

Contents

Welcome Message	1
Committees	3
General Program At-A-Glance	5
Symposium Schedule	9
Plenary Sessions	9
Plenary Speaker Abstracts	10
Agenda for APAM (June 13)	20
Oral Sessions	21
Group A	22
Group B	33
Group C	38
Group D	48
Group E	55
Group F	61
Poster Sessions	71
Group A	72
Group B	90
Group C	103
Group D	110
Group E	118
Group F	136
Banquet Information	148
Conference Room and Poster Locations	149

*Taipei City Government*

Lung-Bin Hau, Ph.D.
Mayor

Office of the Mayor
Taipei, Taiwan, Republic of China

臺北市市長 郝龍斌

Honoured Guests

Welcome to Taipei! On behalf of the Taipei City Government and the city's 2.68 million inhabitants, I would like to extend our warmest welcome to all participants in the International Union of Materials Research Societies–International Conference on Electronic Materials 2014.

I'd like to express our deep appreciation towards the Materials Research Society Taiwan for their commitment to ensuring the success of this global gathering. This event will provide a constructive conduit for the exchange of knowledge and expertise in electronic materials and promises to be a rewarding experience for all involved.

On a different note, be sure to take time out to explore our exhilarating city. Apart from Taipei 101, an awe-inspiring skyscraper, you can also visit the much-vaunted National Palace Museum, which houses some of the world's most important historical artifacts, and make use of the celebrated Taipei Metro, perhaps the world's best rapid transit system. Taipei has many well-kept secrets awaiting your discovery. Nestling in the mountains are a number of well-constructed, eco-friendly hiking trails for the fitness-minded. If day-tripping gives you sore feet, world-class hot springs await your call in Taipei's northern suburbs. Taipei has also made great strides in protecting wildlife and rehabilitating wild areas—stop by the Guandu Nature Park and you will be amazed by its rich biodiversity. Be adventurous and check out the quaint cafés, retro teahouses and boutique art galleries. The quiet alleys that crisscross Taipei are full of little treasures!

As host city and sponsor of the International Conference on Electronic Materials 2014, we hope you have a wonderful time and take home the most beautiful memories.

Sincerely yours

Lung-Bin Hau
Mayor of Taipei



Welcome Message from the MRS-T

Tsung-Tsan Su, President

Materials Research Society-Taiwan (MRS-T) is honored to host the 2014 International Union of Materials Research Societies (IUMRS)-International Conference on Electronic Materials (ICEM), IUMRS-ICEM 2014. On behalf of the organizing committee, I would like to welcome all of you, from every corner of the world, to attend this conference.

The IUMRS-ICEM2014 is one of the prestigious conferences of IUMRS, focusing on advanced electronic materials and related technologies. The ICEM conferences are biennially held, following the successful conferences ICEM 2002 (Xian), ICEM 2004 (San Francisco), ICEM 2006 (Nice), ICEM 2008 (Sydney), ICEM 2010 (Seoul) and ICEM 2012 (Yokohama).

The electronic materials are the keys to solve global problems especially those for sustainable environment and energy. The IUMRS-ICEM 2014 is comprised of 10 plenary lectures, and 26 symposia. It mainly covers six fields: (A): Materials for a Sustainable Society; (B): Materials and Devices; (C): Materials and Processes for Advanced Interconnects and Packaging Technologies; (D): Advanced Materials for Next-Generation Technologies; (E): Modeling, Processing and Characterization; (F): Oxide Thin Films, Nanocomposites and Heterostructures. This conference provides an opportunity for scientists and engineers around the world to exchange their recent achievements and new ideas to advance the R&D of electronic materials science and technology.

It was right after the successful ICEM 2012 held in Yokohama, MRS-T started to work closely with the Asian members, especially MRS-J, C-MRS, and MRS-K, to organize this event. We specially thank Prof. Tamio Endo of MRS-J to organize Group F. Totally 1,035 papers from 26 countries have been received, including some 424 oral and 611 poster presentations. More than 1,000 participants are expected to attend this conference.

Finally, I would like to take this opportunity to express my sincere appreciation to Prof. Sea-Fue Wang, Vice President of National Taipei University of Technology, and Prof. Jinn Chu, Vice Dean of Office of Research and Development, National Taiwan University of Science and Technology, as well as their colleagues for their great efforts in helping organize this conference. I am grateful to the members of Program Committee, General Affairs Committee, Technical Committee and MRS-T staff members for their endless hard work. Special thanks also go to the members of International Advisory Committee and the organizers of each symposium for their valuable contribution to the conference. Last but not least, I would also like to thank all our participants. Without your participation, this conference would not be otherwise possible.

I wish you all a fruitful experience from the conference and an enjoyable stay in Taipei.

Committees

Conference Chair	
Tsung-Tsan Su	<i>President of MRS-T, Taiwan</i>
Co-Chairs:	
Leether Yao	<i>President, National Taipei University of Technology, Taiwan</i>
Ching-Jong Liao	<i>President, National Taiwan University of Science and Technology, Taiwan</i>
R.P.H. (Robert) Chang	<i>Secretary General, IUMRS, USA</i>
Jonq-Min Liu	<i>Executive Vice President, Industrial Technology Research Institute (ITRI), Taiwan</i>
International Advisory Board	
Ho Jung Chang	<i>President of MRS-K, Korea</i>
Robert Chang	<i>General Secretary of IUMRS, USA</i>
Lih-Juann Chen	<i>National Tsing Hua University, Taiwan</i>
B.V.R. Chowdari	<i>President of MRS-S, Singapore</i>
Tsung-Shune Chin	<i>Feng Chia University, Taiwan</i>
Jenq-Gong Duh	<i>National Tsing Hua University, Taiwan</i>
R.M. Faria	<i>President of B-MRS, Brazil</i>
Hanns-Ulrich Habermeier	<i>E-MRS, Germany; 1st Vice President of IUMRS</i>
Yafang Han	<i>Vice President and General Secretary of C-MRS, China</i>
Boyun Huang	<i>President of C-MRS, China</i>
C. Robert Kao	<i>National Taiwan University, Taiwan</i>
Soo Wohn Lee	<i>Vice President of MRS-K, Korea</i>
Nikolai Z. Lyakhov	<i>President of MRS-R, Russia</i>
Tsong-Pyng Perng	<i>National Tsing Hua University, Taiwan</i>
Rodrigo Martins	<i>President of E-MRS</i>
Mona Marei	<i>President of MRS-Africa</i>
Sergio Javier Meija Rosales	<i>President of MRS-Mexico</i>
Paul Siffert	<i>General Secretary of E-MRS</i>
G. Sundararajan	<i>President of MRS-I, India</i>
Atsushi Suzuki	<i>President of MRS-J, Japan</i>
Osamu Takai	<i>President of IUMRS/MRS-J, Japan</i>
Jim Williams	<i>President of A-MRS, Australia</i>
Masahiro Yoshimura	<i>National Cheng Kung University, Taiwan</i>
Program Committee	
Sea-Fue Wang	<i>National Taipei University of Technology, Taiwan</i>
Jinn P. Chu	<i>National Taiwan University of Science and Technology, Taiwan</i>
Jain-Long Horng	<i>General Secretary, MRS-T, Taiwan</i>
Masahiro Yoshimura	<i>National Cheng Kung University, Taiwan</i>
Yafang Han	<i>General Secretary, C-MRS, China</i>
Yee-wen Yen	<i>National Taiwan University of Science and Technology, Taiwan</i>
Tamio Endo	<i>Mie University, Japan</i>
General Affair Committee	
Tzu-Piao Tang	<i>National Taipei University of Technology, Taiwan</i>
Yung-Fu Hsu	<i>National Taipei University of Technology, Taiwan</i>
Chao-Lang Jen	<i>National Taipei University of Technology, Taiwan</i>

Yu-Chuan Wu	<i>National Taipei University of Technology, Taiwan</i>
Te-Wei Chiu	<i>National Taipei University of Technology, Taiwan</i>
Yung-Chin Yang	<i>National Taipei University of Technology, Taiwan</i>
J.K. Chen	<i>National Taipei University of Technology, Taiwan</i>
Shih-Hsien Chang	<i>National Taipei University of Technology, Taiwan</i>
Bing-Sheng Yu	<i>National Taipei University of Technology, Taiwan</i>
Shea-Jue Wang	<i>National Taipei University of Technology, Taiwan</i>
Dong-Hau Kuo	<i>National Taiwan University of Science and Technology, Taiwan</i>
Jem-Kun Chen	<i>National Taiwan University of Science and Technology, Taiwan</i>
Shao-Ju Shih	<i>National Taiwan University of Science and Technology, Taiwan</i>
Jyh-Chien Chen	<i>National Taiwan University of Science and Technology, Taiwan</i>
Yu-Lin, Kuo	<i>National Taiwan University of Science and Technology, Taiwan</i>
Shih-Yun Chen	<i>National Taiwan University of Science and Technology, Taiwan</i>
Chen-Hao Wang	<i>National Taiwan University of Science and Technology, Taiwan</i>
Chiu-Yen Wang	<i>National Taiwan University of Science and Technology, Taiwan</i>
Chin-Yang Yu	<i>National Taiwan University of Science and Technology, Taiwan</i>
Cheng-Min Lee	<i>National Taiwan University of Science and Technology, Taiwan</i>

General Affair Staff

Lin-Chen Chen	<i>MRS-T, Taiwan</i>
Feng-Chen Hsu	<i>MRS-T, Taiwan</i>
Yi-Xin Liu	<i>National Taipei University of Technology, Taiwan</i>

General Program At-A-Glance

Tuesday, June 10		Venue: Nangang Exhibition Hall
10:00-17:30	Registration (1st Floor)	
13:00-18:00	City Tour (Assemble at 1F Registration Desk)	
Room: 402-A-B		
12:30-13:50	MOST Taiwan-MSE Division Lunch Meeting	
14:00-15:00	MRS-T Annual Meeting	
15:00-15:20	Coffee Break	
Room: 402-A-B		
15:20-16:05	Plenary Speech: Dr. Shigeru Niki Research Center for Photovoltaics of AIST, Japan Topic: Progress in Photovoltaic Technologies - Future Prospects of the CIGS PV	
16:05-16:50	Plenary Speech: Prof. Shyi-Kaan Wu National Taiwan University, Taiwan Topic: Recent Development of TiNi Shape Memory Alloys	
16:50-17:20	MRS-T MCP Best Paper Award Presentation Awardee: Prof. Chen-Chi M. Ma National Tsing Hua University, Taiwan Topic: Synergetic Effect of Hybrid Boron Nitride and Multi-Walled Carbon	
17:20-17:50	Prof. Rodrigo Martins President, E-MRS Senate Professor, FCT-UNL, Portugal Topic: Advanced Materials: from Elements in Products to the Industrial Revolution of the Future	
18:00-19:30	IUMRS-ICEM 2014 Welcome Reception/MRS-T 2014 Reception	

Wednesday, June 11				Venue: Nangang Exhibition Hall			
08:30-17:00	Registration (1st Floor)						
13:00-17:30	Exhibition (4th Floor)						
13:00-17:00	Group A/Group D Poster Session (Room: 401) Poster Contest Review (3-4 PM)						
Room: 504-A-B-C							
08:30-09:00	Opening Remark						
09:00-09:45	Plenary Speech: Prof. Motoichi Ohtsu Nanophotonics Research Center, the University of Tokyo, Japan Topic: Dressed Photon Technology						
09:45-10:30	Plenary Speech: Prof. Ho Jung Chang Dankook University, Korea; Former President, Materials Research Society of Korea (MRS-K) Topic: Organic Solar Cells Prepared by Solution Processes: The Next Generation Photovoltaic Devices for the Green Society						
10:30-11:00	Coffee Break						
11:00-11:45	Plenary Speech: Prof. Weiguang Zhu Nanyang Technological University, Singapore Topic: Multifunctional Epitaxial Ultrathin Films and Super-lattices by Laser Molecular Beam Epitaxy						
11:45-12:30	Plenary Speech: Prof. Gou-Chung Chi National Chiao Tung University, Taiwan Topic: LED in Taiwan						
12:30-14:00	Lunch						
14:00-15:40	Session	A2-1	A6-1	B1-1	C3-1	C5-1	C6-1
	Room	504A	501	503	404	521	502
	Session	D3-1	E1-1	E2-1	F2-1	F3-1	
	Room	504C	402A	509	504B	403	
15:40-16:10	Coffee Break			Poster (Room 401): Groups A and D			
16:10-17:40	Session	A1-1	A6-2	B1-2	C3-2	C5-2	C6-2
	Room	504A	501	503	404	521	502
	Session	D1-1	D3-2	E1-2	E2-2	F2-2	F3-2
	Room	402C	504C	402A	509	504B	403

Thursday, June 12				Venue: Nangang Exhibition Hall			
08:30-17:00	Registration (1st Floor)						
09:00-17:30	Exhibition (4th Floor)						
13:00-17:00	Group B/Group F Poster Session (Room: 401) Poster Contest Review (3-4 PM)						
Room: 504-A-B-C							
08:30-09:15	Plenary Speech: Prof. Ching Ping Wong Georgia Institute of Technology, USA Topic: It's a Small World After All : Recent Advances on Nano-materials and Technologies for Advanced Electronic, Photonics and MEMS Application						
09:15-10:00	Plenary Speech: Dr. Seth Darling Argonne National Laboratory, USA Topic: The Solar Energy Challenge						
10:00-10:45	Plenary Speech: Prof. Fu Rong Chen National Tsing Hua University, Taiwan Topic: Atomic Resolution Tomography for 3D Shape of Nano Crystal						
10:45-11:00	Coffee Break						
11:00-11:45	Plenary Speech: Prof. Makoto Shiojiri Kyoto Institute of Technology, Japan Topic: Analytical Scanning Transmission Electron Microscopy and Some Applications to Thin Film Characterization						
11:45-12:30	Plenary Speech: Prof. Yayoi Takamura University of California-Davis, USA Topic: Control of Magnetic Domain Patterns in Complex Oxide Nanostructures						
12:30-13:20	Lunch						
13:20-13:50	Product Demo: Bruker, Taiwan (Room: 402A)						
14:00-15:40	Session	A1-2	A4-1	A6-3	B1-3	C5-3	D1-2
	Room	504A	502	501	503	521	402C
	Session	D2-1	D3-3	E1-3	E2-3	F2-3	F3-3
	Room	404	504C	402A	509	504B	403
15:40-16:10	Coffee Break			Poster (Room 401): Groups B and F			
16:10-17:55	Session	A1-3	A4-2	A6-4	B2-1	C2-1	C3-3
	Room	504A	502	501	503	521	404
	Session	D1-3	D3-4	E2-4	F2-4	F3-4	
	Room	402C	504C	509	504B	403	

Friday, June 13				Venue: Nangang Exhibition Hall			
08:30-17:00	Registration (1st Floor)						
09:00-17:30	Exhibition (4th Floor)						
13:00-17:00	Group C/ Group E Poster Session (Room: 401) Poster Contest Review (3-4 PM)						
15:00-17:45	APAM Taiwan Chapter Formation (Room: 404)						
09:00-10:35	Session	A5-1	A6-5	A7-1	A8-1	B2-2	C2-2
	Room	402C	501	404	504A	503	521
	Session	C4-1	D3-5	E2-5	F1-1	F2-5	F4-1
	Room	502	504C	509	403	504B	402A
10:35-10:50	Coffee Break						
10:50-12:30	Session	A5-2	A6-6	A7-2	A8-1	B2-3	C1-1
	Room	402C	501	404	504A	503	504B
	Session	C2-3	C4-2	D3-6	E3-1	F1-2	F4-2
	Room	521	502	504C	509	403	402A
12:30-13:30	Lunch						
13:30-15:10	Session	A5-3	A6-7	A7-3	A8-2	B2-4	C1-2
	Room	402C	501	404	504A	503	504B
	Session	C2-4	C4-3	D2-2	D3-7	E3-2	F4-3
	Room	521	502	403	504C	509	402A
15:10-15:30	Coffee Break			Poster (Room 401): Groups C and E			
15:30-17:00	Session	A3-1	A5-4	B3-1	C1-3	C2-5	C4-4
	Room	504A	402C	503	504B	521	502
	Session	D2-3	D3-8	E3-3	F4-4		
	Room	403	504C	509	402A		
17:00-18:00	Poster Award Ceremony/Lucky Draw (Room: 402 A-B-C)						
18:30-20:30	Conference Banquet						

Saturday, June 14				Venue: Nangang Exhibition Hall		
09:00-12:00	Exhibition (4th Floor)					
09:00-10:45	Session	B3-2/B4	C1-4	F1-3	F4-5	
	Room	402C	404	403	402A	
10:45-11:00	Coffee Break					
11:00-12:32	Session	F1-4	F4-6			
	Room	403	402A			
12:35	Lunch					

Symposium Schedule

Plenary Sessions

Conference Venue: TWTC Nangang Exhibition Hall, Taipei, Taiwan

Date	Time	Room No.	Symposium	Speaker	Peresentation Title/Affiliation	Chair
6/10	15:20-16:05	402 A-B-C	AP1	Dr. Shigeru Niki	Progress in Photovoltaic Technologies - Future Prospects of the CIGS PV <i>Research Center for Photovoltaic Technologies, National Institute of Advance Industrial Science and Technology (AIST) 1-1-1 Umezono, Tsukuba, Ibaraki, Japan</i>	MRS-T President Tsung-Tsan Su
6/11	09:00-09:45	504 A-B-C	DP2	Prof. Motoichi Ohtsu	Dressed Photon Technology <i>Department of Electrical Engineering and Information Systems, Graduate School of Engineering, the University of Tokyo, also with Nanophotonics Research Center, the University of Tokyo</i>	Prof. Jia-Han Li
	09:45-10:30		AP2	Prof. Ho Jung Chang	Organic Solar Cells Prepared by Solution Processes: The Next Generation Photovoltaic Devices for the Green Society <i>Department of Electronics Engineering, Dankook University, Cheonan-si, Chungnam, Korea</i>	
	10:30-11:00		Coffee Break			
	11:00-11:45		BP1	Prof. Weiguang Zhu	Multifunctional Epitaxial Ultrathin Films and Super-lattices by Laser Molecular Beam Epitaxy <i>Microelectronics Centre, School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore</i>	Prof. Tseung-Yuen Tseng
	11:45-12:30		CP2	Prof. Gou-Chung Chi	LED in Taiwan <i>Department of Photonics, National Chiao Tung University Hsinchu, Taiwan</i>	
6/12	08:30-09:15	504 A-B-C	CP1	Prof. C.P. Wong	It's a Small World After All : Recent Advances on Nano-materials and Technologies for Advanced Electronic, Photonis and MEMS Application <i>Dean of the Faculty of Engineering The Chinese University of Hong Kong</i>	Prof. Jeng-Gong Duh
	09:15-10:00		DP1	Dr. Seth Darling	The Solar Energy Challenge <i>Strategy Leader of Solar Energy Systems and Scientist of Center for Nanoscale Materials, Argonne National Laboratory Fellow, Institute for Molecular Engineering, Chicago University</i>	
	10:00-10:45		EP1	Prof. Fu-Rong Chen	Atomic Resolution Tomography for 3D Shape of NanoCrystal <i>Department of Engineering and System Science, National Tsing-Hua University, HsinChu, Taiwan</i>	
	10:45-11:00		Coffee Break			
	11:00-11:45		EP2	Prof. Makoto Shiojiri	Analytical Scanning Transmission Electron Microscopy and Some Applications to Thin film Characterization <i>Professor emeritus of Kyoto Institute of Technology, Japan</i>	Prof. Tsong-Ping Peng
	11:45-12:30		FP1	Prof. Yayoi Takamura	Control of Magnetic Domain Patterns in Complex Oxide Nanostructures <i>Department of Chemical Engineering and Materials Science, Univ. of California, Davis, Davis, CA, USA</i>	

AP1

6/10
15:20|
16:05

Progress in Photovoltaic Technologies - Future Prospects of the CIGS PV -

Shigeru Niki

*Research Center for Photovoltaic Technologies
National Institute of Advanced Industrial Science and Technology (AIST)
1-1-1 Umezono, Tsukuba, Ibaraki, 305-8568 Japan*

Abstract

The world annual production of PV modules exceeded 30GW in 2011, and is predicted to keep increasing again after a minor standstill. The deployment of PV systems has been accelerated primarily by various policies such as FIT, subsidy, etc. though the price of PV modules and systems has been reduced significantly. Further efforts in R&D have been needed to improve efficiency and reliability of PV modules and systems in order to achieve the grid-parity.

Various research topics such as improvement in performance of various cells and modules, long-term stability and defect analysis of modules, performance testing and measurement technologies, etc. have been carried out in our research center. In this presentation, the latest results from our research center will be first introduced.

Thin film solar cells based on chalcogenide materials such as CdTe and CIGS have emerged and have been leading thin film solar cell technologies. A few GWs of modules have been produced annually. Chalcogenide solar cells have advantages over other technologies in terms of performance, cost, long term stability, etc. In this presentation, the current status and the future direction of the CIGS solar cell technologies will be also introduced. A significant improvement in performance has been developed for both laboratory-scale cells and submodules. It indicates that the CIGS technologies are competitive with the current Si and CdTe technologies in terms of both cost as well as performance.

DP2

6/11
09:00
|
09:45

Dressed Photon Technology

Motoichi Ohtsu

*Department of Electrical Eng. and Information Systems, Graduate School of Eng.,
the Univ. of Tokyo,
also with Nanophotonics Research Center, the Univ. of Tokyo
E-mail: ohtsu@ee.t.u-tokyo.ac.jp*

Abstract

Dressed photon (DP) technology utilizes the electromagnetic fields localized in nanometric space. These fields have been named optical near-fields due to their non-propagating feature [1]. The principles and concepts of DP technology are quite different from those of conventional wave-optical technology encompassing photonic crystals, plasmonics, metamaterials, silicon photonics, and quantum-dot photonic devices. This is because these devices use propagating light even though the materials or particles used may be nanometer-sized. The theoretical picture of DP has been proposed to describe the electromagnetic interactions between nanometric particles located in close proximity to each other. The optical near-field is a virtual cloud of photons that always exists around an illuminated nanometric particle. A real photon (i.e., conventional propagating scattered light) can be emitted from an electron in an illuminated nanometric particle. Independently of the real photon, another photon is emitted from the electron, and this photon can be re-absorbed within a short duration. This photon, i.e., a virtual photon, is nothing more than the optical near-field, and its energy is localized at the surface of the nanometric particle. Since the virtual photon remains in the proximity of the electron, it can couple with the electron in a unique manner. This coupled state is a quasi-particle from the standpoint of photon energy transfer. It is the DP that carries the material excitation energy. The DP has been theoretically described by assuming a multipolar quantum electrodynamic Hamiltonian in a Coulomb gauge in a finite nano-system. The creation and annihilation operators of the DP are expressed as the sum of the operators of the real photon and an electron–hole pair. A real nanometric material is composed not only of electrons but also of a crystal lattice. In this case, after a DP is generated on an illuminated nanometric particle, its energy can be exchanged with the crystal lattice. By this exchange, the crystal lattice can excite the vibration mode coherently, creating a multi-mode coherent phonon state. As a result, the DP and the coherent phonon can form a coupled state (dressed-photon – phonon: DPP). This coupled state is a quasi-particle and is generated only when the particle size is small enough to excite the crystal lattice vibration coherently. Novel LEDs [2] and a laser [3] will be demonstrated by using indirect transition-type semiconductors (Si and SiC), which are fabricated and operated by DPP. Future problems to be solved will be also presented.

Keywords: dressed photons, phonons, LED, laser

References

- [1] M. Ohtsu, *Dressed Photons*, Springer, Berlin (2013).
- [2] T. Kawazoe, A. Mueed, and M. Ohtsu, *Appl. Phys. B* 104, 747 (2011).
- [3] T. Kawazoe, M. Ohtsu, K. Akahane, and N. Yamamoto, *Appl. Phys. B* 107, 659 (2012).

AP2

6/11
09:45

10:30

Organic Solar Cells Prepared by Solution Processes:

The Next Generation Photovoltaic Devices for the Green Society

Ho Jung Chang

Department of Electronics Engineering, Dankook University, Cheonan-si, Chungnam 330-714, Korea
E-mail: hjchang@dankook.ac.kr

Abstract

The demand for alternative energy replacing the fossil fuels has been increased due to environmental pollution problems. The organic solar cell (OSC) is one of the important energy saving devices for the wide range power source applications. In particular, OSCs have some merits in terms of a low cost simple solution process on the large area flexible substrates. However, the power conversion efficiency (PCE) of OSCs is a low compared with the ones of inorganic base solar cells such as crystalline Si and Cu(In,Ga)Se₂ thin film cells. The low PCE may be originated mainly from the large band gap and low carrier mobility of the organic semiconductors. In consideration of these drawbacks of OSCs, it is desirable to optimize the process conditions such as the choice of organic materials and the control of crystalline properties as well as the device structure. We fabricated the OSCs using various active materials such as P3HT (regioregular poly(3-hexylthiophene), PCDTBT (poly [N-9-hepta-decanyl]-2,7-carbazole-alt-5,5-(4,7-di-2-thienyl-2,1,3-benzothiadiazole)) and PCBM ([methano fullerene (6,6)—phenyl C71 butyric acid methyl ester]) as the electron donor and acceptor materials. The PEDOT:PSS [poly (3,4 -ethylenedioxythiophene):poly(styrene sulfonate)] was also used as the hole injection layer (HIL) on the ITO coated glass and plastic substrates. The organic materials were dissolved with the di-chlorobenzene, and spin-coated onto the LiF/PEDOT:PSS/glass(plastic) substrates. Finally, Al and LiF were deposited by the thermal evaporation method. The current density versus voltage characteristics was measured by the solar simulator under AM 1.5G solar energy. The effects of the organic materials and the buffer layer positions on the performances of the devices were investigated. As a result, the introduction of LiF double buffer layers can play a role to improve the electrical properties of the devices. The PCE values are dependent strongly on the surface morphologies and contact angles of the organic film layers. The maximum PCE was about 6.0%. The observed improvement in the electrical properties of the OSCs with PCDTBT:PC61BM active layer is caused by the enhanced light absorption intensity as well as the smooth film surface morphology with low contact angle of the PEDOT:PSS/LiF buffer layer. In addition, the electrical properties of the devices were affected by the addition of gold (Au) nano-particles into PEDOT:PSS layer. From the Raman spectra of the HIL with 0.5 wt.% Au nano-particles, a blue shift was observed for the annealed samples at measured spectra band. The electrical properties were also improved by the post-annealing process with temperature ranges from 110 to 150°C. The surface plasmon resonance effect may be applied by incorporation of Au nano-particles into HIL.

BP1

6/11
11:00
|
11:45

Multifunctional Epitaxial Ultrathin Films and Super-lattices by Laser Molecular Beam Epitaxy

X. Guo, Z. Yang, Z.P. Li, and W. Zhu*

*Microelectronics Centre, School of Electrical and Electronic Engineering
Nanyang Technological University, Singapore 639798*

E-mail: ewzhu@ntu.edu.sg

Abstract

In very recent years, multifunctional ultrathin epitaxial oxide films and superlattices have attracted great interests, intensive research works have been carried out to answer fundamental and scientific challenges, and to seek huge opportunities and potential in electronic device applications. Specific attention has been paid to those multifunctional ultrathin oxide films and superlattices epitaxially grown by laser molecular beam epitaxy technique (L-MBE), which is able to deposit films and superlattices of oxides and ceramics with very high melting temperatures at surface smoothness down to atomic level. In this paper, fully strained multiferroics superlattices: $[(\text{La}_{0.8}\text{Sr}_{0.2}\text{MnO}_3)_{4n}/(\text{BaTiO}_3)_{3n}]_m$ superlattices, where $n = 1, 2, 3$ and 4 , and m is integer number from 1 to 16 , were grown on SrTiO_3 (001) single crystal substrates using L-MBE. The two-dimensional layer-by-layer growth was in situ monitored by reflection high energy electron diffraction (RHEED); structural, electrical and magnetic properties these thin films were systematically investigated. Scanning probe and piezo-force microscopy were also employed to characterize ultrathin ferroelectric films on LSMO substrate to study the polarization and switching effects on the interfacial charge states, ferroelectric tunneling junction, and giant electro-resistance phenomena. A recently proposed single-phase multiferroic material $\text{Pb}(\text{Zr},\text{Ti})\text{O}_3/\text{Pb}(\text{Fe},\text{Ta})\text{O}_3$ (PZT-FT) indicates room-temperature multiferroic with magnetoelectric coupling. We demonstrated successful epitaxial growth of high quality PZT-FT thin films onto SrTiO_3 single crystal substrates using Laser-MBE, monitored by reflection high energy electron diffraction system. In our work on the ferroelectric giant tunneling electro-resistive effect, 3-nm thick ferroelectric thin film was epitaxially grown on SrTiO_3 single crystal substrate, ferroelectric phase was demonstrated by the piezo-phase microscopy, and the giant tunneling electro-resistance (TER) effect with value of 17,500% at 0.4 V was obtained. The experiment results will be presented and the fundamental mechanisms will be discussed.

*: Correspondence and presentation author:

Professor Zhu Weiguang
School of Electrical and Electronic Engineering, Block S2
Nanyang Technological University
50 Nanyang Avenue
Singapore 639798
Republic of Singapore
Tel: (65) 6790 4541
Fax: (65) 6793 3318
E-mail: ewzhu@ntu.edu.sg

CP2**6/11
11:45
|
12:30**

LED in Taiwan

Gou-Chung Chi*Department of Photonics, National Chiao Tung University, Hsinchu, Taiwan*

Abstract

Taiwan Light emitting Diode industry started with Texas Instruments (an US company) set up an assembly line in Taiwan, 1972. The first research and development team was established in ITRI, 1983. Since then, Taiwan's LED productivity steadily grow bigger and stronger. Today, the output value is about 1.6 Billion US dollar. The key epitaxial technology (MOCVD) is in the leading position in the world. There are six major research universities have many professors and graduate students are dedicated to LED R & D for more than twenty years. The LED lighting now is the most exciting topic for energy saving. The market is huge and just beginning. The future of LED industry looks brighter and could extend to the end of this century.

CP1

6/12

08:30

|

09:15

It's a Small World After All: Recent Advances on Nano-materials and Technologies for Advanced Electronic, Photonics and MEMS Applications

C.P. Wong

*Dean of the Faculty of Engineering, The Chinese University of Hong Kong**Shatin, NT, Hong Kong*

E-mail: cpwong@cuhk.edu.hk

On leave from

*School of Materials Science and Engineering**Georgia Institute of Technology**Atlanta, GA 30332-0245**Phone: 404-894-6631; Fax: 404-894-9140*

E-mail: cp.wong@mse.gatech.edu

Abstract

The advance of semiconductor technology is mainly due to the advances of materials, especially polymeric materials. These include the use of polymers as: adhesives (both conductive and non conductive for die attach and assembly interconnects), interlayer dielectrics (low k, low loss dielectrics for high speed and low loss signal transmission), encapsulants (discrete and wafer level packages for device protection), embedded passives (high K capacitors, high Q inductors for high density PWB substrates), superhydrophobic self-cleaning lotus effect surfaces, etc. In this presentation, I will review some of the recent advances on nano-materials and nano-technologies that are currently being investigated for these types of applications, such as: lead-free flexible electrically conductive adhesives (ECAs) with flexible/stretchable properties, self assembly monolayer molecular wires for fine pitch and high current density interconnects, flip chip and wafer level underfills, nano lead-free alloys for low temperature interconnects, well-aligned carbon nanotubes and graphenes for high current and high thermal interface materials (TIMs), superhydrophobic self-clean lotus surface coatings and NanoMetal Assisted Chemical Etching for MEMS and high efficiency solar cell applications.

References

- [1] C.P. Wong, K. Moon, and Y. Li Ed., "Nano-Bio-Electronic, Photonic and MEMS Packaging", Springer, (2010).
- [2] Y. Li, D. Lu, and C.P. Wong, "Electrically Conductive Adhesives with Nanotechnologies", Springer, published (2010).
- [3] Y. Li, K. Moon, and C.P. Wong, "Nano Conductive Materials For Electronic Packaging", Chapter 2, in "Nano-Bio-Electronic, Photonic and MEMS Packaging", C.P. Wong, K. Moon, and Y. Li, Ed., Springer (2010).
- [4] H. Jiang, K. Moon, and C.P. Wong, "Nano Lead-free Solder Pastes for Low Processing Temperature Interconnect Applications in Microelectronic Packaging", Chapter 8, in "Nano-Bio- Electronic, Photonic and MEMS Packaging", C.P. Wong, K. Moon, and Y. Li, Ed., Springer (2010).
- [5] W. Lin and C.P. Wong, "Applications of Carbon Nano-materials as Electrical Interconnects and Thermal Interface Materials", Chapter 17, in "Nano-Bio- Electronic, Photonic and MEMS Packaging", C.P. Wong, K. Moon, and Y. Li, Ed., Springer (2010).
- [6] Z. Li, R. Zhang, Y. Liu, K. Moon, and C.P. Wong, "Highly Conductive, Flexible ECAs..". Proc. 63rd IEEE ECTC (2013).

DP1**6/12****09:15****I****10:00**

The Solar Energy Challenge

Seth B. Darling

*Strategy Leader of Solar Energy Systems and Scientist of Center for Nanoscale
Materials, Argonne National Laboratory, USA*

Fellow, Institute for Molecular Engineering, Chicago University, USA

Abstract

To better understand the current and future role of solar energy, I will frame the global energy supply and demand outlook over the next 40 years while examining potential energy sources from a feasibility and sustainability perspective. In this context, I will discuss the challenges of current solar energy technologies and the promise offered by next-generation materials in this arena.

EP1

6/12
10:00|
10:45

Atomic Resolution Tomography for 3D Shape of NanoCrystal

F.-R. Chen¹, C. Kisielowski², and D. Van Dyck³¹*Department of Engineering and System Science, National Tsing-Hua University, HsinChu, Taiwan*²*NCEM & JCAP Berkeley CA USA*³*University of Antwerp, EMAT, Department of Physics, Belgium*

Abstract

Transmission electron microscopy (TEM) has been well recognized for its power in spatial resolution to the sub-Å level, especially, with aberration-corrected optics, [1]. However, the ultimate goal of electron microscopy is not only to obtain nice images but also to advance materials science. This means that EM has to evolve from describing to understanding materials properties. It is well-known that all the structure-property relations are encoded in the positions of the atoms and the shape of particle, specially, in the case of catalysts and biological species. The future EM is then to be considered as a communication channel between object and observer and the images as data planes from which the 3D atom positions and the shape of the sample can be extracted quantitatively. Although, with the newest generation of Cs corrected EM's the resolution is sufficient to resolve the individual atoms and to refine their position with picometer precision. The drawbacks of high resolution TEM are two folds. First, it gives only 2D projected structural information. And second, the passband of the lens transfer at the low spatial frequencies is very poor and such that the information about shape is lost.

In my talk, I will show that how we develop a novel theory and method for incoherent and coherent TEM imaging technique to determine 3D shape of nano-object with atomic resolution.

EP2

6/12

11:00

|

11:45

Analytical Scanning Transmission Electron Microscopy and Some Applications to Thin Film Characterization

M. Kawasaki¹, M. Nose², J.R. Yang³, and M. Shiojiri^{4,*}

¹JEOL USA Inc., 11 Dearborn Road, Peabody, MA 01960, USA

²Faculty of Art and Design, University of Toyama, Takaoka, Japan

³Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

⁴Professor emeritus of Kyoto Institute of Technology, Japan

*1-297 Wakiyama, Kyoto 618-0091, Japan

E-mail: shiojiri@pc4.so-net.ne.jp

Abstract

Analytical scanning transmission electron microscopy (STEM) is indispensable for investigation and characterization of nanoscale novel materials and devices. First, the history of STEM is briefly presented [1, 2], and the characteristics of the STEM imaging, in particular, of high-angle annular dark-field (HAADF), is instructed comparing with high-resolution transmission electron microscopy [3, 4]. Next, our recent STEM investigations on Au/TiO₂ thin films deposited on the glass substrate [5] and multilayered Cr(Al)N/SiO_x nanocomposite coatings [6, 7] are reviewed as examples of characterization of thin films.

Keywords: Analytical Electron Microscopy, Scanning transmission electron microscopy, thin films, Au/TiO₂, Cr(Al)N/SiO_x

References

- [1] M. von Ardenne, Reminiscences on the origins of the scanning electron microscope and the electron microprobe. in *Advances in imaging and electron physics*, vol. 96, Ed. by T. Mulvey (1996) 635-652.
- [2] A. Crewe, Scanning electron microscopes: Is high resolution possible? *Science* 154, (1966) 279-738.
- [3] M. Shiojiri and H. Saijo, Imaging of high-angle annular dark-field scanning transmission electron microscopy and observations of GaN-based violet laser diodes. *J. Microsc.* 223, (2006) 172-178.
- [4] M. Kawasaki and M. Shiojiri, Imaging Techniques in STEM. *J. Jpn. Inst. Light Metals* (in Japanese), in print.
- [5] M. Kawasaki, M.J. Chen, J.R. Yang, W.A. Chiou, and M. Shiojiri, Structural analysis of Au/TiO₂ thin films deposited on the glass substrate. *Appl. Phys. Lett.* 102, (2013) 091603 (4 pages).
- [6] M. Kawasaki, H. Takabatake, I. Onishi, M. Nose, and M. Shiojiri, Structural investigation of Cr(Al)N/SiO_x films prepared on Si substrates by differential pumping co-sputtering. *ACS Appl. Mater. Interfaces* 5, (2013) 3833-3838.
- [7] M. Kawasaki, M. Nose, I. Onishi, and M. Shiojiri, Structure of multilayered Cr(Al)N/SiO_x nanocomposite coatings fabricated by differential pumping co-sputtering. *Appl. Phys. Lett.* 103, (2013) 201913 (4 pages).

FP1

6/12
11:45

12:30

Control of Magnetic Domain Patterns in Complex Oxide Nanostructures

Yayoi Takamura¹, Erik Folven², Andreas Scholl³, Anthony T. Young³,
Scott Retterer⁴, Thomas Tybell², and Jostein Grepstad²

¹*Department of Chemical Engineering and Materials Science, Univ. of California, Davis, Davis, CA, USA*

²*Department of Electronics and Telecommunications, Norwegian Univ. of Science and Technology,
Trondheim, Norway*

³*Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, USA*

⁴*Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN, USA*
E-mail: ytakamura@ucdavis.edu

Abstract

Perovskite-structured oxides possess a wide range of technologically relevant functional properties including ferromagnetism, ferroelectricity, and superconductivity. Furthermore, the interfaces of perovskite oxides have been shown to exhibit unexpected functional properties not found in the constituent materials. These functional properties arise due to various structural and chemical changes as well as electronic and/or magnetic interactions occurring over nanometer length scales at the interfaces. Exchange interactions which occur at the interface between ferromagnetic (FM) and antiferromagnetic (AFM) layers play a key role in devices such as magnetic hard drives and magnetic random access memory, however, a fundamental understanding of the phenomena remains elusive. Depending on the spin structure of the AFM layer, these exchange interactions can take the form of exchange bias or spin-flop coupling, which are characterized by parallel or perpendicular alignment of the FM/AFM spins at the interface, respectively. In this work, we investigate the FM/AFM system consisting of FM half metal, $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ (LSMO) and the G-type AFM insulator $\text{La}_{1-x}\text{Sr}_x\text{FeO}_3$. This system has been shown to display a robust spin-flop coupling where the direction of the AFM spin axis can be reoriented with a small applied magnetic field, despite the fact that the AFM spin axis is usually strongly defined by the crystallographic axes [1, 2]. X-ray photoemission electron microscopy has been used to directly image the FM and AFM spins in embedded nanostructures patterned in LSMO/ LaFeO_3 bilayers [3, 4]. Unique domain patterns not found in metallic systems were observed due to the combined contributions of exchange bias and spin-flop coupling. In addition, a transition from perpendicular to parallel spin alignment was observed as a function of the size and crystallographic orientation of the nanostructures. These results demonstrate the complex interactions between shape-induced anisotropy in the FM/AFM layers and interface exchange interactions on the magnetic domain patterns of complex oxide nanostructures.

References

- [1] E. Arenholz *et al.*, Appl. Phys. Lett. 94 (2009).
- [2] F. Yang *et al.*, Phys. Rev. B 83 (2011).
- [3] E. Folven *et al.*, Nano Letters 12 (2012).
- [4] Y. Takamura *et al.*, accepted to Phys. Rev. Lett. (2013).

Agenda for the Formation of APAM Taiwan Chapter and Energy Forum

(June 13, 2014 Friday, Room 404)

Time (PM)	Title	Speaker/Coordinator
3:00 – 3:10	Welcome Message	Prof. C.S. Chin National Tsing Hua University, Taiwan 金重勳教授 (清華大學)
3:10 – 3:30	Introduction of APAM	Prof. H.L. Huang Shanghai Jiao Tong University, China 黃惠良教授 (上海交通大學)
3:30 – 4:10	Discussion on the By-Law of APAM Taiwan Chapter	Prof. W.F. Su National Taiwan University, Taiwan 林唯芳教授 (台灣大學)
4:10 – 4:20	Break	
4:10 – 5:45	Energy Forum: “Collaborative R&D in Renewable Energy Technology”	Prof. K.L. Lin National Cheng Kung University, Taiwan 林光隆教授 (成功大學) Panelists: - Prof. P.H. Chang (Northwestern Univ., USA) 張邦衡教授 (美國西北大學) - Prof. C.S. Hsu (National Chiao Tung Univ., Taiwan) 許千樹教授 (交通大學) - Dr. Y.C. Huang (Inst. Nuclear Energy Research, Taiwan) 黃裕清博士 (核研所) - Prof. S.C. Lee (National Taiwan Univ., Taiwan) 李嗣涔教授 (台灣大學) - Prof. C.F. Lin (National Taiwan Univ., Taiwan) 林清富教授 (台灣大學) - Prof. B.H. Tseng (National Sun Yat-Sen Univ., Taiwan) 曾百亨教授 (中山大學)
6:30 – 8:30	Social Hour (Joint with IUMRS-ICEM Banquet)	Prof. Albert Chin National Chiao Tung University, Taiwan 荊鳳德教授 (交通大學)

Oral Sessions

Group A: Materials for a Sustainable Society

Symposium A1: Advanced Fuel Cells

Session A1-1

Conference Room: 504A

2014/6/11

Chair: Prof. Wen-Cheng J. Wei

A1-O-0119 | 16:10-16:30 | T. Mori

Design of Pt-CeO_x Hetero-interface on Cathodes for Improvement of Oxygen Reduction Reaction

T. Mori^{1,*}, K. Fugane¹, S. Chauhan¹, T. Masuda¹, and K. Uosaki^{1,2}
¹Global Research Center for Environment and Energy based on Nanomaterials Science (GREEN), National Institute for Materials Science, Tsukuba, Japan

²International Center for Materials Nanoarchitectonics (MANA), National Institute for Materials Science, Tsukuba, Japan

A1-O-0247 | 16:30-16:50 | T. Fujigaya

Highly Durable Polymer Electrolyte Fuel Cell based on Carbon Nanotube as Electrocatalyst

T. Fujigaya^{1,2,*}, M.R. Berber^{1,2,3}, and N. Nakashima^{1,2}
¹Department of Applied Chemistry, Graduate School of Engineering, Kyushu University, Fukuoka, Japan

²World Premier International Research Center Initiative, International Institute for Carbon Neutral Energy Research (WPI-I2CNER), Kyushu University, Fukuoka, Japan

³Department of Chemistry, Faculty of Science, Tanta University, Tanta, Egypt

A1-O-0385 | 16:50-17:10 | W.S. Hsieh

The Effects of GDC/ScSZ Bilayer Electrolyte on the Characteristics of Electrolyte Supported Micro-tubular Solid Oxide Fuel Cells

W.S. Hsieh¹, P. Lin¹, and Sea-Fue Wang^{2,*}
¹Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan

²Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan

Session A1-2

Conference Room: 504A

2014/6/12

Chair: Bing-Joe Hwang

A1-KT-1055 | 14:00-14:30 | Hiroyuki Uchida

Highly Active and Durable Cathode

Catalysts based on Multilateral Analyses of Oxygen Reduction Reaction at Pt and Pt-Alloys

Hiroyuki Uchida, Hiroshi Yano, Mitsuru Wakisaka, and Masahiro Watanabe

Clean Energy Research Center and Fuel Cell Nanomaterials Center, University of Yamanashi, Kofu, Japan

A1-O-0653 | 14:30-14:50 | Hunhyeong Lee

Fabrication and Properties with Gradient Porous Cathode of Proton Conducting Fuel Cell

Hunhyeong Lee¹, Jinyi Choi², Sewook Lee¹, and Dongwook Shin^{1,2,*}
¹Division of Materials Science & Engineering, Hanyang University, Seoul, Korea

²Department of Fuel Cells and Hydrogen Technology, Hanyang University, Seoul, Korea

A1-O-0795 | 14:50-15:10 | Yi-Xin Liu

Effect of Dopants on the Electrical Properties of LaCoO₃ Cathode Materials

Y.X. Liu, S.F. Wang*, Y.F. Hsu, and Y.S. Peng

Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan

A1-O-0799 | 15:10-15:30 | Enn Lust

Influence of Porosity Parameters of Pt Nanoclusters Modified Carbon Electrodes on Oxygen Electroreduction

Enn Lust*, Kersti Vaarmets, Silver Sepp, Jaak Nerut, Eneli Härk, and Peeter Valk

Institute of Chemistry, University of Tartu, Tartu, Estonia

Session A1-3

Conference Room: 504A

2014/6/12

Chair: Prof. Kuan-Zong Fung

A1-O-0827 | 16:10-16:30 | Mu-Min Chen

Self-sustainable Solid-Oxide-Fuel-Cell (SOFCs) Stacks Operated with Bio-fuel

M.M. Chen, W.B. Guan and W.C.J. Wei

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

A1-O-0952 | 16:30-16:50 | Hsin-Chia Ho

Effect of Thermal-Sprayed $\text{Mn}_{1.5}\text{Co}_{1.5}\text{O}_4$ and $\text{La}_{0.8}\text{Sr}_{0.2}\text{MnO}_3$ Coating on Oxidation Suppression of Metallic InterconnectH.C. Ho^{1,*} and K.Z. Fung²¹Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan²Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan

A1-O-0962 | 16:50-17:10 | Chia-Chieh Shen

Cyclic Hydrogenation Stability of $\text{Ti}_{25}\text{V}_{35}\text{Cr}_{40}$ AlloysChia-Chieh Shen^{1,2,3,*}, Hsueh-Chih Li², and Yuan-Pang Wu⁴¹Department of Mechanical Engineering, Yuan Ze University, Chungli, Taiwan²Graduate School of Renewable Energy and Engineering, Yuan Ze University, Chungli, Taiwan³Fuel Cell Center, Yuan Ze University, Chungli, Taiwan⁴Materials and Electro-Optics Research Division, CSIST, Taoyuan, Taiwan**Symposium A2: Advanced Materials for Lithium/Sodium Batteries****Session A2-1**

Conference Room: 504A

2014/6/11

Chairs: Prof. She-huang Wu and Prof. Kuan-Zong Fung

A1-KT-1054 | 14:00-14:30 | D. Carlier

Sodium Layered Oxides as Positive Electrode Material for Na-batteriesD. Carlier^{1,*}, M. Guignard¹, B. Mortemard de Boisse¹, R. Berthelot¹, J.H. Cheng², C.J. Pan², M. Yoncheva³, R. Stoyanova³, A. Wattiaux¹, B.J. Hwang², and C. Delmas¹¹Institut de Chimie de la Matière Condensée de Bordeaux, ICMCB-CNRS, Université Bordeaux, Pessac, France²Department of chemical engineering, National Taiwan University of Science and Technology, Tapei, Taiwan³Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences, Sofia, Bulgaria

A2-IT-0407 | 14:30-14:55 | Benoit Mortemard de Boisse

A Combined Solid State Electrochemistry, X-Ray Diffraction, Nuclear Magnetic Resonance and DFT Calculations Study of the Na_xNiO_2 ($1/3 \leq x \leq 1$) SystemB. Mortemard de Boisse¹, T. Phraewphiphat^{1,2}, S.K. Kumara Swamy¹, D. Carlier^{1,*}, M. Guignard¹,and C. Delmas¹¹CNRS, Université de Bordeaux, ICMCB, Pessac, France²Department of Electronic Chemistry, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, Yokohama, Japan

A2-IT-0624 | 14:55-15:20 | Jason Fang

Powering the Future - Lithium Sulfur Batteries

Chih-Ching Chang, Chun-Lung Li, Li-Duan Tsai, and Jason Fang*

Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan

A2-O-0926 | 15:20-15:40 | Nithinai Wongittharom

Electrochemical Performance of Na/NaFePO₄ Sodium-ion Batteries with Ionic Liquid ElectrolytesN. Wongittharom¹, T.C. Lee¹, C.H. Wang², Y.C. Wang², and J.K. Chang^{1,2,3,*}¹Department of Chemical and Materials Engineering, National Central University, Jhongli, Taiwan²Institute of Materials Science and Engineering, National Central University, Jhongli, Taiwan³Department of Mechanical Engineering, National Central University, Jhongli, Taiwan

A

Symposium A3: New Progress in Materials of Metal Air Batteries

Session A3-1

Conference Room: 504A

2014/6/13

Chair: Prof. Kan-Lin Hsueh

A3-O-1034 | 15:40-16:00 | Po-Chieh Li

Synthesis and Characterization of α -MnO₂/Carbon Black Air Cathodes for Zinc-air Batteries

Po-Chieh Li¹, Chi-Chang Hu^{1,*}, Tai-Chou Lee², and Wen-Sheng Chang³
¹Laboratory of Electrochemistry & Advanced Materials, Department of Chemical Engineering, National Tsing-Hua University, Hsin-Chu, Taiwan

²Department of Chemical and Materials Engineering, National Central University, Taoyuan, Taiwan

³Green Energy and Environment Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan

A3-O-1037 | 16:00-16:20 | Y.Y. Li

Carbon Nanocapsules@ MnO₂ Catalyst for Zn-air Battery

W.C. Lin¹, J.L. Hong¹, and Y.Y. Li^{1,2,3,*}
¹Department of Chemical Engineering, National Chung Cheng University, Chia-Yi, Taiwan

²Graduate Institute of Opto-Mechatronics, National Chung Cheng University, Chia-Yi, Taiwan

³Advanced Institute of Manufacturing with High-Tech Innovations, National Chung Cheng University, Chia-Yi, Taiwan

A3-O-1074 | 16:20-16:40 | K.-L. Hsueh

Modification of Oxygen Evolution Reaction (OER) Electrode for Rechargeable Metal-air Battery

C.-T. Lu, M.-J. Li, L.-X. Chen, C.-C. Lu, and K.-L. Hsueh*

Department of Energy Engineering, National United University, Miaoli, Taiwan

A3-O-1075 | 16:40-17:00 | K.-L. Hsueh

Performance of Oxygen Reduction Reaction (ORR) Electrode in Alkaline Electrolyte with Nickel on Carbon as the Catalyst

C.-T. Lu¹, M.-C. Li², Y.-Y. Jheng¹, Y.-S. Chen^{2,*}, and K.-L. Hsueh^{1,*}
¹Department of Energy Engineering, National United University, Miaoli, Taiwan

²Department of Mechanical Engineering, National Chung Cheng University, Chiayi, Taiwan

Symposium A4: Materials for Supercapacitors

Session A4-1

Conference Room: 502

2014/6/12

Chairs: Prof. Takeshi ABE
Prof. Chi-Chang Hu

A4-IT-0999 | 14:00-14:25 | Masashi Ishikawa

Novel Electrode Material Design for Advanced Supercapacitors

M. Ishikawa* and M. Yamagata

Department of Chemistry and Materials Engineering, Faculty of Chemistry, Materials and Bioengineering, Kansai University, Suita, Japan

A4-IT-0907 | 14:25-14:50 | Hsisheng Teng

Influence of Pore Structure on Carbon-Based Double Layer Capacitors Operated at High Voltages

H.C. Huang¹, C.W. Huang², and H.S. Teng^{1,3,*}
¹Department of Chemical Engineering and Research

Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan

²Taiwan Textile Research Institute, Taipei, Taiwan

³Center for Micro/Nano Science and Technology, National Cheng Kung University, Tainan, Taiwan

A4-IT-0518 | 14:50-15:15 | Seong-Ju Hwang

Inorganic 2D Nanosheet-based Hybrid-type Electrode Materials for Supercapacitors

S.-J. Hwang*

Center for Intelligent Nano-Bio Materials (CINBM), Department of Chemistry and Nano Sciences, Ewha Womans University, Seoul, Korea

A4-O-0018 | 16:10-16:30 | Robert P.H. Chang

Hierarchical Design for Fabricating Cost-Effective High Performance Supercapacitors

N.D. Kim¹, D.B. Buchholz¹, G. Casillas²,
M. José-Yacamán², and R.P.H. Chang^{1,*}

¹Materials Research Institute & Department of Materials
Science and Engineering, Northwestern University,
Evanston, Illinois, USA

²Department of Physics and Astronomy, University of
Texas at San Antonio, San Antonio, Texas, USA

Session A4-2

Conference Room: 502

2014/6/12 Chair: Prof. Masashi Ishikawa
and Prof. Seong-Ju Hwang

A4-IT-0847 | 16:00-16:25 | Takeshi Abe

Electrochemical Intercalation of Bis(fluorosulfonyl)amide Anion into Graphite

Takeshi Abe

Department of Energy and Hydrocarbon Chemistry,
Graduate School of Engineering, Kyoto University,
Kyoto, Japan

A4-IT-0507 | 16:25-16:50 | Jeng-Kuei Chang

Improved Supercapacitor Performance of MnO₂-Graphene Composites Constructed Using Supercritical Fluid

Chueh-Han Wang, Hui-Ying Li, Ming-Tsung Lee,
Cheng-Hsien Yang, Yi-Chen Wang, and
Jeng-Kuei Chang*

Institute of Materials Science and Engineering,
National Central University, Taoyuan, Taiwan

A4-IT-0602 | 16:50-17:15 | Ying-Hui Lee

The Development of Asymmetric Hybrid Supercapacitors

Ying-Hui Lee, Chun-Lung Li, Yu-Wei Lin,
Chung-Hsiang Chao, Jenn-Yeu Hwang,
Li-Duan Tsai, and Jason Fang*

Material and Chemical Research Laboratories, Industrial
Technology Research Institute, Hsinchu, Taiwan

A4-O-0089 | 17:15-17:35 | Trung Truc Ngo (Frank)

Flexible PPy-CNT/CC Supercapacitor Electrodes Operating in Neutral Aqueous Solution

T.T. Ngo^{1,*}, S.W. Lai², C.W. Chong², L.C. Chen^{1,2},
and K.H. Chen^{1,2}

¹Institute of Atomic and Molecular Sciences, Academia
Sinica, Taipei, Taiwan

²Center for Condensed Matter Sciences, National Taiwan
University, Taipei, Taiwan

A4-O-0771 | 17:35-17:55 | Mengqiang Wu

Nano-composites of Manganese Oxide and Super-activated Carbon for Supercapacitors

Mengqiang Wu^{1,*}, Wenlong Liu¹, and
Shuren Zhang²

¹School of Energy Science and Engineering, University
of Electronic Science and Technology of China,
Chengdu, China

²School of Microelectronics and Solid State Electronics,
University of Electronic Science and Technology of
China, Chengdu, China

Symposium A5: New Materials for Solar Fuels

Session A5-1

Conference Room: 402C

2014/6/13 Chairs: Prof. Jeffrey Chi-Sheng Wu
and Prof. Hsisheng Teng

A5-IT-0885 | 09:00-09:25 | Ru-Shi Liu

Quantum Dots, Nanosized Au, and Upconversion Nanoparticles Sensitized ZnO Nanowires-array Photoelectrodes for Water Splitting

Ru-Shi Liu^{1,*}, Chih-Kai Chen¹, Hao Ming Chen¹,
Chih-Jung Chen¹, and Shu-Fen Hu²

¹Department of Chemistry, National Taiwan University,
Taipei, Taiwan

²Department of Physics, National Taiwan Normal
University, Taipei, Taiwan

A5-IT-1021 | 09:25-09:50 | Tai-Chou Lee

Metal Sulfide Materials for Solar Hydrogen

Tai-Chou Lee^{1,*}, Min-Chih Li¹, Po-Chang Lin², and
T. Randall Lee³

¹Department of Chemical and Materials Engineering,
National Central University, Taoyuan, Taiwan

²Department of Chemical Engineering, National Chung
Cheng University, Chiayi, Taiwan

³Department of Chemistry, University of Houston,
Houston, TX., USA

A5-IT-1079 | 09:50-10:15 | Kong-Wei Cheng

Photoelectrochemical Performances of Multi-component Metal Sulfides/Selenides

A

Electrodes

Kong-Wei Cheng

Department of Chemical Engineering, Chang Gung University, Taoyuan, Taiwan

A5-O-0520 | 10:15-10:35 | Ying-Chau Liu

Electrodeposited Cobalt Catalysts for Electrochemical and Photoelectrochemical Oxidation of Water

Ying-Chau Liu, James C. Hill, Jakub A. Koza, Alan T. Landers, and Jay A. Switzer*

Department of Chemistry and Materials Research Center, Missouri University of Science and Technology, Rolla, Missouri, USA

Session A5-2

Conference Room: 402C

2014/6/13

Chairs: Prof. Ru-Shi Liu and Prof. Shih-Yuan Lu

A5-IT-1023 | 10:50-11:15 | Jih-Jen Wu

TiO₂/Hematite Heteronanostructured Electrodes for Photoelectrochemical Water Splitting

Jih-Sheng Yang and Jih-Jen Wu*

Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan

A5-IT-1017 | 11:15-11:40 | Chia-Yu Lin

Cobalt Sulfide as Cathode Materials in Photoelectrochemical Hydrogen Water Splitting in Basic Aqueous Solution

Chia-Yu Lin

Department of Chemical Engineering, National Cheng Kung University, Taipei, Taiwan

A5-O-0533 | 11:40-12:00 | Yan-Gu Lin

Investigation of Plasmonic Nanoarchitectures for Solar-Hydrogen Application

Yan-Gu Lin^{1,*}, Yu-Kuei Hsu², Li-Chyong Chen³, and Kuei-Hsien Chen^{3,4}

¹*National Synchrotron Radiation Research Center, Hsinchu, Taiwan*

²*Department of Opto-Electronic Engineering, National Dong Hwa University, Hualien, Taiwan*

³*Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan*

⁴*Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan*

Session A5-3

Conference Room: 402C

2014/6/13

Chairs: Prof. Chi-Chang Hu and Prof. Jih-Jen Wu

A5-KT-1057 | 13:30-14:00 | Akihiko Kudo

Metal Oxide and Sulfide Photocatalyst Materials for Artificial Photosynthesis

Akihiko Kudo

Faculty of Science, Department of Applied Chemistry, Tokyo University of Science, Tokyo, Japan

A5-IT-0944 | 14:00-14:25 | Kuei-Hsien Chen

Graphene Oxide and its Hybrids as Photocatalyst for Solar Fuels

Kuei-Hsien Chen^{1,3,*}, Indrajit Shown¹, Hsin-Cheng Hsu², Yo-Chong Chang², Chang-Hui Lin², Chen-Hao Wang², and Li-Chyong Chen³

¹*Institute of Atomic and Molecular Science, Academia Sinica, Taipei, Taiwan*

²*Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan*

³*Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan*

A5-IT-1024 | 14:25-14:50 | Shih-Yuan Lu

ZnFe₂O₄ Decorated CdS Nanorods: a Visible Light Responsive, Photochemically Stable, Magnetically Recyclable Photocatalyst for Hydrogen Generation

Tsung-Hsuan Yu, Wei-Yung Cheng, Kang-Ju Chao, and Shih-Yuan Lu*

Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan

A5-O-0859 | 14:50-15:10 | Yu-Cheng Hsiao

Clarifying the Sensitizing Effect of Anatase-TiO₂ on the Photocatalytic Decoloration of Dyes

Yu-Cheng Hsiao¹, Tsai-Fang Wu², Yu-Sheng Wang¹, Chi-Chang Hu^{1,*}, and Chihpin Huang²

¹*Department of Chemical Engineering, National Tsing Hua University, Hsin-Chu, Taiwan*

²*Institute of Environmental Engineering, National Chiao Tung University, Hsin-Chu, Taiwan*

Session A5-4

Conference Room: 402C

2014/6/13

**Chairs: Prof. Akihiko Kudo
and Dr. Kuei-Hsien Chen**

A5-IT-1011 | 15:30-15:55 | Jeffrey Chi-Sheng Wu

**CO₂ Photoreduction to Renewable Energy
via Artificial Photosynthesis**Wei-Hsuan Lee, Min-Fei Tsai, and Jeffrey C.S. Wu*
*Department of Chemical Engineering, National Taiwan
University, Taipei, Taiwan*

A5-IT-0909 | 15:55-16:20 | Hsinyu Lin

**Z-scheme Overall Water Splitting on
Reduced Graphene Oxide Modified****Rh/K₄Nb₆O₁₇**

H.Y. Lin* and Y.L. Ye

*Department of Materials Science and Engineering,
National Dong Hwa University, Hualien, Taiwan*

A5-O-1019 | 16:20-16:40 | Te-Fu Yeh

**Graphene-Oxide Nanoparticles as
Photocatalysts for H₂ from Water under
Visible-Light Irradiation**T.F. Yeh¹ and H.S. Teng^{1,2,*}¹*Department of Chemical Engineering and Research
Center for Energy Technology and Strategy, National
Cheng Kung University, Tainan, Taiwan*²*Center for Micro/Nano Science and Technology,
National Cheng Kung University, Tainan, Taiwan***Symposium A6: Advanced Thermoelectric Materials for
Sustainable Energy****Session A6-1**

Conference Room: 501

2014/6/11

Chair: Dr. Kuei-Hsien Chen

A6-IT-0722 | 14:00-14:25 | Yang-Yuan Chen

**Engineering High ZT TE Materials by
the Manipulations of Size, Phase and
Electronic Structure**Yang-Yuan Chen*, C.L. Chen, P.C. Wei, P.C. Li,
Y.C. Huang, T.W. Lan, C.H. Chien, Rajesh Kumar,
and Dedi*Institute of Physics, Academia Sinica, Nankang, Taipei,
Taiwan*

A6-KT-0086 | 14:25-14:55 | Zhifeng Ren

**The Benefit of Nanostructures to
Thermoelectric Materials**

Zhifeng Ren

*Department of Physics and TcSUH, University of
Houston, Houston, Texas, USA*

A6-IT-0172 | 14:55-15:20 | L.C. Chen

**Improved Thermoelectric Properties
of Earth-abundant Copper Sulfide by
Composition Engineering**L.C. Chen^{1,*}, L.M. Lyu^{1,2}, Deniz Wong², and
K.H. Chen²¹*Center for Condensed Matter Sciences, National Taiwan
University, Taipei, Taiwan*²*Institute of Atomic and Molecular Sciences, Academia
Sinica, Taipei, Taiwan*

A6-O-0572 | 15:20-15:40 | Rajeshkumar Mohanraman

**Influence of In Doping on the
Thermoelectric Properties of AgSbTe₂
Compound with Enhanced Figure of Merit**Rajeshkumar Mohanraman^{1,2,3,*}, Raman Sankar⁴,
Karunakara Moorthy Boopathi^{1,3,5},
Fang-Cheng Chou⁴, Chih-Wei Chu⁵,
Chih-Hao Lee¹, and Yang-Yuan Chen^{2,*}¹*Department of Engineering and System Science,
National Tsing Hua University, Hsinchu, Taiwan*²*Institute of Physics, Academia Sinica, Taipei, Taiwan*³*Nano Science and Technology, Taiwan International
Graduate Program, Academia Sinica, Taipei, Taiwan*⁴*Center for Condensed Matter Sciences, National Taiwan
University, Taipei, Taiwan*⁵*Research Center for Applied Science, Academia Sinica,
Taipei, Taiwan***Session A6-2**

Conference Room: 501

2014/6/11

Chair: Prof. Chien-Neng Liao

A6-IT-0689 | 16:10-16:35 | Pai-Chun Wei

**Probing the Phonon-Glass
Electron-Crystal Character in
High-Performance In-Doped β -Zn₄Sb₃**Pai-Chun Wei^{1,*}, Chun-Chuen Yang²,
Jeng-Lung Chen³, Sankar Raman⁴,
Chi-Liang Chen¹, Chung-Li Dong⁴,
Chung-Chieh Chang¹, Maw-Kuen Wu¹,

A

Fang-Cheng Chou⁴, Kuei-Hsien Chen⁵,
and Yang-Yuan Chen¹

¹*Institute of Physics, Academia Sinica, Taipei, Taiwan*

²*Department of Physics, Chung Yuan Christian University,
Chung-Li, Taiwan*

³*National Synchrotron Radiation Research Center,
Hsin-Chu, Taiwan*

⁴*Center for Condensed Matter Sciences, National Taiwan
University, Taipei, Taiwan*

⁵*Institute of Atomic and Molecular Sciences, Academia
Sinica, Taipei, Taiwan*

A6-O-0098 | 16:35-16:55 | Tsutomu Iida

Thermoelectric and Mechanical Properties of n-type Mg₂Si and Updated Unileg Thermoelectric Power Generator

T. Iida¹, Y. Oto¹, S. Soeda¹, S. Hirata¹,
M. Ishikawa¹, T. Sakamoto¹, K. Nishio¹, Y. Kogo¹,
Y. Taguchi², T. Nemoto³, N. Hirayama¹, and
Y. Takanashi¹

¹*Department of Materials Science and Technology, Tokyo
University of Science, Tokyo, Japan*

²*Yasunaga Corporation, Mie, Japan*

³*Nippon Thermostat Co., Ltd., Tokyo, Japan*

A6-O-0257 | 16:55-17:15 | I-Nan Chen

RF Magnetron Sputtered Ge-Sb-Te Thin Films for Thermoelectric

I-Nan Chen¹, Cheong-Wei Chong²,
Yang-Fang Chen¹, Kuei-Hsien Chen^{3,*},
and Li-Chyong Chen²

¹*Department of Physics, National Taiwan University,
Taipei, Taiwan*

²*Center for Condensed Matter Sciences, National Taiwan
University, Taipei, Taiwan*

³*Institute of Atomic and Molecular Sciences, Academia
Sinica, Taipei, Taiwan*

Session A6-3

Conference Room: 501

2014/6/12

Chair: Dr. Yang-yuan Chen

A6-IT-0891 | 14:00-14:25 | Chih-Wei Chang

Room Temperature Ballistic Thermal Conduction Persisting Over 8.3 μm in SiGe Nanowires

Tzu-Kan Hsiao^{1,2}, Hsu-Kai Chang³, Sz-Chian Liou¹,
Ming-Wen Chu¹, Si-Chen Lee³,
and Chih-Wei Chang^{1,*}

¹*Center for Condensed Matter Sciences, National Taiwan
University, Taipei, Taiwan*

²*Institute of Applied Physics, National Taiwan University,
Taipei, Taiwan*

³*Graduate Institute of Electronic Engineering, National
Taiwan University, Taipei, Taiwan*

A6-KT-0168 | 14:25-14:55 | Ryoji Funahashi (AK5)

Oxide Thermoelectric Materials and Power Generation

R. Funahashi^{1,2,*}, Y. Matsumura¹, E. Combe¹,
S. Iwaoka¹, and T. Barbier¹

¹*Res. Inst. for Ubiquitous Energy Device, National
Institute of Advanced Industrial Science & Technology,
Osaka, Japan*

²*Core Research for Evolutionary Science and
Technology, Japan Science and Technology Agency,
Tokyo, Japan*

A6-IT-0443 | 14:55-15:15 | Shien Der Tzeng

Changes of Thermoelectric Properties of Surface Molecules/Gold Nanoparticle Composite Structures in Different Gases

Y.S. Li¹, I.C. Ni¹, M.H. Chen², and S.D. Tzeng^{1,*}

¹*Department of Physics, National Dong Hwa University,
Hualien, Taiwan*

²*Department of Optoelectronic Engineering, National
Dong Hwa University, Hualien, Taiwan*

A6-O-0333 | 15:15-15:35 | C.R. Wang

The Properties of Bi₂(Te,Se)₃ Nanoparticles Fabricated by Electrical Discharge Method

C.R. Wang^{1,*}, M.H. Ciou, and Y.Y. Chen²

¹*Department of applied physics, Tung-hai University
Taichung, Taiwan*

²*Institute of Physics, Academia Sinica, Taipei, Taiwan*

Session A6-4

Conference Room: 501

2014/6/12

Chair: Dr. Yia-Chung Chang

A6-IT-0249 | 16:10-16:35 | Jenn-Dong Hwang

The Opportunities and Challenges of Thermoelectric Generation on Industrial Waste Heat Recovery-From Materials to System

Jenn-Dong Hwang

*Material & Chemical Research Lab., ITRI, Hsinchu,
Taiwan*

A6-IT-0167 | 16:35-17:00 | Hsin-Jay Wu

Effect of Stoichiometry on the Microstructures, Phases and Thermoelectric Properties of Pseudo-Binary AgSbSe₂-AgSbTe₂ System

H.J. Wu^{1,*}, T.W. Lan², S.W. Chen³ and Y.Y. Chen²

¹*Department of Materials and Optoelectronic Science,
National Sun Yat-Sen University, Kaohsiung, Taiwan*

²*Institute of Physics, Academia Sinica, Taipei, Taiwan*

³Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan

A6-O-0715 | 17:00-17:20 | Wei-Han Tsai

Synthesis and Thermoelectric Properties of a Single $\text{Bi}_{2-x}\text{Sb}_x\text{Te}_{3-y}$ Nanowire

Wei-Han Tsai^{1,*}, Chia-Hua Chien^{1,2,3}, Ping-Chung Lee¹, Yi-Cheng Huang¹, and Yang-Yuan Chen¹

¹Institute of Physics, Academia Sinica, Taipei, Taiwan

²Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan

³Nano Science and Technology Program, Taiwan International Graduate Program, Institute of Physics, Academia Sinica, Taipei, Taiwan

A6-O-0255 | 17:20-17:40 | Wei-Lun Chien

Homogeneous Bismuth Sulfide Composite as Sustainable Thermoelectric Material

Wei-Lun Chien^{1,3}, Deniz Wong¹, Jih-Shang Hwang³, Li-Chyong Chen², and Kuei-Hsien Chen^{1,*}

¹Institute of Atomic and Molecular Science, Academia Sinica, Taipei, Taiwan

²Center for Condensed Matter Science, National Taiwan University, Taipei, Taiwan

³Institute of Optoelectronic Sciences, National Taiwan Ocean University, Keelung, Taiwan

Session A6-5

Conference Room: 501

2014/6/13 Chair: Prof. Li-Chyong Chen

A6-IT-0150 | 09:00-09:25 | Y.K. Kuo

Optimization of Eco-Friendly Thermoelectric Materials

Y.K. Kuo^{1,*} and C.S. Lue²

¹Department of Physics, National Dong Hwa University, Hualien, Taiwan

²Department of Physics, National Cheng Kung University, Tainan, Taiwan

A6-IT-0291 | 09:25-09:50 | Jong-Soo Rhyee

Chemical Potential Tuning by Doping and Nano-Composite Synthesis of Indium-Selenide based Thermoelectric Materials

Jong-Soo Rhyee

Department of Applied Physics, Kyung Kee University, Yong-In, Korea

A6-IT-0197 | 09:50-10:15 | Deniz Wong

Manipulation of Phases in GeTe-rich Germanium Antimony Telluride alloys for

Enhanced Thermoelectric Performance

Deniz Wong¹, Wei-Lun Chien^{1,3}, Raman Sankar², Fang-Cheng Chou², Jih-Shang Hwang³, Li-Chyong Chen², and Kuei-Hsien Chen^{1,*}

¹Institute of Atomic and Molecular Science, Academia Sinica, Taipei, Taiwan

²Center for Condensed Matter Science, National Taiwan University, Taipei, Taiwan

³Institute of Optoelectronic Sciences, National Taiwan Ocean University, Keelung, Taiwan

A6-O-0608 | 10:15-10:35 | T.W. Lan

Thermoelectric Performance Enhancement in BiSbTe Composites with Silicon Inclusions

C.C. Chang¹, T.W. Lan^{1,2,3}, Y.C. Chien¹, Y.T. Hsieh¹, Y.R. Wu¹, M.H. Wen¹, C.M. Tseng¹, T.K. Lee^{1,2}, M.K. Wu^{1,*}, and Y.Y. Chen^{1,*}

¹Institute of Physics, Academia Sinica, Taipei, Taiwan

²Department of Physics, National Taiwan University, Taipei, Taiwan

³Taiwan International Graduate Program, Academia Sinica, Taipei, Taiwan

Session A6-6

Conference Room: 501

2014/6/13 Chair: Prof. Chih-Wei Chang

A6-IT-0134 | 11:10-11:35 | Chien-Neng Liao

Modulation of Crystal Defects and Thermoelectric Properties of Bismuth Telluride based Compounds

C.N. Liao*, K.M. Liou, L.C. Wu, S.S. Lin, and M.P. Lu

Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan

A6-IT-0848 | 11:35-12:00 | Chung-Chieh Chung

Formation of Cu Nanoparticles in Bismuth Antimony Telluride Bulk Alloys and Their Effect on ZT Enhancement

Chung-Chieh Chang^{1,*}, Tian-Wey Lan^{1,2,3}, Yu-Chieh Chien¹, Chuan-Ming Tseng¹, Yao-Tsung Hsieh¹, Yu-Ruei Wu¹, Min-Hsueh Wen¹, Ting-Kuo Lee¹, Maw-Kuen Wu^{1,4}, and Yang-Yuan Chen¹

¹Institute of Physics, Academia Sinica, Nankang, Taipei, Taiwan

²Department of Physics, National Taiwan University, Taipei, Taiwan

³International Graduate Program, Academia Sinica, Taipei, Taiwan

⁴Department of Physics, National Dong Hwa University, Hualien, Taiwan

A

A6-O-0851 | 12:00-12:20 | Naohito Tsujii

Thermoelectric Properties of an Environmental-Friendly Mineral Mooihoekite $\text{Cu}_9\text{Fe}_9\text{S}_{16}$

Naohito Tsujii* and Takao Mori

National Institute for Materials Science, Tsukuba, Japan

Session A6-7

Conference Room: 501

2014/6/13

Chair: Prof. Yung-Kang Kuo

A6-IT-0377 | 13:30-13:55 | Yu-Chang Chen

Thermoelectric Properties in Atomic/Molecular Junctions from First Principles

Yu-Chang Chen^{1,2}
¹Department of Electrophysic, National Chiao Tung University, Hsinchu, Taiwan

²National Center of Theoretical Science, National Chiao Tung University, Hsinchu, Taiwan

A6-O-0684 | 13:55-14:15 | Chia Hua Chien

Thermoelectric Performance Enhancement by Reducing the Thermal Conductivity in Synthesized Bi_2Te_3 and Bi_2Se_3 Nanoplates

Chia-Hua Chien^{1,2,4,*}, Chung-Chieh Chang², Cheng-Lung Chen², Tian-Wey Lan^{2,3,4},

Ping-Chung Lee², Chih-Hao Lee¹, and Yang-Yuan Chen²
¹Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan

²Institute of Physics, Academia Sinica, Taipei, Taiwan

³Department of Physics, National Taiwan University, Taipei, Taiwan

⁴Nano Science and Technology Program, Taiwan International Graduate Program, Institute of Physics, Academia Sinica, Taipei, Taiwan

A6-O-0250 | 14:15-14:35 | Z.X. Zhu

Assembly of N-type $\text{Bi}_2(\text{Te}, \text{Se})_3$ Thermoelectric Modules by Low Temperature Bonding

Z.X. Zhu¹, C.C. Li¹, L.L. Liao², M.J. Dai², C.K. Liu², and C. Robert Kao^{1,*}
¹Department of Materials Science & Engineering, National Taiwan University, Taipei, Taiwan

²Electronic and Optoelectronics Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan

A6-O-0524 | 14:35-14:55 | Rui-zhi Zhang

How to Improve the Power Factor of Thermoelectric Nanocomposite

Rui-zhi Zhang* and Hao-ying Chen

School of Physics, State Key Laboratory of Photoelectric Technology and Functional Materials (Cultivation Base), Northwest University, Xi'an, China

Symposium A7: Solar Cells and Devices

Session A7-1

Conference Room: 404

2014/6/13

Chair: Prof. Huey-Liang Hwang

A7-O-0472 | 09:00-09:20 | Ming-Chin Li

11%-Efficiency Hybrid Organic/Silicon-Nanowire Heterojunction Solar Cell with an Intermediate 1,1-bis[(di-4-tolylamino)phenyl]cyclohexane Layer

Ming-Chin Li¹, Yi-Chun Lai², Wei-Sheng Weng², Kai-Yuan Cheng², Peichen Yu², and Hsin-Fei Meng³
¹Institute of Photonics Technologies, National Tsing-Hua University, Hsinchu, Taiwan

²Department of Photonics and Institute of Electro-Optical Engineering, National Chiao-Tung University, Hsinchu, Taiwan

³Institute of Physics, National Chiao-Tung University, Hsinchu, Taiwan

A7-O-0560 | 09:20-09:40 | Song-Ting Yang

Silicon Nanohole Structure for High Efficiency Organic-Inorganic Hybrid Solar Cells

Song-Ting Yang¹, Subramani Thiyagu¹, Chien-Ting Liu¹, Hong-Jhang Syu¹, and Ching-Fuh Lin^{1,2,3,*}
¹Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taipei, Taiwan

²Graduate Institute of Electronics Engineering, National Taiwan University, Taipei, Taiwan

³Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan

A7-O-0245 | 09:40-10:00 | Chen, Chao-Yu (Peter)

Highly Efficient Organometallic Perovskite Mesoscopic Heterojunction

Solar Cells

Kuo-Chin Wang, Jun-Yuan Jeng, Po-Shen, Shen, Tzung-Fang Guo, and Peter Chen*

Department of Photonics, National Cheng Kung University, Tainan, Taiwan

A7-O-0589 | 10:00-10:20 | Sheng-Kai Chang

Highly Efficient Polymer Solar Cells with Inverted Structure by Using KCl-Treated ZnO Nanorod Arrays

S.K. Chang¹, C. Lee¹, H.C. Lee¹, and C.F. Lin^{1,2,*}

¹*Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taipei, Taiwan*

²*Graduate Institute of Electronics Engineering, National Taiwan University, Taipei, Taiwan*

Session A7-2

Conference Room: 404

2014/6/13

Chair: Dr. J.F. Guillemoles

A7-IT-0728 | 11:00-11:25 | H.L. Hwang

Establishment of Gobi Photovoltaic Project

H.L. Hwang

Department of Electrical Engineering, National Tsing Hua University, Hsinchu, Taiwan

A7-O-0444 | 11:25-11:45 | Yin-Hsien Su

Growth of Cu₂ZnSnS₄ thin Films by Co-Electrodeposition and Sulfurization

Y.H. Su^{1,*}, T.W. Chang¹, W.C. Lee¹, B.H. Tseng², C. Gougoud³, S. Delbos³, E. Chassaing³, and D. Lincot³

¹*Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan*

²*Institute of Materials Science and Engineering, National Sun Yat-Sen University, Kaohsiung, Taiwan*

³*EDF R&D, Institute of Research and development on Photovoltaic Energy, Chatou, France*

A7-O-0868 | 11:45-12:05 | Cheng-Hung Shih

Direct Growth of Heteroepitaxial CuInSe₂

on GaN (0001) Template by Molecular Beam Epitaxy

Cheng-Hung Shih^{1,*}, Ikai Lo^{2,*}, Shuo-Ting You², Cheng-Da Tsai², Bae-Heng Tseng³, Yun-Feng Chen³, and Gray Z.L. Hsu⁴

¹*Multidisciplinary Science Research Center, National Sun Yat-Sen University, Kaohsiung, Taiwan*

²*Department of Physics, Center for Nanoscience and Nanotechnology, National Sun Yat-Sen University, Kaohsiung, Taiwan*

³*Department of Materials and Optoelectronic Science, National Sun Yat-Sen University, Kaohsiung, Taiwan*

⁴*United Crystal Corporation, Miaoli, Taiwan*

Session A7-3

Conference Room: 404

2014/6/13

Chair: Prof. Ching-Fuh Lin

A7-KT-1053 | 13:30-14:00 | J. F. Guillemoles (AK1)

Imaging Solar Cells Operation

J. François Guillemoles*, Amaury Delamarre, and Laurent Lombez

IRDEP, CNRS, Chatou, France

A7-O-0716 | 14:00-14:20 | Saurabh S. Soni

Enhancement in Photocurrent by Post Buffer Layer of AgNP-TiO₂ Thin Film in Dye Sensitized Solar Cell

Saurabh S. Soni*, Jayraj V. Vaghasiya, and Bharat G. Solanki

Department of Chemistry, Sardar Patel University, Gujarat, India

A7-O-0921 | 14:20-14:40 | Ziqi Sun

Rational Design of Metal Oxide Nanostructures for Dye-Sensitized Solar Cells

Ziqi Sun*, Jung Ho Kim, and Shi Xue Dou

Institute for Superconducting and Electronic Materials (ISEM), University of Wollongong, North Wollongong, Australia

Symposium A8: Metallic Catalysts for Energy and Environment

Session A8-1

Conference Room: 504A

2014/6/13

Chair: Dr. C. Nishimura

A8-KT-1056 | 10:00-10:30 | M. Armbrüster

Intermetallic ZnPd in Methanol Steam Reforming – Fascinating New Insights

M. Armbrüster

Max-Planck-Institut für Chemische Physik fester Stoffe, Dresden, Germany

A

A8-IT-0593 | 10:30-10:55 | Satoshi Kameoka

Metallurgical Design of Catalysis Materials: Control of Microstructures and Electronic States for Alloys

S. Kameoka

IMRAM, Tohoku University, Sendai, Japan

A8-O-0411 | 10:55-11:15 | Yung-Han Huang

Development and Characterization of a New Type Gold or Platinum Supported on ZrO₂-based Oxides

Y.H. Huang¹, S.F. Wang^{1,*}, A.P. Tsai², and S. Kameoka²
¹Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan

²Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan

A8-O-0567 | 11:15-11:35 | Tzu-Yang Wu

Ag Nanoporous Foam Fabricated by Chemical Dealloying for Catalyst Purposes

T.Y. Wu* and J.C. Huang

Department of Materials and Optoelectronic Science, National Sun Yat-Sen University, Kaohsiung, Taiwan

A8-O-0066 | 11:35-11:55 | Hung Ji Huang

Room Temperature Plasmonic Photocatalytic Ammonium Oxidization with Platinum Catalyst

H.J. Huang* and B.-H. Liu

Instrument Technology Research Center, National Applied Research Laboratories, Hsinchu, Taiwan

Session A8-2

Conference Room: 504A

2014/6/13

Chair: Dr. S. Kameoka

A8-IT-0679 | 13:30-13:55 | Ya Xu

Catalytic Properties of Ni-Al Nanoparticles Fabricated via Vacuum Arc Plasma Evaporation

Y. Xu^{1,*}, J.Y. Yang², M. Demura¹, T. Hirano¹,

Y. Matsushita¹, M. Tanaka³, and Y. Katsuya³
¹Hydrogen Materials Unit, National Institute for Materials Science, Tsukuba, Japan

²School of Materials and Engineering, Huazhong University of Science and Technology, Wuhan, China

³Synchrotron X-ray Station at SPring-8, NIMS, Hyogo, Japan

A8-O-0693 | 13:55-14:15 | Chikashi Nishimura

Vanadium-based Alloy Membranes for Production of High-purity Hydrogen

C. Nishimura^{1,*}, M. Komaki¹, A. Suzuki², and A. Kawabata²
¹Hydrogen Materials Unit, National Institute for Materials Science, Tsukuba, Japan

²Taiyo Ko-ko, Co., Ltd., Akou, Japan

A8-O-0705 | 14:15-14:35 | Nguyen Van Chien

A Thin Film Approach to Understand Photochemistry of Au (111) - BiVO₄ (001) Interfacial Reconstruction

N.V. Chien¹, W.S. Chang¹, H.J. Liu¹, H.H. Kuo¹, Y.C. Teng¹, W.Y. Tzeng², J.W. Chen³, C.L. Wu³, C.W. Luo², Y.C. Chen³, and Y.H. Chu^{1,*}
¹Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan

²Department of Electrophysics, National Chiao Tung University, Hsinchu, Taiwan

³Department of Physics, National Cheng Kung University, Tainan, Taiwan

A8-O-0856 | 14:35-14:55 | Ti Lee

Degradation of Methylene Blue by Ag/TiO₂ Plasmonic Photocatalyst Under Visible Light Irradiation

T. Lee, B.K. Chao, and C.H. Hsueh*

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

A8-O-0857 | 14:55-15:15 | C.L. Chiang

Synthesis, Characterization, and N₂/CO₂ Adsorptive Selectivity of Cobalt Metal Azolate Frameworks

C.L. Chiang, K.S. Lin*, C.H. Wang, A.K. Adhikari, and S.H. Yu

Department of Chemical Engineering and Materials Science/Environmental Technology Research Center, Yuan Ze University, Chung-Li, Taiwan

Group B: Materials and Devices

Symposium B1: Si-Related Materials and Devices

Session B1-1

Conference Room: 503

2014/6/11 *Chair: Prof. Chao-Sung Lai*

B1-KT-1058 | 14:00-14:30 | Kei May Lau

Metamorphic Growth of III-V Devices on Silicon Substrate by MOCVD

Kei May Lau

Electronic and Computer Engineering Department, Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong

B1-O-1030 | 14:30-14:50 | Alexander S. Gouralnik

Two Approaches to the Controlled Growth of Thin Films on Silicon SurfaceA.S. Gouralnik*, S.A. Dotsenko, and N.G. Galkin
Institute of Automation & Control Processes, FEB RAS, Vladivostok, Russia

B1-O-0867 | 14:50-15:10 | Jui-Chang Lin

Phosphorus Loss Effect on Electrical Characteristics of N-type Planar Junctionless TransistorsJ.-R. Tsai^{1,*}, J.-C. Lin¹, Y.-S. Su¹, S.-H. Lin¹,
T.-W. Hsiang¹, Y.-H. Huang¹, H.-C. Lin²,
T.-Y. Huang², C.-I. Lin², and Z.-M. Lin²¹*Department of Photonic and Communication Engineering, Asia University, Taichung, Taiwan*²*Department of Electronics Engineering and Institute of Electronics, National Chiao Tung University, Hsinchu, Taiwan*

B1-O-0357 | 15:10-15:30 | Shinji Naito

Application of Silicon Carbon Nitride Dielectric Films to Charge Trapping Nonvolatile MemoriesS. Naito¹, Y. Ito², and K. Kobayashi^{1,2,*}¹*Course of Electrical and Electronic System, Graduate School of Engineering, Tokai University, Hiratsuka, Japan*²*Department of Electrical and Electronic Engineering, School of Engineering, Tokai University, Hiratsuka, Japan***Session B1-2**

Conference Room: 503

2014/6/11 *Chair: Prof. Jung-Ruey Tsai*

B1-O-0360 | 16:10-16:30 | Mukta V. Limaye

Synchrotron based Study of Sub-band Gap Absorbing Sulfur Hyperdoped SiliconMukta V. Limaye^{1,*}, Chen Sz Chang¹,
Shashi B. Singh¹, Yu-Ting Lin², Eric Mazur²,
and W.F. Pong^{1,*}¹*Department of Physics, Tamkang University, Tamsui, Taiwan*²*School of Engineering and Applied Sciences, Harvard University, Cambridge, Massachusetts, USA*

B1-O-0038 | 16:30-16:50 | Xiaozhong Zhang

Resistance Transition Assisted Geometry Enhanced Magnetoresistance in Silicon

X.Z. Zhang*, Z.C. Luo, C.H. Wan, J.J. Chen, and J.M. Wang

School of Materials Science and Engineering, Tsinghua University, Beijing, China

B1-O-0811 | 16:50-17:10 | Ching-Yuan Ho

Fast Programming Speed of Gate-all-around Si Nanowire SONOS Memory using Self-aligned NiSi Schottky Barrier Source/Drain

Ching-Yuan Ho*, Y.L. Chiou, and Yaw-Jen Chang

¹*Department of Mechanical Engineering, Chung Yuan Christian University, Chung-Li, Taiwan*²*Department of Chemistry, Center for Nanotechnology and Institute of Biomedical Technology, Chung Yuan Christian University, Chung-Li, Taiwan***Session B1-3**

Conference Room: 503

2014/6/12 *Chair: Prof. Jer-Chyi Wang*

B1-KT-1059 | 14:00-14:30 | Toshiki Makimoto

Epitaxial Lift-off of Group-III Nitride Semiconductors using a Layered BN - The "MeTRe" Method

Toshiki Makimoto

Waseda University, Japan

B1-IT-0133 | 14:30-14:55 | Pei-Wen Li

The Curious Case of Germanium Quantum Dots: Fantasy Migration and Ripening Behavior of Ge under Si Interstitials OxidationPei-Wen Li^{1,*} and Tom George^{2,3}¹Department of Electrical Engineering, National Central University, Jhongli, Taiwan²Zyomed Corporation, Altadena, CA, USA³Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan

B1-O-0923 | 14:55-15:15 | Chuan-Jung Lin

Fabricating a SiGe Virtual Substrate on (100) Si Wafer by Aluminum-induced Solid Phase Epitaxy at Low-temperatureC.J. Lin^{1,*}, S.Y. Wei¹, C.C. Hsu¹, W.C. Sun²,S.M. Yu^{1,2}, T.S. Lin², and F.R. Chen¹¹Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan²Material & Chemical Research Laboratories, Industrial Technology Research Institute, Chutung, Hsinchu, Taiwan

B1-O-0975 | 15:15-15:35 | C.C. Hsieh

Grain Structures of Multi-crystalline Silicon Grown by Using Patterned CruciblesC.C. Hsieh¹, A. Lan², C. Hsu², C. Martin³, A. Yang⁴, and C.W. Lan^{1,*}¹Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan²Sino-American Silicon Products Inc., Hsinchu, Taiwan³Vesuvius France SA, Feignies, France⁴Solartech Energy Inc., Hsinchu, Taiwan**Symposium B2: Oxides Materials and Devices****Session B2-1**

Conference Room: 503

2014/6/12

Chair: Prof. Pei-Wen Li

B2-O-0208 | 16:10-16:35 | Jun Wang

Conductivity Improvement of Silver Nanowires Film by Thickness Tailoring of Polyvinylpyrrolidone Nanolayer and Application in Flexible Tactile SensorJ. Wang^{1,2,*}, J. Jiu¹, T. Sugahara¹, S. Nagao¹, M. Nogi¹, H. Koga¹, P. He², and K. Suganuma¹¹Institute of Scientific and Industrial Research, Osaka University, Osaka, Japan²State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology, Harbin, China

B2-O-0402 | 16:35-16:55 | M.K. Jayaraj

Room Temperature Hydrogen Sulphide Gas Sensing using Metal Oxide Nanorod ArraysP.P. Subha¹, K. Hasna² and M.K. Jayaraj^{1,*}¹Nanophotonics and Optoelectronic Devices Laboratory, Department of Physics, Cochin University of Science and Technology, India²Department of Instrumentation, Cochin University of Science and Technology, India

B2-O-0969 | 16:55-17:15 | Ta-Te Chen

The Oxygen Permeation Property and Phase Stability of Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}O_{3-δ} Asymmetric Membranes for Oxygen Separation

T.T. Chen*, Y.C. Su, and K.Z. Fung

Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan

B2-O-0081 | 17:15-17:35 | Tso Fu Mark Chang

Effects of Supercritical CO₂ Emulsion on SnO₂, TiO₂, and ZnO Deposited CathodicallyTso-Fu Mark Chang^{1,*}, Wei-Hao Lin^{1,2}, Yung-Jung Hsu², Tatsuo Sato¹, and Masato Sone¹¹Precision and Intelligence Laboratory, Tokyo Institute of Technology, Yokohama, Japan²Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan**Session B2-2**

Conference Room: 503

2014/6/13

Chair: Prof. Horng-Chih Lin

B2-KT-1080 | 09:00-09:30 | I-Wei Chen

CMOS-Compatible Nanometallic RRAM: Materials, Devices and Mechanisms

I-Wei Chen*

Department of Materials Science and Engineering,
University of Pennsylvania, Philadelphia, USA

B2-IT-0615 | 09:30-09:50 | Chenhsin Lien

Overview of HfO_x based RRAM for High Density Applications

C.H. Lien^{1,*}, K.H. Tasi^{1,3}, Y.S. Chen³, H.Y. Lee³,
P.S. Chen², F.T. Chen³, and M.-J. Tsai³

¹Institute of Electronics Engineering, National Tsing Hua University, Hsinchu, Taiwan

²Department of Materials Science and Engineering, MingShin University of Science & Technology, Hsinchu, Taiwan

³Electronics and Optoelectronics Research Laboratory, Industrial Technology Research Institute, Hsinchu, Taiwan

B2-O-0190 | 09:50-10:10 | D. Jana

Sidewall Sub-20nm Resistive Random Access Memory Using AlO_x Switching Material in W/AlO_x/Ir Structure

D. Jana, A. Prakash, and S. Maikap*

Thin Film Nano Tech. Lab., Department of Electronic Engineering, Chang Gung University (CGU), Kwei-Shan Tao-Yuan, Taiwan

B2-O-0039 | 10:10-10:30 | Adnan Mehonic

Silicon Oxide ReRAM

A. Mehonic^{1,*}, L. Montesi¹, M. Munde¹,
M. Buckwell¹, and A.J. Kenyon¹

¹Department of Electronic & Electrical Engineering, University College London, London, UK

Session B2-3

Conference Room: 503

2014/6/13 Chair: Prof. Chenhsin Lien

B2-O-0176 | 11:00-11:20 | Chi-Lu Chen

Performance Improvement of p-side Up Thin Film AlGaInP LEDs via Roughened Transparent Conductive Layer

C.L. Chen^{1,*}, B.R. Wu^{1,2}, C.H. Tien², and R.H. Horng¹

¹Graduate Institute of Precision Engineering, National Chung Hsing University, Taichung, Taiwan

²Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan

B2-O-0045 | 11:20-11:40 | Bo-Shiuan Shie

High-Performance IGZO TFTs Fabricated with Film-Profile-Engineering

Bo-Shiuan Shie¹, Horng-Chih Lin^{1,2}, and Tiao-Yuan Huang¹

¹Department of Electronics Engineering and Institute of Electronics, National Chiao Tung University, Hsinchu, Taiwan,

²National Nano Device Labs., Hsinchu, Taiwan

B2-O-0106 | 11:40-12:00 | Donyau Chiang

Bonding Status of the Oxide Photoresist Subjected to Laser Treatment

P.-K. Chiu¹, C.-M. Chang¹, S.-F. Tseng¹,
W.-T. Hsiao¹, C.-T. Yang², and D. Chiang^{1,*}

¹Instrument Technology Research Center, National Applied Research Laboratories, Hsinchu, Taiwan

²Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan

Session B2-4

Conference Room: 503

2014/6/13 Chair: Prof. Ray-Hua Horng

B2-O-0123 | 13:30-13:50 | Shu-Jui Chang

Complex Interfacial Interactions in Epitaxial Core-shell Metal Oxide Nanocrystals

Shu-Jui Chang, Yong-Lung Chen, Ying-Hao Chu, and Yuan-Chieh Tseng*

Department of Materials Science & Engineering, National Chiao Tung University, Hsin-Chu, Taiwan

B2-O-0362 | 13:50-14:10 | Shashi B. Singh

X-ray-based Microscopic and Spectroscopic Study of d⁰ Magnetism in ZnO Nanostructures

Shashi B. Singh^{1,*}, Y.F. Wang¹, Y.C. Shao¹,
H.Y. Lai¹, S.H. Heish¹, M.V. Limaye¹, H.T. Wang²,
K.T. Lin³, H.C. Hsueh¹, J.W. Chiou⁴, H.M. Tsai⁵,
C.W. Pao⁵, C.H. Chen⁵, H.J. Lin⁵, J.F. Lee⁵,
C.T. Wu⁶, J.J. Wu⁶, and W.F. Pong^{1,*}

¹Department of Physics, Tamkang University, Tamsui, Taiwan

²Department of Physics, National Tsinghua University, Hsinchu, Taiwan

³Department of Physics, National Taiwan University, Taipei, Taiwan

⁴Department of Applied Physics, National University of Kaohsiung, Kaohsiung, Taiwan

⁵National Synchrotron Radiation Research Center, Hsinchu, Taiwan

⁶Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan

B2-O-0189 | 14:10-14:30 | Wei-Fu Wang

Strained Quantum Well Intermixing through Both Column-III and Column-V Sublattices

Wei-Fu Wang¹, Kai-Yuan Cheng¹, Ching-Yi Huang¹,
Wei-Ting Liu², Bao-Hsien Wu², Yu-Chen Cheng³,
and Kuang-Chien Hsieh^{1,*}

¹*Institute of Electronics Engineering, National Tsing Hua University, Hsinchu, Taiwan*

²*Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan*

³*Union Optonics Corp.*

B2-O-0984 | 14:30-14:50 | Jay Shieh

Photocurrent Enhancement of Perovskite Heterojunction by Plasmonics and Ferroelectricity

J. Shieh*, S.W. Chen, Y.S. Lin, and C.Y. Fang

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

Symposium B3: Carbon-Related Materials and Devices

Session B3-1

Conference Room: 503

2014/6/13

Chair: Golap Kalita

B3-O-0030 | 15:40-16:00 | Golap Kalita

Synthesis of Graphene by a Solid Phase Reaction Process for Device Application

G. Kalita^{1,2,*}, S. Sharma², R. Hirano², M.E. Ayhan²,
S.M. Shinde², and M. Tanemura²

¹*Center for Fostering Young and Innovative Researchers, Nagoya Institute of Technology, Nagoya, Japan*

²*Department of Frontier Materials, Nagoya Institute of Technology, Nagoya, Japan*

B3-O-0304 | 16:00-16:20 | Wei-Hung Chiang

A Green and High-yield Synthesis of Graphene Nanoribbons

Y.S. Li, and W.H. Chiang*

Department of Chemical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan

B3-O-0013 | 16:20-16:40 | Li-Ching Chuang

Microwave-Assisted Synthesis of Graphene Nanosheets with Sugar as the Reductant

Li-Ching Chuang^{1,2,*} and Chien-Shiun Liao²

¹*Division of Chemical Engineering, Institute of Nuclear Energy Research Lungtan, Taoyuan, Taiwan*

²*Department of Chemical Engineering and Materials Science, Yuan Ze University, Taoyuan, Taiwan*

B3-O-0306 | 16:40-17:00 | Wei-Hung Chiang

Controllable Synthesis of Heteroatom-doped Carbon Nanomaterials at Atmospheric Pressure

G.L. Chen and W.H. Chiang*

Department of Chemical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan

Session B3-2/B4

Conference Room: 402C

2014/6/14

Chair: Nyan-Hwa Tai

B3-O-0668 | 09:00-09:20 | Ki Seok Kim

Graphene Doping using Halogen-based Plasmas

Ki Seok Kim¹, Jong Sik Oh¹, Kyong Nam Kim¹, and
Geun Young Yeom^{1,2,*}

¹*Department of Materials Science and Engineering, Sungkyunkwan University, South Korea*

²*SKKU Advanced Institute of Nano Technology (SAINT), Sungkyunkwan University, South Korea*

B3-O-0170 | 09:20-09:40 | P.H. Wang

Silver Decorated Carbon Nanotubes for Transparent Conductive Thin Films

P.H. Wang¹, Yan-Sheng Li², Wei-Hung Chiang²,
and Y.C. Liao^{1,*}

¹*Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan*

²*Department of Chemical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan*

B3-O-0233 | 09:40-10:00 | Hitoshi Kato

Characterization of Electronic and Optical Properties of Polyaniline and Carbon Nanotube Nanopatterns Fabricated on Nanostructured Al Surfaces

H. Kato Y. Watanabe, K. Sato, Y. Kitajima,
S. Takemura, and T. Hiramatsu

Department of Electrical and Electronic Engineering, College of Science and Engineering, Kanto Gakuin University, Yokohama, Japan

B3-O-0646 | 10:00-10:20 | Chun-Chieh Wang

Carbon Black-derived Graphene Quantum Dots as Efficient and Stable Catalysts for I₃⁻/I⁻

Chun-Chieh Wang and Shih-Yuan Lu*
*Department of Chemical Engineering,
 National Tsing-Hua University, HsinChu, Taiwan*

²*Graduate School of Materials Science, National Yunlin
 University of Science and Technology, Douliou, Yunlin,
 Taiwan*

B3-O-0435 | 10:20-10:40 | Y.M. Wu

**Synthesis of Au-Pd-Pt/Graphene
 Nanocomposites for Amperometric
 H₂O₂ Detection**

S.H. Hsieh¹, Y.M. Wu², and W.J. Chen^{2,*}

¹*Department of Materials Science and Engineering,
 National Formosa University, Huwei, Yunlin, Taiwan*

B4-O-0118 | 10:40-11:00 | Yuan-Chieh Tseng

**Local Symmetry of Cu atoms and Its
 Magnetic Contribution to ZnO**

Chao-Yao Yang, Shao-Hua Lo, Yung-Jung Hsu and
 Yuan-Chieh Tseng*

*Department of Materials Science and Engineering, Chiao
 Tung University, Hsinchu, Taiwan*

B

Group C: Materials and Processes for Advanced Interconnects and Packaging Technologies

Symposium C1: Materials and Processes for 3D ICs, Including Low Temperature Wafer Bonding Materials and Technologies

C

Session C1-1

Conference Room: 504B

2014/6/13

Chair: Prof. Chih-ming Chen

C1-IT-0327 | 11:00-11:25 | Chih Chen

Low-temperature and Low-pressure Direct Copper-to-copper Bonding

Chien-Min Liu¹, Han-wen Lin¹, Yi-Sa Huang¹, Yi-Cheng Chu¹, Chih Chen^{1,*}, Dian-Rong Lyu², Kuan-Neng Chen², and K.N. Tu³

¹Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan

²Department of Electronics Engineering, National Chiao Tung University, Hsinchu, Taiwan

³Department of Materials Science and Engineering, University of California at Los Angeles, Los Angeles, California, USA

C1-O-0174 | 11:25-11:45 | Jenjui Yu

Effects of Minor Alloying Element Addition to Sn-rich solder under Space Confinement

J.J. Yu*, W.L. Shihand, and C.R. Kao

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

C1-O-0289 | 11:45-12:05 | Chulmin Oh

Flip Chip Interconnection using Ag Solid-state Bonding

Chulmin Oh^{1,*}, Shijo Nagao¹, and Katsuaki Suganuma¹

¹Institute of Scientific and Industrial Research, Osaka University, Osaka, Japan

C1-O-0328 | 12:05-12:25 | Shun Cai Liu

The Effect of Multiple Reflows on Ag Concentration in Sn2.5Ag Microbumps in 3D-IC packaging

Shun Cai Liu and Chih Chen

Department of Materials Science and Engineering, National Chiao Tung University, Taiwan

Session C1-2

Conference Room: 504B

2014/6/13

Chair: Dr. Akitsu Shigetou

C1-O-0673 | 13:30-13:50 | Ting-Li Yang

Interfacial Reactions between Cu and Sn, Sn-Ag, Sn-Bi, Sn-Zn Solder under Space Confinement for 3D IC Micro Joints Applications

T.L. Yang and C.R. Kao*

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

C1-O-0344 | 13:50-14:10 | Tien-Lin Lu

Electromigration in (111) Oriented Nano-Twinned Copper

Tien-Lin Lu¹, Yi-Sa Huang¹, Han-wen Lin¹, and Chih Chen^{1,*}

Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan

C1-O-0405 | 14:10-14:30 | Fiqiri Hodaj

Nucleation and Growth of Cu₃Sn Compound at Copper/Liquid Solder Interface

F. Hodaj^{1,*}, A.M. Gusak², and O. Liashenko^{1,2}

¹SIMAP laboratory - Grenoble Institute of Technology, France

²Cherkasy National University, Ukraine

C1-O-0406 | 14:30-14:50 | Yi-Cheng Chu

The Failure Mechanism of Microbumps with Cu/SnAg/Cu Structure in Thermal Cycling Test

Yi-Cheng Chu¹, Chau-Jie Zhan², Yu-wei Huang², and Chih Chen^{1,*}

¹Department of Materials Science & Engineering, National Chiao Tung University, Hsinchu, Taiwan

²Assembly and Reliability Department, EOL, ITRI

C1-O-0453 | 14:50-15:10 | Wen-Lin Shih

Effects of Ni-Content on the Mechanical Properties of (Cu,Ni)₆Sn₅ in Space-confined Ni/Sn/Cu Diffusion CouplesW.L. Shih^{1,*} and C.R. Kao¹¹Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan**Session C1-3**

Conference Room: 504B

2014/6/13

Chair: Prof. Chih-ming Chen

C1-IT-0710 | 15:40-16:05 | Akitsu Shigetou

Vapor-Assisted Bonding Method as a Tool for Materials Hybridization in Future 3D IntegrationA. Shigetou^{1,*}, A. Mano^{1,2}, J. Mizuno³, and S. Shoji³¹Hybrid Materials Unit, National Institute for Materials Science (NIMS), Ibaraki, Japan²School of Advanced Science and Engineering, Waseda University, Tokyo, Japan³Institute for Nanoscience and Nanotechnology, Waseda University, Tokyo, Japan

C1-O-0490 | 16:05-16:25 | Wan-Lin Hsieh

Morphology of Cu/Sn_{2.5}Ag/Ni/Cu Microbumps under High Temperature Storage Test

W.L. Hsieh and Chih Chen*

Department of Materials Science and Engineering, National Chiao Tung University, Hsin-Chu, Taiwan

C1-O-0493 | 16:25-16:45 | Chia-Ling Lu

Precision Control of Microstructure Transformation of Nano-twinned Copper for 3D IC ManufacturingC.L. Lu¹, H.W. Lin¹, C.M. Liu¹, Y.S. Huang¹, T.L. Lu¹, T.C. Liu¹, H.Y. Hsiao¹, C. Chen^{1,*}, J.C. Kuo², and K.N. Tu³¹Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan²Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan³Department of Materials Science and Engineering, University of California at Los Angeles, Los Angeles, California, USA**Session C1-4**

Conference Room: 504B

2014/6/14

Chair: Prof. Chih-ming Chen

C1-IT-0654 | 09:00-09:25 | Jenn-Ming Song

Direct Metal Bonding for Similar and Dissimilar Materials in Advanced Electronic Packaging

Shang-Kun Huang, Chia-Chen Kuo, and Jenn-Ming Song*

Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan

C1-O-0563 | 09:25-09:45 | Hao-miao Chang

A Novel Ga-based Cu-to-Cu TSV Interconnection with Pt UBMHao-miao Chang¹, Cheng-liang Cho, and Shih-kang Lin^{1,2,3,4,*}¹Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan²Promotion Center for Global Materials Research, National Cheng Kung University, Tainan, Taiwan³Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan⁴Center for Micro/Nano Science and Technology, National Cheng Kung University, Tainan, Taiwan

C1-O-0651 | 09:45-10:05 | Hsuan Lee

Effects of Additives on the Interfacial Reactions Between Tin and Electroplated Copper Substrates

H. Lee*, J.Y. Wu, T.C. Chen, W.P. Dow, and C.M. Chen

Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan

C1-O-0678 | 10:05-10:25 | Jiang-Long Liang

Comparison of Interfacial Reaction between OSP/Cu and NiPdAu/Cu Metalizations for Sn-Ag Lead Free Solder Joint during TC-bondingJiang-Long Liang^{1,*}, Kwang-Lung Lin¹, and Jr-Wei Peng^{2,**}¹Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan²ASE Group, Kaohsiung, Taiwan

C1-O-0844 | 10:25-10:45 | Pay Ying Chia

Liquid Solid State Reactions and Mechanical Properties of Electrodeposited Cu-Sn and Cu-Ni-Sn Multilayer InterconnectsP.Y. Chia¹ and A.S.M.A. Haseeb^{2,*}¹Department of Mechanical Engineering, University of Malaya, Kuala Lumpur, Malaysia²Department of Mechanical Engineering, Faculty of Engineering, University of Malaya, Kuala Lumpur, Malaysia

Symposium C2: Materials and Processes for Flip-Chip, BGA, or PCB Applications

Session C2-1

Conference Room: 521

2014/6/12

Chair: Dr. Charlie Lu and
Dr. Kuo-Chan Chiou

C2-IT-0248 | 16:10-16:35 | Charlie Lu

An Emerging Wire Bonding Technology – Silver Wire Bonding

Charlie Lu

Altera Corporation, San Jose, CA., U.S.A.

C2-IT-0481 | 16:35-17:00 | Kuo-Chan Chiou

Development of Environmentally-Friendly Materials with Highly Thermal Resistance and Low Coefficient of Thermal Expansion

Kuo-Chan Chiou*, Kuei-Yi Chuang, Feng-Po Tseng, and Lu-Shih Liao

Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan

C2-O-1007 | 17:00-17:20 | Cheng-Ying Ho

Orientation, Morphology, and Crack Resistance of η -(Cu,Ni)₆Sn₅ Intermetallic Compounds in Solder Joints under Low-speed Shear Fatigue Stress

Cheng-Ying Ho and Jenq-Gong Duh

Department of Materials Science and Engineering
National Tsing Hua University, Hsinchu, Taiwan

C2-O-0145 | 17:20-17:40 | Cheng-Kai Chung

Effects of Minor Ti, Mn, and Zn Additions on SnAg Solder Joints

C.K. Chung*, J.J. Yu, T.L. Yang, S. Yang, and C.R. Kao

Department of Materials Science and Engineering,
National Taiwan University, Taipei, Taiwan

Session C2-2

Conference Room: 521

2014/6/13

Chair: Dr. Yu-Hua Chen

C2-IT-0497 | 09:00-09:25 | Ming-Kan Liang

The Packages and PCBs of Mobile Phone and i phone Structure and Material Analysis Best Regards

Ming-Kan Liang

Introduction of Electronics and Optoelectronics Research Laboratories, ITRI, Taiwan

C2-IT-0504 | 09:25-09:50 | Takahiro Kinoshita

Inelastic Thermal Stress Simulation of Through Silicon Vias and Si Chip in Three Dimensional System in Package

T. Kinoshita*, T. Kawakami, and T. Sugiura

Department of Mechanical Systems Engineering,
Toyama Prefectural University, Toyama, Japan

C2-O-0163 | 09:50-10:10 | Chih-chia Hu

To Inhibit the Growth of Tin Whisker Using Cu₃Sn as a Diffusion Barrier

Chih-Chia Hu, Han-Wen Lin, and Chih Chen*

Department of Materials Science & Engineering, National Chiao Tung University, Hsinchu, Taiwan

C2-O-0179 | 10:10-10:30 | H.T. Chen

Effect of Phosphorous Concentration on Interfacial Reaction and High Speed Shear Test of Sn4Ag0.5Cu Solder/Electrolytic Ni-Au

H.T. Chen*, J.J. Yu, and C.R. Kao

Department of Materials Science and Engineering,
National Taiwan University, Taipei, Taiwan

Session C2-3

Conference Room: 521

214/6/13

Chair: Prof. Takahiro Kinoshita

C2-IT-0510 | 11:00-11:25 | Yu-Hua Chen

Substrate Material Challenges for Next Generation 3D-SiP

Y.H. Chen, D.C. Hu, and T.J. Tseng

Unimicron Technology Corp., Hsinchu, Taiwan

C2-O-0244 | 11:25-11:45 | Fiqiri Hodaj

The Role of Interfaces on the Undercooling Degree of Lead-free Solder Alloys

F. Hodaj

SIMAPA laboratory - Grenoble Institute of Technology

C2-O-0054 | 11:45-12:05 | Md. Arifur Rahman

Ni-Pd-Sn Isotherm at 250°C

M.A. Rahman¹, C.E. Ho^{1,*}, and W. Gierlotka²

¹Department of Chemical Engineering and Materials Science, Yuan Ze University, Chungli, Taiwan

²Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan

C2-O-0051 | 12:05-12:25 | Ling-Huang Hsu

EBSO Characterization of Electrolytic Cu Deposition in the Blind Hole Structure: Current Density Effect

L.H. Hsu, C.C. Chen, M.K. Lu, and C.E. Ho*

Department of Chemical Engineering and Material Science, Yuan Ze University, Chungli, Taiwan

Session C2-4

Conference Room: 521

2014/6/13

Chair: Prof. Zhi-Quan Liu and Prof. Wojciech Gierlotka

C2-IT-0538 | 13:30-13:55 | Wojciech Gierlotka

Thermodynamic Description of the Sb-Sn-Zn Lead-free Soldering Alloy

Wojciech Gierlotka^{1,*}, Ting-Nan Ko², and An-Cheng Sun²

¹National Dong-Hwa University, Materials Science and Engineering Department, Hualien, Taiwan

²Yuan-Ze University, Chemical Engineering and Materials Science Department, Chung-Li, Taiwan

C2-O-0052 | 13:55-14:15 | W.Z. Hsieh

Electromigration in Tin Blech Structure

W.Z. Hsieh, C.H. Yang, and C.E. Ho*

Department of Chemical Engineering and Material Science, YuanZe University, Chungli, Taiwan

C2-O-0053 | 14:15-14:35 | Tsung-Hsun Yang

Electromigration in 3D-IC Scale Cu/Sn/Cu Joints

T.H. Yang, C.H. Yang, C.N. Chen, and C.E. Ho*

Department of Chemical Engineering and Material Science, Yuan Ze University, Chungli, Taiwan

C2-O-0068 | 14:35-14:55 | Zhi-Quan Liu

Phase Transformation between

Intermetallic Compounds in Eutectic SnIn/Cu Solder Joint

Zhi-Quan Liu* and Feifei Tian

Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

Session C2-5

Conference Room: 521

2014/6/13

Chair: Prof. Cheng-En Ho

C2-O-0055 | 15:40-16:00 | Md. Arifur Rahman

TEM Investigation of the Sn/Ni-xP Couples

M.A. Rahman, C.W. Fan, W.Z. Hsieh, and C.E. Ho*

Department of Chemical Engineering and Materials Science, Yuan Ze University, Zhongli, Taiwan

C2-O-0605 | 16:00-16:20 | Yi-kai Kuo

Interfacial Reactions between Sn-0.7Cu-xGa Solders and Cu Substrates and Phase Equilibria of the Cu-Ga-Sn Ternary System at 200°C

Yi-kai Kuo¹, Trong Lan Nguyen¹, and Shih-kang Lin^{1,2,3,*}

¹Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan

²Promotion Center for Global Materials Research, National Cheng Kung University, Tainan, Taiwan

³Center for Micro/Nano Science and Technology, National Cheng Kung University, Tainan, Taiwan

C2-O-0063 | 16:20-16:40 | Ming-Kai Lu

Palladium Thickness Effect on the Soldering Reaction between Sn-3Ag-0.5Cu and Au/Pd(P)/Ni(P)/Cu Multilayer: Ultrathin Ni(P)-type Deposit

M.K. Lu, W.Z. Hsieh, C.W. Fan, and C.E. Ho*

Department of Chemical Engineering and Material Science, Yuan Ze University, Chungli, Taiwan

C2-O-0050 | 16:40-17:00 | Ming-Kai Lu

Interfacial Reaction and Mechanical Properties of the Sn/Ni-xP Solder Joints

T.H. Yang, C.H. Yang, C.N. Chen, and C.E. Ho*

Department of Chemical Engineering and Material Science, Yuan Ze University, Chungli, Taiwan

C

Symposium C3: Electromigration Issues in Interconnects and Solder Joints

Session C3-1

Conference Room: 404

2014/6/11

Chair: Prof. Albert T. Wu

C3-IT-1078 | 14:00-14:25 | Andre Lee

The use of Nanosturcutred Silanol on Solder Alloys (invited)

Andre Lee

Department of Chemical Engineering and Materials Science Michigan State University, East Lansing, MI., USA

C3-O-0246 | 14:25-14:45 | Yu-An Shen

Study of Grain Size and Orientation of 30 μm Solder Microbumps Bonded by Thermal Compression

Y.A. Shen, and C. Chen*

Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan

C3-O-0307 | 14:45-15:05 | Jie An Lin

Formation of Porous Cu_3Sn Intermetallic Compounds during Current Stressing at High Temperatures in Low-bump-height Solder Joints

Jie An Lin, and Chih Chen

Department of Materials Science & Engineering, National Chiao Tung University, Hsin-chu, Taiwan

C3-O-0968 | 15:05-15:25 | Yi-Shan Yang

Effect of Temperature on Thermomigration of Composite 95%Pb5%Sn-eutectic SnPb Solder Joints in Flip Chip Technology

Y.S. Yang¹, T.Y. Lin¹, and Fan-Yi Ouyang^{1,*}*¹Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan*

Session C3-2

Conference Room: 404

2014/6/11

Chair: Prof. Fanyi Ouyang

C3-O-0617 | 16:10-16:30 | Limin Ma

Effect of Geometry and Microstructure on the Temperature Profile of Solder Joints under Direct Current Stressing

X. Zhang¹, L.M. Ma^{1,*}, F. Guo¹, K.N. Subramanian², and A. Lee²*¹The College of Materials and Engineering, Beijing University of Technology, Beijing, China**²Department of Chemical Engineering and Materials Science, Michigan State University, MI, USA*

C3-O-0338 | 16:30-16:50 | Li-Yun Chang

Effect of Temperature on the Electromigration Failure Mode of Microbumps in 3D IC Packaging

Li Yun Chang and Chih Chen

Department of Materials Science & Engineering, National Chiao Tung University, Hsin-chu, Taiwan

C3-O-0568 | 16:50-17:10 | Yi Chun Hsu

Back-fill Sn Flux Against Current-stressing at Cathode Micro Cu/Sn Interface

Y.C. Hsu and C.Y. Liu

Department of Chemical and Materials engineering, National Central University, Zhongli, Taiwan

C3-O-0618 | 17:10-17:30 | Fu Guo

Evolution of Microstructure Characteristics Across Sn-based Solder Joints under Simultaneous Thermal Cycling and Current Stressing

Y. Zuo¹, L.M. Ma¹, Y.T. Shu¹, F. Guo^{1,*}, A. Lee^{1,2}, and K.N. Subramanian²*¹The College of Materials Science and Engineering, Beijing University of Technology, Beijing, China**²Department of Chemical Engineering and Materials Science, Michigan State University, MI, USA*

Session C3-3

Conference Room: 404

2014/6/12

Chair: Prof. Yutian Shu

C3-O-0442 | 16:10-16:30 | Yi-Ting Huang

The Investigation of Back Stress under Electromigration in Critical Solder Length for 3D-IC

Yi-Ting Huang, Hsueh-Hsien Hsu, and Albert T. Wu*

Department of Chemical and Materials Engineering, National Central University, Zhongli, Taiwan

C3-O-0619 | 16:30-16:50 | Yutian Shu

The Coupling Effects of High Current Density and Creep on Sn-Based Solder JointsY. Zuo¹, L.M. Ma¹, Y.T. Shu¹, J. Han, S.H. Liu¹, and Fu Guo^{1,*}¹The College of Materials Science and Engineering, Beijing University of Technology, Beijing, China²Department of Chemical Engineering and Materials Science, Michigan State University, MI, USA

C3-O-0707 | 16:50-17:10 | Yue Kai Tang

Study of Enhance the EM Resistance at Cathode Cu/SAC InterfaceY.K. Tang¹, Y.C. Hsu¹, Y.H. Hsiao², P.F. Yang², C.C. Lee², and C.Y. Liu^{1,*}¹Department of Chemical and Materials Engineering, National Central University, Zhongli, Taiwan²ASE CRD Product Characterization, Kaohsiung, Taiwan

C3-O-0308 | 17:10-17:30 | Shu Han Chao

Effect of Different Underbump Metallization (UBM) on the Electromigration Failure Mode of Microbumps in 3D IC Packaging

Shu Han Chao and Chih Chen*

Department of Materials Science & Engineering, National Chiao Tung University, Hsin-chu, Taiwan

Symposium C4: Electro Deposition and Electrochemical Processing Technology**Session C4-1**

Conference Room: 502

2014/6/13

Chair: Prof. Wei-Ping Dow

C4-KT-1062 | 09:00-09:30 | T.P. Moffat

Advances in Electrodeposition: From Superfilling to Atomic Layer Deposition

T.P. Moffat

Materials Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, USA

C4-IT-0541 | 09:30-09:55 | Silvia Armini

Self-organized Organic/Inorganic Films Functional to Next Generation Metallization Schemes

S. Armini*, G. Carnevali, Y. Sun, L. Zhang, J.-F. de Marneffe, Y. Zhang, M. Baklanov, N. Jourdan, P. Verdonck, L. Teugels, T. Delande, L. Wen, H. Struyf, J. Boemmels, and Z. Tokei

Interuniversity Microelectronic Center, Leuven, Belgium

C4-O-0214 | 09:55-10:15 | Dai-Yang Lee

Thermal Stability of Pulsed Electroplating Nanotwinned CopperDai-Yang Lee¹, Yi-Sa Huang¹, and Chih Chen

Department of Materials Science & Engineering, National Chiao Tung University, Hsinchu, Taiwan

C4-O-0026 | 10:15-10:35 | Yu-Tien Lin

Through-Hole Filling in a Cu Plating Bath with Functional Insoluble Anodes and Acetic Acid as a Supporting ElectrolyteY.T. Lin¹, M.L. Wang¹, C.F. Hsu¹, W.P. Dow^{1,*}, S.M. Lin², and J.J. Yang³¹Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan²Waste Recovery Technology Inc., Taichung, Taiwan³Industrie De Nora S.p.A., Singapore Branch, IMM Building, Singapore**Session C4-2**

Conference Room: 502

2014/6/13

Chair: Dr. T.P. Moffat

C4-IT-0206 | 11:00-11:25 | Ryoichi Kimizuka

Progress & Future of Copper Fill Plating TechnologyRyoichi Kimizuka^{1,2} and Hideki Hagiwara¹¹Research & Development Headquarters, JCU Corporation, Kanagawa, Japan²Graduate School of Engineering, Kanto Gakuin University, Kanagawa, Japan

C4-O-0336 | 11:25-11:45 | Hsin Fu Teng

Redox Influence on Metal Assisted Etching Silicon SubstrateH.F. Teng^{1,*}, W.N. Su¹, and B.J. Huang²

¹Graduate Institute of Applied Science and Technology,
National Taipei University of Technology, Taipei, Taiwan

²Institute of Chemistry and Engineering, National Taipei
University of Technology, Taipei, Taiwan

C4-O-0087 | 11:45-12:05 | Shuehlin Yau

Scanning Tunneling Microscopy of Superfilling in Formula Containing Chloride, Polyethylene Glycol and Bis-3-sodiumsulfopropyl-disulfide

Shuehlin Yau* and Yunlin Fu

Department of Chemistry, National Central University,
JhongLi, Taiwan

Session C4-3

Conference Room: 502

2014/6/13

Chair: Dr. Silvia Armini

C4-IT-0259 | 13:30-13:55 | Ying-Chih Liao

Electrochemical Deposition Method for Electrochromic Metallo-supramolecular Thin Films

C.W. Hu¹, K.C. Ho^{1,2,*}, and Y.C. Liao

¹Department of Chemical Engineering, National Taiwan
University, Taipei, Taiwan

²Institute of Polymer Science and Engineering, National
Taiwan University, Taipei, Taiwan

C4-O-0373 | 13:55-14:15 | Yijia Chen

Electrodepositing TiO₂ on ZnO Considering Electrochemical Double Layer at the Interface

Y.J. Chen^{1,2*}, K.F. Liu¹, Y.K. Hsu², and C.H. Wang³

¹Department of Materials Science and Engineering,
National Dong Hwa University, Hualien, Taiwan

²Department of Optoelectronic Engineering, National
Dong Hwa University, Hualien, Taiwan

³Department of Materials Science and Engineering,
National Taiwan University of Science and Technology,
Taipei, Taiwan

C4-O-0065 | 14:15-14:35 | Po-Fan Chan

Use of 3,3-Thiobis(1-propanesulfonate) to Accelerate Microvia Filling in Copper

Electrodeposition

Po-Fan Chan, Yong-Da Chiu, and Wei-Ping Dow*

Department of Chemical Engineering, National Chung
Hsing University, Taichung, Taiwan

C4-O-0869 | 14:35-14:55 | Yingxin Goh

Electrochemical Studies on the Effects of Additives during Sn-Bi Plating

Y. Goh*, A.S.M.A. Haseeb, and M.F.M. Sabri

Department of Mechanical Engineering, University of
Malaya, Kuala Lumpur, Malaysia

Session C4-4

Conference Room: 502

2014/6/13

Chair: Prof. Ying-Chih Liao

C4-IT-0037 | 15:40-16:05 | Yiu-Hsiang Chang

Pattern Densities Effect on TSV Filling by Using Surface Paddle Agitation Plating Chamber and A Novel Application on TSV Metallization

Y.H. Chang* and S.C. Chen

Electronics and Optoelectronics Research Laboratories,
Industrial Technology Research Institute (ITRI), Hsinchu,
Taiwan

C4-O-0067 | 16:05-16:25 | Chia-Wen Cheng

Using Zinc Oxide as Intermediate Layer for Glass Metallization

Chia-Wen Cheng, Po-Fan Chan, and
Wei-Ping Dow*

Department of Chemical Engineering, National Chung
Hsing University, Taichung, Taiwan

C4-O-0025 | 16:25-16:45 | Chia-Fu, Hsu

Microvia Filling by Copper Plating Using Dual Levelers for Thin Copper Layer on a Printed Circuit Board

Chia-Fu Hsu and Wei-Ping Dow

Department of Chemical Engineering, National Chung
Hsing University, Taichung, Taiwan

Symposium C5: Materials Design for Challenging Applications (High temperature, Flux-Free, Nano Materials etc.)

Session C5-1

Conference Room: 521

2014/6/11 *Chair: Prof. Masahisa Fujinori*

C5-IT-0720 | 14:00-14:25 | M.Ichiki

Nano-transfer Technology for the Handling Process of Thin-film Capacitor

M. Ichiki^{1,*}, K. Sueshige², Y. Amano³, (I.Byun³), B.J. Kim³, and T. Suga²¹Research Center of Ubiquitous MEMS and Micro Engineering, National Institute of Advanced Industrial Science and Technology(AIST), Ibaraki, Japan²Department of Precision Engineering, the University of Tokyo, Tokyo, Japan³Institute of Industrial Science, the University of Tokyo, Tokyo, Japan

C5-IT-0686 | 14:25-14:50 | Tao-Chih Chang

Improvement of Electrical Performance of Power Module by Ag Sintering Technology

J.Y. Chang, S.Y. Fun, Y.L. Leu, K.S. Kao and T.C. Chang*

3D Stacking and Reliability Technology Department, Industrial Technology Research Institute, Hsinchu, Taiwan

C5-O-0135 | 14:50-15:10 | Yao-Jen Chang

Mechanism of Novel Sub-Micron Cu/Sn Bond System with Ultra-Thin Ni Buffer Layer for 3D Integration

Yao-Jen Chang, Cheng-Han Fan, and Kuan-Neng Chen*

Department of Electronics Engineering, National Chiao Tung University, Hsinchu, Taiwan

C5-O-0230 | 15:10-15:30 | Chia-Chen Kuo

Kinetic Study on the Reduction of Thin-film Cu₂O under Formic Acid Atmosphere by In situ FTIR Spectroscopy

Chia-Chen Kuo* and Jenn-Ming Song

Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan

KT-Keynote, IT-Invited

Session C5-2

Conference Room: 521

2014/6/11 *Chair: Dr. Tao-Chih Chang*

C5-IT-0664 | 16:10-16:35 | Masahisa Fujino

Fabrication of Flexible Carbon Nanotube Bump Interconnect for Flexible Multilayer Substrates

M. Fujino^{1,*}, H. Terasaka¹, T. Suga¹, I. Soga², D. Kondo², Y. Ishizuki², and T. Iwai²¹Department of Precision Engineering, The University of Tokyo, Tokyo, Japan²Institute Fujitsu Ltd & Fujitsu Laboratories, Atsugi, Japan

C5-O-0355 | 16:35-16:55 | Jeng-Ting Li

ZTO Thin Film Transistors with ZnO Nanocrystals Charge Trapping Layer

Jeng-Ting Li^{1,*}, Li-Chih Liu¹, Jiann-Shing Jeng², and Jen-Sue Chen¹¹Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan²Department of Materials Science, National University of Tainan, Tainan, Taiwan

C5-O-0840 | 16:55-17:15 | Yee Mei Leong

Soldering Characteristics and Mechanical Properties of Sn-1.0Ag-0.5Cu Solder with Minor Aluminium Addition

Y.M. Leong and A.S.M.A. Haseeb*

Department of Mechanical Engineering, University of Malaya, Kuala Lumpur, Malaysia

C5-O-0845 | 17:15-17:35 | Chih-Wei Wang

Nitrogen Purged Zirconium Based Thin Film Metallic Glass as a Diffusion Barrier Between Copper and Silicon Layers

C.W. Wang¹, P. Yiu^{1,2} and C.H. Hsueh¹¹Department of Materials Science and Engineering, National Taiwan University of Science and Technology²Department of Physics and Materials Science, City University of Hong Kong

Session C5-3

Conference Room: 521

2014/6/12

Chair: Prof. Jenn-Ming Song

C5-KT-1061 | 14:00-14:30 | Ning-Cheng Lee

Development of High Temperature Lead-Free Solder Materials

Ning-Cheng Lee

Indium Corporation of America

C5-IT-0270 | 14:30-14:55 | Kuan-Neng Chen

Material Design for Challenging Heterogeneous Applications of 3D IC and Low Temperature Wafer Bonding

Kuan-Neng Chen

Department of Electronics Engineering, National Chiao Tung University, Hsinchu, Taiwan

C5-IT-0641 | 14:55-15:20 | Changshu Kuo

Electrospun Conductive Nanofiber Networks as Flexible Transparent Electrodes

H.T. Chen, Y.Y. Jhuo, Ingann Chen*, and Changshu Kuo*

Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan

C5-O-0922 | 15:20-15:40 | G. Muralidharan

Effect of Materials on the Reliability of High Temperature Packages

G. Muralidharan

Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA

Symposium C6: Packaging Technology for Energy Generation Modules (Solar, Thermoelectric, etc.)

Session C6-1

Conference Room: 502

2014/6/11

Chair: Prof. Shih-kang Lin

C6-KT-1060 | 14:00-14:30 | Katsuaki Suganuma

Interconnection Materials for High-temperature Electronics Applications

Katsuaki Suganuma, Tohru Sugahara, and Shijo Nagao

ISIR, Osaka University

C6-IT-0012 | 14:30-14:55 | Masato Sone

Nanoscale Cu Wiring by Electrodeposition in Supercritical Carbon Dioxide Emulsified Electrolyte toward 3D Integrated Circuits

Masato Sone, Tetsuya Shimizu, Tso-Fu Mark Chang, Nao Shinoda, Takashi Nagoshi, and Tatsuo Sato

Precision & Intelligence Laboratory, Tokyo Institute of Technology, Yokohama, Japan

C6-O-0142 | 14:55-15:15 | Lin, Chih-Fan

Deposition of Ni on Bi₂Te₃ Substrate and Its Interfacial Reaction with Lead-free Solder

C.F. Lin^{1,*}, S.P. Feng², N.Y. Hau², J.D. Hwang³, and C.M. Chen¹
¹Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan

²Department of Mechanical Engineering, The University of Hong Kong, Hong Kong

³Material & Chemical Research Laboratory, Industrial Technology Research Institute, Hsinchu, Taiwan

C6-O-0143 | 15:15-15:35 | Shan Ye

Effect of Layer Direction on the Interfacial Reactions between bismuth Telluride and Tin-Based Solder

S. Ye^{1,*}, J.D. Hwang², and C.M. Chen¹
¹Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan

²Material & Chemical Research Laboratory, Industrial Technology Research Institute, Hsinchu, Taiwan

Session C6-2

Conference Room: 502

2014/6/11

Chair: Dr. Tao-Chih Chang

C6-IT-0337 | 16:10-16:35 | Dr. Jun Mizuno

Low-Temperature Bonding Using Selective Formation of Nanoporous Powders for Bump Interconnects

Jun Mizuno^{1,*}, Hayata Mimatsu²,
Takashi Kasahara², Mikiko Saito¹, Shuichi Shoji¹,
and Hiroshi Nishikawa³

¹*Institute for Nano-science and Nano-technology,
Waseda University, Japan*

²*Major in Nano-science and Nano-engineering, Waseda
University, Japan*

³*Joining and Welding Research Institute, Osaka
University, Japan*

C6-O-0558 | 16:35-16:55 | Shu-Tsung Hsu

Degradation of PV Module by Over-Stress Salt Corrosion Test

Shu-Tsung Hsu* and Yean-San Long

*Energy & Environment Metrology Division, Industrial
Technology Research Institute, Hsinchu, Taiwan*

C6-O-0565 | 16:55-17:15 | Yu-hsiang Wang

Interfacial Reactions in the Cu/In/Ni Thermal Management Module

Yu-hsiang Wang¹, Hui-chin Kuo¹, and

Shih-kang Lin^{1,2,3,*}

¹*Department of Materials Science and Engineering,
National Cheng Kung University, Tainan, Taiwan*

²*Promotion Center for Global Materials Research,
National Cheng Kung University, Tainan, Taiwan*

³*Center for Micro/Nano Science and Technology,
National Cheng Kung University, Tainan, Taiwan*

C6-O-0070 | 17:15-17:35 | Cheng-Chieh Li

Assembly of Diffusion Barrier Layer for Mid-temperature Thermoelectric Module by Hot-pressing Method

C.C. Li^{1,*}, L.L. Liao², M.J. Da², C.K. Liu²,
F. Drymiotis³, C. Robert Kao^{1,*}, and J.G. Snyder³

¹*Department of Materials Science and Engineering,
National Taiwan University, Taipei, Taiwan*

²*Electronic and Optoelectronics Research Laboratories,
Industrial Technology Research Institute, Hsinchu,
Taiwan*

³*Materials Science, California Institute of Technology,
Pasadena, California, USA*

C

Group D: Advanced Materials for Next-Generation Technologies

Symposium D1: Metamaterial

Session D1-1

Conference Room: 402C

2014/6/11 *Chair: Prof. Kuo-Ping Chen*

D1-IT-0474 | 16:10-16:35 | Shiuian-Yeh Chen

Far-field and Near-field Properties of a Hybrid Nanoantenna

M.J. Wu, Y.H. Lo, and S.Y. Chen*

Department of Photonics, National Cheng Kung University, Tainan, Taiwan

D1-O-0772 | 16:35-16:55 | Miao-Hsuan Chien

Effects of Nanoprism Rotation-angle on Surface Plasmon Coupling in Gold Bowtie Nanoantennas

M.H. Chien¹, L.W. Nien¹, B.K. Chao¹, J.H. Li², and C.H. Hsueh^{1,*}¹*Department of Materials Science and Engineering, National Taiwan University*²*Department of Engineering Science and Ocean Engineering, National Taiwan University*

D1-O-0099 | 16:55-17:15 | Juei-Lun Chang

Phenomenon of Negative Refraction in a Two-Dimensional Acoustic Metamaterial

Juei-Lun Chang and Hsin-Haou Huang*

Department of Engineering Science and Ocean Engineering, National Taiwan University, Taipei, Taiwan

D1-O-0132 | 17:15-17:35 | Ying-Chih Lin

A Study of Composite Laminated Plate with Embedded Shape Memory Alloy Wires under Impact Load

Y.L. Chen¹, H.W. Chen², and Y.C. Lin^{3,*}¹*Department of Power Vehicle and Systems Engineering, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan*²*Chung-San Institute of Sciences and Technology, Taoyuan, Taiwan*³*School of Defense Science, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan*

Session D1-2

Conference Room: 402C

2014/6/12 *Chair: Prof. Yun-Chorng Chang*

D1-KT-1063 | 14:00-14:30 | Boris Luk'yanchuk

What We Expect from Dielectric Materials with High Refractive Index

Boris Luk'yanchuk^{1,*}, Arseniy I. Kuznetsov¹, Andrey E. Miroshnichenko², and Yuri Kivshar²¹*Data Storage Institute, Agency for Science, Technology and Research, Singapore*²*Nonlinear Physics Centre, Research School of Physics and Engineering, Australian National University, Canberra, Australia*

D1-O-0017 | 1430-1450 | Robert P.H. Chang

Light Interaction with Indium Tin Oxide Arrays

Shi-Qiang Mike Li¹, Peijun Guo¹, Daniel B. Tice², Mario Tagliazucchi², D. Bruce Buchholz¹, Emily A. Weiss², K. Sakoda³, and Robert P.H. Chang^{1,*}¹*Department of Materials Science and Engineering, Northwestern University, Evanston, IL, USA*²*Department of Chemistry, Northwestern University, Evanston, IL, USA*³*National Institute for Materials Science, Tsukuba, Japan*

D1-O-0097 | 14:55-15:15 | L.W.Nien

Giant Electric Field Enhancement and Sensitivity by Optimizing Bowtie Nanoring Nanoantennas

L.W. Nien¹, B.K. Chao¹, J.H. Li², and C.H. Hsueh^{1,*}¹*Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan*²*Department of Engineering Science and Ocean Engineering, National Taiwan University, Taipei, Taiwan*

D1-O-0369 | 15:15-15:35 | Shih-Wen Chen

Bowtie Nanostructures in Periodic Holes Arrays

Shih-Wen Chen¹, Jia-Han Li^{1,*}, and Chun-Hway Hsueh²

¹Department of Engineering Science and Ocean Engineering, National Taiwan University, Taipei, Taiwan

²Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

Session D1-3

Conference Room: 402C

2014/6/12

Chair: Prof. Hsin-Hao Huang

D1-O-0898 | 16:10-16:30 | Kuo-Ping Chen

Oblique Incidence of Gold Nanoantennas and Metasurface

K.P. Chen^{1,*}, Z.Y. Yang², Y.H. Chen², C.W. Su³, and S.C. Yeh¹

¹Institute of Imaging and Biomedical Photonics, National Chiao Tung University, Tainan, Taiwan

²Institute of Lighting and Energy Photonics, National Chiao Tung University, Tainan, Taiwan

³Institute of Photonic System, National Chiao Tung University, Tainan, Taiwan

D1-O-0195 | 16:30-16:50 | Bo-Kai Chao

Simulation of Free-Standing Gold Disc Nanoantennas with Different Apex

Angles of Missing Wedge and Variable Post Heights for Enhanced Raman Spectroscopy

B.K. Chao¹, L.W. Nien¹, J.H. Li², and C.H. Hsueh^{1,*}

¹Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

²Department of Engineering Science and Ocean Engineering, National Taiwan University, Taipei, Taiwan

D1-O-0101 | 16:50-17:10 | Yen-Chang Chou

Impact Response of a Mass-in-mass System

Yen-Chang Chou, Meng-Jie Chen, and Hsin-Hao Huang*

Department of Engineering Science and Ocean Engineering, National Taiwan University, Taipei, Taiwan

D1-O-0100 | 17:10-17:30 | Jian-Syun Yu

Dynamic Behavior of Metamaterial Beams with Extreme Young's Modulus

Jian-Syun Yu and Hsin-Hao Huang*

Department of Engineering Science and Ocean Engineering, National Taiwan University, Taipei, Taiwan

Symposium D2: Biosensor

Session D2-1

Conference Room: 404

2014/6/12

Chair: Prof. Fan-Gang Tseng

D2-KT-1073 | 14:00-14:30 | Shoji Takeuchi

Hydrogel beads and Fibers for Biomedical Applications

Shoji Takeuchi

¹Institute of Industrial Sciences, The University of Tokyo, Tokyo, Japan

²ERATO Takeuchi Biohybrid Innovation Project, Japan Science and Technology Agency, Japan

D2-O-0645 | 14:30-14:50 | Wei-Chen Huang

Anti-inflammatory and Bioactive Interface based on Polyphenol-crosslinked Amphiphilic Polysaccharide Nanogels for Neural Implanting

W.C. Huang¹, Y.Y. Chen², and S.Y. Chen^{1,*}

¹Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan

²Department of Biomedical Engineering, National Yang Ming University, Taipei, Taiwan

D2-O-0334 | 14:50-15:10 | Jae-Won Jang

Nano/micro Features of Soft Materials by Tip-based Nanolithography

Jae-Won Jang

Department of Physics, Pukyong National University, Busan, South Korea

D2-O-0381 | 15:10-15:30 | Zijian Zheng

Dip-Pen Nanodisplacement Lithography: A Versatile Tool for Constructing Patterned 2D and 3D Polymer Surfaces

Zijian Zheng^{1,2,*}

¹Nanotechnology Center, Institute of Textiles and Clothing, The Hong Kong Polytechnic University, Hong Kong, China

²The Hong Kong Polytechnic University Shenzhen Research Center, Shenzhen, China

Session D2-2

Conference Room: 403

2014/6/13

Chair: Prof. Fan-Gang Tseng

D2-KT-1064 | 13:30-14:00 | Man Bock Gu

Aptamer-based Nanobiosensors for the Ultrasensitive Detection of Small Molecules and Viruses

Man Bock Gu

College of Life Sciences and Biotechnology, Korea University, Seoul, Republic of Korea

D2-IT-0547 | 14:00-14:25 | Jen-Kuei Wu

Silicon Nanowires Gated Nanofluidic System for Single Bacterium Detection by MSN-based Redox Signal Amplification

Ren-Guei Wu¹, Chun-Wei Lee¹, Po-Chao Wen¹, Hwan-You Chang², and Fan-Gang Tseng¹
¹Department of Engineering and System Science, National Tsing Hua University, Taiwan

²Department of Life Science, National Tsing Hua University, Taiwan

D2-O-0154 | 14:25-14:45 | Seung Woo Lee

Synthesis and Characterization of Inorganic and Polymer Nanomaterials for Detection Cations and Amine Derivatives Based on Fluorescent Probe

S.W. Lee^{1,*}, M.J. Lee¹, H.S. Shin¹, W.C. Seok¹, and B. Chae²
¹School of Chemical Engineering, Yeungnam University, Gyeongsan, Korea

²Pohang Acceleration Laboratory, Beamline Division, Pohang, Korea

D2-O-0196 | 14:45-15:05 | Pankaj Kumar

Urea and Glucose Sensing Using Gold Nanoparticles

Pankaj Kumar¹, Kanishk Singh¹, and Siddheswar Maikap^{1,*}

Department of Electronic Engineering, Chang Gung University, Taoyuan, Taiwan

Session D2-3

Conference Room: 403

2014/6/13

Chair: Prof. Fan-Gang Tseng

D2-O-0404 | 15:40-16:00 | Kuang-yu Chen

A Platform for Detecting Macromolecules on Side-polished Optic Fiber with Surface-enhanced Raman Scattering Led by Metal Arrays

K.Y. Chen^{1,*}, Y.T. Nien², and I.G. Chen¹
¹Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan

²Department of Materials Science and Engineering, National Formosa University, Yunlin, Taiwan

D2-O-0095 | 16:00-16:20 | Can Xue

Synthesis, Optical Properties, and Sensing Applications of Anisotropic Plasmonic Nanostructures

Can Xue*, Mohammad Mehdi Shahjamali, and Shaowen Cao

School of Materials Science and Engineering, Nanyang Technological University, 50 Nanyang Avenue, Singapore

D2-O-1025 | 16:20-16:40 | Kuan-Ting Lee

Porous Fluorine-doped tin Oxide as a Promising Substrate for Electrochemical Biosensors – Demonstration in Hydrogen Peroxide Sensing

Kuan-Ting Lee¹, Dai-Min Liu¹, Yung-Yung Liang¹, Nobuhiro Matsushita², Toshiyuki Ikoma³, and Shih-Yuan Lu^{1,*}
¹Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan

²Mater. & Structures Lab., Tokyo Institute of Technology, Yokohama, Japan;

³Department of Inorganic Material, Tokyo Institute of Technology, Tokyo, Japan

Symposium D3: Organic Material and Device

Session D3-1

Conference Room: 504C

2014/6/11

Chair: Dr. Leeyih Wang

D3-KT-0768 | 14:00-14:30 | Kilwon Cho

Organic Photovoltaics: Morphological Aspect of Performance Enhancement

Kilwon Cho

Department of Chemical Engineering, Pohang University of Science and Technology, Pohang, Korea

D3-IT-0077 | 14:30-14:55 | Leeyih Wang

Polythiophenes Bearing Conjugated Side Chains and Their Application in Organic PhotovoltaicsCheng-Yu Kuo¹, Chuen-Yo Hsiow¹, Hung-Wei Liu¹, Yu-Shiuan Lin¹, Ching-I Huang¹, Wen-Yen Chiu^{1,2}, Syang-Peng Rwei³, and Leeyih Wang^{1,4,*}¹*Institute of Polymer Science and Engineering, National Taiwan University, Taipei, Taiwan*²*Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan*³*Institute of Organic and Polymeric Materials, National Taipei University of Technology, Taipei, Taiwan*⁴*Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan*

D3-O-0212 | 14:55-15:15 | Jan T. Golder

Red-Orange Fluorescent Anodic Buffer Layer in High Efficiency Planar Heterojunction PhotovoltaicsJ.T. Golder^{1,2}, Y.B. Lan³, S.C. Yeh^{2,4}, and C.T. Chen^{1,2}¹*Department of Applied Chemistry, National Chiao Tung University Hsinchu, Taiwan*²*Institute of Chemistry, Academia Sinica, Taipei, Taiwan*³*Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan*⁴*Institute of Polymer Science and Engineering, National Taiwan University, Taipei, Taiwan*

D3-O-0186 | 15:15-15:35 | Hsun-Wei Cho

Incorporating Reduced Graphene Oxide in P3HT/In-Situ ZnO Hybrid for Dual Heterojunction Hybrid Polymer Solar Cells

Hsun-Wei Cho, Wen-Ping Liao, and Jih-Jen Wu*

Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan

D3-O-0161 | 15:35-15:55 | Wen-Pin Liao

Incorporation of Au@SiO₂ Core-Shell Nanoparticles into P3HT/Oxide Hybrid Polymer Solar CellsWen-Pin Liao¹, Yun-Kai Huang², Li-Wen Huang³, Chen-Sheng Yeh², Yen-Hsun Su³, and Jih-Jen Wu^{1,*}¹*Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan*²*Department of Chemistry, National Cheng Kung University, Tainan, Taiwan*³*Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan***Session D3-2**

Conference Room: 504C

C2014/6/11

Chair: Prof. Kilwon Cho

D3-IT-0516 | 16:10-16:35 | Chi-An Dai

Nanostructure Engineering by Conducting Block Copolymers for Organic Solar Cell ApplicationC.-A. Dai^{1,2,*}, Y.-H. Lee^{1,2}, W.-C. Chen², K.-C. Kau², W.-S. Liou¹, and L. Wang^{2,3,*}¹*Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan*²*Institute of Polymer Science and Engineering, National Taiwan University, Taipei, Taiwan*³*Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan*

D3-O-0137 | 16:35-16:55 | Cheng-Hung Hou

Low-Temperature Solution-Processed NiO Hole-Collection Layers for Enhanced Efficiency and Stability of Bulk-Heterojunction Polymer Solar Cells

C.H. Hou and F.Y. Tsai*

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

D3-O-0136 | 16:55-17:15 | Yen-Ju Hsieh

Effect of Molecular Structure of Fulleropyrrolidine Derivatives on the Photovoltaic Behavior of Poly(3-hexylthiophene)-based Bulk Heterojunction Solar CellsY.J. Hsieh¹, D.Y. Chang², S.P. Rwei², and L. Wang^{1,3,*}¹*Institute of Polymer Science and Engineering, National Taiwan University, Taipei, Taiwan*²*Institute of Organic and Polymeric Materials, National Taipei University of Technology, Taipei, Taiwan*³*Centre for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan*

D3-O-0079 | 17:15-17:35 | Rathinam Raja

Synthesis and Characterization of Fulleropyrrolidines Bearing π -Conjugated Thiophene and Theno[2,4-b]thiophene as Potential Acceptors for High-Performance Polymer Solar CellsRathinam Raja¹, Wei-Shin Lin¹, Chuen-Yo Hsiow¹, Yen-Ju Hsieh¹, and Leeyih Wang^{1,2,*}¹*Centre for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan*²*Institute of Polymer Science and Engineering, National Taiwan University, Taipei, Taiwan*

Session D3-3

Conference Room: 504C

2014/6/12 *Chair: Prof. Shyh-Chyang Luo*

D3-IT-0800 | 14:00-14:25 | San-Yuan Chen

Combination Therapy for Nanocapsule with Dual-Targeting as Anticancer Nanomedicines

C.S. Chiang and S.Y. Chen*

*Department of Materials Science and Engineering,
National Chiao Tung University, Hsinchu, Taiwan*

D3-IT-0774 | 14:25-14:50 | Shyh-Chyang Luo

Functionalized Poly(3,4-Ethylenedioxythiophene) for Conductive Biointerfaces

S.-C. Luo

*Department of Materials Science and Engineering,
National Cheng Kung University, Tainan, Taiwan*

D3-O-0566 | 14:50-15:10 | Jen-Hau Yeh

Nanocrystal Memory based on Polypeptide-mediated Gold Nanoparticles at Room Temperature

Jen-Hau Yeh¹, Jeng-Shiung Jan², and Ching-Chieh Leu^{1,*}
¹*Department of Chemical and Materials Engineering,
National University of Kaohsiung, Kaohsiung, Taiwan*
²*Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan*

D3-O-0109 | 15:10-15:30 | Yin Chang

Bio-inspirations from Reptilian Eggshells: Unique Mechanical Properties and Potential Applications

Yin Chang¹ and Po-Yu Chen^{1,*}
¹*Department of Materials Science and Engineering,
National Tsing Hua University, Hsinchu, Taiwan*
Session D3-4

Conference Room: 504C

2014/6/12 *Chair: Prof. San-Yuan Chen*

D3-O-1003 | 16:10-16:30 | Pratima R. Surati

Single Crystal and Computational Study of New Schiff Base Compound Containing Pyrazolone Ring: Photochromism and Molecular Switching Behaviour

Pratima R. Surati^{1,*} and Bhavna A. Shah¹
¹*Department of Chemistry, Veer Narmad South Gujarat University, Gujarat, India*

D3-O-0496 | 16:30-16:50 | Chun-Fu Lu

A Facile Volatile Organic Compounds Sensor by Conjugated Polymers / Nanoparticles Nanocomposites

Chun-Fu Lu¹, Po-Chih Yang¹, Ming-Chung Wu², and Wei-Fang Su^{1,*}
¹*Department of Materials Science and Engineering,
National Taiwan University*
²*Department of Chemical and Materials Engineering,
Chang Gung University*

D3-O-0607 | 16:50-17:10 | Yu-Jen Chou

An Investigation of Bioactive Mesoporous Glass Particles by Spray Pyrolysis

Yu-Jen Chou, Leon Valentino Posma Panjaitan, and Shao-Ju Shih*

*Department of Materials Science and Engineering,
National Taiwan University of Science and Technology,
Taipei, Taiwan*

D3-O-0171 | 17:10-17:30 | Chuen-Yo Hsiow

Donor-Acceptor Random Copolymers Based on Two-dimensional Polythiophene: An Effective Strategy to Enhance Photovoltaic Performance

Chuen-Yo Hsiow¹, Hsin-Chung Huang², Wen-Yen Chiu^{1,3}, and Leeyih Wang^{1,4,*}
¹*Institute of Polymer Science and Engineering, National Taiwan University, Taipei, Taiwan*
²*Institute of Organic and Polymeric Materials, National Taipei University of Technology, Taipei, Taiwan*
³*Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan*
⁴*Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan*
Session D3-5

Conference Room: 504C

2014/6/13

Chair: Prof. Albert Chin

D3-KT-0769 | 09:00-09:30 | R.P.H. Chang

Materials Related Issues for the Next Generation Hybrid Solar Cells

R.P.H. Chang

*Department of Materials Science and Engineering,
Materials Research Institute and Argonne-Northwestern
Solar Energy Research Center, Northwestern University,
Evanston, IL., USA*

D3-IT-1041 | 09:30-09:55 | Albert Chin

Opportunity and Challenges for Organic Electronics beyond Silicon Integrated Circuit

Albert Chin

Department of Electronics Eng., National Chiao-Tung University, Hsinchu, Taiwan

D3-O-0239 | 09:55-10:15 | Kiran R. Surati

Photophysical Properties of Ir(III) Complex Derived From Heterocyclic Ligands For OLEDs Application

Kiran R. Surati* and Atul C. Vamja

Department of Chemistry, Sardar Patel University, Gujarat, India

D3-O-0321 | 10:15-10:35 | He-Ping Chen

Effects of Carrier Injection Layers on the Performance of Organic Light-Emitting Diodes

C.C. Hsu^{1,2,*} and H.P. Chen³

¹Graduate School of Engineering Science and Technology, National Yunlin University of Science and Technology, Douliu, Taiwan

²Department of Electronic Engineering, National Yunlin University of Science and Technology, Douliu, Taiwan

³Graduate School of Electronic and Optoelectronic Engineering, National Yunlin University of Science and Technology, Douliu, Taiwan

Session D3-6

Conference Room: 504C

2014/6/13

Chair: Prof. R.P.H. Chang

D3-IT-0116 | 11:00-11:25 | Hsin-Che Lee

Application of Au Nanoparticles in Inverted Low-Bandgap Polymer Solar Cells

Shao-Hsuan Kao¹, Ping-Yi Ho¹, Chia-Yu Kao², Hsin-Che Lee¹, and Ching-Fuh Lin^{1,2,*}

¹Graduate Institute of Photonics and Optoelectronics, Taiwan University, Taipei, Taiwan

²Graduate Institute of Electronics Engineering, Taiwan University, Taipei, Taiwan

D3-O-0470 | 11:25-11:45 | Meng-Lin Tsai

Concurrent Improvements in Optical and Electrical Properties in Si/PEDOT:PSS Hybrid Solar Cells by Employing Graphene Quantum Dots

Meng-Lin Tsai^{1,3}, Wan-Rou Wei¹, Libin Tang², Lih-Juann Chen³, Shu Ping Lau², and Jr-Hau He¹

¹Institute of Photonics and Optoelectronics and Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan

²Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong

³Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan

D3-O-0046 | 11:45-12:05 | Keng-Te Lin

Developing Picowatt-sensitive UV Photoconductors for Characterization of UV-sensitive Materials

Keng-Te Lin¹, Hsuen-Li Chen^{1,*}, Yu-Sheng Lai², Yu-Lun Liu¹, Yi-Chuan Tseng¹, and Cheng-Hsi Lin¹

¹Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

²National Nano Device Laboratories, National Applied Research Laboratories, Hsinchu, Taiwan

Session D3-7

Conference Room: 504C

2014/6/13

Chair: Dr. Chi-Yang Chao

D3-IT-0032 | 13:30-13:55 | Hao-Wu Lin

Optical Structure Designs for Organic Thin-Film Solar Cells

H.W. Lin*, Y.H. Chen, Z.Y. Huang, C.W. Chen, and S.W. Chiu

Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan

D3-IT-0714 | 13:55-14:20 | Chi-Yang Chao

P3HT Block Copolymers: Precise Syntheses and Morphology Manipulation

C.Y. Chao*, H. Lim, and B.F. Yang

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

D3-O-0388 | 14:20-14:40 | Reza Rooydell

Facile Preparation of bis(acetylacetonato O,O') [zinc(II) cobalt(II)] as New Bimetal MOCVD Precursor

Farzaneh Ebrahimzadeh, Reza Rooydell^{1,*}, Chuan-Pu Liu², and Kuan-Zong Fung*

¹Department of Chemistry, Fars Science and Research Branch, Islamic Azad University, Marvdasht, Iran

²Department of Material Science and Engineering, National Cheng Kung University, Tainan, Taiwan

D3-O-0375 | 14:40-15:00 | Reza Rooydell

Synthesis and Characterization of bis(acetylacetonato) [Al/Cu], Metal Organic Complexes as a Solid MOCVD Precursor

Reza Rooydell, Chuan-Pu Liu^{1,*}, and Farzaneh Ebrahimzadeh¹

¹Department of Material Science and Engineering, National Cheng Kung University, Tainan, Taiwan

²Department of Chemistry, Fars Science and Research
Branch, Islamic Azad University, Marvdasht, Iran

Session D3-8

Conference Room: 504C

2014/6/13

Chair: Prof. Hao-Wu Lin

D3-O-1010 | 15:40-16:00 | Tzu-Hao Kao

Core-Shell Structured Polyacrylonitrile-Polybenzoxazine Nanofibers by Coaxial Electrospinning

Tzu-Hao Kao and Jem-Kun Chen*

Department of Materials Science and Engineering,
National Taiwan University of Science and Technology,
Taiwan

D3-O-0591 | 16:00-16:20 | Eduardo Ceretta Moreira

Structural, Optical and Vibrational Properties of Photoactive Aminobenzazole DerivativesE.C. Moreira^{1,*}, R.M. Alves¹, L.H. Trevisan¹, and F.S. Rodembusch²

¹Grupo de Pesquisa em Espectroscopia de Materiais
Fotônicos, Campus Bagé, Universidade Federal do

Pampa, Bagé - RS, Brazil

²Grupo de Pesquisa em Novos Materiais Orgânicos e
Fotoquímica, Universidade Federal do Rio Grande do
Sul, Porto Alegre - RS, Brazil

D3-O-0390 | 16:20-16:40 | Reza Rooydell

Preparation and Characterization of Highly Stable Silver Nanoparticles by Chemical Reduction Method in Aqueous Media Under Ambient EnvironmentFarzaneh Ebrahimzadeh^{1,*}, Kuan-Zong Fung²,
Reza Rooydell², and Yun-Jie Chung²

¹Department of Chemistry, Science and Research
Branch, Islamic Azad University, Fars, Iran

²Departments of Materials Science and Engineering,
National Cheng Kung University, Tainan, Taiwan

D3-O-0284 | 16:40-17:00 | Ying-Cheng Lin

Preparation of P3HT/TiO₂ Nanocomposites from *In-situ* Sol-gel Process

Ying-Cheng Lin, Herman Lim, and Chi-Yang Chao*

Department of Materials Science and Engineering,
National Taiwan University, Taipei, Taiwan

Group E: Modeling, Processing and Characterization

Symposium E1: Modeling of Materials

Session E1-1

Conference Room: 402A

2014/6/11 Chair: Prof. Wojciech Gierlotka

E1-IT-0147 | 14:00-14:25 | Seung-Cheol Lee

Reduction of CO₂ on MgO Surface for Sabatier Reaction: A Surface Thermodynamics and Mechanistic Study

Seung-Cheol Lee^{1,2*}, Rizcky Tamarany^{2,3}, and Jung-Hae Choi³¹Indo-Korea Science and Technology Center, Korea Institute of Science and Technology, Bangalore, India²Department of Nanomaterials Science and Engineering, University of Science and Technology, Daejeon, Korea³Electronic Materials Research Center, Korea Institute of Science and Technology, Seoul, Korea

E1-IT-0252 | 14:25-14:50 | Hyungjun Kim

Predictions on Shock-induced Phase Transform of Lithium from Quantum Electron Dynamics Simulations

Hyungjun Kim*

Graduate School of EEWS, Korea Advanced Institute of Science and Technology, Daejeon, Korea

E1-O-1013 | 14:50-15:10 | Wei Lo

Three Dimensional Thermal Simulation of Accelerated Cooling process in CSC Plate Mill

W. Lo*

Rolling Process Development Section, China Steel Corporation, Kaohsiung, Taiwan

E1-O-1036 | 15:10-15:30 | Rao Huang

Structural and Thermal Stabilities of Core-Shell and Alloyed Pt-Pd Bimetallic Nanoparticles

Rao Huang^{1,*}, Yuhua Wen¹, Guifang Shao², Liangyou Xu², Zizhong Zhu¹, and Shigang Sun³¹Institute of Theoretical Physics and Astrophysics, Department of Physics, Xiamen University, Xiamen, China²Center for Cloud Computing and Big Data, Department of Automation, Xiamen University, Xiamen, China³State Key Laboratory of Physical Chemistry of Solid

Surfaces, Department of Chemistry, Xiamen University, Xiamen, China

E1-O-0372 | 15:30-15:50 | Wei-Guang Chen

First Principles Study of Band alignment of Rutile and Anatase TiO₂

Wei-Guang Chen and Chin-Lung Kuo*

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

Session E1-2

Conference Room: 402A

2014/6/11 Chair: Prof. Hyungjun Kim

E1-IT-0723 | 16:10-16:35 | Masato Yoshiya

A Challenge to Identify Factors and Their Interplay Governing Microstructure Evolution with Phase-Field Modeling

M. Yoshiya^{1,3,*}, N. Ueshima¹, M. Watanabe¹, H. Yasuda^{1,4}, T. Fukuda², and T. Kakeshita²¹Department of Adaptive Machine Systems, Osaka University, Suita, Osaka, Japan²Department of Materials and Manufacturing Science, Osaka University, Suita, Osaka, Japan³Nanostructures Research Laboratory, Japan Fine Ceramics Center, Nagoya, Aichi, Japan⁴Department of Materials Science and Engineering, Kyoto University, Kyoto, Japan

E1-O-0515 | 16:35-16:55 | Dong-Sheng Li

First Principles Study of the Structural and Electronic Properties of Amorphous Carbon

Dong-Sheng Li and Chin-Lung Kuo*

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

E1-O-0527 | 16:55-17:15 | Susumu Fujii

Relationship between Two-Dimensional Thermal Conduction and Dynamic Interlayer Interactions in a Layered Cobalt Oxide Ca₃Co₄O₉

S. Fujii^{1,*}, A. Yumura¹, Y. Miyauchi¹, M. Tada¹,

M. Yoshiya^{1,2}, and H. Yasuda³

¹Department of Adaptive Machine Systems, Osaka University, Osaka, Japan

²Nanostructures Research Laboratory, Japan Fine Ceramics Center, Nagoya, Japan

³Department of Materials Science and Engineering, Kyoto University, Kyoto, Japan

E1-O-0537 | 17:15-17:35 | Wojciech Gierlotka

Application of the Calphad Method to the Nano-systems Calculation

Wojciech Gierlotka

Department of Materials Science and Engineering, National Dong-Hwa University, Taiwan

Session E1-3

Conference Room: 402A

2014/6/12

Chair: Prof. Chaohong Wang

E1-O-0625 | 14:00-14:20 | Tatsuya Yokoi

Atomistic Analyses of Grain Boundary Segregation of Extrinsic Point Defects and Its Modification of Local Structure and Ionic Conductivity

T. Yokoi^{1,*}, M. Yoshiya^{1,2}, and H. Yasuda³

¹Department of Adaptive Machine System, Osaka University, Suita, Japan

²Nanostructures Research Laboratory, Japan Fine Ceramics Center, Nagoya, Japan

³Department of Material Science and Engineering, Kyoto University, Kyoto, Japan

E1-O-0071 | 14:20-14:40 | Jia-Ying Dai

Phase equilibria in the Sn-Bi-Au ternary system at 80, 125 and 150°C

Yi-Pin Wu¹, Jia-Ying Dai¹, Hsien-Ming Hsiao¹,

Chih-Ming Chen² Chien-Chung Jao³, and

Yee-wen Yen^{1,*}

¹Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan

²Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan

³Department of Applied Technology of Living, Ta Hwa University of Science and Technology, Hsinchu, Taiwan

E1-O-0717 | 14:40-15:00 | Dominika Jendrzeczyk-Handzlik

Re-optimization of the Binary Cu-Ga System

Dominika Jendrzeczyk-Handzlik¹, Wojciech Gierlotka², and Krzysztof Fitzner¹

¹Department of Non-Ferrous Metals, AGH University of Science and Technology, Cracow, Poland

²Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan

E1-O-0925 | 15:00-15:20 | Jim Williams

Phase Transformation Pathways in Si and Ge under High Pressure: New Metastable Phases at Ambient Pressure

J.S. Williams^{1,*}, B. Haberl¹, S. Deshmukh¹, B.C. Johnson², J.C. McCallum², M. Guthrie³, and J.E. Bradby¹

¹Research School of Physics and Engineering, Australian National University, Canberra, Australia

²School of Physics, University of Melbourne, Victoria, Australia

³Geophysical Laboratory, Carnegie Institution of Washington, Washington DC, USA

E1-O-0934 | 15:20-15:40 | Ting Liao

Stimulated Effect of Chemically Modified Ribbon Edge on Energy Application: A First-Principles Computational Study

T. Liao^{1,2,*}, C.H. Sun², Z.Q. Sun¹, and S.C. Smith³

¹Institute for Superconducting & Electronic Materials, University of Wollongong, NSW, Australia

²Centre for Theoretical and Computational Molecular Science, Australian Institute for Bioengineering and Nanotechnology, University of Queensland, Brisbane QLD, Australia

³Centre for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN, USA

Symposium E2: Processing of Materials

Session E2-1

Conference Room: 509

2014/6/11

Chair: Prof. Yee-wen Yen

E2-KT-1066 | 14:00-14:30 | S. Kou

Metallurgical Issues in Welding of Magnesium Alloys

S. Kou

Department of Materials Science and Engineering, University of Wisconsin, Madison, WI, USA

E2-IT-1012 | 14:30-14:55 | Jien-Wei Yeh

Potential Applications of High-entropy Materials

Jien-Wei Yeh

Department of Materials Science and Engineering,
National Tsing Hua University, Hsinchu, Taiwan

E2-O-0027 | 14:55-15:15 | Cheng-Hsien Liu

Modeling and Scale up ECAE Process by Using Conventional Direct Extrusion

Cheng-Hsien Liu and Hsin-Chih Lin*

Department of Materials Science and Engineering,
National Taiwan University, Taipei, Taiwan

E2-O-0523 | 15:15-15:35 | Ryota Ozaki

Thermodynamics-driven Distribution of Modifier Elements in Hypereutectic Al-Si Alloy and Its Impact on Microstructure

R. Ozaki^{1,*}, H. Yasuda^{1,2}, K. Nogita³, T. Nagira¹,
M. Yoshiya¹, and Y. Terada⁴

¹Department of Adaptive Machine Systems, Osaka
University, Osaka, Japan

²Nanostructures Research Laboratory, Japan Fine
Ceramics Center, Nagoya, Japan

³School of Mechanical and Mining Engineering,
University of Queensland, Brisbane, Australia

⁴Japan Synchrotron Radiation Research Institute,
SPring-8, Hyogo, Japan

Session E2-2

Conference Room: 509

2014/6/11 Chair: Prof. Hiroshi Nishikawa

E2-IT-0724 | 16:10-16:35 | Hiroshi Nishikawa

Characteristics of Micro-joints Soldered with Sn-3.0Ag-0.5Cu Solder Using Laser Process

H. Nishikawa^{1,*} and N. Iwata²

¹Joining and Welding Research Institute, Osaka
University, Osaka, Japan

²Graduate School of Engineering, Osaka University,
Osaka, Japan

E2-O-0104 | 16:35-16:55 | Seung Kwon Seol

Three-dimensional (3D) Printing of Micro- and Nanostructures by Fountain-Pen Lithography

Seung Kwon Seol^{1,2,*}, Won Suk Chang¹,
Jung Hyun Kim¹, and Daeho Kim^{1,3}

¹Nano Hybrid Technology Research Center, Korea
Electrotechnology Research Institute, Changwon,
Korea

²Electrical Functionality Material Engineering, University
of Science and Technology, Changwon, Korea

³Energy and Power Conversion Engineering, University
of Science and Technology, Changwon, Korea

E2-O-0272 | 16:55-17:15 | Li-Yang Hong

Single Titanium Oxide Nanodot Ultraviolet Light Nanosensors Created by Atomic Force Microscopy Nanolithography

Li-Yang Hong* and Heh-Nan Lin

Department of Materials Science and Engineering,
National Tsing Hua University, Hsinchu, Taiwan

E2-O-0662 | 17:15-17:35 | Mao-Kuo Wei

Spherical Nanolens Array Fabricated Using a Non-Conventional Thermal Reflow Approach

M.-K. Wei^{1,*}, J.-H. Jou², S.-J. Lin¹, Y.-Y. Su¹,
B.H. Wang¹, and H.-Y. Lin³

¹Department of Materials Science and Engineering,
National Dong Hwa University, Hualien, Taiwan

²Department of Materials Science and Engineering,
National Tsing Hua University, Hsinchu, Taiwan

³Mechanical and Systems Research Laboratories,
Industrial Technology Research Institute, Hsinchu,
Taiwan

Session E2-3

Conference Room: 509

2014/6/12 Chair: Prof. Sinn-wen Chen

E2-KT-1067 | 14:00-14:30 | Men G. Chu

Application of Solidification Principles and Computer Simulation to Industrial Aluminum Alloy Ingot Casting Practice

Men G. Chu and Al Giron

Alcoa Technical Center, Alcoa Center, PA, USA

E2-IT-0730 | 14:30-14:55 | Chung-Wen Lan

Recent Development of High-Performance Multi-crystalline Silicon for Photovoltaic Industry

C.W. Lan^{1,*}, Y. M. Yang², A. Yu², B. Hsu²,
W.C. Hsu², and A. Yang³

¹Department of Chemical Engineering, National Taiwan
University, Taipei, Taiwan

²Sino-American Silicon Productions Inc., Hsinchu,
Taiwan

³Solartech Energy Inc., Hsinchu, Taiwan

E2-O-0876 | 14:55-15:15 | Wei-Chin Huang

Investigation of the Solidification Process in Selective Laser Melting

W.C. Huang*, T.W. Tsai, C.C. Lin, C.S. Chuang,
C.H. Wu, D.Y. Lin, S.H. Liu, W.P. Tseng, and
J.B. Horng

*ITRI South Campus, Industrial Technology Research
Institute, Tainan, Taiwan*

E2-O-0107 | 15:15-15:35 | Wan-Ting Chiu

Liquidus Projection of the Ternary Cu-In-Se Solar Cell Material System

W.-T. Chiu, H.-J. Wu, J.-S. Chang, and S.-W. Chen*

*Department of Chemical Engineering, National Tsing
Hua University, Hsinchu, Taiwan*

Session E2-4

Conference Room: 509

2014/6/12 Chair: Prof. Chung-wen Lan

E2-IT-1032 | 16:10-16:35 | Dongping Liu

Large-area Surface Modification and Plasma Cleaning by Atmospheric- pressure Air Microplasma Array

Dongping Liu^{1,2,*}, Ying Song¹, Xianhui Zhang²,
Longfei Ji¹, Weiyan Ni¹, Qi Zhang¹, and
Jinhai Niu¹

¹*School of Physics and Materials Engineering, Dalian
Nationalities University, China*

²*Fujian Key Laboratory for Plasma and Magnetic
Resonance, Department of Electric Science, School
of Physics and Mechanical & Electrical Engineering,
Xiamen University, Xiamen, China*

E2-O-0665 | 16:35-16:55 | J.E.E. Baglin

Nanoscale Lithography for Few-Nanometer Features Using Ion Beams

J.E.E. Baglin*

IBM Almaden Research Center, San Jose, CA, USA

E2-O-0091 | 16:55-17:15 | Wei-an Chen

Ni/CoSb₃ Interfacial Reactions and Ni-Co-Sb Phase Equilibria

W.-A. Chen, J.-S. Chang, H.-J. Wu, and S.-W. Chen*

*Department of Chemical Engineering, National Tsing
Hua University, Hsinchu, Taiwan*

E2-O-0980 | 17:15-17:35 | Li-Chi Hsu

Characteristics of Cr-B-Si-N/Ti-B-Si-N Multilayer Coatings

Li-Chi Hsu¹ and Jyh-Wei Lee^{1,2,*}

¹*Department of Materials Engineering, Ming Chi
University of Technology, New Taipei City, Taiwan*

²*Center for Thin Films Technologies and Applications,*

*Ming Chi University of Technology, New Taipei City,
Taiwan*

Session E2-5

Conference Room: 509

2014/6/13

Chair: Prof. Sinn-wen Chen

E2-KT-1068 | 09:00-09:30 | Shuanglin Chen

A Computational Tool for Materials Genome Initiative

Shuanglin Chen*, Weisheng Cao, Fan Zhang,
Chuan Zhang, and Jun Zhu

CompuTherm LLC, Madison, WI, USA

E2-IT-0781 | 09:30-09:55 | Yong Lu

Periodic Microstructure Designed by Self-organized Phase Separation During Film Deposition

Yong Lu^{1,2}, Cuiping Wang¹, Xingjun Liu^{1,*}, and
Yunzhi Wang²

¹*Department of Materials Science and Engineering,
College of Materials, and Research Center of Materials
Design and Applications, Xiamen University, Xiamen,
China*

²*Department of Materials Science and Engineering, The
Ohio State University, Columbus, OH, USA*

E2-O-0092 | 09:55-10:15 | Sinn-wen Chen

Phase Diagrams of Thermoelectric Co-Sb-In Ternary System

Sinn-wen Chen*, Ssu-ming Tseng, and
Hwader Chu

*Department of Chemical Engineering, National Tsing
Hua University, Hsinchu, Taiwan*

E2-O-0093 | 10:15-10:35 | Jui-Shen Chang

Phase Diagrams of Thermoelectric Pb-Se-Sb Ternary System

Jui-Shen Chang and Sinn-wen Chen*

*Department of Chemical Engineering, National Tsing
Hua University, Hsinchu, Taiwan*

E2-O-0911 | 10:35-10:55 | Ming-Hung Tsai

Criterion for Sigma Phase Formation in Cr- and V-Containing High-Entropy Alloys

Ming-Hung Tsai^{1,*}, Kun-Yo Tsai², Che-Wei Tsai²,
Chi Lee², Chien-Chang Juan², and Jien-Wei Yeh²

¹*Department of Materials Science and Engineering,
National Chung Hsing University, Taichung, Taiwan*

²*Department of Materials Science and Engineering,
National Tsing Hua University, Hsinchu, Taiwan*

Symposium E3: Characterization of Materials

Session E3-1

Conference Room: 509

2014/6/13

Chair: Prof. Heh-Nan Lin

E3-IT-1043 | 11:00-11:25 | Jer-Ren Yang

TEM Investigation of Nanostructures in Advanced High-Strength Low-Alloy Steels

J.R. Yang*, H.W. Yen, and C.Y. Chen

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

E3-IT-1045 | 11:25-11:50 | Noboru Taguchi

Analytical TEM Study for Surface Modified LiCoO₂ Using Li K-Edge Spectra

N.Taguchi^{1,*}, H. Sakaebe¹, T. Akita¹, K. Tatsumi¹, and Z. Ogumi²¹*Research Institute for Ubiquitous Energy Devices, National Institute of Advanced Industrial Science and Technology (AIST), Ikeda, Osaka, Japan*²*Office of Society-Academia Collaboration for Innovation, Kyoto University, Uji-shi, Kyoto, Japan*

E3-O-1006 | 11:50-12:10 | Ming-Wei Lai

In-Situ TEM Study of the Thermal-induced Microstructure Evolution of STObA

M.W. Lai*, S.C. Lo, M.T. Chang, C.Y. Hsieh, and H.C. Wu

Material and Chemical Research Laboratories, Industrial Technology Research Institute (ITRI), Hsinchu, Taiwan

E3-O-0330 | 12:10-12:30 | Chung-Ho Kao

Optimization of TEM/EDX Analysis at a Nano-Scale Interface

Chung-Ho Kao, Yu-Feng Ko, Pradeep Sharma*, Chih-Hsun Chu, and Yong-Fen Hsieh

TEM and R&D Division, Materials Analysis Technology Inc., Hsinchu, Taiwan

Session E3-2

Conference Room: 509

2014/6/13

Chair: Dr. Hsin-Yi Lee

E3-IT-0594 | 13:30-13:55 | Ya-Ping Chiu

Atomic-Scale Electronic Structure Across

Hetero-Interfaces by Cross-Sectional STM

Ya-Ping Chiu*

Department of Physics, National Sun Yat-sen University, Kaohsiung, Taiwan

E3-IT-0780 | 13:55-14:20 | C.-H. Hsu

Structural Characteristics of Oxide/Semiconductor Heteroepitaxial Systems

C.-H. Hsu^{1,*}, J. Kwo², and M. Hong³¹*Scientific Research Division, National Synchrotron Radiation Research Center, Hsinchu, Taiwan*²*Department of Physics, National Tsing Hua University, Hsinchu, Taiwan*³*Graduate Institute of Applied Physics and Department of Physics, National Taiwan University, Taipei, Taiwan*

E3-O-0704 | 14:20-14:40 | J. Serafiniczuk

Application of in-plane x-ray Diffractometry to Determine Mosaicity and Lateral Block Size in Highly Mismatched Epitaxial Layers

J.Serafiniczuk^{1,*} and J. Kozłowski¹¹*Faculty of Microsystem Electronics and Photonics, Wrocław University of Technology, Wrocław, Poland*

E3-O-0315 | 14:40-15:00 | H. Kajiyama

Photochromism of MgSnO Thin Film Induced by Bandgap Excitation

H. Kajiyama¹, T. Matsuura¹, A. Otomo², and S. Inoue²¹*Faculty of Science and Engineering, Tokushima Bunri University, Sanuki, Japan*²*Graduate School of Engineering, Hiroshima University, Higashi-hiroshima, Japan*

E3-O-0169 | 15:00-15:20 | Mula Sigiros

Growth and Optical Characterization of MoSe₂, WSe₂, and Mo_xW_{1-x}S₂ Single Crystals

Mula Sigiros^{1,*}, Y.J. Wu², C.Y. Ke¹, C.C. Pung¹, Y.S. Huang¹ and C.H. Ho^{1,3}¹*Department of Electronic and Computer Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan*²*Graduate Institute of Electro-Optical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan*

³Graduate Institute of Applied Science and Technology,
National Taiwan University of Science and Technology,
Taipei, Taiwan

Session E3-3

Conference Room: 509

2014/6/13

Chair: Prof. Ya-Ping Chiu

E3-O-0614 | 15:40-16:00 | Alemu Tesfaye

Effects of Indenter Geometries on Indentation Recovery of Thin Film Metallic GlassAlemu Tesfaye¹, J.P. Chu^{1,*}, and Y.L. Shen²

¹Department of Materials Science and Engineering,
National Taiwan University of Science and Technology,
Taipei, Taiwan

²Department of Mechanical Engineering, University of
New Mexico, Albuquerque, USA

E3-O-0754 | 16:00-16:20 | E-Wen Huang

Microyielding of Core-Shell Crystal Dendrites in a Bulk-metallic-glass Matrix CompositeE-Wen Huang^{1,*}, Junwei Qiao², Wen-Jay Lee³,
and Marco Di Michiel⁴

¹Department of Chemical and Materials Engineering,

National Central University, Jhongli, Taiwan

²Research Center of Advanced Materials Science and
Technology, Taiyuan University of Technology, Taiyuan,
China

³National Center for High-Performance Computing,
Taichung, Taiwan

⁴European Synchrotron Radiation Facility Beamline
ID15, Grenoble, France

E3-O-0725 | 16:20-16:40 | Z. Adabavazeh

Nonstoichiometry of Pristine, La-doped, and La/Cr-co-doped BiFeO₃: Solid-state syntheses, Characterization, and First-principle CalculationsW.D. Hsu¹, C.W. Liu¹, T.C. Wu¹, Z. Adabavazeh¹,
T.T. Fang¹, and S.K. Lin^{1,*}

¹Department of Materials Science and Engineering,
National Cheng Kung University, Tainan, Taiwan

E3-O-0910 | 16:40-17:00 | David Beck

Extracting Quantitative Nanomechanical Properties from Tapping Mode AFM MeasurementsD. Beck*, R. Proksch¹, M. Kocun, and A. Labuda

Oxford Instruments Asylum Research, Inc., Santa
Barbara, CA, USA

Group F: Oxide Materials for Advanced Electronics

Symposium F1: Advanced Thin Films and Heterostructure Towards Novel Oxide Electronics

Session F1-1

Conference Room: 403

2014/6/13

Chairs: T. Tsuchiya
and T. Tsuruoka

F1-KT-1076 | 09:00-09:30 | Chia-Chiang Chang

Transparent Metal Oxide Thin Film Coating and Applications Using Atmospheric Environmental Plasma Process

Chia-Chiang Chang

ae Plasma 41 Co., Ltd. Taoyuan, Taiwan

F1-IT-0581 | 09:30-09:55 | Shizuo Fujita

Epitaxial Growth of Corundum-Structured α -(Al,Ga,In)₂O₃ Semiconductor Alloys on Sapphire Substrates

S. Fujita^{1,*}, K. Akaiwa², N. Suzuki², and K. Kaneko¹¹Photonics and Electronics Science and Engineering Center, Kyoto University, Kyoto, Japan²Department of Electronic Science and Engineering, Kyoto University, Kyoto, Japan

F1-IT-0076 | 09:55-10:20 | M.K. Jayaraj

Domain Matched Epitaxial Growth of Dielectric Thin Films

M.K. Jayaraj* and P.S. Kirshnaprasad

Nanophotonic and Optoelectronic Device Laboratory
Department of Physics, Cochin University of Science and Technology, Kochi, India

F1-IT-0438 | 10:20-10:45 | Fu-Hsing Lu

Low Temperature Hydrothermal-Galvanic Couple Synthesis of Perovskite Oxide Thin Films

Fu-Hsing Lu*

Department of Materials Science and Engineering,
National Chung Hsing University, Taichung, Taiwan

Session F1-2

Conference Room: 403

2014/6/13

Chairs: T. Endo
Fu-Hsing Lu

F1-IT-0532 | 11:00-11:25 | Masaharu Oshima

Electronic Structures of Transition Metal Oxide Nanostructures Revealed by *in Situ* Laser MBE + Soft X-ray Photoelectron Spectroscopy and Microscopy

M. Oshima

Synchrotron Radiation Research Organization, The University of Tokyo, Tokyo, Japan

F1-O-0033 | 11:25-11:45 | Lin Hao

Epitaxial Growth of Layered B-Site Ordered Double Perovskite Y₂MnCrO₆ Films

L. Hao, Z.F. Zhang, L. Yang, X.N. Xie, and H. Zhu*

Department of physics, University of Science and Technology of China, Hefei, China

F1-O-0232 | 11:45-12:05 | Wan-Chen Hsieh

Mixed-valence TiO₂/TiO_x Superlattices: Structure, Magneto-transport, and Magnetism

W.C. Hsieh¹, P.V. Wadekar^{1,2,5}, Q.Y. Chen^{1,2,*}, S.H. Chang³, C.F. Chang¹, M.S. Wong³, H.C. Huang¹, L.W. Tu¹, N.J. Ho¹, W.K. Chu², H.H. Ko¹, W.Y. Lin¹, Q.J. Lin¹, H.H. Liu¹, C.W. Chang¹, Y.T. Lin¹, Y.S. Wang¹, H.W. Seo⁴, H.H. Liao⁶, and C.H. Liao⁷¹Department of Physics, National Sun-Yat Sen University, Kaohsiung, Taiwan²Department of Physics, University of Houston, USA³Department of Materials Science and Engineering, National Dong Hua University, Hualien, Taiwan⁴Department of Physics and Astronomy, University of Arkansas, USA⁵Department of Chemistry, University of Liverpool, UK⁶Enli Technology Inc., Kaohsiung, Taiwan⁷Department of Physics, ROC Military Academy, Kaohsiung, Taiwan

F1-IT-0009 | 12:05-12:30 | Kohei Fujiwara

Growth of Complex Nanostructures of Metal Oxides Using a Shadow Effect

K. Fujiwara*, K. Okada, A.N. Hattori, and H. Tanaka

ISIR, Osaka University, Ibaraki, Osaka, Japan

Session F1-3

Conference Room: 403

2013/6/14

Chairs: K. Fujiwara
and B. Park

F1-IT-0687 | 09:00-09:25 | Tetsuo Tsuchiya

Non Hysteretic VO₂ Thin Film on SiN/Polyimide/Si Substrate Prepared by ELAMOD for IR Sensor

H. Ishizaki, T. Nakajima, K. Shinoda, and T. Tsuchiya*

National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Ibaraki, Japan

F1-O-0552 | 09:25-09:45 | Berhanu Tulu

Resistive Switching Characteristics and Mechanism of Pt/(ZrCuAlNi)O_x/Pt Memory Device

Berhanu Tulu¹, W.Z. Chang¹, J.P. Chu^{1,*}, and S.F. Wang²
¹Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taiwan

²Department of Materials and Minerals Resources Engineering, National Taipei University of Technology, Taiwan

F1-O-0609 | 09:45-10:05 | Tohru Tsuruoka

Synaptic Plasticity Observed in a Gapless-type Atomic Switch Using a Thin Ta₂O₅ Film

T. Tsuruoka^{1,2,*}, T. Hasegawa^{1,2}, K. Terabe¹, and M. Aono¹
¹International Center for Materials Nanoarchitectonics (MANA), National Institute for Materials Science (NIMS), Tsukuba, Japan

²Core Research for Evolutional Science (CREST), Japan Science and Technology Agency (JST), Tokyo, Japan

F1-O-0727 | 10:05-10:25 | Yen-Lin Huang

Anisotropic Superconductivity induced by Periodic Multiferroic Domains

Yen-Lin Huang^{1,*}, Vu-Thanh Tra², Heng-Jui Liu¹, Long-Yi Chen³, Shih-Ting Guo⁴, Wei-Li Lee⁴, Chih-Wei Luo³, Jiunn-Yuan Lin², and Ying-Hao Chu¹
¹Department of Materials Science and Engineering, National Chiao Tung University, HsinChu, Taiwan

²Institute of Physic, National Chiao Tung University, HsinChu, Taiwan

³Department of Electrophysics, National Chiao Tung University, HsinChu, Taiwan

⁴Institute of Physics, Academia Sinica, Nankang, Taipei, Taiwan

F1-O-0742 | 10:25-10:45 | Yung-Chun Teng

Structural and Physical Properties of a New Bismuth Lead Oxide Phase

Y.C. Teng^{1,*}, H.H. Kuo¹, H.J. Liu¹, N.V. Chien¹, H.W. Chen², H.L. Liu², and Y.H. Chu¹
¹Department of Materials Science and Engineering, National Chiao Tung University, HsinChu, Taiwan

²Department of Physics, National Taiwan Normal University, Taipei, Taiwan

Session F1-4

Conference Room: 403

2014/6/14

Chairs: T. Nakajima
and T. Tsuchiya

F1-IT-0019 | 11:00-11:25 | R.P.H. Chang

Structural Studies of Amorphous Indium Oxide

D.B. Buchholz¹, Q. Ma^{1,2}, L. Zang¹, V.P. Dravid, M.J. Bedzyk¹, Julia E. Medvedeva³, Arturo Ponce-Pedraza⁴, and R.P.H. Chang^{1,*}
¹Materials Research Center and Department of Materials Science and Engineering, Northwestern University, Evanston, IL, USA

²Argonne National Lab, Advanced Photon Source, Northwestern Synchrotron Research Centers, DND CAT, Argonne, IL USA

³Department of Physics, Missouri University of Science and Technology, Missouri, USA

⁴Department of Physics, University of Texas at San Antonio, Texas, USA

F1-IT-1081 | 11:25-11:50 | Ri-ichi Murakami

The Improvement of Optical Transmission and the Resistivity of ZnO/Ag/ZnO Multilayers Films

Ri-ichi Murakami

Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taiwan

F1-O-0343 | 11:50-12:10 | Yijia J. Chen

Surface Coating of TiO₂ on ZnO by Electrodeposition for Dye-sensitized Solar Cells

Y.J. Chen^{1,2,*}, K.F. Liu¹, Y.K. Hsu², and C.H. Wang³

¹Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan

²Department of Optoelectronic Engineering, National Dong Hwa University, Hualien, Taiwan

³Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan

F1-IT-0451 | 12:10-12:35 | Tamio Endo

Defect-Related Transport across Oxide Films and Heterostructures

T. Endo^{1,*} and M. Belogolovskii²

¹Graduate School of Engineering, Mie University, Mie, Japan

²Department of Dynamical Properties of Complex Systems, Donetsk Institute for Physics and Engineering, Donetsk, Ukraine

Symposium F2: p- or n-type Oxide Films, Transparent Conductive Films and Devices: Photovoltaic, Optoelectronic, Plasmonic, Gas Sensor and Microwave Devices

Session F2-1

Conference Room: 504B

2014/6/11

Chair: T. Yamamoto

F2-KT-1069 | 14:00-14:30 | H. Nishikawa

Filling Control of Perovskite Type Charge-transfer Insulators via Interface Electron Reconstruction from SrTiO₃

H. Nishikawa

Faculty of Biology-Oriented Science and Technology, Kinki University, Kinokawa, Japan

F2-IT-0991 | 14:30-14:55 | Valentin Craciun

On the Metrology of Amorphous Transparent and Conductive Oxides Grown by Combinatorial Pulsed Laser Deposition

G. Socol¹, E. Axente¹, J. Hermann², A.C. Galca³, D. Pantelica⁴, P. Ionescu⁴, N. Becherescu⁵, C. Martin⁶, and V. Craciun^{1,*}

¹National Institute for Lasers, Plasma and Radiation Physics, Măgurele, Romania

²LP3, CNRS - Aix-Marseille University, Marseille, France

³National Institute of Materials Physics, Măgurele, Romania

⁴National Institute of Physics and Nuclear Engineering Horia Hulubei, Măgurele, Romania

⁵Appel Laser, Bucharest, Romania

⁶Ramapo College of New Jersey, NJ, USA

F2-O-0127 | 14:55-15:15 | Chih-Hung Li

MgZnO/ZnO Heterostructure Thin Film Transistors Fabricated Using Large-area Compatible Processes

Chih-Hung Li^{1,*}, Tsung-Han Wu¹, I-Chun Cheng², Cheng-Che Hsu³, and Jian-Zhang Chen^{1,*}

¹Graduate Institute of Applied Mechanics, National Taiwan University, Taipei, Taiwan

²Graduate Institute of Photonics and Optoelectronics & Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan

³Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan

F2-O-0384 | 15:15-15:35 | I-Chung Chiu

Electrical Performance and Negative Gate-bias Stability of p-type SnO TFTs Using HfO₂ Gate Dielectric

I-Chung Chiu¹, Ming-Sheng Tu¹, I-Chun Cheng^{1,*}, and Jian-Zhang Chen²

¹Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taipei, Taiwan

²Institute of Applied Mechanics, National Taiwan University, Taipei, Taiwan

F2-O-0410 | 15:35-15:55 | Chun Fu Chang

Effects of Oxidation and Reduction on Nb-doped SrTiO₃ Epitaxial Thin Films

C.F. Chang¹, Q.Y. Chen^{1,2,*}, P.V. Wadekar^{1,2,6}, O. Lozano³, M.S. Wong⁴, W.C. Hsieh¹, W.Y. Lin¹, H.H. Ko¹, Q.J. Lin¹, H.H. Liu¹, C.W. Chang¹, Y.T. Lin¹, Y.S. Wang¹, H.C. Huang¹, N.J. Ho¹, L.W. Tu¹, H.H. Liao^{1,7}, P.V. Chinta^{1,2,8}, W.K. Chu², and H.W. Seo⁵

¹Department of Physics, National Sun Yat-Sen University, Kaohsiung, Taiwan

²Department of Physics, University of Houston, Texas, USA

³Department of Physics, University of Namur, Namur, Belgium

⁴Department of Material Science, National Dong Hwa University, Hualien, Taiwan

⁵Department of Physics and astronomy, University of Arkansas, Little Rock, USA

⁶Department of Chemistry, University of Liverpool, Liverpool, UK

⁷Enli Tech., Kaohsiung, Taiwan

⁸Department of Physics and Materials Science, University of Vermont, Burlington, USA

Session F2-2

Conference Room: 504B

2014/6/11

Chair: V. Craciun

F2-IT-0200 | 16:10-16:35 | Kanji Yasui

Epitaxial Growth of ZnO Films on a-plane Sapphire Substrates Using High-temperature H₂O Generated from a Catalytic Reaction

Kanji Yasui

Department of Electrical, Electronics and Information Engineering, Nagaoka University Technology, Nagaoka, Japan

F2-IT-0374 | 16:35-17:00 | Tetsuya Yamamoto

Optical Characteristics of Heavily Ga-Doped ZnO Polycrystalline Films at the Telecommunication Wavelength for Plasmonics

T. Yamamoto*, H. Song, J. Nomoto, and H. Makino

Materials Design Center, Research Institute, Kochi University of Technology, Kochi, Japan

F2-O-0316 | 17:00-17:20 | S. Kogano

Annealing Temperature Dependence of Electrical and Structural Properties of Spin-Coated GZO Films

S. Kogano¹, J. Zhang¹, and K. Nakamura²

¹Department of Electrical and Electronic Engineering, Graduate School of Science and Engineering, Kansai University, Osaka, Japan

²Department of Electrical and Electronic Engineering, Faculty of Engineering Science, Kansai University, Osaka, Japan

F2-O-0672 | 17:20-17:40 | Yasuhisa Fujita

Near UV Light Emitting Diodes Using Nitrogen Doped ZnO Nanoparticles

Yasuhisa Fujita^{1,*}, Yuto Hiragino¹, Hirofumi Seiyama¹, Yuta Karino¹,

Hideki Hashimoto², and Toshiyuki Yoshida¹

¹Interdisciplinary Graduate School of Science and Engineering, Shimane University, Matsue, Japan

²Center for Promotion of Project Research, Shimane University, Matsue, Japan

Session F2-3

Conference Room: 504B

2014/6/12

Chair: K. Yasui

F2-KT-1070 | 14:00-14:30 | Masaya Ichimura

Photochemical Deposition of Oxide and Sulfide Semiconductor Thin Films and Their Application for Gas Sensors and Solar Cells

Masaya Ichimura

Department Engineering Physics, Electronics, and Mechanics, Nagoya Institute of Technology Gokiso, Showa, Nagoya, Japan

F2-IT-0461 | 14:30-14:55 | Wan-Hsien Lin

Surface Charge Transfer in Au-Nanoparticle Enhanced Nonpolar ZnO Photocatalyst

Wan-Hsien Lin^{1,2,*}, Jih-Jen Wu¹, Mitch M.C. Chou³, and Masahiro Yoshimura²

¹Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan

²Promotion Center for Global Materials Research (PCGMR), Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan

³Department of Materials Science and Opto-electronic Engineering, National Sun Yat-Sen University, Kaohsiung, Taiwan

F2-O-0655 | 14:55-15:15 | S. Kishimoto

Hydrogen-Gas Sensing Characteristics for Highly Transparent Conductive 50-nm-thick Heavily Ga-doped ZnO Films

S. Kishimoto^{1,2,*}, H. Song¹, J. Nomoto¹, H. Makino¹, and T. Yamamoto¹

¹Kochi National College of Technology, Kochi, Japan

²Research Institute, Kochi University of Technology, Kochi, Japan

F2-O-0638 | 15:15-15:35 | Chang-Yeoul Kim

Fast Responsive Gas Sensor of Vertically Aligned Fluorine-doped Tin Oxide Nanorod Thin Film

Chang-Yeoul Kim* and Hyun Sung Jung

Nano-Convergence Intelligence Material Team, Korea Institute of Ceramic Engineering and Technology, Seoul, Korea

F2-O-0370 | 15:35-15:55 | Hui-Yu Chiang

Effect of Sintering Atmosphere on Sensor Performance of CeO₂-Based Oxygen Sensor

Hui-Yu Chiang* and Chin-Yi Chen

*Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan***Session F2-4**

Conference Room: 504B

2014/6/12

Chair: T. Yamamoto

F2-IT-0004 | 16:10-16:35 | George Kiriakidis

Low Temperature Metal Oxide Thin Film Gas Sensing PlatformsG. Kiriakidis^{1,2}, I. Kortidis^{1,3}, K. Moschovis^{1,2}, and V. Binas¹¹*Transparent Conductive Materials Lab/Institute of Electronic Structure and Laser, Foundation for Research and Technology Hellas, Heraklion, Crete, Greece*²*Department of Physics, University of Crete, Heraklion, Crete, Greece*³*Department of Chemistry, University of Crete, Heraklion, Crete, Greece*

F2-IT-0003 | 16:35-17:00 | J.-J. Delaunay

Core-shell Nanowire Array on a Film for Hydrogen Generation by Photocatalytic Water Splitting with SunlightM. Zhong¹, Y. Sato¹, A. Apostoluk², B. Masenelli², Y. Ikuhara¹, and J.-J. Delaunay^{1,*}¹*School of Engineering, The University of Tokyo, Tokyo, Japan*²*Université de Lyon, INSA Lyon, INL, CNRS UMR-5270, Villeurbanne, France*

F2-O-0819 | 17:00-17:20 | Tzu-Ming Chien

Enhanced Photocatalytic Water Splitting by Plasmonic TiO₂-Fe₂O₃ Cocatalyst under Visible Light IrradiationWei-Hsuan Hung^{1,*}, Tzu-Ming Chien¹, and Chuan-Ming Tseng²¹*Feng Chia University, Taichung, Taiwan*²*Institute of Physics, Academia Sinica, Taipei, Taiwan*

F2-O-0297 | 17:20-17:40 | Tien-Tsai Wu

Bridging TiO₂ Nanoparticles Using Graphene for Use in Dye-Sensitized Solar Cells

Tien-Tsai Wu and Jyh-Ming Ting*

*Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan***Session F2-5**

Conference Room: 504B

2014/6/13

Chair: K. Yasui

F2-IT-0311 | 09:00-09:25 | Ching-Ting Lee

Investigation of SiO₂-doped ZnO Films in ZnO-based UV-C PhotodetectorsChing-Ting Lee^{1,2} and Tzu-Shun Lin¹¹*Institute of Nanotechnology and Microsystems Engineering, National Cheng Kung University, Tainan, Taiwan*²*Institute of Microelectronics, Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan*

F2-O-0413 | 09:25-09:45 | Siang-Yun Li

Combinatorial Sputtering Exploration of Zn-Sn-O Composition Spreads for The Application of Transparent Conducting OxideS.-Y. Li¹, J.-M. Ting¹, and K.-S. Chang^{1,2,*}¹*Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan*²*Promotion Center for Global Materials Research (PCGMR), National Cheng Kung University, Tainan, Taiwan*

F2-O-0669 | 09:45-10:05 | Wen-Chang Huang

The Electrical and Optical Characteristics of the AZO/Mo/AZO Transparent Conductive Film by SputteringT.C. Lin¹, W.T. Chiu², W.C. Huang^{2,*}, and F.C. Tsai²¹*Department of Electrical Engineering, Kun Shan University, Tainan, Taiwan*²*Department of Electro-Optical Engineering, Kun Shan University, Tainan, Taiwan*

F2-O-1008 | 10:05-10:25 | Ryosuke Goto

Spin-coating Fabrication of In-doped ZnO Films by Molecular Precursor Method

R. Goto, T. Yasuno, H. Nagai, H. Hara, M. Sato, T. Yamaguchi, and T. Honda*

Department of Information and Communications Engineering, Kogakuin University, Tokyo, Japan

F1-IT-0656 | 10:25-10:50 | Byungwoo Park

Nonoscale Interface Control for Photoluminescence and Solar-Cell Applications

Byung Park*, Hongsik Choi, Jae Ik Kim, Seunghoon Nam, Woojin Lee, Sungun Wi, Chohui Kim, and Joonhyeon Kang

Department of Materials Science and Engineering, Seoul, National University, Seoul, Korea

Symposium F3: Oxide Devices: Thermoelectric Conversion, Resistive Sensors, Spintronics, and Superconductors

Session F3-1

Conference Room: 403

2014/6/11

Chairs: K. Fujiwara
N.V. Nong

F3-IT-0015 | 14:00-14:25 | H.-U. Habermeier

Photon-induced Thermoelectric Voltages in Complex Oxide Superlattices

H.-U. Habermeier and S. Heinze

Max-Planck-Institut für Festkörperforschung, Stuttgart, Germany

F3-IT-0049 | 14:25-14:50 | Paolo Mele

Thermoelectric Properties of ZnO Thin Films Deposited on Amorphous Substrates

P. Mele^{1,*}, S. Saini¹, H. Honda¹, K. Matsumoto², K. Miyazaki³, H. Hagino³, and A. Ichinose⁴
¹Institute for Sustainable Sciences and Development (ISSD), Hiroshima University, Higashi Hiroshima, Japan

²Department of Materials Science, Kyushu Institute of Technology, Kitakyushu, Japan

³Department of Mechanical Engineering, Kyushu Institute of Technology, Kitakyushu, Japan

⁴Central Research Institute of Electric Power Industry (CRIEPI), Electric Power Engineering Laboratory, Yokosuka, Japan

F3-O-0365 | 15:10-15:30 | Jih-Jen Wu

Fabrication of ZnO Nanostructured Anodes on Plastic Substrates for Flexible Dye-Sensitized Solar Cells

Shou-Yen Lin, Geng-Jia Chang, and Jih-Jen Wu*

Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan

Session F3-2

Conference Room: 403

2014/6/11

Chair: H. Habermeier

F3-IT-0514 | 16:10-16:35 | Jay A. Switzer

Resistance Switching in Electrodeposited Metal Oxide Thin Films

Jay A. Switzer*, Jakub A. Koza, and Sanaz Prasant

Department of Chemistry and Materials Research Center, Missouri University of Science and Technology,

Rolla, Missouri, USA

F3-O-0075 | 16:35-16:55 | K. Miyazaki

Correlation between Thermal Hysteresis Width and Temperature Coefficient of Resistance in Doped VO₂ Films for Bolometer Applications

K. Miyazaki^{1,*}, K. Shibuya², M. Suzuki¹, H. Wado¹, and A. Sawa²
¹Electronics Research and Development Division, Research Laboratories, DENSO Corporation, Aichi, Japan

²National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

F3-O-0884 | 16:55-17:15 | Heng-Jui Liu

Control of Structure-Coupled Functionalities in Self-Assembled Nanostructures

H.J. Liu^{1,*}, Y.H. Hsieh¹, C.Y. Tsia², and Y.H. Chu¹
¹Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan

²Institute of Electro-Optical Engineering, National Chiao Tung University, Hsinchu, Taiwan

F3-O-0833 | 17:15-17:35 | K.-W. Lin

The Effects of Oxygen Ion-beam Bombardment on the Co Surface in Modifying Magnetic Properties of Co Thin Films

K.-W. Lin¹, H.-T. Liang¹, D.L. Cortie², and J. van Lierop³
¹Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan

²Quantum Matter Institute, Department of Physics and Astronomy, University of British Columbia, Vancouver, Canada

³Department of Physics and Astronomy, University of Manitoba, Winnipeg, Canada

Session F3-3

Conference Room: 403

2014/6/12

Chairs: P. Mele and J.A. Switzer

F3-IT-0937 | 14:00-14:25 | Sunseng Pyon

Emergence of Superconductivity in the

KT-Keynote, IT-Invited

Vicinity of Structural Phase Transition in IrTe₂

S. Pyon^{1,2,*}, K. Kudo¹, and M. Nohara¹

¹Department of Physics, Okayama University, Okayama, Japan

²Department of Applied Physics, The University of Tokyo, Tokyo, Japan

F3-O-0110 | 14:25-14:45 | Y.C. Lee

The Characteristic of FeTe_{1-x}S_x Superconductor Thin Films and Nanowires

Y.C. Lee^{1,2,*}, C.C. Chang^{1,*}, H.H. Chang³, C.M. Tseng¹, C.H. Chien^{1,4}, W.H. Tsai¹, Y.R. Wu¹, M.H. Wen¹, Y.Y. Chian³, Y.Y. Chen¹, M.J. Wang^{1,3}, and M.K. Wu^{1,2,5}

¹Institute of Physics, Academia Sinica, Taipei, Taiwan

²Department of Physics, National Tsing-Hua University, Hsinchu, Taiwan

³Institute of Astronomy and Astrophysics, Academia Sinica, Taipei, Taiwan

⁴Department of Engineering and System Science, National Tsing-Hua University, Hsinchu, Taiwan

⁵Department of Physics, National Dong-Hua University, Hualien, Taiwan

F3-O-0938 | 14:45-15:05 | Sunseng Pyon

Enhancement of Critical Current Densities in 122-type Iron-based Superconductor in Powder-in-tube Wires by High Pressure Sintering

S. Pyon^{1,*}, H. Inoue¹, Y. Tsuchiya¹, N. Koizumi², H. Kajitani², and T. Tamegai¹

¹Department of Applied Physics, The University of Tokyo, Tokyo, Japan

²Fusion Research and Development Directorate, Japan Atomic Energy Agency (JAEA), Ibaraki, Japan

F3-O-0347 | 15:05-15:25 | Toshihiro Matsuura

Plasma Synthesis of Photochromic ZnSiO Nanoparticles

Toshihiro Matsuura¹, Hiroshi Kajiyama^{1,*}, Hiroshi Tanaka^{1,2}, Atsushi Otomo², Shuhei Inoue², Keiji Takata³, and Kiichiro Uchino⁴

¹Faculty of Science and Engineering, Tokushima Bunri University, Sanuki, Japan

²Department of Mechanical Science Engineering, Hiroshima University, Higashi-hiroshima, Japan

³Faculty of Engineering Science, Kansai University, Suita, Japan

⁴Graduate School of Engineering Sciences, Kyushu University, Kasuga, Japan

Session F3-4

Conference Room: 403

2014/6/13

Chairs: H. Nishikawa and H. Kajiyama

F3-IT-0987 | 16:10-16:35 | Ngo Van Nong

Thermoelectric Oxides for Effective Power Generation from High-temperature Waste Heat

N.V. Nong*, L.T. Hung, L. Han, and N. Pryds

Department of Energy Conversion and Storage, Technical University of Denmark, Roskilde, Denmark

F3-O-0069 | 16:35-16:55 | Yu-Ciang Zeng

Low Turn-on Field Emission of ZnO:Ga Nanowires Grown with Pseudo-Catalyst

M.W. Tsai, Y.C. Zeng, and S.H. Yang*

Department of Electronic Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan

F3-O-0151 | 16:55-17:15 | Ryuji Okumura

Orientration Dependence of Growth Direction of ZnO Nanorods Grown on Sapphire Substrate

R. Okumura*, W. Yano, N. Hiroshiba, and Y. Ichikawa

Graduate School of Engineering, Nagoya Institute of Technology, Nagoya, Japan

F3-O-0286 | 17:15-17:35 | Wataru Yano

Welding of ZnO Nanorods on Nafion Sheet by Pulsed Laser Melting

W. Yano*, R. Okumura, Y. Kondo, N. Hiroshiba, and Y. Ichikawa

¹Graduate School of Engineering, Nagoya Institute of Technology, Nagoya, Japan

F

Symposium F4: Oxide Nanocomposites, Nanowire, Nanoparticle and Bulks

Session F4-1

Conference Room: 402A

2014/6/13

Chairs: T. Endo
and A. Wisniewski

F4-KT-1071 | 09:00-09:30 | Chaoyang Li

ZnO Nanostructures: Growth, Properties and Optoelectronic Application

C. Li, X. Li and E.K.C. Pradeep

Institute for Nanotechnology, Kochi University of Technology, Kochi, Japan

F4-IT-0584 | 09:30-09:55 | Alexandra Apostoluk

Spectroscopic Studies of Intentionally Introduced Defects and p dopants in ZnO Nanoparticles and Nanowires for Photovoltaic Applications

A. Apostoluk^{1,*}, Y. Zhu¹, B. Masenelli¹, S. Daniele², and J.J. Delaunay³¹ *Université de Lyon, INSA Lyon, Institut des Nanotechnologies de Lyon, INL CNRS UMR-5270, Villeurbanne, France*² *Université de Lyon, Institut de Recherches sur la Catalyse et l'Environnement de Lyon, IRCELYON CNRS UMR-5256, Villeurbanne, France*³ *School of Engineering, The University of Tokyo, Tokyo, Japan*

F4-O-0140 | 09:55-10:15 | Yuan-Yu Lin

Interface Engineering of Atomic-Layer-Deposited ZnO Thin-Film Transistors for Enhanced Device Characteristics and Stability

Y.Y. Lin and F.Y. Tsai*

Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

F4-O-0762 | 10:15-10:35 | Chao-Ching Chang

Preparation of 1-D Indium-tin Oxide (ITO) Nanostrips and Transparent Conductive Composite Coatings

C.C. Chang^{1,2,*} and C.W. Chang¹¹ *Department of Chemical and Materials Engineering, Tamkang University, New Taipei City, Taiwan*² *Energy and Opto-Electronic Materials Research Center, Tamkang University, New Taipei City, Taiwan*

Session F4-2

Conference Room: 402A

2014/6/13

Chairs: C. Li
and A. Apostoluk

F4-IT-0146 | 11:00-11:25 | Takeshi Toshima

Controlling Growth Form of Brushite Crystal in Aqueous Solution

T. Toshima^{1,*}, R. Hamai², M. Tafu¹, Y. Takemura¹, S. Fujita¹, T. Chohji¹, T. Yokoi³, S. Tanda⁴, S. Li⁵, and G.W. Qin⁵¹ *Toyama National College of Technology, Toyama, Japan*² *Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, Fukuoka, Japan*³ *Laboratory for Environmentally-benign Material Science & Engineering (LEMSE), Graduate School of Environmental Studies, Tohoku University, Sendai, Japan*⁴ *Department of Applied Physics, Hokkaido University, Hokkaido, Japan*⁵ *Key Laboratory for Anisotropy and Texture of Materials (MOE), Northeastern University, Shenyang, China*

F4-IT-0376 | 11:25-11:50 | T. Nakajima

Ultraviolet Laser-induced Oxygen Deficiency of TiO₂: Anomalous Electrical Resistivity and Enhancement of Photoelectrocatalytic Property

Tomohiko Nakajima*, Takako Nakamura, Kentaro Shinoda, and Tetsuo Tsuchiya

Flexible Chemical Coating Research Group, Advanced Manufacturing Research Institute, National Institute of Advanced Industrial Science and Technology, Ibaraki, Japan

F4-O-0713 | 11:50-12:10 | W.-C. Lu

Exploration of High Photocatalytic Activity of Cr/N Doped TiO₂ Nanorods Using Hydrothermal

W.-C. Lu¹, H.-D. Nguyen¹, and K.-S. Chang^{1,2,*}¹ *Department of Materials Science & Engineering, National Cheng Kung University (NCKU), Tainan, Taiwan*² *Promotion Center for Global Materials Research (PCGMR), National Cheng Kung University (NCKU), Tainan, Taiwan*

F4-O-0598 | 12:10-12:30 | Hoo-Che Feng

HfO₂ Nanorods Fabricated Using Sputtering and Their Applications in Photocatalysis

H.-C. Feng and K.-S. Chang*

Department of Materials Science and Engineering,
National Cheng Kung University, Tainan, Taiwan

Session F4-3

Conference Room: 402A

2014/6/13

Chair: T. Nakajima

F4-IT-0322 | 13:30-13:55 | Alejandro G. Roca

Size Dependent Magnetism in FeO/Fe₃O₄ Core/Shell Nanoparticles

A.G. Roca¹, M. Estrader², A. López-Ortega³,
G. Salazar-Alvarez⁴, S. Estradé^{5,6}, E. Winkler⁷,
I.V. Golosovsky⁸, M. Vasilakaki⁹, K.N. Trohidou⁹, J.
D. Ardisson¹⁰, F. Peiró⁶, S. Suriñach¹¹, R.D. Zysler⁷,
M.D. Baró¹¹, and J. Nogués^{1,12}

¹ ICN2 – Institut Català de Nanociència i
Nanotecnologia, Bellaterra, Spain

² Department de Química Inorgànica, Univ. de
Barcelona, Barcelona, Spain

³ INSTM and Dipt. di Chimica 'U. Schiff', Univ. degli Studi
di Firenze, Firenze, Italy

⁴ Department of Materials and Environmental Chemistry,
Stockholm Univ., Stockholm, Sweden

⁵ TEM-MAT, SCT, Univ. de Barcelona, Barcelona, Spain

⁶ LENS-MIND-IN2UB, Department d'Electrònica, Univ.
de Barcelona, Barcelona, Spain

⁷ Centro Atómico Bariloche, S.C. de Bariloche, Argentina

⁸ St. Petersburg Nuclear Physics Institute, Gatchina, St.
Petersburg, Russia

⁹ IAMPPMN, Department of Materials Science, NCSR
'Demokritos', Attiki, Greece

¹⁰ Centro de Desenvolvimento da Tecnologia Nuclear,
Belo Horizonte, Brazil

¹¹ Department de Física, Univ. Autònoma de Barcelona,
Bellaterra, Spain

¹² ICREA, Barcelona, Spain

F4-IT-1002 | 13:55-14:20 | German Salazar-Alvarez

Anomalous Magnetic Properties of Iron Oxide Nanoparticles and Their Self-Assembly

G. Salazar-Alvarez*

Department of Materials and Environmental Chemistry,
Stockholm University, Stockholm, Sweden

F4-O-0613 | 14:20-14:40 | Ming-Kai Lo

Exploration of The Piezo-photocatalytic Effect of Nano-structured ZnSnO₃

Ming-Kai Lo and Kao-Shuo Chang*

Department of Materials Science and Engineering,
National Cheng Kung University, Tainan, Taiwan

F4-O-0579 | 14:40-15:00 | Wen-dung Hsu

The Atomistic Modeling of Ferroelectric Lead-Titanate Using Bond-Valence /Potts Model

Amir Reza Ansari Dezfoli^{1,*} and Wen-dung Hsu¹

¹ Department of Materials Science and Engineering,
National Chen Kong University, Tainan, Taiwan

Session F4-4

Conference Room: 402A

2014/6/13

Chairs: G. Salazar-Alvarez and
T. Toshima

F4-IT-0901 | 15:30-15:55 | A. Wisniewski

Size Effect on the Magnetic Properties of (La,Ca)MnO₃ and (Sm,Ca)MnO₃ Nanoparticles

A. Wisniewski^{1,*}, V. Markovich², I. Fita^{1,3}, and
R. Puzniak¹

¹ Institute of Physics, Polish Academy of Sciences,
Warsaw, Poland

² Department of Physics, Ben-Gurion University of the
Negev, Beer-Sheva, Israel

³ Donetsk Institute for Physics and Technology, National
Academy of Sciences, Donetsk, Ukraine

F4-O-0325 | 15:55-16:15 | Gowtham Sriram Jawahararam

Synthesis of Barium Titanate through an Ethylene Glycol Complex Polymerisation from Barium Nitrate and Their Characterizations

J. Gowtham Sriram^{1,*}, N. Nivas¹,
S. Sakthi Prasad², S. Balasivanandha Prabu¹,
and S. Manisha Vidyavathy²

¹ Department of Mechanical Engineering, Anna University,
Chennai, India

² Department of Ceramic Technology, National Anna
University, Chennai, India

F4-O-0694 | 16:15-16:35 | Y.H. Chen

Study on Mixed Ionic-Electronic (MIE) Conductivity of M_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O₃ (M=La, Bi, Pr) Cathode Materials for SOFCs

Y.H. Chen and W.C.J. Wei

Department of Materials Science and Engineering,
National Taiwan University, Taipei, Taiwan

Session F4-5

Conference Room: 402A

2014/6/14

Chairs: T. Endo
and A.G. Roca

F4-IT-0305 | 09:25-09:50 | M.C. Bhatnagar

Synthesis and Structural Properties of W-doped SnO₂ Nanostructures

Anima Johari¹, M.C. Bhatnagar^{2,*}, and Manish Sharma³
¹Center for Applied Research in Electronics (CARE), Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India

²Physics Department, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India

F4-O-0485 | 09:50-10:10 | Delphine Lebrun

Versatile Multi-layered Metal-oxide Inverse Opal Fabrication for Photocatalytic Applications

Delphine Lebrun^{1,*}, Lars Österlund¹, Gunnar Niklasson¹, and Vassilios Kapaklis²
¹Department of Engineering Sciences, Uppsala University, Uppsala, Sweden

²Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden

F4-O-0511 | 10:10-10:30 | Lu-Chih Wang

Synthesis and Characterization of Cu Particles and Cu Oxides Nanoparticles by Thermolysis Method for Conductive Paste

Lu-Chih Wang^{1,*}, Ying-Jung Chiang², Chun-An Lu¹, and Hong-Ching Lin¹
¹Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan

²Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, Taiwan

Session F4-6

Conference Room: 402A

2014/6/14

Chairs: D. Cozzoli and M.C. Bhatnagar

F4-O-0509 | 11:00-11:20 | Razmik Malkhasyan

Research on the Phase Transition of

Nanosized Amorphous Tungsten and Its Oxide to Crystalline State

R.T. Malkhosyan¹ and L.V. Kamaeva²
¹NPP "Nanoamorph Technology" CJSC, Yerevan, Armenia

²Physico-Technical Institute of the Ural Branch of Russian Academy of Sciences, Izhevsk, Russia

F4-O-0331 | 11:20-11:40 | Ming-Show Wong

Low-temperature Reactive Sputtering of Pure and Cr-incorporated Alumina Hard Thin Films

Jhe-Wei Chang, Yu-Ling Chang, Sheng-Mau Yang, and Ming-Show Wong

Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan

F4-O-0561 | 11:40-12:00 | Hong-Huei Huang

Facile Synthesis of High Coverage Density of Au Nanoparticles on 3-aminopropyltrimethoxysilane Thin Film at Room Temperature

Hong-Huei Huang¹, Fu-Ken Liu², and Ching-Chieh Leu^{1,*}
¹Department of Chemical and Materials Engineering, National University of Kaohsiung, Kaohsiung, Taiwan

²Department of Applied Chemistry, National University of Kaohsiung, Kaohsiung, Taiwan

F4-O-0712 | 12:00-12:20 | Chi-Hang Tsai

Relationship between Surface Physics and the Ability to Form Metallic Nanowires for Thin-film Oxides

Chi-Hang Tsai^{1,*}, Shih-Yun Chen², Yu-Lin Shen¹, and Jenn-Ming Song³
¹Graduate Institute of Applied Science and Technology, National Taiwan University of Science and Technology, Taipei, Taiwan

²Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan

³Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan

Poster Sessions

Group A: Materials for a Sustainable Society

Paper no.	Paper Title	Authors/Affiliation
Symposium A1: Advanced Fuel Cells Date: 2014/6/11, Time: 13:00~17:00 PM, Room: 401		
A1-P-0036	Performance and Durability Evaluation of Anode-Supported Solid Oxide Fuel Cell after 10,000 Hours Operation	T.N. Lin ^{1,*} , S.W. Cheng ² , W.X. Kao ¹ , H.Y. Kuo ¹ , L.C. Wen ¹ , J.Y. Kao ¹ , C.Y. Yeh ¹ , and R.Y. Lee ² ¹ Chemical Engineering Division, Institute of Nuclear Energy Research, Taoyuan, Taiwan ² Physics Division, Institute of Nuclear Energy Research, Taoyuan, Taiwan
A1-P-0080	Synthesized and Properties of New Solid Oxide La ₆ WO ₁₂ Electrolyte	I.M. Hung ¹ and T.C. Liu ^{1,*} ¹ Department of Chemical Engineering and Materials Science, Yuan Ze University, Taoyuan, Taiwan
A1-P-0084	Preparation and Application of Nafion® /NMe ₄ TP and Nafion® /HTP Composite Membranes for Proton Exchange Membrane Fuel Cells	M.Y. Shiue* Department of Chemical Engineering & Institute of Biochemical Engineering, Ming Chi University of Technology, Taipei, Taiwan
A1-P-0152	Materials Characterization of Thermochemically Stable Apatite La ₁₀ (SiO ₄) ₆ O ₃ Solid Oxide Electrolytes	Huei-Ting Huang, Yu-Lin Kuo*, and Yun-Yuan Liang Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan
A1-P-0216	Gas Diffusion Layer of PEMFC by Fabricating Micro-Porous Layer with Doctor Blade Technique and Investigate Performance of PEMFC	T.Y. Wang ¹ , T.H. Ko ¹ , W.H. Chen ¹ , C.W. Shen ¹ , C.H. Chen ¹ , Y.S. Huang ¹ , H.K. Li ¹ , Ching-Han Liu ² , and S.H. Wu ¹ ¹ Department of Materials Science and Engineering, Feng Chia University, Taiwan ² Bio-medical Carbon Technology, Co., Ltd., Taichung, Taiwan
A1-P-0217	The Effect of Gas Diffusion Layer in the PEMFC by Spraying Method in Different Conditions	H.K. Li ¹ , T.H. Ko ¹ , Y.S. Huang ¹ , T.Y. Wang ¹ , C.H. Chen ¹ , W.H. Chen ¹ , C.H. Liou ² , and C.W. Shen ¹ ¹ Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan ² Bio-medical Carbon Technology Co., Ltd., Taichung, Taiwan
A1-P-0218	The Effect of Different Spraying Pressure and Flow in the Manufacturing Process of Gas Diffusion Layer on the Performance of PEMFC	Y.S. Huang ^{1,*} , T.H. Ko ¹ , T.Y. Wang ¹ , W.H. Chen ¹ , C.H. Chen ¹ , C.W. Shen ¹ , H.K. Li ¹ , and C.H. Liou ² ¹ Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan ² Bio-medical Carbon Technology Co., Ltd., Taichung, Taiwan
A1-P-0285	Fabrication of Pr ₂ CuO ₄ Cathode Material for Intermediate Temperature Solid Oxide Fuel Cell	C.H. Chen*, W.R. Wang, and T.W. Chiu Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan
A1-P-0361	Investigation of Transport Properties of Yttria Doped Barium Cerate Electrolyte Using Embedded Reference Electrodes	H.-T. Lim*, M.G. Jung, J.S. Jin, and C.H. Kim School of Materials Science and Engineering, Changwon National University, Changwon, Korea

Paper no.	Paper Title	Authors/Affiliation
A1-P-0399	Fabrication of GDC Protective Layer by Electrostatic Slurry Spray Deposition for Solid Oxide Fuel Cells	J. Choi ¹ , H. Lee ¹ , S. Lee ¹ , and D. Shin ^{1,2,*} ¹ <i>Department of Fuel Cells and Hydrogen Technology, Hanyang University, Seoul, Korea</i> ² <i>Division of Materials Science & Engineering, Hanyang University, Seoul, Korea</i>
A1-P-0417	Effects of Al ³⁺ , Mo ⁶⁺ , Nb ⁵⁺ and Fe ³⁺ Dopants on the Germanate-Based Apatites as Electrolyte for Use in Solid Oxide Fuel Cells	C.L. Li*, P.H. Li, S.F. Wang, and Y.F. Hsu <i>Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan</i>
A1-P-0420	SiO ₂ -Al ₂ O ₃ -Y ₂ O ₃ -ZnO-La ₂ O ₃ -NiO Glass Sealants for Intermediate Temperature Solid Oxide Fuel Cell Applications	Y.C. Hsieh*, S.F. Wang, and Y.F. Hsu <i>Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan</i>
A1-P-0426	Effect of Indium Content on the Conductivity and Chemical Stability of the Ba _{0.8} Sr _{0.2} Ce _{0.8-x-y} Zr _y In _x Y _{0.2} O _{3-δ} (X = 0.05, 0.1 Y = 0.1, 0.2) Proton Conductive Oxides	Yu-Jing Ren ¹ , Kai-Ti Hsu ¹ , Yao-Chih Liu ² , Che-Wei Wu ¹ , Shi-Wei Chen ² , Shun-Fu Chang ² , Jia-Bin Li ² , Pei-Hua Tsai ¹ , Jason Shian-Ching Jang ^{1,2,*} , and Jing-Chie Lin ^{1,2} ¹ <i>Institute of Materials Science and Engineering, National Central University, Taoyuan, Taiwan</i> ² <i>Department of Mechanical Engineering, National Central University, Taoyuan, Taiwan</i>
A1-P-0427	Effect of Indium Content on the Conductivity and Chemical Stability of the SrCe _{0.65} Zr _{0.15} Y _{0.2-x} In _x O _{3-δ} (0.0 ≤ x ≤ 0.1) Proton Conductive Oxides	Han-Wen Chen ¹ , Kai-Ti Hsu ¹ , Chih-Yu Chen ² , Da-Xin Lin ² , Jia-Bin Li ² , Pei-Hua Tsai ¹ , Jason Shian-Ching Jang ^{1,2,*} , Chi-Shiung Hsi ³ , and I-Ming Hung ⁴ ¹ <i>Institute of Materials Science and Engineering, National Central University, Taoyuan, Taiwan</i> ² <i>Department of Mechanical Engineering, National Central University, Taoyuan, Taiwan</i> ³ <i>Department of Materials Science and Engineering, National United University, Miaoli, Taiwan</i> ⁴ <i>Department of Chemical Engineering and Materials Science, Yuan-Ze University, Taoyuan, Taiwan</i>
A1-P-0466	The NiO Reduction Process for Decreasing the Defects at Interfaces of co-fired SOFC	Jenn-Shing Wang ^{1,*} , Rui-Dong Li ¹ , Yu-Ching Wang ² , and Chung-Ta Ni ² ¹ <i>Department of Mechanic Engineering, Far East University, Tainan, Taiwan</i> ² <i>Institute of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
A1-P-0546	Oxygen Reduction Activity of Pt-based Alloy Model Catalysts Prepared by Molecular Beam Epitaxy	N. Todoroki*, Y. Asakimori, Y. Takahashi, T. Kondo, S. Takahashi, and T. Wadayama <i>Graduate School of Environmental Studies, Tohoku University, Sendai 980-8579, Japan</i>
A1-P-0551	The Effect of Grain Size on the Microstructures and Conductivities of Aliovalent Cations co-doped Ceria-base Electrolytes	Jhih-Yuan Cheng*, Yu-Lin Cheng, and Yu-Chuan Wu <i>Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, Taiwan</i>
A1-P-0612	Effect of Sm _{0.5} Sr _{0.5} CoO ₃ -BaCe _{0.5} Zr _{0.35} Y _{0.15} Surface-coated Composite Cathode for Proton-conducting Fuel Cells	Sewook Lee ¹ , Jinyi Choi ² , Hunhyeong Lee ¹ , and Dongwook Shin ^{1,2,*} ¹ <i>Division of Materials Science and Engineering, Hanyang University, Seoul, Korea</i> ² <i>Department of Fuel Cells and Hydrogen Technology, Hanyang University, Seoul, Korea</i>

Paper no.	Paper Title	Authors/Affiliation
A1-P-0649	Fabrication of Titanium Nitride Interconnected Porous Structure by Atomic Layer Deposition as Catalyst Support for PEMFC	E-Min Chi ^{1,*} , Yo-Shane Yu ² , and Tsong-Pyng Perng ¹ ¹ Department of Materials Science and Engineering, National Tsing Hua University, Taiwan ² Instrument Technology Research Center, National Applied Research Laboratories, Hsinchu, Taiwan
A1-P-0746	Sulfide as Cathode Catalyst for Alkaline Anion Exchange Membrane Fuel Cell Application	Yu-Chuan Lin and Chen-Hao Wang* Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan
A1-P-0842	Effects of Heat Treatment on Catalysis of Pt/Vivianite in Fuel Cells	Chia-Hsien Huang, Yu-Wen Chen, and Shiow-Kang Yen* Department of Materials Science and Engineering, National Chung Hsing University, Taiwan
A1-P-0877	Fabrication and Performance of an Anode Supported P-SOFC Single Cell via Tape-casting and Laminated co-sintering Methods	Kai-Ti Hsu ¹ , Yu-Jing Ren ¹ , Jason Shian-Ching Jang ^{1,2} , Kan-Rong Lee ² , Hao-Ni Hsu ³ , Jing-Chie Lin ¹ , Sheng-Wei Lee ¹ , Jeng-Kuei Chang ¹ , and Chi-Shiung Hsi ⁴ ¹ Institute of Materials Science and Engineering, National Central University, Taoyuan, Taiwan ² Department of Mechanical Engineering, National Central University, Taoyuan, Taiwan ³ Institute of Energy Engineering, National Central University, Taoyuan, Taiwan ⁴ Department of Materials Science and Engineering, National United University, Miaoli, Taiwan
A1-P-0878	Deposition of Bimetallic Nanoparticles onto Graphene Sheets as Electrochemical Catalysts	Chien-Te Hsieh*, Yan-Shuo Chang, Po-Yuan Yu, and Ken-Ming Yin Department of Chemical Engineering and Materials Science, Yuan Ze University, Taoyuan, Taiwan
A1-P-0943	Synthesis of Novel Cathode Materials Ba _{0.5} Sr _{0.5} Fe _{1-x} Cu _x O _{3-δ} (x = 0, 0.1, 0.2 and 0.3) for P-SOFC by Co-precipitation Method	Y.A. Chen ^{1,*} and J.C. Lin ^{2,*} ¹ Institute of Materials Science and Engineering, National Central University, Zhongli, Taiwan ² Institute of Materials Science and Engineering/ Department of Mechanical Engineering, National Central University, Zhongli, Taiwan
A1-P-0946	Novel Cathode of La _{0.7} Sr _{0.3-x} Ag _x MnO ₃ (x = 0, 0.1, 0.2, 0.3) Prepared by Co-precipitation for Solid Oxide Fuel Cells	C.C. Yeh ¹ , I.C. Kao ² , W.H. Weng ² , S.D. Chyou ² , and J.C. Lin ^{1,2,*} ¹ Department of Energy Engineering, National Central University, Zhongli, Taiwan ² Institute of Materials Science and Engineering, National Central University, Zhongli, Taiwan
A1-P-0949	Fabrication of Macroporous LSM/YSB Composite Material Derived from Ordered Microspheres as Template for IT-SOFCs Applications	Y.J. Chang*, Y.F. Chang, and K.Z. Fung Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
A1-P-0950	High Ionic Conductivity and Phase Stability of Double Doped Bismuth Oxide ((Bi _{1-x-y} Sr _x Nb _y) ₂ O _{3-x+2y}) for IT-SOFCs Applications	Y.J. Chang* and K.Z. Fung Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan

Paper no.	Paper Title	Authors/Affiliation
A1-P-0966	Pulse Electro-Deposition Method for Nitrogen-doped Carbon-Nanotube Electrode in PBI-based High-temperature Fuel Cell	Sun-Tang Chang ^{1,2,3} , Chen-Shuan Yang ³ , He-Yun Du ¹ , Chen-Hao Wang ^{3,*} , Li-Chyong Chen ^{2,*} , and Kuei-Hsien Chen ^{1,*} ¹ <i>Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan</i> ² <i>Center for Condensed Matter Science, National Taiwan University, Taipei, Taiwan</i> ³ <i>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i>
A1-P-0989	High Performance of Nanocrystalline Yttria Stabilize Bismuth Oxide (Bi ₂ O ₃) _{0.75} (Y ₂ O ₃) _{0.25} and Silver Composite Cathode for IT-SOFCs	Yu-Fan Chang* and Kuan-Zong Fung <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
Symposium A2: Advanced Materials for Lithium/Sodium Batteries Date: 2014/6/11, Time: 13:00~17:00 PM, Room: 401		
A2-P-0042	Growth of Carbon Nanotube Incorporated Nano-flaky TiO ₂ for Lithium Ion Battery	W.C. Lo*, H.J. Chu, and J.L. He <i>Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan</i>
A2-P-0103	Silicon /Carbon Nanotube/ Graphene Composites for Lithium-ion Batteries Anode with Improved Cycling Stability	C.Y. Chen*, W.C. Hung, C.L. Chang, Y.J. Huang, and N.T. Wen <i>Chemical System Research Division, Chung Shan Institute of Science and Technology, Longtan, Taoyuan, Taiwan</i>
A2-P-0312	Electrochemical Performances of Sn Modified Si Thin Film Anodes for All-solid-state Lithium Ion Batteries	W.C. Huang*, P.C. Huang, K.F. Chiu, and C.H. Chang <i>Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan</i>
A2-P-0329	Single-Crystalline SnS Nanoflakes as Anode Material for Li-ion Batteries	C.Y. Chen ^{1,*} , T. Yokoshima ¹ , H. Nara ¹ , T. Momm ^{1,2} , and T. Osaka ^{1,2} ¹ <i>Research Institute for Science and Engineering, Faculty of Science and Engineering, Waseda University, Tokyo, Japan</i> ² <i>Department of Applied Chemistry, Faculty of Science and Engineering, Waseda University, Tokyo, Japan</i>
A2-P-0354	Enhanced Performance of Graphene-based Anode Materials by Microwave Plasma Treatments	W. R. Liu*, K. L. Yeh, and T. C. Wei* <i>Department of Chemical Engineering, Chung Yung Christain University, Chung Li, Taiwan</i>
A2-P-0389	Dehydrogenation Behavior of NaAlH ₄ -MgH ₂ Composites	K.L. Pan ¹ , B.X. Wu ¹ , C.Y. Tan ¹ , and W.T. Tsai ^{1,2*} ¹ <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> ² <i>Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
A2-P-0394	Performance Improvement of Li-ion Batteries by Adding Crumpled Graphene	C.H. Wu ^{1,*} , Y.Y. Peng ¹ , G.N. Shi ¹ , N.W. Pu ² , Y.M. Liu ³ , and M.D. Ger ³ ¹ <i>School of Defense Science, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan</i> ² <i>Department of Photonics Engineering, Yuan Ze University, Chung-Li, Taiwan</i> ³ <i>Department of Chemical & Materials Engineering, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan</i>
A2-P-0456	Separators based on Novel Triblock Polyelectrolyte for Lithium Battery: Improving Performance and Safety	K.L. Liu* and C.Y. Chao <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i>
A2-P-0517	Ternary Metal Oxides as High Performance Anode Materials for Li Ion Batteries	Saad Gomaa Mohamed ^{1,2} , Tai-Feng Hung ³ , Chih-Jung Chen ¹ , Chih Kai Chen ¹ , Shu-Fen Hu ^{4,*} , and Ru-Shi Liu ^{1,*} ¹ <i>Department of Chemistry, National Taiwan University, Taipei, Taiwan</i> ² <i>Nanoscience and Technology Program, Taiwan International Graduate Program, Institute of Physics, Academia Sinica, Taipei, Taiwan</i> ³ <i>Nano Energy Materials Department, Industrial Technology Research Institute, Hsinchu, Taiwan</i> ⁴ <i>Department of Physics, National Taiwan Normal University, Taipei, Taiwan</i>
A2-P-0610	Crystal Phase Studies on Li ₂ O-TiO ₂ -Al ₂ O ₃ -P ₂ O ₅ Glass as Solid Electrolyte of Li Battery	MI-Jai Lee*, Bit-Nam Kim, Jin-Ho Kim, Jong-Hee Hwang, and Tae-Young Lim <i>Optic & Display Materials Team, Korea Institute of Ceramic Engineering & Technology, Seoul, Korea</i>
A2-P-0690	Tunable Architectures of Niobium-doped Anatase TiO ₂ for Lithium-ion Batteries	Hao Yang and Jenq-Gong Duh* <i>Department of Material Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
A2-P-0711	Effect of Different Binders in Spinel LiNi _{0.5} Mn _{1.5} O ₄ Electrodes and Their Electrochemical Performance for Li-ion Batteries	W.Y. Chou*, and J.G. Duh <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
A2-P-0854	Electrolytic Deposition and Characterization of LiCo _x Mn _{2-x} O ₄ for Cathodes in Thin Film Lithium-Ion Batteries	Ting-Rong Chang, Wen-Yu Shieh, and Shiow-Kang Yen* <i>Department of Materials Science and Engineering, National Chung Hsing University, Taiwan</i>
A2-P-0903	Reduced Graphene Oxide as an Anode Material for Sodium-ion Batteries	Xu-Feng Luo, Yi-Chen Wang, Cheng-Hsien Yang, and Jeng-Kuei Chang* <i>Institute of Materials Science and Engineering, National Central University, Taoyuan, Taiwan</i>
A2-P-0930	Acid-treated Non-graphitic PPy-based Carbon Nanotubes Anode Materials for Lithium-ion Batteries	Y.H. Huang* and J.G. Duh <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
A2-P-0940	Preparation and Characterization of Thin Film Li ₄ Ti ₅ O ₁₂ Electrodes by Radio Frequency magnetron Sputter	Mei-Han Chen, Min-Hsiung Hon, and Kuan-ZongFung* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
A2-P-0945	Preparation of TiO ₂ (B) Nanosheets by a Hydrothermal Process and Their Lithium Storage Characteristics	Hsin-Yi Wu ¹ , Min-Hsiung Hon ^{1,2} , Chi-Yun Kuan ¹ , and Ing-Chi Leu ^{3,*} ¹ Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan ² Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan ³ Department of Materials Science, National University of Tainan, Tainan, Taiwan
A2-P-0986	Fabrication of 0.5Li ₂ MnO ₃ ·0.5Li Mn _{1/3} Ni _{1/3} Co _{1/3} O ₂ Cathode Materials for Li-ion Batteries Application	Wei-Zhi Lin ^{1,*} , Chung-Ta Ni ¹ , and Kuan-Zong Fung ² ¹ Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan ² Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan
A2-P-1015	LiFe _{0.5} Mn _{0.5} PO ₄ /C Composite Cathode Materials Prepared by a Solid-state Method for Lithium Ion Batteries	Chun-Chen Yang ^{1,2,*} and Yen-Wei Hung ¹ ¹ Department of Chemical Engineering, Ming Chi University of Technology, New Taipei City, Taiwan ² Battery Research Center of Green Energy, Ming Chi University of Technology, New Taipei City, Taiwan
A2-P-1016	Synthesis, Characterization, and Electrochemical Performance of Cathode Material Li _{1.2} Ni _{0.12} Mn _{0.68} O ₂ /C in Lithium-ion Batteries	Chun-Chen Yang ^{#,*} and Pin-Ci Liao Department of Chemical Engineering, Ming Chi University of Technology, New Taipei City, Taiwan [#] Battery Research Center of Green Energy, Ming Chi University of Technology, New Taipei City, Taiwan

Paper no.	Paper Title	Authors/Affiliation
Symposium A4: Materials for Supercapacitors Date: 2014/6/11, Time: 13:00~17:00 PM, Room: 401		
A4-P-0059	Effect of MgO Addition on Dielectric Properties of (Bi _{1.5} Zn _{0.5})(Ti _{1.5} Nb _{0.5})O ₇ Ceramics	Jian-Ming Chen ¹ , Xiao-Xu Wang ^{1,2} , and Ying-Chieh Lee ^{1,*} ¹ Department of Materials Engineering, National PingTung University of Technology & Science, Ping-Tung, Taiwan ² Institute of Applied Physics, Beijing University of Science and Technology, Beijing, China
A4-P-0073	Microwave Plasma Enhanced Chemical Vapor Deposition of Nanostructured Carbon Materials Applied as Electrodes for Ultracapacitors	Hsiang-Feng Yen ^{1,3} , Ying-Ying Horng ² , Ming-Shien Hu ³ , Yian Tai ¹ , Li-Chyong Chen ² , and Kuei-Hsien Chen ^{3,*} ¹ Department of Chemical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan ² Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan ³ Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan
A4-P-0237	Constructing Supercapacitors in the Asymmetric Design	Chi-Chang Hu [*] , Chun-Tsung Hsu, Jia-Cing Chen, and Kuo-Hsin Chang Department of Chemical Engineering, National Tsing Hua University, Hsin-Chu, Taiwan

Paper no.	Paper Title	Authors/Affiliation
A4-P-0243	Thermal Stability and Electrochemical Performance Enhancement of CTAB Modified RuO ₂ Nanocrystalline	I-Li Chen ^{1,*} , Yu-Chen Wei ² , Tsan-Yao Chen ³ , Chi-Chang Hu ¹ , and Tsang-Lang Lin ¹ Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan ² Institute of Materials Science and Engineering, National Central University, Taoyuan, Taiwan ³ Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan
A4-P-0293	Nano-flake Nickel-cobalt Hydroxide Electrodeposited on 3D Structure Current Collector as Advanced Electrodes for Supercapacitors	Jian-Lin Liu, Han-Peng Tsai, and Chao-Hong Wang* Department of Chemical Engineering, National Chung Cheng University, Taiwan
A4-P-0341	Sodium Ion Effect on Manganese Oxide for the Supercapacitor Application	Tzu-Man Ou and Chi-Chang Hu* Department of Chemical Engineering, National Tsing Hua University, Hsin-Chu, Taiwan
A4-P-0391	Designing Porous Microstructures of Spinel NiCo ₂ O ₄ using CTAB-assisted Dispersion	Chun-Tsung Hsu and Chi-Chang Hu* Department of Chemical Engineering National Tsing Hua University Hsin-Chu, Taiwan
A4-P-0473	Electrochemical Activation of Active Carbon Electrode for Enhancing the Capacitance in Organic Electrical Double- layer Capacitors	Hsiao Hsuan Shen and Chi Chang Hu* Department of Chemical Engineering, National Tsing Hua University, Hsin-Chu, Taiwan
A4-P-0513	A 3-D Porous Graphene-carbon Nanotube Structure for the Application of High-performance Supercapacitors	Chi-Chang Hu*, Chen-Chi M. Ma*, Shin-Yi Yang, Kuo-Hsin Chang, Ying-Feng Lee, Shin-Ming Li, and Yu-Sheng Wang Department of Chemical Engineering, National Tsing Hua University, Hsin-Chu, Taiwan
A4-P-0575	Supercapacitors based on Three-dimensional Hollow Balls of Graphene-polyaniline Hybrid Electrodes	Nguyen Bao Trung, Tran Van Tam, Hye Ryeon Kim, and Won Mook Choi* School of Chemical Engineering, University of Ulsan, 93 Daehak-ro Nam-gu, Ulsan, Korea
A4-P-0603	A High-power, Long-life Supercabattery based on bi-material Electrodes	Ying-Hui Lee, Yu-Wei Lin, Jenn-Yeu Hwang, Li-Duan Tsai, and Jason Fang* Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan
A4-P-0626	Performance of Electric Double Layers Capacitor Using Activated Carbon Materials from Rice Husk as Electrodes	Taik. Nam. Kim ^{1,*} , Tuan. Dung. Nguyen ² , and Sachin. Bramhe ² ¹ Department of Information and Electronic Materials Engineering, PaiChai University, Daejeon, Korea ² Department of Material Science and Engineering, Graduate School of PaiChai University, Daejeon, Korea
A4-P-0735	Synthesis and Capacitance of Cobalt Sulfide/Graphene Oxide Nanocomposite	Wei Ying ^{1,2} , Wang Hailong ¹ , Wang Aming ¹ , and Zhang Shengyi ^{1,*} ¹ Department of Chemistry, Anhui University, Hefei, China ² Anhui Provincial Center for Disease Control and Prevention, Hefei, China
A4-P-0756	An Asymmetric Supercapacitor with a Negative N-containing AC Electrode and a Positive Li-Mn Oxy-hydroxide Electrode	Y.C. Tsai ¹ , G.T. Pan ² , J.B. Lin ¹ , and C.M. Huang ^{1,*} ¹ Department of Materials Engineering, Kun Shan University, Tainan, Taiwan ² Institute of Taiwan Textile Research, Taipei, Taiwan

Paper no.	Paper Title	Authors/Affiliation
A4-P-0793	Facile Synthesis of Flower-like and Nanorod MnO ₂ by Microwave-assisted Hydrothermal and Their Application in Supercapacitors	P.R. So ¹ and J.M. Ting ^{1,2,*} ¹ <i>Department of Materials Science and Engineering, National Cheng Kung University</i> ² <i>Institute of Nanotechnology and Microsystems Engineering</i> ³ <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
A4-P-0798	Ultra-high Rate Supercapacitors based on the Activated D-glucose Derived Carbon Electrodes	A. Jänes*, T. Thomberg, T. Tooming, and E. Lust <i>Faculty of Science and Technology, Institute of Chemistry, University of Tartu</i>
A4-P-0817	The Study and Fabrication of Solid-State Supercapacitor by Anodization and Electro-deposition Processes	C.C. Chen ^{1,*} , C.J. Wang ¹ , and C.M. Chu ¹ ¹ <i>Department of Energy Engineering, National United University</i> [*] <i>Department of Energy Engineering, National United University</i>
A4-P-0881	Enhancement the Performance of Supercapacitor Using Nitrogen Doped Graphene by Microwave-assisted Hydrothermal Method	Fitri Nur Indah Sari and Jyh-Ming Ting* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>

A

Paper no.	Paper Title	Authors/Affiliation
Symposium A5: New Materials for Solar Fuels Date: 2014/6/11, Time: 13:00~17:00 PM, Room: 401		
A5-P-0839	Synthesis and Optical Properties of Sn _{1-x} Ge _x S Nanocrystals	Syuan-Tai Syu*, Ming-Hung Chiang, and Wen-Tai Lin <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
A5-P-0959	The Effects of Titanium and Molybdenum Substitution on the Electric and Photoelectric Properties of Potassium Niobate	Y.H. Lin*, Y.L. Liang, X.D. Qi, S.Z. Lu, and W.H. Liu <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
A5-P-0990	Photoelectrochemical Characterization of Sn, Al co-doped Zinc Oxide Thin Films Prepared on ITO Glass via Chemical Process	Mao-Chia Huang ¹ , Min-I Lee ^{1,2} , Yao-Tien Tseng ¹ , David Legrand ^{1,2} , Gilles Lerondel ² , and Jing-Chie Lin ^{1,*} ¹ <i>Institute of Materials Science and Engineering, National Central University, Taoyuan, Taiwan</i> ² <i>Laboratoire de Nanotechnologie et d'Instrumentation Optique, Institut Charles Delaunay, CNRS - UMR STMR 6279, Université de Technologie de Troyes, Troyes, France</i>

Paper no.	Paper Title	Authors/Affiliation
Symposium A6: Advanced Thermoelectric Materials for Sustainable Energy Date: 2014/6/11, Time: 13:00~17:00 PM, Room: 401		
A6-P-0085	Fabrication and Characterization of Bulk Bi ₂ Te ₃ Thermoelectric Alloys	

Paper no.	Paper Title	Authors/Affiliation
A6-P-0162	The Properties of High Performance Nano PbTe based Thermoelectric Materials	C.C. Hsu ¹ , H.B. Wang ¹ , H.S. Chu ¹ , J.D. Hwang ¹ , T.H. Lee ¹ , C.M. Chen ¹ , H.Y. Chung ² , T.K. Huang ³ , J.Y. Huang ³ , and H.L. Hsieh ³ ¹ Industrial Technology Research Institute, Taiwan ² Feng chia University, Taiwan ³ China Steel Corporation, Taiwan
A6-P-0182	Thermoelectric Properties of Silver-doped Bi ₂ Te ₃ Thin Films	J.M. Lin*, Y.C. Chen, and C.P. Lin Department of Electrical Engineering, National Sun Yat-sen University, Kaohsiung, Taiwan
A6-P-0254	Effect of Heat Treatment on Thermoelectric Properties of Sr-doped Lanthanum Copper Oxides	Ming-Yi Chen, Chii-Shyang Hwang*, and Wen-Dung Hsu Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
A6-P-0403	Introduction of Manufacturing-directed Process for the Fabrication of Mg ₂ Si Thermoelectric Power Generation Chip	A. Shimodate ¹ , N. Ishida ¹ , T. Iida ¹ , Y. Oto ¹ , S. Soeda ¹ , S. Hirata ¹ , M. Ishikawa ¹ , T. Sakamoto ¹ , K. Nishio ¹ , Y. Kogo ¹ , Y. Taguchi ² , N. Hirayama ¹ , and Y. Takanashi ¹ ¹ Department of Materials Science and Technology, Tokyo University of Science, Tokyo, Japan ² Yasunaga Corporation, Mie, Japan
A6-P-0422	Thermoelectric and Mechanical Properties of Bulk b-Zn ₄ Sb ₃ Material Fabricated by Melt-spinning and Vacuum Hot Pressing	Jun-Hsien Yen ¹ , Pei-Hua Tsai ² , Jinn-Hung Ke ² , Meng-Hsuan Sui ¹ , Kai-Ti Hsu ² , Jia-Bin Li ¹ , Jason Shian-Ching Jang ^{1,2,*} , and Jenn-Dong Hwang ³ ¹ Department of Mechanical Engineering, National Central University, Taoyuan, Taiwan ² Institute of Materials Science and Engineering, National Central University, Taoyuan, Taiwan ³ Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan
A6-P-0449	Thermoelectric Properties of ZnO and In ₂ O ₃ (ZnO) n Nanowires	Yen-Chih Chen, Wei-Hung Chen, Jr-Ting Lin, Yi-Chang Li, and Chuan-Pu Liu* Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
A6-P-0478	Bonding Module of PbTe Thermoelectric Material and Cu Electrode Using SnAgTi Solder	C.H. Cheng ¹ , Y.S. Ke ¹ , C.P. Cheng ^{1,*} , M.J. Dai ² , C.K. Liu ² , and L.L. Liao ² ¹ Department of Mechatronic Technology, National Taiwan Normal University, Taipei, Taiwan ² Electronics and Optoelectronics Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan
A6-P-0506	Preparation and Characterization of Bi ₂ Te ₃ Thermoelectric Material Bonding Interface	Cheng-Chuan Wang* and Chia-Ying Yen Material and Chemical Research Laboratories, Industrial Technology Research Institute
A6-P-0539	Thermoelectric Properties of Bismuth Telluride Films with Controlled Structure and Morphology	Jun Jie Huang, Phuoc Huu Le, and Jihperng Leu* Department of Materials Science and Engineering, National Chiao-Tung University, Hsinchu, Taiwan
A6-P-0791	Thermal Absorber Coating for the Prototype of Thermoelectric Generator	Bing-Hung Chang, Rei-Cheng Juang*, Tien-Yuan Li, and Yu-Li Lin Green Energy & Environment Research Laboratories, Industrial Technology Research Institute (ITRI), Hsinchu, Taiwan

Paper no.	Paper Title	Authors/Affiliation
A6-P-0882	Evaluation of Diffusion Barrier Properties of Molybdenum Coatings on the Thermoelectric Substrate Deposited using Thermal Spraying Process	W. T. Hsiao* and W. H. Liu <i>Materials and Chemical Laboratory, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
A6-P-0919	Thermoelectric Properties of Copper Sulfide	L.M. Lyu ^{1,2,*} , L.C. Chen ¹ , and K.H. Chen ² ¹ <i>Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan</i> ² <i>Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan</i>
A6-P-0957	Influence of Co Substitution on the Structural and Electrical Properties of Thermoelectric FeSe	Pei-Lee Hu ¹ , Xiaoding Qi ^{1,2,3} , C.-L. Hsiao ¹ , C.C. Chen ¹ , and I K'ai Huang ¹ ¹ <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan City, Taiwan</i> ² <i>Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan City, Taiwan</i> ³ <i>Center for Micro/Nano Science and Technology, National Cheng Kung University, Tainan City, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
Symposium A7: Solar Cells and Devices Date: 2014/6/11, Time: 13:00~17:00 PM, Room: 401		
A7-P-0113	Investigation of Binary Sulfides Dye-sensitized Solar Cells by Successive Ionic Layer Adsorption and Reaction Method	W.S. Jhuang and S.H. Chen* <i>Department of Materials Science and Engineering National Dong Hwa University, Hualien, Taiwan</i>
A7-P-0129	Distribution and Performance of Gallium Gradient in CIGS Thin Films	K.J. Liao ¹ , H.H. Sung ¹ , D.C. Tsai ¹ , S.C. Liang ² , and F.S. Shieu ^{1,*} ¹ <i>Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan</i> ² <i>Chung shan institute of science and Technology. Armaments Bureau. M.N.D.</i>
A7-P-0144	Analysis of TiO ₂ Layer with Different Graphene Contents for Dye-sensitized Solar Cell by Electrochemical Impedance Spectroscopy	C.H. Huang ¹ , J.C. Chou ^{1,2,*} , Y.H. Liao ³ , S.W. Chuang ¹ , and S.C. Lin ² ¹ <i>Graduate School of Microelectronic and Optoelectronic Engineering, National Yunlin University of Science and Technology, Douliou, Taiwan</i> ² <i>Department of Electronic Engineering, National Yunlin University of Science and Technology, Douliou, Taiwan</i> ³ <i>Department of Information Management, TransWorld University, Douliou, Taiwan</i>
A7-P-0157	Preparation of Ag/TiO ₂ Core-shell Nanocomposites to Enhance Conversion Efficiency	Kuo-Tong Lee*, Yen-Rong Peng, and Guan-Zhi Huang <i>Department of Chemical Engineering, Ming Chi University of Technology, New Taipei, Taiwan</i>
A7-P-0178	Study on Molybdenum Substrate with Working Pressure for Electrodeposited CuInSe ₂ Solar Cell	Tsung-Wei Chang*, Wen-Hsi Lee, and Yin-Hsien Su <i>Department of Electrical Engineering, National Cheng Kung University, Tainan City, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
A7-P-0181	Effects of Sputtering Power on Mo Back Contact Layers for CIGS Solar Cells Deposited by DC Magnetron Sputtering	Chun-Chen Yang ^{1,*} , Hung-Hua Sheu ¹ , Shih-Chang Liang ² , and De-Ru Jung ² ¹ <i>Department of Chemical and Materials Engineering, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan</i> ² <i>Metallurgy Section, Materials & Electro-Optics Research Division, Chung-Shan Institute of Science & Technology, Taoyuan, Taiwan</i>
A7-P-0188	Equivalent Circuit Analysis of Titanium Oxide Arrayed Dye-sensitized Solar Cells by Cyclic Voltammetry	M.C. Chiang ¹ , J.C. Chou ^{1,2,*} , Y.H. Liao ³ , S.W. Chuang ¹ , C.J. Yang ¹ , P.A. Ho ² , and S.C. Lin ² ¹ <i>Graduate School of Electronic and Optoelectronic Engineering, National Yunlin University of Science and Technology, Douliou, Taiwan</i> ² <i>Department of Electronic Engineering, National Yunlin University of Science and Technology, Douliou, Taiwan</i> ³ <i>Department of Information Management, TransWorld University, Douliou, Taiwan</i>
A7-P-0242	Enhanced Energy Conversion of Non-Vacuum Process Flexible CIGS Solar Cell by Plasmonics Effect	Yi-Ju Chen ¹ , Shih-Chen Chen ² , Yu-Ting Yen ¹ , Hao-Chung Kuo ² , and Yu-Lun Chueh [*] ¹ <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i> ² <i>Department of Photonics and Institute of Electro-Optical Engineering, National Chiao-Tung University, Hsinchu, Taiwan</i>
A7-P-0264	Efficiency Improvement of Silicon Nanostructure-based Solar Cells Using Hydrogen Plasma Treatment	Ying-Kan Yang and Bohr-Ran Huang [*] <i>Graduate Institute of Electro-Optical Engineering and Department of Electronic Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i>
A7-P-0295	Characteristic of CuInSe ₂ Thin Films Prepared via Hydrothermally-assisted Selenization Process	Jeng-Shin Ma, Jen-Cheng Sung, and Chung-Hsin Lu [*] <i>Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan</i>
A7-P-0298	Characteristics of the MoNa Back Contact Layers Prepared by DC Magnetron Sputtering System	D.R. Jung ¹ , S.C. Liang ¹ , C.Y. Ni ¹ , C.N. Wei ¹ , H.Y. Bor ¹ , and V.S. Chengn ² ¹ <i>Metallurgy Section, Materials & Electro-Optics Research Division, Chung-Shan Institute of Science and Technology, Lung Tan, Taiwan</i> ² <i>Department of Optometry, Central Taiwan University of Science and Technology, Taichung, Taiwan</i>
A7-P-0303	Influence of Reactive-sputtered TiN Barrier Layers on the Performance of the Flexible CIGS Solar Cells with a 430 Stainless Substrate	Wei Chieh Huang, Shih Chang Liang, Cuo Yo Ni, Chao Nan Wei, Hui Yun Bor, and Vun Shing Chengn [*] <i>Metallurgy Section, Materials & Electro-Optics Research Division, Chung-Shan Institute of Science and Technology, Lung Tan, Taiwan</i>
A7-P-0309	Research of High Performance Photovoltaic Module Design	J.L. Hwang ^{1,*} , W.J. Chen ² , and S.Y. Wen ¹ ¹ <i>Green Energy and Environment Research Laboratories, Industrial Technology Research Institute, Chutung, Hsinchu, Taiwan</i> ² <i>Department of Chemical Engineering, Ming Chi University of Technology, New Taipei City, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
A7-P-0310	Impacts of Zn-treatments on the CIGS Surface Prepared by an Electroplating Process	W.C. Li ^{1,*} , S.C. Liang ¹ , C.Y. Ni ¹ , C.N. Wei ¹ , H.Y. Bor ¹ , and V.S. Cheng ² ¹ <i>Metallurgy Section, Materials & Electro-Optics Research Division, Chung-Shan Institute of Science and Technology, Lung Tan, Taiwan</i> ² <i>Department of Optometry, Central Taiwan University of Science and Technology, Taichung, Taiwan</i>
A7-P-0380	Preparation of Cu-Zn-Sn-S (CZTS) Sputtering Target for the Applications to Thin-film Solar Cells	Yu-Pin Lin ¹ , Yi-Fang Chi ¹ , Tsung-Eong Hsieh ^{1,*} , Yen-Chih Chen ² , and Kun-Ping Huang ³ ¹ <i>Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan</i> ² <i>Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i> ³ <i>Mechanical and Systems Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
A7-P-0447	Formation of CuIn(S,Se) ₂ Nanotips on Flexible Substrate by Ion Erosion	Y.T. Yen, Y.C. Wang, C.W. Chen, H.W. Tsai, Y.Z. Chen, F. Hu, and Y.L. Chueh* <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
A7-P-0448	Textured Mo Rear Electrodes for CuIn(S,Se) ₂ Solar Cells Applications	Yi-Chung Wang, Yu-Ting Yen, Chia-Wei Chen, Fan Hu, and Yu-Lun Chueh* <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
A7-P-0462	Effect of Annealing to Gold Nanoparticles Thin-films with Various Self-assembly Time Applied on Work Electrode of Dye-Sensitized Solar Cells	Hsueh-Tao Chou ^{1,*} , Jheng-Lin Wu ¹ , Tien-Ming Wu ² , Ho-Chun Hsu ² , and Shinn-Hwa Chen ² ¹ <i>Department of Electronic Engineering, National Yunlin University of Science and Technology, Douliou City, Yunlin, Taiwan</i> ² <i>Graduate School of Engineering Science and Technology, National Yunlin University of Science and Technology, Douliou City, Yunlin, Taiwan</i>
A7-P-0464	A Nanoporous TiO ₂ Photo-electrode Film Fabricated by Using Self-made Spray Coating System Applying in Dye Sensitized Solar Cell	Hsueh-Tao Chou ^{1,*} , Min-Hsiung Huang ¹ , Ho-Chun Hsu ² , and Chiu-Hui Lien ¹ ¹ <i>Department of Electronic Engineering, National Yulin University of Science and Technology, Doliou, Taiwan</i> ² <i>Graduate School of Engineering Science and Technology, National Yulin University of Science and Technology, Douliou, Taiwan</i>
A7-P-0475	Non-toxic Sol-gel Spin Coating Approach for Low Cost, Earth-abundant Photovoltaic Absorber: Cu ₂ ZnSn(S _x Se _(1-x)) ₄ , for Solar-cell Applications	Venkatesh Tunuguntla ^{1,2,3} , Wei-Chao Chen ^{1,2,4} , Pei Hsuan Shih ^{1,5} , Kuei-Hsien Chen ¹ , and Li-Chyong Chen ² ¹ <i>Institute of Atomic and Molecular Science, Academia Sinica, Taipei, Taiwan</i> ² <i>Center for Condensed Matter Science, National Taiwan University, Taipei, Taiwan</i> ³ <i>Department of Chemistry, National Tsing Hua University, Hsinchu, Taiwan</i> ⁴ <i>Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan</i> ⁵ <i>Institute of Optoelectronic Sciences, Nation Taiwan Ocean University, Keelung, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
A7-P-0508	One-step Pulse Electrodeposition of Cu ₂ ZnSnS ₄ Thin Film for Solar Cell Application	H.W. Tsai, J.W. Chen, C.H. Hsu, and Y.L. Chueh* <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsin-Chu, Taiwan</i>
A7-P-0521	Study of Dye Sensitized Solar Cell Application of Doped Transition Elements TiO ₂ Films by Atmospheric Pressure Plasma Deposition Method	W.J. Liu*, P.S. Hsieh, and C.J. Liou <i>Department of Materials Science and Engineering, I-Shou University, Kaohsiung, Taiwan</i>
A7-P-0522	Study of Dye Sensitized Solar Cell Application of TiO ₂ Films by Atmospheric Pressure Plasma Jet Deposition System	W.J. Liu*, S.H. Lin, and C.J. Liou <i>Department of Materials Science and Engineering, I-Shou University, Kaohsiung, Taiwan</i>
A7-P-0530	A Performance Evaluation Study on DSSC Using ZnO Nano Wire Electrode Prepared by Buffer Layer APCVD	Yuneng Chang, Cheng-Fong Lee, Yu-Cheng Huang, and Kevin Jeian <i>Department of Chemical and Material Engineering, Lungwha University of Science and Technology, Taoyuan, Taiwan</i>
A7-P-0548	Plasmonic Nanoparticles-decorated p-type Si Wire as Photocathode for Water Splitting	Chih-Jung Chen ¹ , Ming-Guei Chen ² , Chih Kai Chen ¹ , Shu-Fen Hu ^{2,*} , and Ru-Shi Liu ^{1,*} ¹ <i>Department of Chemistry, National Taiwan University, Taipei, Taiwan</i> ² <i>Department of Physics, National Taiwan Normal University, Taipei, Taiwan</i>
A7-P-0640	Nanostructure Developments of TiO ₂ Nanocrystals and Aerogels and Their Dye-Sensitized Solar Cell Application	Chang-Yeoul Kim* <i>Nano-IT Convergence Center, Korea Institute of Ceramic Engineering & Technology</i>
A7-P-0718	Effects of Deposition Pressure of i-layer on the Performance of p-i-n a-Si:H Solar Cells	Ido Bevoir, Bohan Ho, and Yeu-Long Jiang* <i>Graduate institute of Optoelectronic Engineering and Department of Electrical Engineering, National Chung Hsing University, Taichung, Taiwan</i>
A7-P-0775	Cost Effective Spraying AlO _x /TiO _x Bilayer for High Efficiency Crystalline Silicon Solar Cells	S.M. Yu ¹ , W.C. Sun ¹ , W.Y. Chou ¹ , S.Y. Wei ¹ , T.J. Wang ¹ , H.H. Wu ² , K.B. Chen ² , W.K.W. Huang ² , N.T. Ou ² , S.F. Chen ² , and C.H. Wu ² ¹ <i>Material & Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i> ² <i>Gintech Energy Corporation, Taiwan</i>
A7-P-0777	The Synthesis of Poly (ethylene oxide)-b-Poly (acrylic acid) by RAFT and Its Application for Porous TiO ₂ Electrodes in DSSCs	Y.L. Chu*, K.Y. Huang, H.W. Lee, Y.M. Chen, and C.H. Lin <i>Department of Performance Materials Synthesis & Application, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
A7-P-0794	Cu ₂ ZnSnS ₄ Thin Films Preparation Using Pulsed Electrodeposition and Sulfurization	Li-Jun Wang and Jyh-Ming Ting* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
A7-P-0797	Solid-State Solar Cell-Based on CH ₃ NH ₃ PbI ₃ Perovskite Sensitizer and Mesoporous Anatase TiO ₂ Beads	Fanessa Firdausi and Jyh-Ming Ting* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
A7-P-0823	The Growth of NaSe ₂ Doped Cu(InGa)Se ₂ Thin Films by Using Non-vacuum Processes	Yung-Yu Huang ^{1,*} , Yen-Cheng Liang ¹ , Shih-Yun Liao ² , Yi-Hua Zeng ¹ , Po-Yi Chen ¹ , and Li-Chung Yang ¹ ¹ Graduate Institute of Materials Science and Green Energy Engineering, National Formosa University, Yunlin, Taiwan ² Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan
A7-P-0824	Preparation of Ternary Chalcopyrite CuZnSe ₂ Thin Films by Non-vacuum Processes	Yi-De Li*, Yung-Yu Huang, Ming-Chian Chung, Po-Yi Chen, and Li-Chung Yang Graduate Institute of Materials Science and Green Energy Engineering, National Formosa University, Yunlin, Taiwan
A7-P-0825	Synthesis of I ₂ -IV-VI ₃ Compound Cu ₂ SnSe ₃ Thin Films by Printing Processes	Yan-Cheng Liang*, Yi-De Li, Jie-Zhi Lai, Po-Yi Chen, and Li-Chung Yang Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan
A7-P-0852	Study of Segregative Behavior for Gallium in Cu(In _{1-x} Ga _x)Se ₂ based Thin Film Solar Cells	Cherng-Yuh Su ^{1,2,*} , Kuang-Hsiang Liao ¹ , and Yu-Ting Ting ² ¹ Department of Mechanical Engineering, National Taipei University of Technology, Taipei, Taiwan ² Institute of Manufacturing Technology, National Taipei University of Technology, Taipei, Taiwan
A7-P-0887	Characteristic of Mixed-phase TiO ₂ Nanoparticles on Dye-sensitized Solar Cells	Ching-Yuan Ho and Chi-Hang Huang Department of Mechanical Engineering, Chung Yuan Christian University, Chung-Li, Taiwan
A7-P-0904	A Novel Single Side Etching Process for Silicon Solar Cells	S.M. Yu ¹ , W.C. Sun ¹ , W.Y. Chou ¹ , S.Y. Wei ¹ , F.W. Jih ² , L.T. Huang ² , and L.S. Huang ² ¹ Material & Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan ² Infina Technology Co., Ltd., Taoyuan, Taiwan
A7-P-0920	Improving Photovoltaic Performance of ZnO Dye-Sensitized Solar Cells by Incorporation of Graphene Into the Photoelectrodes	W.M. Hsu ¹ , T.C. Tseng ¹ , W.C. Chang ^{1,2} , M.D. Ger ³ , and W.C. Yu ^{1,*} ¹ Institute of Organic and Polymeric Materials, National Taipei University of Technology, Taipei, Taiwan ² Institute of Nuclear Energy Research, Taoyuan, Taiwan ³ Department of Chemical and Materials Engineering, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan
A7-P-0951	Characterization of Cu ₂ ZnSnSe ₄ Thin Films Grown by Pulsed Laser Deposition	Hung-Chi Wei*, Xiaoding Qi, Chia-Chuan Chen, and Bing-Hua Li Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
A7-P-0961	Quantum Dots Synthesized by Phosphine-free Method	Kai-Cheng Wang, Ching-Che Hung, and Hsueh-Shih Chen* Department of Material Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan

Paper no.	Paper Title	Authors/Affiliation
A7-P-0972	Effect of Titanium Oxide Compact Layer of Dye-Sensitized Solar Cell Prepared by Liquid Phase Deposition	J.J. Huang ^{1,*} , M.J. Wu ² , Chao-Nan Chen ³ , C.F. Hsu ² , S.J. Chen ⁴ and W.J. Jin ⁴ ¹ Department of Materials Science and Engineering, MingDao University, Chunghua, Taiwan ² Department of Mechatronics Engineering, National Changhua University of Education, Chunghua, Taiwan ³ Department of Computer Science and Information Engineering, Asia University, Taichung, Taiwan ⁴ College of Materials Science and Engineering, Fujian University of Technology, Fujian, China
A7-P-0997	Comparison of Chemical Bath Deposited ZnS-Based Buffer Layer Using Ammonia and Ammonia-Ethylenediamine as Complexing Agent	Wenlong Liu ¹ , Qiyi Zhang ² , and Mengqiang Wu ^{1,*} ¹ School of Energy Science and Engineering, University of Electronic Science and Technology of China, Chengdu, PR China ² School of Chemical Engineering, Sichuan University, Chengdu, PR China
A7-P-1077	The Importance of the Choice of Precursors to Achieve High Performance Electronic Devices	Jongbok Kim* Department of Materials Science and Engineering, Kumoh National Institute of Technology, Gumi, Korea

Paper no.	Paper Title	Authors/Affiliation
Symposium A8: Metallic Catalysts for Energy and Environment Date: 2014/6/11, Time: 13:00~17:00 PM, Room: 401		
A8-P-0251	Catalytic effect of transition metal decorated MWCNTs on dehydrogenation behavior of LiAlH ₄	C.Y. Tan ¹ , and W.T. Tsai ^{1,2,*} ¹ Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan ² Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan
A8-P-0364	Low Temperature Methane Reforming by Radio Frequency Plasma	P.C. Liu ^{1,*} , T.C. Chen ¹ , H.J. Leu ² , K.F. Chiu ¹ , and Z.C. Wu ¹ ¹ Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan ² Green Energy Development Center, Feng Chia University, Taichung, Taiwan
A8-P-0430	Effect of Pt on the Photocatalytic Degradation of azo Dye in Pt-TiO ₂ /Graphene Nanocomposites	S.H. Hsieh ¹ , C.T. Wu ² , and W.J. Chen ^{2,*} ¹ Department of Materials Science and Engineering, National Formosa University, Huwei, Yunlin, Taiwan ² Graduate School of Materials Science, National Yunlin University of Science and Technology, Douliou, Yunlin, Taiwan
A8-P-0431	The Effect of N ₂ H ₄ on the Phase of ZnSe and the Photocatalytic Degradation of azo Dye	S.H. Hsieh ¹ , T.H. Yeh ² , and W.J. Chen ^{2,*} ¹ Department of Materials Science and Engineering, National Formosa University, Huwei, Yunlin, Taiwan ² Graduate School of Materials Science, National Yunlin University of Science and Technology, Douliou, Yunlin, Taiwan

Paper no.	Paper Title	Authors/Affiliation
A8-P-0526	Synthesis of Elongated Hexagonal MoS ₂ Nano plates by Chemical Vapor Deposition	Sachin Shinde, Golap Kalita*, Subash Sharma, and Masaki Tanemura <i>Department of Frontier materials, Nagoya Institute of Technology, Gokiso-Cho, Nagoya, Japan</i>
A8-P-0556	Preparation of Porous Metals from Mg-alloys and Their Catalytic Activities	K. Miyamoto ^{1,*} , S. Kameoka ² , and A.P. Tsai ² ¹ <i>Department of Materials Processing, Graduate School of Engineering, Tohoku Univ. Sendai, Japan</i> ² <i>Institute of Multidisciplinary Research for Advanced Materials, Sendai, Japan</i>
A8-P-0600	Direct Fabrication of Ta ₃ N ₅ Nanorod Photocatalysts Using A Reactive Sputtering	Y.-J. Peng and K.-S. Chang* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
A8-P-0659	Synthesis of Pt/Graphene Nanocomposites and Its Application to Direct Methanol Fuel Cells	S.H. Hsieh ¹ , S.H. Tsai ² , and W.J. Chen ^{2,*} ¹ <i>Department of Materials Science and Engineering, National Formosa University, Huwei, Yunlin, Taiwan</i> ² <i>Graduate School of Materials Science, National Yunlin University of Science and Technology, Douliou, Yunlin, Taiwan</i>
A8-P-0695	Evaluation of Dry Sorbent Technology for CO ₂ Capture from Moderate-high Temperature	Yu-Ling Lu, Po-Hsueh Chang, and San-Yuan Chen* <i>Department of Materials Science and Engineering, National Chiao Tung Taiwan University, Hsinchu, Taiwan</i>
A8-P-0696	Hydrogen Absorption and Catalytic Properties of the Raney-type Alloys Pd-TM (TM=Ni, Co)	K. Kimbara ^{1,*} , S. Kameoka ² , C. Nishimura ³ , K. Onodera ¹ , and A.P. Tsai ² ¹ <i>Dept. of Materials Processing, Graduate School of Engineering, Tohoku University, Japan</i> ² <i>Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan</i> ³ <i>National Institute for Materials Science, Japan</i>
A8-P-0698	Catalytic Properties of Al-Au-Fe and Al-Pt-Fe Eutectic Alloys and Their Microstructures	K. Ohshima ^{1,*} , S. Wakabayashi ¹ , S. Ohashi ² , S. Kameoka ² , and A.P. Tsai ² ¹ <i>Department of Materials Processing, Graduate School of Engineering, Tohoku University, Sendai, Japan</i> ² <i>Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan</i>
A8-P-0733	Moisture Sensing Behavior and Band Edge Properties of AgAlS ₂	Ching-Hwa Ho* and Chia-Chi Pan <i>Graduate Institute of Applied Science and Technology, National Taiwan University of Science and Technology, Taipei, Taiwan</i>
A8-P-0850	Synthesis of Silver Nanoparticle by Chemical Reduction Method for Antibacterial Application	J.J. Huang ^{1,*} , J.Y. Lin ² , H.K. Su ³ , M.W. Tsai ¹ , and Y.L. Hsueh ⁴ ¹ <i>Department of Materials Science and Engineering, MingDao University, Chungwa, Taiwan</i> ² <i>Department of Electronic Engineering, National Yunlin University of Science and Technology, Yunlin, Taiwan</i> ³ <i>Department of Computer Science and Information Engineering, Asia University, Taichung, Taiwan</i> ⁴ <i>Graduate School of Engineering Science and Technology, National Yunlin University of Science and Technology, Yunlin, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
A8-P-0858	Preparation and Characterization of Metal-Organic Frameworks for Carbon Dioxide Adsorption	C.H. Wang, C.L. Chiang, K.S. Lin*, and Y.C. Tseng <i>Department of Chemical Engineering and Materials Science/Environmental Technology Research Center, Yuan Ze University, Chung-Li, Taiwan</i>
A8-P-0860	Preparation and Characterization of Mesoporous Polymer-Based Solid Acid Catalysts for Biodiesel Production Enhancement	H.Y. Chan, C.L. Chiang, Y.C. Tseng, and K.S. Lin* <i>Department of Chemical Engineering and Materials Science/Environmental Technology Research Center, Yuan Ze University, Chung-Li, Taiwan</i>
A8-P-0861	Separation and Recycling of Ferrite Nanocatalysts from Flyash in Steel Industries	P.J. Hsu, Y.C. Tseng, C.L. Chiang, and K.S. Lin* <i>Department of Chemical Engineering and Materials Science/Environmental Technology Research Center, Yuan Ze University, Chung-Li, Taiwan</i>
A8-P-0896	A Novel MoS ₂ /Graphene Oxide Photocatalyst for Carbon Dioxide Reduction	Hsin-Cheng Hsu ^{1,2,*} , Chen-Hao Wang ¹ , Yu-Chung Chang ^{1,2} , Chong-Hui Lin ^{1,2} , Sun-Tang Chang ^{1,3} , Hsin-Chih Huang ^{1,2} , Indrajit Shown ² , Li-Chyong Chen ³ , and Kuei-Hsien Chen ^{2,3} ¹ <i>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i> ² <i>Institute of Atomic and Molecular Science, Academia Sinica, Taipei, Taiwan</i> ³ <i>Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan</i>
A8-P-0918	Metal Sulfide Mixing with Graphene Oxide as Photocatalyst for CO ₂ Reduction	Y.C. Chang ^{1,3} , H.C. Hsu ^{1,3} , L.M. Lyu ³ , C.H. Wang ¹ , L.C. Chen ² , and K.H. Chen ^{3,*} ¹ <i>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i> ² <i>Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan</i> ³ <i>Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan</i>
A8-P-0983	Enhancement in Crystallization and Surface Area of La _{0.8} Sr _{0.2} CoO ₃ Perovskite Oxide for Catalyst Application	Shao-Chi Chang ^{1,*} , Shu-Yi Tsai ¹ , and Kuan-Zong Fung ² ¹ <i>Dept. of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> ² <i>Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan</i>

Group B: Materials and Devices

Paper no.	Paper Title	Authors/Affiliation
Symposium B1: Si-Related Materials and Devices Date: 2014/6/12, Time: 13:00~17:00 PM, Room: 401		
B1-P-0023	Crystalline Characteristics of PECVD a-Si and nc-Si Films Treated by KrF Laser Annealing	T.H. Tsai ¹ , J.H. Liang ¹ , B.R. Wu ¹ , R.H. Horng ² , and D.S. Wu ^{1,3,*} ¹ <i>Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan</i> ² <i>Graduate Institute of Precision Engineering, National Chung Hsing University, Taichung, Taiwan</i> ³ <i>Department of Materials Science and Engineering, Da-Yeh University, Changhua, Taiwan</i>
B1-P-0088	Influence of the Work Function of Metal Gate Electrodes on UV-Light-Induced Conduction Current through Silicon Nitride Films	A. Suzuki and K. Kobayashi* <i>Course of Electrical and Electronic System, Graduate School of Engineering, Tokai University, Hiratsuka, Japan</i>
B1-P-0139	Design the Shape of Nanosilicide by the Control of Dislocation Arrays and Its Surface Stress Effects	Cheng-Lun Hsin ¹ , Chi-Hsuan Cheng ¹ , Chun-Wei Huang ² , and Wen-Wei Wu ² ¹ <i>Department of Electrical Engineering, National Central University, Taoyuan, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan</i>
B1-P-0283	Novel Nitride Phosphors for White Light-emitting Diodes	Hsin-Cheng Lin, Che-Yuan Yang, Subrata Das, and Chung-Hsin Lu* <i>Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan</i>
B1-P-0323	Manufacturing Substrate-bonded Ag Nanoparticles on Silicon by Inductively Coupled Plasma	Y.C. Li* and J. Shieh <i>Department of Materials Science and Engineering, National United University, Miaoli, Taiwan</i>
B1-P-0396	Deposition of Organic Silicon Plasma Polymerization Thin Film to Improve Material Surface and Immobilize Biological Polymer	Min-Yi Sung ^{1,2} , Chung-Yu Guo ² , and Ko-Shao Chen ^{1,*} ¹ <i>Department of Materials Engineering, Tatung University, Taipei, Taiwan</i> ² <i>Dentistry, Buddhist Tzu Chi General Hospital, Taipei Branch, Taipei, Taiwan</i>
B1-P-0397	Fabrication of Plasma-polymerized Thin Films by Vinyltrimethylsilane/Oxygen or Hexamethyldisilazane/Oxygen for Transparent Optical and Barrier Coating Application	Yi-Syuan Wei ¹ , Wan-Yu Liu ¹ , Ko-Shao Chen ^{1,*} , V. Cech ² , and N Inagaki ³ ¹ <i>Department of Materials Engineering, Tatung University, Taipei, Taiwan</i> ² <i>Institute of Materials Chemistry, Brno University of Technology, Brno, Czech Republic</i> ³ <i>Emeritus Professor of Shizuoka University, Hamamatsu, Japan</i>
B1-P-0471	Influence of Phosphorous Incorporation on Silicon Nanocrystal Formation in Silicon-rich Silicon Nitride Films	Yu-Cian Wang ¹ , Ping-Jung Wu ¹ , I-Chen Chen ^{1,*} , Chien-Chieh Lee ² , Jenq-Yang Chang ³ , and Tomi Li ⁴ ¹ <i>Institute of Materials science and Engineering, National Central University, Taoyuan, Taiwan</i> ² <i>Optical Science Center, National Central University, Taoyuan, Taiwan</i> ³ <i>Department of Optics and Photonics, National Central University, Taoyuan, Taiwan</i> ⁴ <i>Department of Mechanical Engineering, National Central University, Taoyuan, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
B1-P-0578	Effect of Frequency and Pulsed Time on the Microstructure of ZrB ₂ Film on Si (100) by Pulsed dc Magnetron Sputtering	C.T. Lee, D. Chiang, P.-K. Chiu*, and C.-Y. Su <i>Instrument Technology Research Center, National Applied Research Laboratories, Hsinchu, Taiwan</i>
B1-P-0812	To Study the Influence of Hydrated Multi-Fluxes on Boron Content in Metallurgical Grade Silicon	Fang-Chun Liao ¹ , Bo-Kai Wu ² , and Kai-Lin Lan ³ ¹ <i>Da-Yeh University Materials Science and Engineering Associate Professor</i> ² <i>Da-Yeh University Mechanical and Automation Engineering Master</i> ³ <i>Da-Yeh University Master Program in Design and Materials for Medical Equipment and Devices Graduate Student</i>
B1-P-0813	To Study the Effect of Impurities Removal from Quartz by Physical Metallurgy Methods	Fang-Chun Liao ¹ , Shih-Chieh Chung ² , and Kuan-Ting Chen ³ ¹ <i>Da-Yeh University Materials Science and Engineering Associate Professor</i> ² <i>Da-Yeh University Mechanical and Automation Engineering Master</i> ³ <i>Da-Yeh University Master Program for Design and Materials for Medical Equipment and Devices Graduate Student</i>
B1-P-0954	Effect of Arsenic Dose loss on Film Resistivity in Silicon Substrate	J.-R. Tsai ^{1,*} , G. Sheu ^{1,2} , R.-D. Chang ³ , W.-C. Chen ³ , J.-C. Lin ¹ , and Z. Zhong ¹ ¹ <i>Department of Photonic and Communication Engineering, Asia University, Taichung, Taiwan</i> ² <i>Department of Computer Science and Information Engineering, Asia University, Taiwan</i> ³ <i>Department of Electronic Engineering, Chang Gung University, Taoyuan, Taiwan</i>
B1-P-0956	A Novel Rapid Process for Silicon Recycle and Refining from Kerf	C.F. Yang*, and C.W. Lan <i>Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan</i>
B1-P-0958	Growth 3C-SiC Films Without SiC Seeding by Vapor-Liquid-Solid Tri-phase Epitaxy	H.Y. Lee*, Y.L. Liang, X.D. Qi, S.Z. Lu, and W.H. Liu <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
B1-P-0976	Crystallization of Amorphous Silicon Carbide Thin Film by Sputter	C.C. Hsu ^{1,*} , S.Y. Wei ² , C.J. Lin ¹ , W.C. Sun ² , S.M. Yu ^{1,2} , T.S. Lin ² , and F.R. Chen ¹ ¹ <i>Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan</i> ² <i>Material & Chemical Research Laboratories, Industrial Technology Research Institute, Chutung, Hsinchu, Taiwan</i>
B1-P-0977	A Novel Rapid Thermal Processing for Refining Photovoltaic Silicon from Cutting Kerf-Loss Slurry	C.F. Yang, H.P. Hsu, and C.W. Lan* <i>Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
Symposium B2: Oxides Materials and Devices Date: 2014/6/12, Time: 13:00~17:00 PM, Room: 401		
B2-P-0016	Electric-Field Devices Based on Ferrite Compounds	K. Fujiwara* and H. Tanaka <i>ISIR, Osaka University, Ibaraki, Osaka, Japan</i>

Paper no.	Paper Title	Authors/Affiliation
B2-P-0029	Thin Films Effect of SBT with SrTa ₂ O ₅ Seeding on Substrates	Hsiu-Yu Chou* and En-Ko Lee <i>Department of Applied Technology of Living, Ta Hwa University of Science and Technology, Hsinchu, Taiwan</i>
B2-P-0083	Schottky Barrier Characteristics of Pt Contacts to n-type GaN and MOS Diodes	Thi Tran Anh Tuan, Dong-Hau Kuo*, Cheng-Chi Li, Kidus Yohannes, and Wei-Chun Yen <i>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i>
B2-P-0096	Effect of Annealing Temperatures of Fluorine Doped Tin Oxide Electrodes for Application in Dye-Sensitized Solar Cells	Yi-Hao Pai* and Chen-Yi Yen <i>Department of Opto-Electronic Engineering, National Dong Hwa University, Hualien, Taiwan</i>
B2-P-0184	The Investigation of Different Transparent Conductive Oxide Film on Flat Electron Emission Lamp Device	B.H. Chen ^{1,2,*} , C.L. Chiang ^{2,3} , H.K. Zeng ¹ , J.Y. Li ² , Y.P. Lin ² , P.H. Wang ² , and S.P. Chen ² ¹ <i>Department of Electronic Engineering, Chung Yuan Christian University, Chungli, Taiwan</i> ² <i>Green Energy & Environment Research Laboratories, Industrial Technology Research Institute, Chutung, Taiwan</i> ³ <i>Department of Electrophysics, National Chiao Tung University, Hsinchu, Taiwan</i>
B2-P-0211	Improvement of Unipolar Resistive Switching by N ₂ Annealing in Ni/ZrO ₂ /TaN Memory Device	T.L. Tsai*, T.H. Ho, and T.Y. Tseng <i>Department of Electronics Engineering and Institute of Electronics, National Chiao Tung University</i>
B2-P-0262	Tuning Emission Color of YAG:Ce,Si Phosphor Ceramics by Laser Drilling and Their Microstructure Study	Y.T. Nien ^{1,*} , R.Y. Hsu ¹ , J.K. You ¹ , C.W. Ma ² , and I.G. Chen ² ¹ <i>Department of Materials Science and Engineering, National Formosa University, Yunlin, Taiwan</i> ² <i>Dept. of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
B2-P-0265	Synthesis and Photo-luminescent Properties of (Y _{10-x-y} M _x Eu _y)W ₂ O ₂₁ (M = La ³⁺ , Lu ³⁺ , Sc ³⁺) Phosphors	T.C. Chien* and C.S. Hwang <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
B2-P-0267	The Influence of Doping Material for the Refraction Index and Resistance of Target in the Nb ₂ O _{5-x} Matrix	S.H. Wei ¹ , R.Z.Chen ² , and C.H. Lai ^{1,*} ¹ <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i> ² <i>China Steel, Kaohsiung, Taiwan</i>
B2-P-0274	Properties of Complementary Electrochromic Device with Gel Polymer Electrolyte	Chih-Ming Wang ^{1,*} , Chih-Yu Wen ² , Chun-Chieh Wang ³ , Jui-Yang Chang ¹ , and Ying-Chung Chen ² ¹ <i>Department of Electrical Engineering, Cheng Shiu University, Kaohsiung, Taiwan</i> ² <i>Department of Electrical Engineering, National Sun Yat-Sen University, Kaohsiung, Taiwan</i> ³ <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
B2-P-0282	Synthesis and Photoluminescence Properties of Color-tunable Silicate Oxyapatite Phosphors	Hsin-Cheng Lin, Che-Yuan Yang, Subrata Das, and Chung-Hsin Lu* <i>Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
B2-P-0288	Photon Management in Dye-Sensitized Solar Cells Using TiO ₂ Nanotube Periodic/Aperiodic Photonic Crystals	Haitao Huang* <i>Department of Applied Physics, Hong Kong Polytechnic University, Hong Kong</i>
B2-P-0314	Memory Properties of Atomic Layer-Deposited Al ₂ O ₃ , HfAlO, Al ₂ O ₃ /HfO ₂ Nanolaminates for Non-Volatile Memory Application	A. Rifai ^{1,2} , S. Maikap ^{1,*} , D. Jana ¹ , P. Kumar ¹ , and Y. Nakamura ² ¹ <i>Department of Electronic Engineering, Chang Gung University, Taoyuan, Taiwan</i> ² <i>Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, Tokyo, Japan</i>
B2-P-0400	Simultaneous Surface Doping of Gold Nanoparticles on Electrophoretic Self-assembled Structure of SiO ₂ Microspheres	R.F. Louh*, Danny Ho, Vivian Liu, and Doris Liao <i>Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan</i>
B2-P-0412	Low Sintering Temperature of Mg(Ti _{0.95} Zr _{0.05})O ₃ Microwave Ceramic	J.T. Tsai, S.F. Wang* and C.H. Wu <i>Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan</i>
B2-P-0434	The Synthesize of WO ₃ Powders by Redox Reaction	Tzu Hsuan Chiang*, Chia-Chun Hsu, and Yuan-Chun Liang <i>Department of Energy Engineering, National United University, Miaoli, Taiwan</i>
B2-P-0437	The Effect of NaCl for the Morphology of α-MoO ₃ Powder	Tzu Hsuan Chiang* and Hua-Yu Lei <i>Department of Energy Engineering, National United University, Miaoli, Taiwan</i>
B2-P-0454	Dielectric Properties and Microstructures of Non-reducible High-temperature Stable X9R Ceramics based on BaTiO ₃ -LiTaO ₃ Compositions	J.H. Li, S.F. Wang*, and Y.C. Wu <i>Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan</i>
B2-P-0582	Enhancement of Crystallinity of Sputtered ZnO Films by a Sol-Gel Derived Seed Layer for Electron Transport in Polymer Light-Emitting Diodes	Chun-Yuan Huang*, Wu-Tsung Tsai, Zong-Lin Yang, and You-Ching Tsai <i>Department of Applied Science, National Taitung University, Taitung, Taiwan</i>
B2-P-0592	Synthesis and Characterization of ZnO Nanoparticles Prepared by Sol-gel Proteic Method	E.C. Moreira* L.P. Etcheverry, and W.H. Flores <i>Universidade Federal do Pampa, Campus Bagé, Grupo de Pesquisa Nanoestruturados, CEP 96400-970, Bagé - RS, Brazil</i>
B2-P-0611	A Simple and Low-Cost Method for the Fabrication of Low Thermal Conductivity Ceramic Hybrid Materials Containing Monodisperse Hollow	Yu-Han Wu*, Kuo-Chuang Chiu, and Tzu-Yu Liu <i>Department of Eco Sensor Devices & Ceramic Materials, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
B2-P-0633	Hydrogenated TiO ₂ Thin Film with Enhanced Photocatalytic Properties	Vitaly Gurylev*, Tzu-Kang Chin, and Tsong-Pyng Perng <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
B2-P-0635	Properties of (Mn, Sb) co-tuned PZMNS-PZT Piezoelectric Ceramics in the Diffused Phase Transition and Their Applications on Multi-bulk Step-down Piezoelectric Transformers	C.C. Tsai ^{1,*} , C.C. Shih ² , and H.H. Hsieh ¹ ¹ <i>Department of Electronics Engineering and Computer Science, Tung Fang Design Institute, Kaohsiung County, Taiwan</i> ² <i>General Education for Center, Tung Fang Design Institute, Kaohsiung County, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
B2-P-0660	Effect of Dopants on the Semiconducting Properties of Zn-Sn-O Thin Film Transistors	Sharma Abhishek, Joongwon Kim and Sang-Im Yoo <i>Department of Materials Science and Engineering and Research Institute of Advanced Materials (RIAM), Seoul National University, Seoul, Korea</i>
B2-P-0674	The Study of Microwave Properties of $\text{Re}_4(\text{La}_4\text{Pr}_2)(\text{SiO}_4)_6\text{O}_2$ (Re = Mg, Ca, Sr, Ba)	Y-J Lin ^{1,*} , S-F Wang ² , and B-H Tung ¹ ¹ <i>Department of Materials Engineering, Tatung University, Taipei, Taiwan</i> ² <i>Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan</i>
B2-P-0697	The Influences of Oxygen Content to the Resistive Switching Behavior of the Rare Earth Scandate Films	Lilik Suprianti ¹ , W.Z. Chang ¹ , J.P. Chu ^{1,*} , and S.F. Wang ² ¹ <i>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i> ² <i>Department of Materials and Minerals Resources Engineering, National Taipei University of Technology, Taipei, Taiwan</i>
B2-P-0709	Advanced Process for Fabricating Intrinsic Josephson Junction using Hydrogen-Atmosphere Treatment	H. Tanaka ^{1,*} , H. Yoshikawa ² , and S. Kishida ³ ¹ <i>Dept. of Electrical and Computer Engineering, Yonago National College of Technology, Tottori, Japan</i> ² <i>Advanced Nano-Characterization Center, National Institute for Materials Science, Tsukuba, Japan</i> ³ <i>Graduate School of Electrical and Electronic Engineering, Tottori University, Tottori, Japan</i>
B2-P-0758	Characterizations of Ti Doped CeO_2 Flash Memory	H.Chen ^{1,*} , C.H. Kao ² , S.H. Wang ¹ , Y.C. Chu ¹ , and C.B. Chen ¹ ¹ <i>Department of Applied Materials and Optoelectronic Engineering, National Chi Nan University, Puli, Taiwan</i> ² <i>Department of Electronic Engineering, National Chi Nan University, Kwei-shan, Taiwan</i>
B2-P-0853	Design and Fabrication of ZnO/TiO ₂ Semiconductor Diodes Using Solution Processing Approach	L.C.K. Liao* and P.H. Lo <i>Department of Chemical Engineering and Materials Science, Yuan Ze University, Taoyang, Taiwan</i>
B2-P-0890	Synthesis and Characterization of Multi-walled Carbon Nanotubes/ β -FeOOH Nanocomposites for Supercapacitor	Y.H. Chen, Yi. Hu*, Tung-Cheng Liu and C.-C. Lin <i>Department of Materials Engineering, Tatung University, Taipei, Taiwan</i>
B2-P-0941	Ferromagnetism of Mn-doped ZnO Nanaowires	Chiu-Yen Wang ^{1,*} and Bin-Hong Yeh ² ¹ <i>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i> ² <i>Department of Physics, Tamkang University, Taipei, Taiwan</i>
B2-P-0948	Manufacture of Oxygen Sensor by Multi-layer Ceramic Technology	H.T. Chang* and K.Z. Fung <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
B2-P-0960	TiO ₂ -protected Silver Nanowire Transparent Conductive Film	Ming-Hua Yeh and Hsueh-Shih Chen* <i>Dept. of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
B2-P-0978	Fabrication of Titania Branched Nanostructures via a Simple One-step Hydrothermal Method	JungChe Tsai ^{1,*} , MinHsiung Hon ^{1,2} , and Ing-Chi Leu ³ ¹ Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan ² Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan ³ Department of Materials Science, National University of Tainan, Tainan, Taiwan
B2-P-0996	Switchable Superhydrophobicity of ScCO ₂ -treated TiO ₂ Nanotube Arrays	Yuan-Yuan You, Jeng-Kuei Chang, and Sheng-Wei Lee* Institute of Materials Science and Engineering, National Central University of Technology, Zhongli, Taiwan
B2-P-1004	Microwave-assisted Hydrothermal Synthesis of TiO ₂ for Use as Photoanode in Dye-sensitized Solar Cell	Wei-Xuan Sun and Wan-Yu Wu* Department of Materials Science and Engineering, MingDao University, ChangHua, Taiwan
B2-P-1018	Solvothermal Synthesis and Electrochromic Property of WO ₃ Nanowire Arrays on FTO Glass	Chih-Hao Lu ^{1,*} , Min Hsiung Hon ^{1,2} , Chi-Yun Kuan ¹ , and Ing-Chi Leu ³ ¹ Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan ² Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan ³ Department of Materials Science, National University of Tainan, Tainan, Taiwan

Paper no.	Paper Title	Authors/Affiliation
Symposium B3: Carbon-Related Materials and Devices Date: 2014/6/12, Time: 13:00~17:00 PM, Room: 401		
B3-P-0062	Preparation of Graphene Nanoplatelets/Carbon Nanotubes/Epoxy Composites Using SCCO ₂ Assisted Mixing	Hsin-Ping Chang ^{1,2} , Hung-Chih Liu ¹ , Hsin-Wei Lin ¹ , and Chung-Sung Tan ^{1,*} ¹ Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan ² Chung Shan Institute of Science and Technology (CSIST), Armaments Bureau, M.N.D. Taiwan
B3-P-0078	Room Temperature Detection of NH ₃ and Organic Vapors by Porous Graphene Films	Ching-Han Wu, Chia-Hao Tu, Yi-Chang Li, Yi-Jyun Cai, Yen-Chin Chen, and Cuan-Pu Liu* ¹ Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan ² Department of Materials Science, National Tainan University, Tainan, Taiwan
B3-P-0125	The Effects of Radio-frequency Powers on the Characteristics of Graphene Prepared by Thermal Chemical Vapor Deposition Enhanced with Inductively Coupled Plasma	L.H. Lai and S.T. Shiue* Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan
B3-P-0126	Effects of Different Radio-frequency Powers on Characteristics of Amorphous Nickel Carbon Thin Film Alloys Prepared by Reactive Radio-frequency Plasma Enhanced Chemical Vapor Deposition	P.H. Hung and S.T. Shiue* Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan

Paper no.	Paper Title	Authors/Affiliation
B3-P-0185	Strontium-Based Metal-Organic Framework as a New Dielectric Material for Microelectronics Applications	Muhammad Usman ^{1,2,3} and Kuang-Lieh Lu ^{1,*} ¹ <i>Institute of Chemistry, Academia Sinica, Taipei, Taiwan</i> ² <i>Department of Physics, National Central University, Chung-Li, Taiwan</i> ³ <i>Institute of Atomic and Molecular Science, Academia Sinica, Taipei, Taiwan</i>
B3-P-0241	Controlling the Number of Layers for CVD-grown Graphene by the Thickness of Copper Foil	Pei-Ju Wu ¹ , Bo-Rong Wu ¹ , Cheng-Wei Huang ^{1,*} , Nen-Wen Pu ¹ , Ming-Der Ger ² , and Yih-Ming Liu ² ¹ <i>Department of Photonics Engineering, Yuan Ze University, Chung-Li, Taiwan</i> ² <i>Department of Chemical & Materials Engineering, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan</i>
B3-P-0269	Ferromagnetic Carbon Encapsulated Nanoparticles Synthesized by Ethanol as Carbon Source and their Particle Size Distributions	H.Y. Lin, C.C. Chiu, and M.H. Teng* <i>Department of Geosciences, National Taiwan University, Taipei, Taiwan</i>
B3-P-0319	A Novel Controlling Technique to Synthesize Ultra-nanodiamond through Silicon Nanowires/ Pyramid Silicon Template for Enhancing Field Emission Properties	Bohr-Ran Huang*, Tzu-Ching Lin, and Xuan-Bo Wong <i>Graduate Institute of Electro-Optical Engineering and Department of Electronic Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i>
B3-P-0326	Experimentally Determined Parameters of Liquid Carbon Source that Enhance the Performance of the Arc Discharge Method	S.T. Hsu and M.H. Teng* <i>Department of Geosciences, National Taiwan University, Taipei, Taiwan</i>
B3-P-0348	Production of Composite Conductive Adhesives Using Core-shell Metal Particles and Graphene as Conductive Fillers	Y.Y. Peng ¹ , W.F. Ke ¹ , C.H. Wu ³ , Y.Y. Peng ³ , N.W. Pu ² , Y.M. Liu ¹ , and M.D. Ger ^{1,*} ¹ <i>Department of Chemical & Materials Engineering, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan</i> ² <i>Department of Photonics Engineering, Yuan Ze University, Chung-Li, Taiwan</i> ³ <i>School of Defense Science, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan</i>
B3-P-0378	Improvement of the Field Emission Characteristics of Carbon Nanocoil Cathodes Using a Stepwise Aging Post Treatment	Y.M. Liu ^{1,*} , Kevin Cheng ² , K.J. Chung ² , G.F. Xu ³ , C.W. Chang ³ , N.W. Pu ⁴ , and M.D. Ger ¹ ¹ <i>Department of Applied Chemistry & Materials Science, Chung Cheng Institute of Technology, National Defense University, Taiwan</i> ² <i>Graduate School of Defense Science, Chung Cheng Institute of Technology, National Defense University, Taiwan</i> ³ <i>Department of Chemical & Materials Engineering, Chung Cheng Institute of Technology, National Defense University, Taiwan</i> ⁴ <i>Department of Photonics Engineering, Yuan Ze University, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
B3-P-0395	The Carbon Nanocoil Fibers Grown by Chemical Vapour Deposition on the 304 Stainless Steels Supported Pd Nanoparticles as Field Emission Cathode	K.J. Chung ^{1,*} , Y.M. Liu ² , M.J. Youh ³ , Kevin. Cheng ¹ , N.W. Pu ⁴ , and M.D. Ger ² ¹ Graduate School of Defense Science, Chung Cheng Institute of Technology, National Defense University, Taiwan ² Department of Chemical & Materials Engineering, Chung Cheng Institute of Technology, National Defense University, Taiwan ³ Department of Information Technology, Hsing Wu College, Taipei County, Taiwan ⁴ Department of Photonics Engineering, Yuan Ze University, Taiwan
B3-P-0432	Preliminary Study of the Modification of Graphite Encapsulated Iron Metal Nanoparticles	S.S. Li and M.H. Teng* Department of Geosciences, National Taiwan University, Taipei, Taiwan
B3-P-0455	Fabrication of Field Emission Lights and Optimization of the Thickness of Carbon Nanocoils Used for Their Cathodes	C.W. Chang ¹ , G.F. Xu ¹ , J.C. Jiang ¹ , K.J. Chung ² , K. Cheng ² , Y.M. Liu ¹ , M.D. Ger ^{1,*} , N.W. Pu ³ , and M.J. Youh ⁴ ¹ Department of Chemistry and Material Engineering, National Defense University of Chung Cheng Technology, Taoyuan, Taiwan ² Graduate School of Defense Science, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan ³ Photonics Engineering, Yuan Ze University, Taoyuan, Taiwan ⁴ Department of Information Technology, Hsing Wu College, Taipei, Taiwan
B3-P-0469	Improving the Quality of Graphene Transparent Conductive Films by Removing the Oxidation Debris	B.H. Jian ^{1,*} , P.J. Wu ² , B.R. Wu ² , N.W. Pu ² , Y.M. Liu ¹ , and M.D. Ger ¹ ¹ Department of Applied Chemistry & Materials Science, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan ² Department of Photonics Engineering, Yuan Ze University, Chung-Li, Taiwan
B3-P-0482	Graphene Nano-ribbons Prepared by Hydrothermal Method with Different Oxidation Times	L.I. Chen ^{1,*} , C.H. Wu ² , Y.Y. Peng ² , G.N. Shi ² , N.W. Pu ³ , Y. M. Liu ¹ , and M.D. Ger ¹ ¹ Department of Chemistry & Materials Engineering, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan ² School of Defense Science, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan ³ Department of Photonics Engineering, Yuan Ze University, Chung-Li, Taiwan
B3-P-0491	Titanium/DLC as the Electrode for Electrochemical Oxidation Processes	Chia-Cheng Yeh ^{1,*} , Yi-Cheng Hou ¹ , Ju-Liang He ¹ , and Chih-Chao Wu ² ¹ Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan ² Department of Environmental Engineering and Science, Feng Chia University, Taichung, Taiwan
B3-P-0492	Improving the Field Emission Properties of the Carbon Nano-coil Cathode Wires by Nitrogen Doping Treatment	G.F. Xu ¹ , J.C. Jiang ¹ , K.J. Chung ¹ , K. Cheng ¹ , Y.M. Liu ^{1,*} , M.D. Ger ¹ , N.W. Pu ² , and M.J. Youh ³ ¹ Department of Chemistry and Material Engineering, National Defense University of Chung Cheng Technology, Taoyuan, Taiwan ² Photonics Engineering, Yuan Ze University, Taoyuan, Taiwan ³ Department of Information Technology, Hsing Wu College, Taipei, Taiwan

Paper no.	Paper Title	Authors/Affiliation
B3-P-0499	Graphene Oxide Based Nanocomposite Containing MnO ₂ and NiO for Supercapacitor Applications	R.F. Louh, Victor Wang, Eric Lee, and Bunny Tsai <i>Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan</i>
B3-P-0569	Stabilization of Mesophase Pitch Carbon Fiber Precursors by Thermal Oxidation	Che-Chung Kao ^{1,*} , Chung-An Wang ² , Hsing-Ping Chang ² , Yin-Ming Liu ¹ , Ming-Der Ger ¹ , and Nen-Wen Pu ³ ¹ <i>Department of Chemical and Materials Engineering, Chung Cheng Institute of Technology, Nation Defense University, Taoyuan, Taiwan</i> ² <i>Materials & Electro-Optics Research Division, Chung-Shan Institute of Science & Technology, New Taipei City, Taiwan</i> ³ <i>Department of Photonics Engineering, Yuan Ze University, Zhongli, Taoyuan, Taiwan</i>
B3-P-0573	Synthesis of N-Doped Graphene Quantum Dots and Their Fluorescent Sensing of Fe ³⁺ Ions	Tran Van Tam, Nguyen Bao Trung, Hye Ryeon Kim, and Won Mook Choi* <i>School of Chemical Engineering, University of Ulsan, Ulsan, Korea</i>
B3-P-0631	Preparation of Graphite Oxide and Rapid Microwave-assisted Synthesis of Graphene, Properties, and Applications	Shi Kun Yao* and Chen yun Fan <i>University department, National Pingtung University of Education, Pingtung, Taiwan</i>
B3-P-0661	Investigation of Characteristics of Polymer Materials for Triboelectric Nanogenerators	S.N. Chen and C.P. Liu* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
B3-P-0666	Nanoscope Observations of Stress-induced Surface Graphitization of Amorphous Carbon	Ding-Shiang Wang ¹ , Shou-Yi Chang ^{1,*} , Jin-Bao Wu ² , and Hong-Jen Lai ² ¹ <i>Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan</i> ² <i>Institute of Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
B3-P-0667	Microwave-assisted Rapid Synthesis of Graphene and Their Application	Kun-Yauh Shih* and Yun-Fan Chen <i>Dept. of Chemical Biology, National Pingtung University of Education, Pingtung, Taiwan</i>
B3-P-0671	Structural Study of Hollow Carbon Ball Using HRTEM and Laser Raman Spectroscopy	D.S. Kang, S.M. Oh, S.M. Lee, S.H. Kim, S.W. Lee, and J.S. Roh* <i>School of Advanced Materials and System Engineering, Kumoh National Institute of Technology, Gyeongsangbuk, Korea</i>
B3-P-0675	Development of MCMBs Based Synthesis Graphite	Chuen-Ming Gee ^{1,2} , Jyh-Chen Chen ¹ , Hsin-Ping Chang ^{2,*} , Pai-Lu Wang ² , and Ching-Jang Lin ² ¹ <i>Department of Mechanical Engineering, National Central University, Taoyuan, Taiwan</i> ² <i>Materials & Electro-Optics Research Division, Chung-shan Institute of Science & Technology, Taoyuan, Taiwan</i>
B3-P-0763	Hydrothermal Synthesis of RGO-TiO ₂ -ZnO Composite and Its Photocatalytic Activity	Fatima Tuz Johra and Woo-Gwang Jung* <i>Department of Advanced Materials Engineering, Kookmin University, Seoul, Korea</i>

Paper no.	Paper Title	Authors/Affiliation
B3-P-0803	Study of Zinc Oxide Nanorod Arrays Coated with Carbon	R.J. Chung* and Y.C. Li <i>Department of Chemical Engineering and Biotechnology, National Taipei University of Technology (Taipei Tech), Taipei, Taiwan</i>
B3-P-0806	Green Synthesis of Few-Layered Graphene Flakes with Electrochemical Exfoliation in Alkaline Electrolytes	L.C. Chang ¹ , Y.C. Hsieh ² , Y.M. Chen ² , P.W. Wu ^{2,*} , and J.F. Lee ³ ¹ <i>Graduate Program for Science and Technology of Accelerator Light Source, National Chiao Tung, Hsinchu, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan</i> ³ <i>National Synchrotron Radiation Research Center, Hsinchu, Taiwan</i>
B3-P-0820	Graphene Coupling with Graphene Oxides Generate Wavelength-tunable Graphene Plasmonic Laser by Controlling Oxidation of Graphene	Yao-Yu Chung, Jyh-Ming Ting*, and Yen-Hsun Su <i>Department of Material Science & Engineering, National Cheng Kung University, Tainan, Taiwan</i>
B3-P-0866	Photochemical Water Splitting of Graphene Plasmonic Photosensitizer in Solar Hydrogen Production	Jyh-Ming Ting, Yen-Hsun Su, and Jyun-Sheng Guo <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
B3-P-0880	Synthesis of Graphene and Carbon Nanotube Hybrid Structure for Gas Sensor	H.C. Chang ¹ , J.Y. Huang ² , H.Y. Chang ¹ , W.J. Su ² , Y.T. Shih ² , Y.S. Huang ^{1,2} , and K.Y. Lee ^{1,2,*} ¹ <i>Department of Electronic Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i> ² <i>Graduate Institute of Electro-Optical Engineering, National Taipei University of Technology, Taipei, Taiwan</i>
B3-P-0902	Ionic-liquid-enhanced Glucose Sensing Ability of Non-enzymatic Au/graphene Electrodes Fabricated Using Supercritical CO ₂ Fluid	Chueh-Han Wang, Jia-Wun Wu, Hung-Ching Chen, and Jeng-Kuei Chang* <i>Institute of Materials Science and Engineering, National Central University, Taoyuan, Taiwan</i>
B3-P-0908	Characterization of Nitrogen-Doped Graphene Sheets with the Low Voltage Cs-corrected TEM and High Resolution EELS Spectrometry	C.Y. Hsieh ^{1,*} , S.C. Lo ¹ , K.P. Huang ² , and M.T. Chang ¹ ¹ <i>Department of Electron Microscopy Development and Application, Material and Chemical Research Laboratories, Industrial Technology Research Institute (ITRI)</i> ² <i>Mechanical and System Research Laboratories, Industrial Technology Research Institute (ITRI)</i>
B3-P-0912	An Eco-Friendly Approach towards Mass Production of Graphene Nanosheets and Its Applications in Microwave Absorbing Composites	Chi-Wei Liang*, Shu-Ping Chang, Ming-Kun Hsieh, Bang-Ying Yu, Chuen-Ming Gee, Pai-Lu Wang, and Ching-Jang Lin <i>Materials & Electro-Optics Research Division, Chung-Shan Institute of Science & Technology, Taoyuan, Taiwan</i>
B3-P-0913	Development of UV Photodetectors with Carbon Thin-Films Deposited on Nano-Porous-Silicon Substrates	Kuen-Hsien Wu* and Yu-Sheng Huang <i>Department of Electro-Optical Engineering, Southern Taiwan University of Science and Technology, Tainan City, Taiwan</i>
B3-P-0928	Low Temperature Growth of Graphene Using Thermal Chemical Vapor Deposition Method	C.S. Chen and C.K. Hsieh* <i>Department of Materials Engineering, Ming Chi University of Technology, Taipei, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
B3-P-0939	Electrochemically Cathodic Exfoliation of Graphene Sheets in Room Temperature Ionic Liquids Sulfuric Acid, with UV-assisted Photocatalytic Reduction, and Their Electrochemical Properties	Chia-Hao Wu ^{1,*} , Yu-Wei Lin ¹ , and Yang-Kun Chew ² ¹ Department of Materials Science and Engineering, Mingdao University, Changhua, Taiwan ² Department of Electro-Optical and Energy Engineering, Mingdao University, Changhua, Taiwan
B3-P-0967	Synthesis and Characterization of Reduced Graphene Oxide Graphene Oxide for Transparent Conductive Film	C.C. Hung, M.H. Yeh, and H.S. Chen* Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan
B3-P-1033	Effects of sp ³ Contents on the Quality of Amorphous Diamond-Like Carbon by Filter Arc Deposition	Ya-Chi Chen ¹ , C.C Wang ¹ , Han C. Shih ^{2,*} , Fuh-Sheng Shieu ¹ , and Sheng Han ³ ¹ Department of Materials Science and Engineering National Chung Hsing University, Taichung, Taiwan ² Institutes of Materials Science and Nanotechnology, Chinese Culture University, Taipei, Taiwan ³ Departments of Leisure and Recreation Mangement, Nation Taichung University of Science and Technology, Taichung, Taiwan

Paper no.	Paper Title	Authors/Affiliation
Symposium B4: Advanced Magnetic Materials Date: 2014/6/12, Time: 13:00~17:00 PM, Room: 401		
B4-P-0094	Fabrication and Consolidation of Magnetic α -Fe/MgO Nanocomposite by Reactive Ball Milling	H.W. Kim and C.H.Lee* Department of Materials Science and Engineering, National Mokpo National University, Mu-an-gun, Chonnam, Korea
B4-P-0187	MoC Intermediate Layer for FePt Magnetic Recording Media	Jai-Lin Tsai*, Qi-Shao Luo, Po-Ran Chen, Yi-Hsiu Chen, and Yun-Ting Tseng Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan
B4-P-0234	Preparation of Metal-Epoxy Composite Films on Polyimide film by the Metal-Polymer Co-electroless Deposition Method	N. Fujita ^{1,*} , N. Matsumoto ¹ , K. Nishimura ¹ , M. Hirai ¹ , Y. Kobayashi ² , T. Shinagawa ² , and S. Ikeda ² ¹ Department of Electrical Engineering, Nara National College of Technology, Yamatokoriyama, Japan ² Osaka Municipal Technical Research Institute, Osaka, Japan
B4-P-0459	Shell Transfer Into a Red-emitting Phosphors $\text{Ca}_9\text{Gd}(\text{PO}_4)_7:\text{Eu}^{3+}$ with Magnetic Property	T.Y. Chang ^{1,*} , Y. Liu ¹ , and H.M. Lin ^{1,2} ¹ Institute of Optoelectronic Sciences, National Taiwan Ocean University, Keelung, Taiwan ² Institute of Bioscience and Biotechnology, National Taiwan Ocean University, Keelung, Taiwan
B4-P-0622	The Fabrication of Iron Phosphate-coated Fe Metal powder	Hui Eun Kim ¹ , Jae-Hyoung You ¹ , Sang Kyun Kwon ² , and Sang-Im Yoo ^{1,*} ¹ Department of Materials Science and Engineering, and Research Institute of Advanced Materials, Seoul National University, Seoul, Korea ² Corporate R&D Institute, Samsung Electro-Mechanics, Suwon, Korea

Paper no.	Paper Title	Authors/Affiliation
B4-P-0639	Synthesis of Magnetite Nanoparticles and Their Surface Modification for Hyperthermia Application	Eun-Hee Lee and Chang-Yeoul Kim* <i>Nano-IT Convergence Center, Korea Institute of Ceramic Eng. & Tech</i>
B4-P-0657	Excellent Low Field Magnetoresistance Properties of the Ga ₂ O ₃ -doped Mn-Zn Ferrites	Hyo-Jin Kim, Jae-Hyoung You, and Sang-Im Yoo* <i>Department of Materials Science and Engineering, Research Institute of Advanced Materials (RIAM), Seoul National University, Seoul, Korea</i>
B4-P-0682	Exchange Bias in Epitaxial Growth L10 (111)-Oriented FePt / La-doped BiFeO ₃ Bilayer Films	S.J. Chiu, H.Y. Lee*, and S.N. Hsiao ¹ <i>National Synchrotron Radiation Research Center, Hsinchu, Taiwan</i>
B4-P-0683	Synthesis and Phase Stability of Strontium W-type Hexagonal Ferrite	Jae-Hyoung You, Hyo-Jin Kim, and Sang-Im Yoo ^{1,*} <i>Department of Materials Science and Engineering, Research Institute of Advanced Materials (RIAM), Seoul National University, Seoul, Korea</i>
B4-P-0753	L ₁₁ phase CoPt Film with Multilayer Structure on Glass Substrate	Chuan-Fa Huang, An-Cheng Sun*, and Hsian-Yuan Wu <i>Department of Chemical Engineering and Materials Science, Yuan-Ze University, Chung-Li, Taiwan</i>
B4-P-0815	The Study of NiMnInX Meta-magnetic Shape Memory Alloy	Jiun-Cherng Liu ¹ and Chen-Ti Hu ^{1,*} ¹ <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i> [*] <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
B4-P-0832	Preparation of Pr-Fe-B Thin Films with Perpendicular Magnetic Anisotropy	Sheng-Fu Chen, Chuan-Fa Huang, An-Cheng Sun*, Yu-Ting Lin, and Yao-Chung Yeh <i>Department of Chemical Engineering and Materials Science, Yuan Ze University, Chung-Li, Taiwan</i>
B4-P-0879	Magnetic properties of Monodispersive FePt Nanoparticles Synthesized with Different Solvents	D.H. Wei ^{1,*} , C.Z. Kuo ¹ , Y.C. Yu ² , Y.Y. Chen ² , and Y.D. Yao ² ¹ <i>Institute of Manufacturing Technology & Institute of Mechatronic Engineering, National Taipei University of Technology (TAIPEI TECH), Taipei, Taiwan</i> ² <i>Institute of Physics, Academia Sinica, Taipei, Taiwan</i>
B4-P-0971	Ferromagnetism in Defect-ridden Sm doped CeO _{2-x} Nanoparticles with Core-shell Structure	Shih-Yun Chen ^{1,*} , Ren-Jie Chen ¹ , William Lee ¹ , Chung-Li Dong ² , and Chien-Te Chen ² ¹ <i>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i> ² <i>National Synchrotron Radiation Research Center, Hsinchu, Taiwan</i>
B4-P-0982	Preparation of Co ₃ Pt thin film with m-D0 ₁₉ phase at room temperature	Ting-Hsuan You and An-Cheng Sun* <i>Department of Chemical Engineering and Materials Science, Yuan Ze University, Chung-Li, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
B4-P-1022	Fabrication of Fe ₃ O ₄ @SiO ₂ @anti-ALB/CdTe core-shell Nanoparticles for Optical Immunosorbent Assay with Magnetolithography	Yu-Bao Liao, Lin-Jhong Li, and Jem-Kun Chen* <i>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taiwan</i>

Group C: Materials and Processes for Advanced Interconnects and Packaging Technologies

Paper no.	Paper Title	Authors/Affiliation
Symposium C1: Materials and Processes for 3D ICs, including Low Temperature Wafer Bonding Materials and Technology Date: 2014/6/13, Time: 13:00~17:00 PM, Room: 401		
C1-P-0193	Fabrication of Nearly Void-free Cu ₃ Sn Microbumps for 3D IC Packaging	W. L. Chiu* and C. Chen <i>Department of Materials Science and Engineer, National Chiao Tung University, Hsinchu, Taiwan</i>
C1-P-0642	Electroless Nickel Plating for a Solid Electrolytic Capacitor: a Pre-study for a Decoupling Capacitor for 3D System in Package	Hung-Chung Chien*, Yi-Chang Du, Li-Duan Tsai, and Jason Fang <i>Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
C1-P-1014	Synthesis of Nano Silver Particles in Ethyl Glycol System	Y.F. Chen ^{1,*} , and Y.H. Lee ² ¹ <i>Department of New Materials Research & Development, Specialty Alloy Development Section, Kaohsiung, Taiwan</i> ² <i>Department of Technical, Thintech Materials Technology CO., LTD, Kaohsiung, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
Symposium C2: Materials and Processes for Flip-Chip, BGA, or PCB Applications Date: 2014/6/13, Time: 13:00~17:00 PM, Room: 401		
C2-P-0148	The Study of Indium Bump Bonding for 2D x-ray Pixel Detector at NSRRC	Hui-Fang Chuang ^{1,*} , H.H. Hsu ² , H. Chen ² , Chi-Yi Huang ¹ , Albert T. Wu ² , Duan-Jen Wang ¹ , Chao-Chih Chiu ¹ , Te-Hui Lee ¹ , Kuan- Li Yu ¹ , and Shih-Chun Chung ¹ ¹ <i>Experimental Facility Division, National Synchrotron Radiation Center, Hsinchu, Taiwan</i> ² <i>Department of Chemical & Materials Engineering, National Central University, Taoyuan, Taiwan</i>
C2-P-0213	Copper Alloy Film for Use as Buffer Layer in Barrierless Metallization and Solder Bump Flip-Chip Applications	C.H. Lin* <i>Department of Biotechnology, Asia-Pacific Institute of Creativity, TouFen, Taiwan</i>
C2-P-0340	Inhibition of Whisker Formation by Forming Uniform Intermetallic Layer	Han-wen Lin ^{1,*} , Yu-long Lin ¹ , Chih-chia Hu ¹ , Yan-zuo Liu ² , and Chih Chen ^{1,*} ¹ <i>Department of Materials Science & Engineering, National Chiao Tung University, Hsinchu, Taiwan</i> ² <i>IC Carrier SBU, Unimicron Technology Corp., Taoyuan County, Taiwan</i>
C2-P-0446	Influence of Temperature on the Spreading Kinetics of Liquid Tin on Copper Surface under High Vacuum	O. Liashenko ^{1,2} and F. Hodaj ^{1,*} ¹ <i>SIMAP laboratory - Grenoble Institute of Technology, France</i> ² <i>Cherkasy National University, Ukraine</i>
C2-P-0557	The Effect of Production Parameter on Direct-Boned Copper Ceramic Substrate	K.H.Chuang*, K.C. Chiu, and C.J. Ho <i>Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
C2-P-0595	Zn Diffusion Study During Reflow Aging of Sn-9Zn Solder on Ni/Cu Substrate	J. Mittal* and K.L. Lin <i>Department of Material Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
C2-P-0764	Synthesis of poly(2,6-dimethyl-1,4-phenylene oxide) Derivatives in Water	Chi-Wei Chen, Hou-Yuan Chen, I-Hong Lin, Chung-Chang Lin, and Masaki Horie* <i>Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan</i> <i>*Material and Chemical Research Laboratories, Industrial Technology Research Institute, Taipei, Taiwan</i>
C2-P-0927	Controlling the Orientation of Nano-twined Cu thin Film Deposited by Unbalanced Magnetron (UBM) Sputtering	Hsin-Yuan Chen and Fan-Yi Ouyang* <i>Department of Engineering and System Science, National TsingHua University, Hsinchu, Taiwan</i>
C2-P-0988	Effect of Ni-based Substrates and Cu-based Substrates on Grain Structure of Beta-tin in Pb-free Solder Joints	T.T. Chou, W.Y. Chen, and J.G. Duh* <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
Symposium C3: Electromigration Issues in Interconnects and Solder Joints Date: 2014/6/13, Time: 13:00~17:00 PM, Room: 401		
C3-P-0439	In Situ Measurement of Evaluation of Thermal Strain in a Die-to-Interposer Chip by Synchrotron X-ray Diffraction	H.H. Hsu ¹ , T.C. Chiu ² , T.C. Chang ³ , H.Y. Lee ⁴ , and Albert T. Wu ^{1,*} <i>¹Department of Chemical and Materials Engineering, National Central University, Zhongli, Taiwan</i> <i>²Department of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan</i> <i>³Industrial Technology Research Institute, Hsinchu, Taiwan</i>
C3-P-0441	Analysis of Spontaneous Tin Whisker by Surface Pre-treatment	Hao Chen ¹ , Chien-Hao Su ¹ , Hsin-Yi Lee ² , Ching-Shun Ku ² , and Albert T. Wu ^{1,*} <i>¹Department of Chemical and Materials Engineering, National Central University, Zhongli City, Taiwan</i> <i>²National Synchrotron Radiation Research Center, HsinChu City, Taiwan</i>
C3-P-0597	Crystalline Evolution of Sn-3.5wt%Ag Solder Alloy under Current Stress	H.C. Huang ^{1,*} , K.L. Lin ¹ , and Albert Wu ² <i>¹Department. of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> <i>²Department of Chemical and Materials Engineering, National Central University, Jongli, Taiwan</i>
C3-P-0604	Effect of Electric Current on Crystalline Orientation of Tin Strip	Yi-Han Liao ^{1,*} , Kwang-Lung Lin ¹ , and Albert Wu ² <i>¹Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> <i>²Department of Chemical and Materials Engineering, National Central University, Zhongli, Taiwan</i>
C3-P-0630	Electromigration of Metals Using Self-learning Kinetic Monte-carlo Method	Fang-Yu Chiu and Wen-Dung Hsu* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
C3-P-0648	The IMC Formation and Failure Mechanism Upon Current Stressing of the Copper Pillar Cu/Sn1.8Ag/OSP-Cu Microbump Structure	Chiao-Wen Chen ^{1,*} , Kwang-Lung Lin ¹ , Ying-Ta Chiu ² , Chin-Li Kao ² , Chiu-Wen Lee ² , and Ping-Feng Yang ² ¹ Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan ² ASE Group, Kaohsiung, Taiwan
C3-P-0658	Finding Critical Current Density of Electrodisruption Behavior in 97Pb3Sn Strip by Utilizing Synchrotron Radiation X-ray Diffraction	Y.K. Wu ^{1,*} , Albert T. Wu ² , and K.L. Lin ¹ ¹ Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan ² Department of Chemical and Materials Engineering, National Central University, Zhongli, Taiwan
C3-P-0931	Failure Mechanisms of Cu-Al Wedge Bonding Under Electromigration Test in Insulated-gate Bipolar Transistor (IGBT) Modules	Z.H. Yang, T.Y. Hsu, and Fan-Yi Ouyang* Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan

Paper no.	Paper Title	Authors/Affiliation
Symposium C4: Electro Deposition and Electrochemical Processing Technology Date: 2014/6/13, Time: 13:00~17:00 PM, Room: 401		
C4-P-0008	Electrodeposition of Tin Using Supercritical Carbon Dioxide Emulsion	Mana Tanabe*, Tso-Fu Mark Chang, Tatsuo Sato, and Masato Sone Precision and Intelligence Laboratory, Tokyo Institute of Technology, Japan
C4-P-0102	Fabrication of Ni-Mn Micro-Probe Structure with Low Internal Stress and high Hardness by Employing DC Electrodeposition	Kuan-Hui Cheng ^{1,*} , Fu-Je Chen ² , Chun-Ying Lee ¹ , Chao-Sung Lin ² , Jung-Tang Huang ¹ , Chang-Cheng Lan ³ , Ping-Huan Tsou ³ , and Tzu-I Ho ³ ¹ Department of Mechanical Engineering, National Taipei University of Technology, Taipei, Taiwan ² Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan ³ C.C.P Contact Probes Co. Ltd., Taipei, Taiwan
C4-P-0273	Preparation and Characterization of Silver Direct Plating on Ru Layer	Jia-Syuan Hsu ⁺ , Tsong-Huei Chang, Pang Shiu Chen*, C.A. Jong ¹ , and Yuan Gee Lee ² ⁺ Department of Chemical and Materials Engineering, Ming Hsin University of Science and Technology, Hsinchu, Taiwan ¹ National Nano Device Laboratories (NDL), NARLabs, Hsinchu, Taiwan ² Department of Automation Engineering and Institute of Mechatronoptic Systems, Chien-Kuo, Institute of Technology, Changhua, Taiwan
C4-P-0339	Effect of Pressure on the Electrodeposition of Ni-P Coatings Employing CO ₂ -containing Baths	S.T. Chung ^{1,2} , W.T.Tsai ^{1,2,*} , T.F.M. Chang ³ , and M. Sone ³ ¹ Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan ² Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan ³ Precision and Intelligence Laboratory, Tokyo Institute of Technology, Yokohama, Japan

Paper no.	Paper Title	Authors/Affiliation
C4-P-0476	The Functional Trivalent Chromium Carbide Alloy Coatings Prepared Using Electroplating	Hung-Hua Sheu ¹ , Chen-En Lu ² , Kung-Hsu Hou ³ , Yih-Ming Liu ¹ , Xin-Wei Low ¹ , and Ming-Der Ger ^{1,*} ¹ <i>Department of Chemical and Materials Engineering, Chung-Cheng Institute of Technology, National Defense University, Da-Xi, Taoyuan, Taiwan</i> ² <i>Graduate School of Defense Science, Chung-Cheng Institute of Technology, National Defense University, Da-Xi, Taoyuan, Taiwan</i> ³ <i>Department of Power Vehicle and System Engineering, Chung-Cheng Institute of Technology, National Defense University, Da-Xi, Taoyuan, Taiwan</i>
C4-P-0488	Electrochemical Carburization of Iron in Supercritical CO ₂ Containing Aqueous Electrolyte	Wen-Ta Tsai ^{1,2,*} , Cheng-Yang Lin ¹ , Sung-Ting Chung ^{1,2} , and Chuan-Ming Tseng ³ ¹ <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> ² <i>Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan</i> ³ <i>Institute of Physics, Academia Sinica, Taipei, Taiwan</i>
C4-P-0512	Micro-arc Treatment on Aluminum under Nitrogen Atmosphere	H.J. Chu*, H.L. Liu, and J.L. He <i>Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan</i>
C4-P-0836	Electrolytic CaP/ZrO ₂ Coating on Pure Magnesium for Corrosion Resistance and Bioactivity	Cheng-Ruei Lin and Shioh-Kang Yen* <i>Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
Symposium C5: Materials Design for Challenging Applications (High temperature, Flux-Free, Nano Materials etc) Date: 2014/6/13, Time: 13:00~17:00 PM, Room: 401		
C5-P-0014	Ink-Jet Printing of Low Temperature Cured Silver Patterns by Using AgNO ₃ /1-Dimethylamino-2-propanol Inks on Polymer Substrates	Jung-Tang Wu, Steve Lien-Chung Hsu*, and Chia-Wei Liu <i>Department of Materials Science and Engineering, Center for Micro/Nano Science and Technology, National Cheng-Kung University, Tainan, Taiwan</i>
C5-P-0122	Room Temperature Reduction of Nanoparticle-based Ag Interconnections	Tsung-Yun Pai ^{1,*} , Kun-Hung Hsieh ¹ , Jenn-Ming Song ¹ , In-Gann Chen ² , and Teng-Yuan Dong ³ ¹ <i>Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> ³ <i>Department of Chemistry, National Sun Yat-Sen University, Kaohsiung, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
C5-P-0164	Quantum Dot Color Conversion Films for Flat Panel Lamps Affording Excellent Color Rendering	Chih-Jung Chen*, Ciao-Fen Chen, Chee-Cheng Lin, and Ray-Kuang Chiang* <i>Nanomaterials Laboratory, Department of Materials Science and Engineering, Far East University, Hsing-Shih, Tainan, Taiwan</i>
C5-P-0192	Investigations of Interfacial Adhesion between Cu, Al, Co or Ti and Benzocyclobutene (BCB) Polymer Dielectric in 3D Integration	J.Y. Shih ¹ , W.C. Huang ¹ , C.T. Ko ¹ , Z. Yang ² , S.X. Hu ³ , J.P. Leu ³ , K.C. Chou ² , and K.N. Chen ^{1,*} ¹ <i>Department of Electronics Engineering, National Chiao Tung University, Hsinchu, Taiwan</i> ² <i>Department of Chemistry, The University of British Columbia, Vancouver, V6T 1Z1, Canada</i> ³ <i>Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan</i>
C5-P-0280	Formulations of Silver Nanoparticles with Energetics for Low Temperature Bonding	Yu-Ling Lin, Yu-You Jhuo, Bo-Ya Tsai, and Changshu Kuo* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
C5-P-0353	The Simulation of Micro Dot Behavior of Metallic Paste in Inkjet Printing Process and Its Experimental Validation	Wen-Chih Peng, Jhih-Kai Wang, Ho-Lin Tsai, and Weng-Sing Hwang* <i>Department of Materials Science and Engineering, National Cheng-Kung University, Tainan, Taiwan</i>
C5-P-0414	Effect of Active Elements on the Interfacial Reactions Between Copper and SAC Solder	S.Y. Chang*, Y.Z. Shan, and A.B. Wu <i>Department of Mechanical Engineering, National Yunlin University of Science & Technology, Yunlin, Taiwan</i>
C5-P-0457	Improved Thermal Management of Light-Emitting Diode	L.C. Cheng*, J.Y. Wu, and C.M. Chen <i>Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan</i>
C5-P-0549	Electrochemical Impedance Spectroscopy of Various Coating Materials in Chloride Containing Environment	E.L. Lin ¹ , S.J. Pan ² , and W.T. Tsai ^{1,2,*} ¹ <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> ² <i>Ocean Energy Research Center, Tainan Hydraulics Laboratory, National Cheng Kung University, Tainan, Taiwan</i>
C5-P-0577	Yellow Emission from Surface-functionalized ZnS: Mn/ZnO Core-shell Nanostructures: A New Approach to Luminescence Conversion for Solid State Lighting	Kuan-Yu Chen, Pin-Chun Shen, and Ching-Fuh Lin* <i>Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taipei, Taiwan</i>
C5-P-0583	Engineering of Hole Transporting in Crosslinked CdSe/CdS Quantum Dot Light-Emitting Diodes	Chun-Yuan Huang ^{1,*} , You-Ching Tsai ¹ , Zong-Lin Yang ¹ , Wu-Tsung Tsai ¹ , Chih-Jung Chen ² , and Ray-Kuang Chiang ² ¹ <i>Department of Applied Science, National Taitung University, Taitung, Taiwan</i> ² <i>Department of Materials Science and Engineering, Far East University, Tainan, Taiwan</i>
C5-P-0586	Correlation of Microstructure and Conductivity of Spray Pyrolysed Strontium Titanate	Tsai-Ling Sun, Hsiung-Chun Hung, and Shao-Ju Shih* <i>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
C5-P-0484	The Investigation of the Thermal Crosslinking Polymer-Pd Composite Ink Apply to Fabricate Micro-nano Metallization Pattern on Glass Substrate	Yan-Yu Nian*, Chang Pin Chang, Yih Ming Liu, and Ming Der Ger <i>Applied Chemistry and Material Engineering Department, Chung Cheng Institute of Technology, National Defense University, Taiwan</i>
C5-P-0680	The Effect of Cr Addition on the Wetting Behavior and Interfacial Reaction between Cu and High Temperature Zn-25Sn-0.15Al-0.1Ga-xCr Pb-free Solder	Chin-Wei Liu and Kwang-Lung Lin* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
C5-P-0703	Nano-sized Ag Interconnection, a Solution of Low Temperature Chip Stacking	Y.M. Lin, S.Y. Huang, T.C. Chang*, and W.C. Lo <i>Advanced Package Technology Division, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
C5-P-0767	Low resistivity thin films deposited by sputtering of Ag-Mg-Al alloys	Y.T. Lin ^{1,*} , Y.L. Chung ² , and J.C. Huang ¹ ¹ <i>Department of Materials and Optoelectronic Science, National Sun Yat-Sen University</i> ² <i>Metal Industries Research & Development Centre</i>
C5-P-0992	The Development of Low Characteristic Temperature Borosilicate Glass for LED Lighting Package	Y.R. Chung*, J.H. Liao, and F.B. Wu* <i>Department of Materials Science and Engineering, National United University, Miaoli, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
Symposium C6: Packaging Technology for Energy Generation Modules (Solar, Thermoelectric, etc.) Date: 2014/6/13, Time: 13:00~17:00 PM, Room: 401		
C6-P-0165	Effect of Fluid Mechanical on the Rapid Quantitative Method of Organic Additives in Advanced Copper Electroplating	W.P. Yang*, G.P. Ju, K. S. Sun, and Z.W. Wu <i>Department of Chemical Engineering National United University, Miao-Li, Taiwan</i>
C6-P-0349	Durability Test of Backsheet Film for PV Modules	Han-Chang Liu*, Chung-Teng Huang, Wen-Kuei Lee, and Bo-Han Wu <i>Green Energy & Environment Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
C6-P-0356	Using Modified xGnP/AlN Composites to Produce High-electrical-resistivity Thermally-conductive Phase Change Materials	C.W. Liao ^{1,*} , C.H. Wu ² , N.W. Pu ³ , Y.M. Liu ¹ , M.D. Ger ¹ , and Chien-Liang Chang ⁴ ¹ <i>Department of Chemical & Materials Engineering, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan</i> ² <i>School of Defense Science, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan</i> ³ <i>Department of Photonics Engineering, Yuan Ze University, Chung-Li, Taiwan</i> ⁴ <i>Chemical System Research Division, Chung Shan Institute of Science and Technology, Longtan, Taoyuan, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
C6-P-0494	Influence of VA Contents in EVA Encapsulant on Potential Induced Degradation for Crystalline Silicon PV Modules	Han-Chang Liu ^{1,*} , Wen-Kuei Lee ¹ , Chung-Teng Huang ¹ , Wen-Hsien Wang ² , Min-Tsung Kuan ² , and Bo-Han Wu ¹ ¹ <i>Green Energy & Environment Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i> ² <i>Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
C6-P-0559	PV Cell Degradation by Vibration Experimental Study in Transportation	Shu-Tsung Hsu* and Yean-San Long <i>Energy & Environment Metrology Division, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
C6-P-0786	Arc Ion Plated Nickel Aluminide as the Diffusion Barrier Layer for Bismuth Telluride Thermoelectric Module	L.C. Yang ^{1,*} , C.H. Yeh ² , and J.L. He ¹ ¹ <i>Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan</i> ² <i>Green Energy & Environment Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
C6-P-0830	Enhanced Thermoelectric Properties of Nickel Film on Bismuth Telluride-based Materials	W.H. Chao ^{1,*} , Y.R. Chen ² , S.C. Tseng ¹ , P.H. Yang ¹ , and J.Y. Hwang ¹ ¹ <i>Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i> ² <i>Green Energy and Environment Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
C6-P-1044	Electric Flame-Off Characteristics and Tensile Fracture Properties of 18 μ m Palladium Coated Cu (PCC) Wire with 50 nm Palladium Coating Layer	Yu-Hao Su*, Fei-Yi Hung*, and Truan-Sheng Lui <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>

Group D: Advanced Materials for Next-Generation Technologies

Paper no.	Paper Title	Authors/Affiliation
Symposium D1: Metamaterial Date: 2014/6/11, Time: 13:00~17:00 PM, Room: 401		
D1-P-0318	The Effect of Modifying the Bombardment Voltage and Oxygen Content on Microstructures and Exchange Biases of MgO/NiO/Ni ₃ Fe and SiO ₂ /NiO/Ni ₃ Fe	Chong-Chi Chi ¹ , YiSheng Huang ¹ , C.-H. Hsiao ¹ , R-D. Desautels ² , J. van Lierop ² , and Hao Ouyang ¹ ¹ Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan ² Department of Physics and Astronomy, University of Manitoba, Winnipeg, MB, R3T 2N2, Canada
D1-P-0750	A Mechanical-Property Investigated of CoCrFeMnNi High Entropy Alloy by <i>In-situ</i> Neutron-Diffraction And Simulation	Shang-Yi Tu ^{1,*} , E-Wen Huang ¹ , Jien-Wei Yeh ² , and Chi Lee ² ¹ Department of Chemical and Materials Engineering and Center for Neutron Beam Applications, National Central University, Zhongli, Taiwan ² Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taoyuan County, Taiwan

Paper no.	Paper Title	Authors/Affiliation
Symposium D2: Biosensor Date: 2014/6/11, Time: 13:00~17:00 PM, Room: 401		
D2-P-0074	Electrochemical Measurement of Avidin and Biotin Immobilized Pt and Fluorine-doped Tin Oxide Electrodes for Biosensor	Y. Katayanagi ¹ , F. Chimoto ¹ , K.-T. Lee ² , K. Katsumata ¹ , T. Ikoma ³ , J. Tanaka ³ , S.-Y. Lu ² , K. Okada ¹ , and N. Matsushita ^{1,*} ¹ Materials and Structures Laboratory, Tokyo Institute of Technology, Kanagawa, Japan ² Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan ³ Department of Inorganic Materials, Tokyo Institute of Technology, Tokyo, Japan
D2-P-0173	Analysis of Graphene Sheet/Glucose Oxidase-Nafion Modified RuO ₂ Electrode by Cyclic Voltammetry and Electrochemical Impedance Spectroscopy	R.T. Chen ¹ , J.C. Chou ^{1,2,*} , Y.H. Liao ³ , J.W. Lin ¹ , C.Y. Lin ¹ , and C.Y. Jhang ² ¹ Graduate School of Microelectronic and Optoelectronic Engineering, National Yunlin University of Science and Technology, Douliou, Taiwan ² Department of Electronic Engineering, National Yunlin University of Science and Technology, Douliou, Taiwan ³ Department of Information Management, TransWorld University, Douliou, Taiwan
D2-P-0345	Functionalization of Metal-Organic Framework Materials by Controlled Nanomaterials Encapsulation	F.W. Huo* and W.N. Zhang School of Materials Science and Engineering, Nanyang Technological University, 50 Nanyang Ave. 639808, Singapore

Paper no.	Paper Title	Authors/Affiliation
D2-P-0408	<i>In-situ</i> Exfoliation and Carboxylation of Graphite and Its Application in Electrochemical Sensor	H.C. Chen ¹ , Y.H. Chen ¹ , S.L. Chen ¹ , Y.T. Chern ² , R.Y. Tsai ³ , and M.Y. Hua ^{1,*} ¹ Department of Chemical and Materials Engineering, Chang Gung University, Taiwan ² Department of Chemical Engineering, National Taiwan University of Science and Technology, Taiwan ³ Electronics and Optoelectronics Research Laboratories, Industrial Technology Research Institute, Taiwan
D2-P-0433	Study on the Wireless Sensing Systems in Potentiometric Glucose Biosensor	J.T. Chen ¹ , R.T. Chen ¹ , J.C. Chou ^{1,*} , Y.H. Liao ² , H.T. Chou ¹ , and C.Y. Lin ¹ ¹ Graduate School of Microelectronic and Optoelectronic Engineering, National Yunlin University of Science and Technology, Douliou, Taiwan ² Department of Information Management, TransWorld University, Douliou, Taiwan
D2-P-0688	The Modification of Glucose Sensing Electrodes by UV Radiation	K.F. Chu*, P.Y. Chen, W.L. Hsiao, and T.K. Chen Department of Biomedical Engineering, Yuanpei University, Hsinchu, Taiwan
D2-P-0743	Using In-situ X-RAY Diffraction to Analyze the Effect of Electric Field and Temperature for Structure Evolution in Piezoelectric Material from Composite of P(VDF-TrFE) and TiOPc	T.K. Liao ^{1,*} , E.W. Huang ¹ , S.K. Cheng ¹ , W.T. Chuang ² , W.C. Chang ³ , Y.C. Chen ³ , and C.K. Lee ³ ¹ Department of Chemical and Materials Engineering and Center for Neutron Beam Applications, National Central University, Taoyuan, Taiwan ² National Synchrotron Radiation Research Center, Taiwan ³ Institute of Applied Mechanics, National Taiwan University, Taipei City, Taiwan
D2-P-0757	Dense Silver Islands Coating for Surface-Enhanced Raman Scattering Substrates	C.C. Chiu and S. Jou* Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan
D2-P-0818	Shape and Size Control of Cu Nanoparticles by Tailoring Surface Morphologies of TiN Thin Films Electrodes for Glucose Sensing	Chia-Jung Yang and Fu-Hsing Lu Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan

D

Paper no.	Paper Title	Authors/Affiliation
Symposium D3: Organic material and device Date: 2014/6/11, Time: 13:00~17:00 PM, Room: 401		
D3-P-0031	High Efficiency of White OLED using Ir(ppy) ₃ Phosphorescent Sensitizer	Wen-Jie Wu, Xuan-Fu Chen, and Su-Hua Yang* Department of Electronic Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan
D3-P-0058	Conductive Polymer Electrolyte for Solid Capacitors	Y.J. Chang ¹ , K.C. Chang ² , and K.L. Yeh ¹ ¹ Material and Chemical Research Laboratories, Taipei, Taiwan ² Department of Chemical Engineering, Ming Chi University of Technology, Taipei, Taiwan

Paper no.	Paper Title	Authors/Affiliation
D3-P-0082	Evaluation of Silk Fibroin as Hygroscopic Gate Dielectric for Indigo Ambipolar Bio-OTFTs	Jen-Ching Tsai and Jenn-Chang Hwang* <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsin-Chu City, Taiwan</i>
D3-P-0090	Graphene Oxide Sheet-Polyaniline Nanohybrids for Enhanced Photovoltaic Performance of Dye-sensitized Solar Cells	Lin-Chieh Tseng, Yu-Chen Hsu, and Rong-Ho Lee <i>Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan</i>
D3-P-0111	Quantitative Correlation of Nanomorphology and Performance of High-Efficiency Isoindigo-Based Copolymers Solar Cells Tailored by Solvent and Additive	Chun-Yu Chang ¹ , Yu-Ching Huang ² , Hsueh-Chung Liao ¹ , Cheng-Si Tsao ^{2,*} , Chien-An Chen ³ , Meng-Huan Jao ¹ , Cheng-Ya Chuang ¹ , and Wei-Fang Su ^{1,3,*} ¹ <i>Dept. of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i> ² <i>Institute of Nuclear Energy Research, Taoyuan, Taiwan</i> ³ <i>Institute of Polymer Science and Engineering, National Taiwan University, Taipei, Taiwan</i>
D3-P-0120	Mobile, Easy, and Material Saving TiO ₂ Dyeing Method for High Efficiency Dye Sensitized Solar Cells	S.C. Yeh ^{1,2} , P.H. Lee ³ , H.Y. Liao ⁴ , Y.Y. Chen ¹ , C.T. Chen ^{1,3,*} , R.J. Jeng ^{2,*} , and J.J. Shuye ⁴ ¹ <i>Institute of Chemistry, Academia Sinica, Taipei, Taiwan</i> ² <i>Institute of Polymer Science and Engineering, National Taiwan University, Taipei, Taiwan</i> ³ <i>Department of Applied Chemistry, National Chiao Tung University, Hsinchu, Taiwan</i> ⁴ <i>Research Center for Applied Science, Academia Sinica, Taipei, Taiwan</i>
D3-P-0124	Polythiophenes Comprising Conjugated Pendants for Polymer Solar Cells	Hsing-Ju Wang and Ru-Jong Jeng* <i>Institute of Polymer Science and Engineering, National Taiwan University, Taipei, Taiwan</i>
D3-P-0128	Efficiency Enhancement of Hybrid Solar Cells with GaAs/PEDOT: PSS	Kai-Yuan Cheng ¹ , Huai-Te Pan ¹ , Wei-Sheng Weng ¹ , Yi-Chun Lai ¹ , Peichen Yu ¹ , and Hsin-Fei Meng ² ¹ <i>Department of Photonics and Institute of Electro-Optical Engineering, National Chiao-Tung University, Hsinchu, Taiwan</i> ² <i>Institute of Physics, National Chiao-Tung University, Hsinchu, Taiwan</i>
D3-P-0131	A Single-Layer Organic-Inorganic-Hybrid Thin-Film Encapsulation Technique for Organic Solar Cells	Yun-Shiuan Li ¹ , Chih-Hung Tsai ¹ , Shao-Hsuan Kao ¹ , I-Wen Wu ¹ , Jian-Zhang Chen ² , Chih-I Wu ¹ , Ching-Fuh Lin ¹ , and I-Chun Cheng ^{1,*} ¹ <i>Graduate Institute of Photonics and Optoelectronics, National Taiwan University, Taipei, Taiwan</i> ² <i>Institute of Applied Mechanics, National Taiwan University, Taipei, Taiwan</i>
D3-P-0180	High-Performance Vacuum-Deposited Small Molecule Organic Solar Cells Employing a Novel D-A Type Donor	Chang-Wen Chen ^{1,*} , Yi-Hong Chen ¹ , Yann Bretonniere ² , and Hao-Wu Lin ^{1,*} ¹ <i>Department of Materials Science and Engineering, National Tsing Hua University, HsinChu, Taiwan</i> ² <i>CNRS, Université Lyon I, ENS-Lyon, 46 allée d'Italie, 69364 Lyon, France</i>

Paper no.	Paper Title	Authors/Affiliation
D3-P-0183	Light Trapping Surface Wrinkles for Organic Thin-Film Solar Cells	Hao-Wei Kang, Wei-Ching Huang, and Hao-Wu Lin* <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsin Chu, Taiwan</i>
D3-P-0198	The Passivation Effects of UV-Ozone Treatment in Si/PEDOT: PSS Hybrid Solar Cells	K.C. Chen, P.F. Yang, and H.W. Lin* <i>Department of Materials Science and Engineering, National Tsing Hua University, HsinChu, Taiwan</i>
D3-P-0203	Hierarchical Bulk Heterojunction Structure of Solution-processed Small-molecule Organic Solar Cell Studied by Synchrotron Scattering	Yu-Ching Huang ^{1,*} , Cheng-Si Tsao ^{1,*} , Tzu-Yen Huang ² , Hou-Chin Cha ¹ , Dhananjaya Patra ² , Chun-Jen Su ³ , U-Ser Jeng ³ , Kung-Hwa Wei ⁴ , and Chih-Wei Chu ² ¹ <i>Institute of Nuclear Energy Research, Longtan, Taoyuan, Taiwan</i> ² <i>Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan</i> ³ <i>National Synchrotron Radiation Research Center, Hsinchu, Taiwan</i> ⁴ <i>Department of Materials Science and Engineering, National Chiao-Tung University, Hsinchu, Taiwan</i>
D3-P-0204	Tailoring a High Performance of Inverted Polymer Solar Cell by Modifying the Electron Transport Layer	Yu-Ching Huang*, Wei-Chen Chang, Charn-Ying Chen, and Cheng-Si Tsao <i>Institute of Nuclear Energy Research, Longtan, Taoyuan, Taiwan</i>
D3-P-0205	Controlling the Formation of Organic photoactive Layer of Roll-to-Roll Processed Polymer Solar Cells	Yu-Ching Huang*, Hou-Chin Cha, Chih-Min Chuang, Cheng-Wei Chou, De-Han Lu, Charn-Ying Chen, and Cheng-Si Tsao <i>Institute of Nuclear Energy Research, Longtan, Taoyuan, Taiwan</i>
D3-P-0207	High-Performance Semitransparent Polymer Solar Cells with Good Transparency Color Perception and Rendering Properties	Chih-Yu Chang ^{1,*} , Hao-Yi Siao ¹ , Chain-Shu Hsu ² , and Alex K-Y. Jen ³ ¹ <i>Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan</i> ² <i>Department of Applied Chemistry, National Chiao Tung University, Hsin-Chu, Taiwan</i> ³ <i>Department of Materials Science and Engineering, University of Washington, Seattle, USA</i>
D3-P-0209	PEDOT: PSS/Silver Nanowire Composite Transparent Electrodes for Efficient ITO-free Organic Solar Cells	Wei-Jung Chi, Wei-Ching Hung, Jung-Hao Chang, and Hao-Wu Lin* <i>Department of Chemistry, National Tsing Hua University, Hsinchu, Taiwan</i>
D3-P-0210	Photophysical Studies of Os(II)-based Dye-sensitized Solar Cells	P.F. Yang ¹ , F.C. Hu ² , S.W. Wang ² , Y. Chi ^{2,*} , and H.W. Lin ¹ ¹ <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i> ² <i>Department of Chemistry, National Tsing Hua University, Hsinchu, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
D3-P-0221	Silicon Periodic Nanorods with Conductive Polymer of Heterojunction Solar Cell	Wei-Sheng Weng ¹ , Kai-Yuan Cheng ¹ , Yang-Yue Huang ¹ , Yi-Chun Lai ¹ , Peichen Yu ^{1,*} , Hsin-Fei Meng ² , and Martin Charlton ³ ¹ <i>Department of Photonic & Institute of Electro-Optical Engineering, National Chiao Tung University, Taiwan</i> ² <i>Institute of Physics, National Chiao Tung University, Taiwan</i> ³ <i>ECS, Faculty of Physical and Applied Sciences, University of Southampton, United Kingdom</i>
D3-P-0225	Heteroleptic Naphthyridinolate Platinum Complexes for Monochromatic and Hybrid White OLEDs	A. Poloek ^{1,2,3} , C.T. Chen ² , and C.T. Chen* ¹ <i>Institute of Chemistry, Academia Sinica, Taipei, Taiwan</i> ² <i>Department of Chemistry, National Taiwan University, Taipei, Taiwan</i> ³ <i>Nano Science and Technology Program, TIGP, Academia Sinica, Taipei, Taiwan</i>
D3-P-0238	Synthesis and Characterization of π -Conjugated Copolymers Containing 4,4'-Bisalkyl-3,3'-Dicyano-2,2'-Bithiophene Electron Acceptor and their Application for Organic Photovoltaics	S.F. Liao ^{1,2} , C.T. Chen ^{1,*} , and C.Y. Chao ^{1,2,*} ¹ <i>Institute of Chemistry, Academia Sinica, Taipei, Taiwan</i> ² <i>Dept. of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i>
D3-P-0258	Highly Efficient Organic Solar Cells with Nano-structured "Quasi-bilayer" Interfaces	Jung-Hao Chang ¹ , Kuan-Chen Chen ¹ , Wei-Ching Huang ¹ , Zheng-Yu Huang ¹ , Wei-Chieh Lin ¹ , Hsin-Fei Meng ² , Hsiao-Fang Wang ³ , Rong-Ming Ho ³ , and Hao-Wu Lin ^{1,*} ¹ <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i> ² <i>Institute of Physics, National Chiao Tung University, Hsinchu, Taiwan</i> ³ <i>Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
D3-P-0260	Morphological Characterization of Vertically Phase-separated Ternary Polymer Solar Cells toward High Performance	Meng-Huan Jao ¹ , Yu-Ching Huang ^{2,*} , Hsueh-Chung Liao ¹ , Cheng-Si Tsao ² , and Wei-Fang Su ¹ ¹ <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i> ² <i>Institute of Nuclear Energy Research, Taoyuan, Taiwan</i>
D3-P-0281	Efficient Inverted Organic Solar Cells Fabricated by Halogenated-solvent-free Non-toxic Process	W.L. Tsai, J.H. Chang, and H.W. Lin* <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
D3-P-0313	Synthesis and Characterization of High Performance New Host Materials for Blue Phosphorescence or Hybrid White Organic Light-Emitting Diodes	C.L. Wu ^{1,2} , C.T. Chen ^{2,*} , and C.T. Chen ^{1,*} ¹ <i>Institute of Chemistry, Academia Sinica, Taipei, Taiwan</i> ² <i>Department of Chemistry, National Taiwan University, Taipei, Taiwan</i>
D3-P-0335	High Efficiency Two-color White Phosphorescence Organic Light-emitting Devices with Extremely Simplified Structure for Solution Process Composing of All Small Molecule Materials	Y.T. Chang, C.T. Chen*, and Y.T. Lee <i>Institute of Chemistry, Academia Sinica, Taipei, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
D3-P-0383	Dual Layer Nanocomposite of Silicon Nanowires and Polythiophene for Organic-based Thin Film Transistors	J.-Y. Wu ¹ , K. Ogata ² , Y.-S. Chen ¹ , and G.-W. Hsieh ^{1,*} ¹ <i>College of Photonics, National Chiao Tung University, Tainan, Taiwan</i> ² <i>Engineering Department, University of Cambridge, Cambridge, UK</i>
D3-P-0423	New Solution Processable Small Molecular Host Materials for Blue and White Phosphorescence Organic Light-Emitting Diodes	Y.T. Lee ^{1,2} , Y.T. Chang ¹ , C.T. Chen ² , and C.T. Chen ^{1,*} ¹ <i>Institute of Chemistry, Academia Sinica, Taipei, Taiwan</i> ² <i>Department of Chemistry, National Taiwan University, Taipei, Taiwan</i>
D3-P-0436	Efficient Planar-type Perovskite Solar Cells Fabricated by Two-Step Process	Sheng-Yi Hsiao, Chang-Wen Chen, and Hao-Wu Lin* <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
D3-P-0477	A Skin-like Stretchable Organic Memory Based on Rippled Structure	Y.C. Lai ^{1,3,*} , C.Y. Chen ¹ , Y.X. Wang ¹ , C.Y. Chang ² , W.F. Su ² , and Y.F. Chen ^{1,3} ¹ <i>Department of Physics, National Taiwan University, Taipei, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i> ³ <i>Center for Emerging Material and Advanced Devices, National Taiwan University, Taipei, Taiwan</i> ⁴ <i>Center for Emerging Material and Advanced Devices, National Taiwan University, Taipei, Taiwan</i>
D3-P-0487	Electrical Switching Mechanism of Flash-type Post-it Organic Memory	Y.C. Lai ^{1,3,*} , Y.X. Wang ¹ , C.Y. Chang ² , H.C. Liao ² , W.F. Su ² , and Y.F. Chen ^{1,3} ¹ <i>Department of Physics, National Taiwan University, Taipei, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i> ³ <i>Center for Emerging Material and Advanced Devices, National Taiwan University, Taipei, Taiwan</i>
D3-P-0535	Synthesis and Characterization of Tris (acetylacetonato) [Al/Fe], Metal Organic Complexes as a Solid MOCVD Precursor	Matin Roshan zamir, Chuan-Pu Liu*, and Reza Rooydell <i>Department of Material Science and Engineering National Cheng Kung University, Tainan, Taiwan</i>
D3-P-0540	The Charge Generation Mechanism of Highly Doped P-N Junctions in Tandem Organic Light-Emitting Diodes	C.C. Hsu ^{1,2,*} , H.P. Chen ³ , and C.H. Wu ³ ¹ <i>Graduate School of Engineering Science and Technology, National Yunlin University of Science and Technology, Douliu, Taiwan</i> ² <i>Department of Electronic Engineering, National Yunlin University of Science and Technology, Douliu, Taiwan</i> ³ <i>Graduate School of Electronic and Optoelectronic Engineering, National Yunlin University of Science and Technology, Douliu, Taiwan</i>
D3-P-0574	Induction of Internal Capacitance Effect of Organic Photovoltaic Device (OPV) by Real-Time One-Sweep Method (RTOSM) in I-V measurement	Yean-San Long*, Shu-Tsung Hsu, and Teng-Chun Wu <i>Energy & Environment Metrology Division, Industrial Technology Research Institute, Hsinchu, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
D3-P-0628	Mechanical Properties of Polybutadiene Rubber by Molecular Dynamics Simulations	Ching-Wie Liao and Wen-Dung Hsu* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
D3-P-0637	Targeting to HER2-positive Breast Cancer Cell by Dual Targeting Strategies	C.S. Chiang and S.Y. Chen* <i>Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan</i>
D3-P-0643	Recovery and Breakdown Mechanisms of Lipid Bilayer During Nanoindentation: Molecular Dynamics Simulations	Fan-Wei Lin and Wen-Dung Hsu* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
D3-P-0663	Synergistic Enhancement of Combination Therapy Using Thickness-controllable Lipid Shell-droplet Core Nanoparticles	Chia-Wei Su ¹ , Ting-Hsi Fan ² , Wei-Ming Li ¹ , and San-Yuan Chen ^{1,*} <i>¹Department of Materials Sciences and Engineering National Chiao Tung University, Hsinchu, Taiwan</i> <i>²Undergraduate Honors Program of Nano Science and Engineering National Chiao Tung University, Hsinchu, Taiwan</i>
D3-P-0738	Transreactions in Blends of the Biodegradable Copolyester with Phenoxy	C.C. Su*, C.H. Wei, W.J. Chen, and B.L. Wu <i>Department of Chemical and Materials Engineering, National University of Kaohsiung, Kaohsiung, Taiwan</i>
D3-P-0759	Synthesis and Properties of an Air-stable n-Channel Semiconductor Based on MEH-PPV Derivatives Containing Benzo[c]cinnoline Moiety	Jyh-Chien Chen ^{1,*} , Hsin-Chung Wu ¹ , Tuo Chen ¹ , Chi-Jui Chiang ¹ , and Li Xing ² <i>¹Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i> <i>²Pfizer Worldwide Research and Development, Cambridge, MA, USA</i>
D3-P-0773	Characteristics of Pentacene Organic Thin-film Transistors with Silk Fibroin as Gate Dielectric at Different Humidity	Y.-P. Tang, C.-Y. Lee, L.-S. Tsai, and J.-C. Hwang* <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
D3-P-0779	Drosophila Fatty Acid Binding Protein as the Gate Dielectric Material for Organic Thin-film Transistors	J.-P. Wu ¹ , C.-Y. Lee ¹ , Y.-Y. Cheng ² , Y.-F. Huang ² , J.-C. Hwang ^{1,*} , and P.-C. Lyu ² <i>¹Institute of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i> <i>²Institute of Bioinformatics and Structural Biology, National Tsing Hua University, Hsinchu, Taiwan</i>
D3-P-0784	The Ink Material Used in the Electro-wetting Display	Ming-Tzung Wu, Te-Yi Chang, Chin-Hua Chang, and Yu-Chin Lin <i>Material and Chemical Research Laboratories, Industrial Technology Research Institute, Taipei, Taiwan</i>
D3-P-0792	A Highly Sensitive Terpyridine-based Polyfluorene as Colorimetric and Turn-off Fluorimetric Sensor Toward Cu ²⁺ Detection	P.C. Yang, H.W. Wen, H.J. He, and M.T. Chen <i>Department of Chemical Engineering and Materials Science, Yuan-Ze University, Chung-Li, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
D3-P-0801	Highly Efficient Yellow Organic Light Emitting Diode with a Novel Wet- and Dry-Process Feasible Iridium Complex Emitter	T.H. Li ^{1,*} , J.H. Jou ¹ , Y.X. Lin ¹ , C.L. Chin ² , J.J. Shyue ³ , and C.T. Chen ⁴ ¹ Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan ² Material and Chemical Research Laboratories Industrial Technology Research Institute, Hsinchu, Taiwan ³ Research Center for Applied Sciences Academia Sinica, Taipei, Taiwan ⁴ Department of Chemistry National Tsing Hua University, Hsinchu, Taiwan
D3-P-0802	Artificial Dusk-Light Based on Organic Light Emitting Diodes	C.C. An ^{1,*} , J.H. Jou ¹ , R.Z. Wu ¹ , H.H. Yu ¹ , and C.T. Chen ² ¹ Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan ² Department of Chemistry, National Tsing Hua University, Hsinchu, Taiwan
D3-P-0841	Synthesis and Mechanical Properties of the Monodisperse Poly (methyl methacrylate/ 1, 6-hexanediol diacrylate) Particles	Y.C. Kao*, Y.C. Chen, H.T. Li, C.H. Shih, K.C. Chen, and Y.D. Chen Department of Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan
D3-P-0888	Effect of Hole Blocking Layer on Organic Light-Emitting Diodes	C.A. Chi ^{1,*} , J.H. Wu ² , C.H. Li ² , Y.P. Lin ² , and C.L. Chiang ² ¹ Department of Material Engineering, Ming Chi University of Technology, Taipei, Taiwan ² Green Energy and Environment Research Laboratory, Industrial Technology Research Institute, Hsinchu, Taiwan
D3-P-0889	Effect of ITO Sheet Resistance on Alq ₃ -Based Organic Light-Emitting Diodes	J.H. Wu ^{1,*} , C.A. Chi ² , Y.P. Lin ¹ , J.Y. Li ¹ , and S.P. Chen ¹ ¹ Green Energy and Environment Research Laboratory, Industrial Technology Research Institute, Hsinchu, Taiwan ² Department of Material Engineering, Ming Chi University of Technology, Taipei, Taiwan
D3-P-0894	Very-high CRI of WOLEDs with Carrier Modulation Layer	C.H. Li ^{1,*} , C.A. Chi ² , Y.P. Lin ¹ , G.Y. Chen ¹ , J.Y. Li ¹ , and S.P. Chen ¹ ¹ Green Energy and Environment Research Laboratories, Industrial Technology Research Institute, Taipei, Taiwan ² Department of Materials Engineering, Ming Chi University of Technology, Taipei, Taiwan
D3-P-0914	Influence of Thickness of Composite Scattering Films on Efficiency Improvement for the Organic Light-emitting Device	Y.-W. Su ¹ , C.-Y. Jian ¹ , C.-H. Wu ¹ , M.-K. Wei ^{1,*} , and J.-H. Jou ² ¹ Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan ² Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan

Group E: Modeling, Processing and Characterization

Paper no.	Paper Title	Authors/Affiliation
Symposium E1: Modeling of Materials Date: 2014/6/13, Time: 13:00~17:00 PM, Room: 401		
E1-P-0158	High Strength Core-shell Steel Composite	C.N. Kuo, C.H. Chang*, F.Z. Lin, Z.H. Lee, B.H. Wang, R.Y. Huang, C.E. Wu, C.W. Lin, C.T. Kuo, and C.M. Wei <i>Metal Industries Research & Development Centre, Kaohsiung, Taiwan</i>
E1-P-0276	The Structural and Mechanical Properties of Polypropylene-based Graphene Nanocomposites by Molecular Dynamics Simulation	Tien-Jung Huang ¹ , Shin-Pon Ju ^{2,*} , and Chien-Chia Chen ² ¹ <i>Material & Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i> ² <i>Department of Mechanical and Electro-Mechanical Engineering, National Sun Yat-Sen University, Kaohsiung, Taiwan</i>
E1-P-0287	Microstructure and Mechanical Properties of Al/LZ91 Multilayer Fabricated by Accumulative Roll Bonding (ARB)	C.H. Wu*, X.R. Hu, and J.Y. Wang* <i>Department of Materials Science and Engineering, National Dong Hwa University of Science and Technology, Hualien, Taiwan</i>
E1-P-0320	Effects of Ga Concentration on Electronic and Optical Properties of Ga-doped ZnO by First Principles Calculations	H.C. Wu*, Y.R. Zhu, C.C. Chen, and Y.C. Peng <i>Department of Materials Engineering, Ming Chi University of Technology, New Taipei, Taiwan</i>
E1-P-0351	Solid/solid Interfacial Reactions of Sn/Ni(-P)/Bi ₂ Te ₃ -based Thermoelectric Materials	Chun-Wei Chiu and Chao-Hong Wang* <i>Department of Chemical Engineering, National Chung Cheng University, Taiwan</i>
E3-P-0398	Structural Design and Attachment Mechanisms of Aquatic Insects	Guan-Lin Liu, Ming-Han Chou, Yung-Chieh Chuang, Hao-Jen Fang, and Po-Yu Chen* <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
E1-P-0419	Analysis of Impact Resistance Performance of Hexagonal Ceramic Composite Plate	Y.L. Chen ¹ , C.Y. Li ¹ , C.Y. Huang ² , Y.C. Lin ^{2,*} , and C.Y. Ni ³ ¹ <i>Department of Power Vehicle and Systems Engineering, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan</i> ² <i>School of Defense Science, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan</i> ³ <i>Chung-Shan Institute of Sciences and Technology, Armaments Bureau, Taoyuan, Taiwan</i>
E1-P-0425	Kinetics Study of Thermal Decomposition of Hydroxyapatite	C.H. Kuo and M.H. Teng* <i>Department of Geosciences, National Taiwan University, Taipei, Taiwan</i>
E1-P-0544	Attempts to Improve Thermoelectric Properties of Magnéli Phase Titanium Oxides by Controlling Defect Chemistry	D. Kanayama ^{1,*} , A. Yumura ¹ , S. Fujii ¹ , T. Yokoi ¹ , Y. Miyauchi ¹ , and M. Yoshiya ^{1,2} ¹ <i>Department of Adaptive Machine Systems, Osaka University, Osaka, Japan</i> ² <i>Nanostructures Research Laboratory, Japan Fine Ceramics Center, Nagoya, Japan</i>

Paper no.	Paper Title	Authors/Affiliation
E1-P-0564	The Effect of Pt on the γ' -Ni ₃ Al/Al ₂ O ₃ Interface of Thermal Barrier Coatings	Y.M. Nie* and Y.A. Chen <i>Department of Applied Materials and Optoelectronic Engineering, National Chi Nan University, Nantou County, Taiwan</i>
E1-P-0585	Modeling of Surface Profile Evolution by Plasma Etching Process	Zhong-Long Chang* and Kun-Dar Li <i>Department of Materials Science, National University of Tainan, Tainan, Taiwan</i>
E1-P-0590	Surface Strengthening of Alumina Using Glass Infiltration Technique	Sachin N. Bramhe ^{1,2} , M.C. Chu ¹ , and T.N. Kim ^{2,*} ¹ <i>Korea Research Institute of Standards and Science, Daejeon, South Korea</i> ² <i>Department of Materials Science and Engineering, Pai Chai University, Daejeon, South Korea</i>
E1-P-0606	Numerical Simulation on the Evolution and Morphology of Faceted Nanoparticles	Kwanyu Chen* and Kun-Dar Li <i>Department of Materials Science, National University of Tainan, Tainan, Taiwan</i>
E1-P-0620	Design of Nozzle for Planar Flow Casting	Hung-Pin Nien ^{1,*} , Huey-Jiuan Lin ¹ , and Chung-Yung Wu ² ¹ <i>Department of Materials Science and Engineering, National United University, Miaoli, Taiwan</i> ² <i>Iron & Steel Research & Development Department, China Steel Corporation, Taiwan</i>
E1-P-0623	Backscattering High Resolution Monochromator for X-ray in the Region from 2 keV to 35 keV	Chi-Yi Huang*, Ku-Ding Tsuei, Cheng-Chi Chen, Duan-Jen Wang, Shih-Chun Chung, and Hui-Fang Chuang <i>National Synchrotron Radiation Research Center, Hsinchu, Taiwan</i>
E1-P-0650	Compatibility and Crystallization Behavior of Poly (Lactic Acid)/Poly (trimethyleneterephthalate)/ Styrene-Ethylene-Buthylene-Styrene Composites	Xin-Ming Tuan ¹ , Zhi-Ling Huang ¹ , Bo-Jyue Kao ¹ , Ming-Chien Yang ¹ , Chih-Kuei Chu ² , Yu-Ting Hu ² , Yi-Hsun Chiu ² , Jui-Chin Chen ² , Wei-Hua Yao ² , Shu-Chih Liu ³ , Maw-Cherng Suen ³ , Mei-Shan Hu ³ , and Chi-Hui Tsou ^{1,2,4,*} ¹ <i>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i> ² <i>Department of Materials and Textiles, Oriental Institute of Technology, Pan-Chiao, Taiwan</i> ³ <i>Graduate School of Materials Applied Technology, Taoyuan Innovation Institute of Technology, Jongli, Taiwan</i> ⁴ <i>R&D Center for Membrane Technology, Department of Chemical Engineering, Chung Yuan University, Chung-Li, Taiwan</i>
E1-P-0652	Crystallization Behavior and Tensile Property of Poly(trimethyleneterephthalate)/Styrene-Ethylene-Buthylene-Styrene Composites	Zhi-Ling Huang ¹ , Xin-Ming Tuan ¹ , Bo-Jyue Kao ¹ , Ming-Chien Yang ¹ , Chih-Kuei Chu ² , Yu-Ting Hu ² , Yi-Hsun Chiu ² , Jui-Chin Chen ² , Wei Hua Yao ² , Shu-Chih Liu ³ , Mei-Shan Hu ³ , Maw-Cherng Suen ³ , and Chi-Hui Tsou ^{1,2,4,*} ¹ <i>Department of Materials Science and Engineering National Taiwan University of Science and Technology, Taipei, Taiwan</i> ² <i>Department of Materials and Textiles, Oriental Institute of Technology, Pan-Chiao, Taiwan</i> ³ <i>Graduate School of Materials Applied Technology, Taoyuan Innovation Institute of Technology, Jongli, Taiwan</i> ⁴ <i>R&D Center for Membrane Technology, Department of Chemical Engineering, Chung Yuan University, Chung-Li, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
E1-P-0702	Influences of Elastic Strain and Consequent Change in δ/γ Interface Energy on Nucleation-Triggered Massive-like Transformation of Carbon Steel	Moeka Sato ^{1,*} , Manabu Watanabe ¹ , Kenta Nakajima ¹ , Nobufumi Ueshima ¹ , Masato Yoshiya ^{1,2} , Tomoya Nagira ¹ , and Hideyuki Yasuda ³ ¹ Department of Adaptive Machine Systems, Osaka University, Osaka, Japan ² Nanostructures Research Laboratory, Japan Fine Ceramics Center, Aichi, Japan ³ Department of Materials Science and Engineering, Kyoto University, Kyoto, Japan
E1-P-0748	A Molecular Dynamics Study to Investigate Micromechanisms of a Dendrite/Zr-based Bulk-metallic-glass Composite Subjected to Plastic Deformation	Yi-Chuan Chao ^{1,*} , E-Wen Huang ¹ , Marco Di Michiel ² , Jer-Yi Liao ¹ , and Wen-Jay Lee ³ ¹ Department of Chemical and Materials Engineering and Center for Neutron Beam Applications, National Central University, Jhongli, Taiwan ² European Synchrotron Radiation Facility Beamline ID15, Grenoble, France ³ National Center for High-Performance Computing, Tainan, Taiwan
E1-P-0755	Isothermal Section at 250°C and Liquidus Projection of Sn-Zn-Sb Ternary System	T.N. Ko ¹ , W. Gierlotka ^{2,*} , and A.C. Sun ^{1,*} ¹ Department of Chemical Engineering and Materials Science, Yuan Zi University, Chung-Li, Taiwan ² Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan
E1-P-0865	The Simulation of Thermoelectric Module's Efficiency and Power Output	H.C. Chen*, S.H. Chiou, H.S. Chu, J.D. Hwang, and C.T. Hsu Department of Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan
E1-P-0915	Determination of Solid-liquid Interfacial Anisotropy from Wetting and Premelting Grain Boundary Groove Through Phase Field Modeling	S.Y. Yeh* and C.W. Lan Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan
E1-P-0955	Three-dimensional Phase Field Modeling on Growth Mechanism of Si Faceted Dendrite	H.K. Lin* and C.W. Lan Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan
E1-P-1031	Atomistic Modeling of Cu-Zr-Al Metallic Glass under Indentation at Elevated Temperature	C.Y. Wu and Y.C. Wang* Department of Civil Engineering, National Cheng Kung University, Tainan, Taiwan

Paper no.	Paper Title	Authors/Affiliation
Symposium E2: Processing of Materials Date: 2014/6/13, Time: 13:00~17:00 PM, Room: 401		
E2-P-0105	Liquidus Projection of the Solar Cell Ag-In-Se Ternary System	Liang-Chun Chang, Jui-Shen Chang, and Sinn-wen Chen* Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan
E2-P-0117	A Study on the Clad-roll Bonding Technology for Pure Copper/stainless Clad Metal	Cheng-En Wu, Rin-Yo Huang, Chia-Hao Chang, Fang-Zhou Lin, Bo-Han Wang, and Zong-Han Lee, Che-Nan Kuo, Cheng-Wen Lin, and Cheng-Tsung Kuo Metal Industries Research & Development Centre, Kaohsiung, Taiwan

Paper no.	Paper Title	Authors/Affiliation
E2-P-0177	Microstructure Evolution of Al-Zn-Mg-Cu Alloy during Severe Plastic Deformation	Y.T. Hsu ¹ , C.H. Liu ¹ , W.P. Hon ² , J.S. Lin ² , and H.C. Lin ^{1,*} ¹ Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan ² Advanced Material Specialty Inc., Yunlin, Taiwan
E2-P-0199	The Effects of Equal-channel Angular Pressing and Adding Y element on the Mechanical Properties of LZ91 Mg-Li Alloy	C.R. Chen*, J.Y. Wang, and C.H. Tu Institute of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan
E2-P-0222	Influence of Zr Element Addition on the Mechanical Properties of a Nickel-based Superalloy by a Fine-grained Process	Y.L. Tsai ^{1,2,*} , S.F. Wang ¹ , and H.Y. Bor ² ¹ Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, Taiwan ² Materials and Electro-Optics Research Division, Chung-Shan Institute of Science and Technology, Tao-Yuan, Taiwan
E2-P-0227	Characterization of Bi ₂ O ₃ /ZrO ₂ Nanopowder Prepared by Spary Pyrolysis	B.-J. Shao ¹ , C.-Y. Chen ¹ , and C.-K. Lin ² ¹ Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan ² School of Dental Technology, College of Oral Medicine, Taipei Medical University, Taipei, Taiwan
E2-P-0275	Effect of Mechanical Alloying and Nano-oxide Particle Reinforcement on the Synthesis of 6061 Aluminum Nanocomposites	C.H. Lin, J.Y. Wang, and C.L. Chen* National Dong Hwa University, Department of Materials Science and Engineering, Hualien, Taiwan
E2-P-0279	Effect of Ti Content on Microstructure and Properties of Mechanically Alloyed Oxide-dispersed Tungsten Alloys	Y. Tseng, Y.A. Chen, and C.L. Chen* National Dong Hwa University, Department of Materials Science and Engineering, Hualien, Taiwan
E2-P-0324	Fabrication of β -FeSi ₂ Sintered Body with Three-dimensional Alignment by an Anisotropic Magnetic Field	N. Nakatsuka ^{1,*} , K. Kurokawa ¹ , M. Yoshiya ¹ , T. Nagira ¹ , and H. Yasuda ² ¹ Department of Adaptive Machine Systems, Osaka University, Osaka, Japan ² Department of Materials Science and Engineering, Kyoto University, Kyoto, Japan
E2-P-0342	Electrodeposition of Ni-P Alloy on Sintered NdFeB Magnet Employing Supercritical CO ₂ Bath	S.T. Chung ^{1,2} , C.Y. Lin ¹ , W.T. Tsai ^{1,2,*} , C.C. Wang ^{1,3} , C.M. Wei ³ , and H.C. Hung ³ ¹ Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan ² Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan ³ Metal Industries Research & Development Centre, Kaohsiung, Taiwan
E2-P-0346	Welding Temperature and Solder Effects on Electric Conductivity	C.W. Lin, C.N. Kuo*, C.T. Kuo, R.Y. Huang, Z.H. Lee, F.Z. Lin, C.H. Chang, S.J. Yang, and C.C. Huang Metal Processing R&D Department, Metal Industries Research & Development Centre, Kaohsiung, Taiwan
E2-P-0363	Synthesis of in Situ NiAl-TiC Nanocomposites by Mechanical Alloying	C.C. Hsiung, J.N. Li, and C.L. Chen* National Dong Hwa University, Department of Materials Science and Engineering, Hualien, Taiwan

Paper no.	Paper Title	Authors/Affiliation
E2-P-0428	Effect of Nitrogen-radical Irradiation for Selective Growth of InAs on GaAsSb/GaAs Submicron Dot Structures	Y. Suzuki, S. Kimura, K. Miyazawa, and K. Uesugi* <i>Department of Information and Electronic Engineering, Muroran Institute of Technology, Japan</i>
E2-P-0429	Arsenic Incorporation in GaAsSb Submicron Dots on GaAs Substrates Grown by Metal-organic Molecular Beam Epitaxy	S. Kimura, Y. Suzuki, K. Miyazawa, Y. Shimomura, Y. Igarashi, and K. Uesugi* <i>Department of Information and Electronic Engineering, Muroran Institute of Technology, Japan</i>
E2-P-0463	Improving Radiation Absorption Efficiency for Recycle Waste Water with Cu ²⁺	Jenn-Shing Wang ^{1,*} , Chia-Yu Wu ¹ , Yu-Ching Wang ² , Rui-Dong Li ¹ , and Beng-Xian Yan ¹ ¹ <i>Department of Mechanic Engineering, Far East University, Tainan, Taiwan</i> ² <i>Institute of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
E2-P-0486	Comparing the Characteristics of Grinding of Zirconia Before and After Sintering	Jenn-Shing Wang ^{1,*} , Beng-Xian Yan ² , Chia-Yu Wu ² , Jiun-Shen Wang ³ , and Shien-Jen Yang ⁴ ¹ <i>Department of Mechanical Engineering, Far East University, Tainan, Taiwan</i> ² <i>Institute of Mechanical Engineering, Far East University, Tainan, Taiwan</i> ³ <i>Department of Power Mechanical Engineering, National Taitung Junior College, Taitung, Taiwan</i> ⁴ <i>Department of Cosmetic Application and Management, Far East University, Tainan, Taiwan</i>
E2-P-0505	Ultrathin (<2nm) N-rich ALD-TiN Film as Ag Diffusion Barrier	Hsin-Han Huang ¹ , M.-H. Lee ¹ , J.-S. Hsu ² , T.-H. Chang ² , P.S. Chen ² , K.-Y. Jhou ³ , W. Hsieh ³ , and Chao-An Jong ^{3,*} ¹ <i>Institute of Electro-optical Science and Technology, National Taiwan Normal University, Taipei, Taiwan</i> ² <i>Department of Chemistry and Materials Engineering, Ming-Hsin University of Science and Technology, Hsin-Feng, Hsinchu, Taiwan</i> ³ <i>National Nano Device Laboratories (NDL), NARLabs, Hsinchu, Taiwan</i>
E2-P-0519	Determination of the Amorphous Regions of the Zr-Ag-Al Ternary System and the Phase Equilibria of Zr-Ag-Al Ternary System at 500°C	Yee-Wen Yen ¹ , Hsien-Ming Hsiao ^{1,2} , Hao Chen ¹ , Zong-Ling Li ¹ , and Yen-Wei Chang ¹ ¹ <i>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i> ² <i>Institute of Nuclear Energy Research, Longtan, Taiwan</i>
E2-P-0528	Preparation of Ti ₃ SiC ₂ /TiC-containing NiAl Intermetallic Based Composite with Addition of Al as Sintering Agent	Wen-Yan Ruan, Song-Zhen Xie*, and Hsin-Ming Wu <i>Department of Materials Engineering, Tatung University, Taipei, Taiwan</i>
E2-P-0531	Effects of 2wt.%Y Addition on the High Temperature Mechanical Properties and Aging Strengthening of ZK60 Magnesium Alloys	L.S. Huang*, C.H. Lin, and J.Y. Wang* <i>Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
E2-P-0571	Study on Preparation of MAO Ceramic Coating on CP-Ti Hot-dip Aluminum	P.H. Chiu* and M.R. Yang <i>Department of Materials Engineering, Tatung University, Taipei, Taiwan</i>
E2-P-0681	Brazing Incoloy 800 Applied in High-Performance Plate Heat Exchanger	W.S. Chen, Y.C. Liu, and R.K. Shiue* <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i>
E2-P-0701	Self-Assembled Microlens Arrays and Their Optical Properties	B.H. Wang ¹ , M-K. Wei ^{1,*} , and J.-H. Jou ² ¹ <i>Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
E2-P-0740	Development of High Performance Carbon Fiber Precursor	Hsin-Ping Chang*, Chun-Han Ling, Cheng-Jung Ko, Chung-An Wang, Chuen-Ming Gee, Pai-Lu Wang, and Ching-Jang Lin <i>Chung Shan Institute of Science and Technology (CSIST), Armaments Bureau, M.N.D. Taiwan</i>
E2-P-0747	Brazing 316L Stainless Steel and Ti ₅₀ Ni ₅₀ with Au-based Fillers	C.P. Chen ¹ , R.K. Shiue ² , and S.K. Wu ^{1,2,*} ¹ <i>Department of Mechanical Engineering, National Taiwan University, Taipei, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i>
E2-P-0766	Square Patterns with Micro-structures Generated by Femtosecond Square Laser Beams	Y.D. Chen*, W.J. Tsai, S.H. Liu, and J.B. Horng <i>Additive Manufacturing Innovation Department, ITRI Southern Region Campus, Tainan, Taiwan</i>
E2-P-0776	Effect of Process Parameters on the Friction and Wear Behavior of Carbon Nanotube Containing Friction Material	Kuo-Jung Lee*, Mao-Hsiang Hsu, Huy-Zu Cheng, Mu-Chou Li, Guan-Ting Liou, Chang-Yi Chen, Ya-Ru Luo, Jhen-Guei Liang, Yi-Jyun Lin, and Shu-Han Yang <i>Department of Materials Science and Engineering, I-SHOU University, Kaohsiung, Taiwan</i>
E2-P-0785	Designing Cu and Ag Bearing 200 Series Stainless Steels for Antibacterial Applications	H.W. Wu ¹ , A.C. Yeh ^{1,*} , C.C. Huang ² , H.Y. Chang ³ , and Y. Tsou ³ ¹ <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i> ² <i>Metal Processing R&D Department, Metal Industries Research & Development Centre (MIRDC), Kaosiung, Taiwan</i> ³ <i>Institute of Molecular Medicine, National Tsing Hua University, Hsinchu, Taiwan</i>
E2-P-0787	Microstructural and Properties Evolution of 800H Superalloy during Grain Boundary Engineering Processes	Y.H. Huang ¹ , T.K. Tsao ¹ , A.C. Yeh ¹ , S.C. Chang ¹ , M.Y. Li ² , and S.M. Kuo ² ¹ <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i> ² <i>New Materials Research & Development Department, China Steel Corporation, Taiwan</i>
E2-P-0788	Development of High Entropy Superalloys	An-Chou Yeh, Te-Kang Tsao, Yao-Jen Chang, and Jien-Wei Yeh <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
E2-P-0789	Effect of Minor Elements on the Hot Deformation Behaviours of a Superalloy	J.M. Chang ¹ , A.C. Yeh ^{1,*} , M.Y. Li ² , and S.M. Kuo ² ¹ <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i> ² <i>New Materials Research & Development Department, China Steel Corporation, Taiwan</i>
E2-P-0796	Improvement of Tensile Mechanical Properties and Failure Behaviors of the Friction Stir Processed Mg-Li Alloy	Chung-Wei Yang* and Chih-Hao Chen <i>Department of Materials Science and Engineering, National Formosa University, Yulin, Taiwan</i>
E2-P-0822	Effect of the Stabilized R phase on Reversible Shape Memory of Ni-rich NiTi Alloy	Zong-Han Wu and Chen-Ti Hu* <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
E2-P-0829	Synthesis of Silver Nanowire and Its Application for Transparent Conducting Electrode	Chien-Shiun Liao* and Jia-Jyun Yang <i>Department of Chemical Engineering & Materials Science, Yuan-Ze University, Taoyuan, Taiwan</i>
E2-P-0831	The Effects of Aging Treatments on the Tensile Fracture Characteristics of Ti-15V-3Cr-3Sn-3Al Alloy	Y.-K. Chou ¹ , W. Kai ² , and L.W. Tsay* ¹ <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i> ² <i>Institute of Materials Engineering, National Taiwan Ocean University, Keelung, Taiwan</i>
E2-P-0837	High-temperature Performances of the Spectrally Selective CrN/CrON/Al ₂ O ₃ Tandem Absorber Prepared by Reactive Magnetron Sputtering	Y.H. Li ^{1,*} , T.K. Tsai ^{1,2,*} , S.W. Yang ¹ , J.C. Liou ² , and H.C. Yang ² ¹ <i>Graduate Institute of Materials Science and Green Energy Engineering, National Formosa University, Yunlin, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Formosa University, Yulin, Taiwan</i>
E2-P-0838	High-temperature Properties of CrAlN Thin Films Deposited by Reactive Magnetron Sputtering	T.K. Tsai ^{1,2,*} , Y.H. Li ¹ , S.W. Yang ^{1,*} , C.C. Huang ² , and H.Y. Chang ² ¹ <i>Graduate Institute of Materials Science and Green Energy Engineering, National Formosa University, Yunlin, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Formosa University, Yunlin, Taiwan</i>
E2-P-0855	Effect of Al Addition on Mechanical Properties and Oxidation Resistance of Refractory High-entropy HfNbTaTiZr Alloy	Jien-Wei Yeh*, Gia-Shiou Chang, Chun-Ming Lin, and Chien-Chang Juan <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
E2-P-0871	On High-entropy Nitride Films of (AlCr _{1.5} Nb _{0.5} SiBC _{0.5})N _x by DC Reactive Magnetron Sputtering	C.L. Tsai, W.J. Shen, C.Y. Cheng, and J.W. Yeh* <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
E2-P-0897	Effects of Repetitive Thermo-mechanical Process on Hardness and Tribological Properties of 316L Stainless Steel	C.H. Hsu* and K.H. Huang <i>Department of Materials Engineering, Tatung University, Taipei, Taiwan</i>
E2-P-0993	Preparation and Properties of the Zn Doped Hydroxyapatite	Yen-Ching Wang and Yung-Chin Yang* <i>Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
E2-P-1005	Deposition of TiO ₂ Thin Films Using a High Power Impulse Magnetron Sputter Process	Pin-Hung Li, Jian-Yu Jian, Che Liu, Chi-Lung Chang, and Wan-Yu Wu* <i>Department of Materials Science and Engineering, MingDao University, ChangHua, Taiwan</i>
E2-P-1029	Assessment of the Critical Pitting Temperature of the Multi-component High Entropy Alloy: Al ₅ Cr ₁₂ Fe ₃₅ Mn ₂₈ Ni ₂₀ in Various Aqueous Environments	S.K. Chen ¹ , S.Y. Lin ¹ , Chun-Huei Tsau ¹ , J.W. Yeh ² , and Han C. Shih ^{1,2,*} ¹ <i>Department of Chemical and Materials Engineering Chinese Culture University, Taipei, Taiwan</i> ² <i>Department of Materials Science and Engineering National Tsing Hua University, Taipei, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
Symposium E3: Characterization of Materials Date: 2014/6/13, Time: 13:00~17:00 PM, Room: 401		
E3-P-0011	Micro-Tensile Test Using Micro-Sized Gripper and Specimen Fabricated by FIB	Yoshiahi Kihara*, Takashi Nagoshi, Tso-Fu Mark Chang, Tatsuo Sato, and Masato Sone <i>Precision and Intelligence Laboratory, Tokyo Institute of Technology, Japan</i>
E3-P-0020	Hierarchical Structure Formation of Nanoparticles Studied by Time-Resolved Small Angle X-ray Scattering	Yu-Chiao Lin ¹ , Hsin-Lung Chen ^{1,*} , Takeji Hashimoto ^{1,2} , and Yen-Cheng Li ³ ¹ <i>Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan</i> ² <i>Advanced Science Research Center, Japan Atomic Energy Agency, Nakagun, Japan</i> ³ <i>Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i>
E3-P-0057	Enhance Thermoresistance of Plastics by Maleimide	K.L. Yeh ^{1,*} , Y.J. Chang ¹ , and K.C. Chang ² ¹ <i>Material and Chemical Research Laboratories, ITRI, Taiwan</i> ² <i>Department of Chemical Engineering, Ming Chi University of Technology, New Taipei, Taiwan</i>
E3-P-0060	Structure of a MTMS-based Hydrophobic Silica Aerogel Prepared from an Ionic Liquid	Ching-Mao Wu*, and Szu-Yin Lin <i>Material and Chemical Research Laboratories, Industrial Technology Research Institute, Chutung, Hsin-Chu, Taiwan</i>
E3-P-0072	Rheological Characterization of PLA/PTT Composite Blended with Nanoclay or mPOE	G.G. Lin*, T.W. Kuo, and M. Sipos <i>Department of Chemical and Materials Engineering, Energy and Opto-Electronic Materials Research Center, Tamkang University, New Taipei City, Taiwan</i>
E3-P-0108	A Pretreatment Characterization of Surface Morphology and Interfacial Microstructure of the Zincate Films Formed on a Commercial Al Alloy	W.L. Wang*, C.C. Hsieh, C.H. Lai, Y.C. Tsai, and C.C. Yang <i>Special Alloy Application Department, Green Energy & Eco-Technology, ITRI Southern Region Campus (IS), Industrial Technology Research Institute (ITRI), Tainan, Taiwan</i>
E3-P-0114	Phase Behavior of Poly(3,3''-Didodecylquarterthiophene)	M.J. Lai and S.H. Chen* <i>Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
E3-P-0115	Fluorescence Energy Transfer Study on PFH/ Polythiophene Blends	J.M. Jhao, Y.S. Lio, and S.H. Chen* <i>Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan</i>
E3-P-0121	Structural Investigation of ZnO: Al Films Deposited on the Si Substrates by Radio Frequency Magnetron Sputtering	Y.Y. Chen ^{1,*} , Y.W. Chen ¹ , J.R. Yang ¹ , S.L. Cheng ² , and M. Shiojiri ³ ¹ <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i> ² <i>Department of Chemical and Materials Science Engineering, National Central University, Jung-Li, Taiwan</i> ³ <i>Kyoto Institute of Technology, Kyoto, Japan</i>
E3-P-0156	A Study of Conductive-bridge Random Access Memory Using Ge ₂ Sb ₂ Te ₅ Chalcogenide as the Programming Layer	Hsuan-An Chen, Yin-Hsien Huang, Hsin-Han Wu, and Tsung-Eong Hsieh* <i>Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan</i>
E3-P-0166	Structural and Electrical Properties of GaAs Film on Ge with SiO ₂ Buffer Layer	Ching-Chih Fang, Lung-Chien Chen*, Zhao-Yu Wen, and Chun-Che Wang <i>Department of Electro-optical Engineering, National Taipei University of Technology, Taipei, Taiwan</i>
E3-P-0191	Optical Properties and Material Analysis of Nd-doped YAG Slab Crystal	H.Y. Cheng*, T.S. Yeh <i>Materials and Electro-Optics Research Division (Solid State Devices Section) Chung-Shan Institute of Science and Technology, Armaments Bureau, MND, Taoyuan, Taiwan</i>
E3-P-0201	Output Performance Engineering of Alternating Current Piezoelectric Nanogenerators via Controlling the Carrier Screening Effect	Chao-Hung Wang ¹ , Wei-Shun Liao ¹ , Zong-Hong Lin ² , Nai-Jen Ku ¹ , Yi-Chang Li ¹ , Yen-Chih Chen ¹ , Zhong-Lin Wang ² , and Chuan-Pu Liu ^{1,3,4,*} ¹ <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> ² <i>School of Materials Science & Engineering, Georgia Institute of Technology, U.S.A.</i> ³ <i>Center for Micro/Nano Science and Technology, National Cheng Kung University, Tainan, Taiwan</i> ⁴ <i>Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan</i>
E3-P-0229	The Effect of Nickel Pre-plating on High Temperature Oxidation Behavior of Hot-dip Aluminized Cast Iron	Meng-Bin Lin* <i>Chemical System Research Division, Chung Shan Institute of Science and Technology, Lungtan, Taiwan</i>
E3-P-0292	Zinc Oxide Nanoparticles Decoration Multi-wall Carbon Nanotube Complex Material Preparation and Fluorescence Phenomenon	Ching-Cheng Su* and Yin-Shuo Li <i>National University of Kaohsiung, Kaohsiung, Taiwan</i>
E3-P-0296	Cheap and Facile Synthetic Method to Prepare Ag Nanoparticles for Highly Reproducible Surface Enhanced Raman Scattering (SERS) Substrates Signals	Nitzan Dar ^{1,*} , Kuang-Yu Chen ¹ , Yung-Tang Nien ² , and In-Gann Chen ¹ ¹ <i>Department of Material Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Formosa University, (Huwei), Yunlin, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
E3-P-0302	In Hydrothermal Synthesis of Cadmium Selenide and Carbon Nanotube-cadmium Selenide Nanocomposites	Chean-Cheng Su* and Ping-Hsun Yang <i>Department of Chemical and Materials Engineering, National University of Kaohsiung, Kaohsiung, Taiwan</i>
E3-P-0350	Antioxidation Coating of Conductive Copper Component	C.T. Kuo, C.N. Kuo*, C.H. Huang, C.W. Lin, R.Y. Huang, Z.H. Lee, B.H. Wang, C.E. Wu, and C.C. Huang <i>Metal Processing R&D Department, Metal Industries Research & Development Centre, Kaohsiung, Taiwan</i>
E3-P-0366	Study of Discharging/Charging Mechanism of Silicon Anode in Nanoscale	Min-Ta Tsai, Sheng-Xun Jiang, and Bernard Haochih Liu* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
E3-P-0367	Microscopic Electrical Measurement of Solid Electrolyte Interface on the Silicon Electrode by Dual-electrode Scanning Probe	Cheng-Xiang Tsai, Yu-Lun Cheng, and Bernard Hao-chih Liu* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
E3-P-0368	The Ferrite to Austenite Transformation in 2205 Duplex Stainless Steel	Y.C. Hsieh*, Y.T. Tsai, Y.L. Chang, C.H. Hsu, and J.R. Yang <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i>
E3-P-0371	Investigation of Streptococcus Mutans Exopolysaccharides Secretion with Atomic Force Microscope	Yi-Cheng Young*, Lie-Jei Yu, Bernard Haochih Liu*, Wen-Ke Huang, and Jiunn-Der Liao <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
E3-P-0386	Thermal Characterizations of Light-Emitting Diodes with Different Leadframes	Rong-Ci Hong*, Shang-Ping Ying, and Huan-Yu Chien <i>Department of Optoelectronic System Engineering, Minghsin University of Science & Technology, Hsinchu, Taiwan</i>
E3-P-0458	AEM Study of Planar Defects in GaN Layers Grown on Ordered Arrays of Nanorods by Metal-organic Vapour Phase Epitaxy	Chang-Ning Huang ^{1,2,*} , Philip A. Shields ³ , Duncan W.E. Allsopp ³ , and Achim Trampert ¹ ¹ <i>Paul-Drude-Institute für Festkörperelektronik, Berlin, Germany</i> ² <i>Department of Chemical and Materials Engineering, Southern Taiwan University of Science and Technology, Tainan, Taiwan</i> ³ <i>Department of Electronic and Electrical Engineering, University of Bath, Bath, UK</i>
E3-P-0460	Misorientation Measurement of Bainitic Ferrite Using Convergent Beam Electron Diffraction	T.Y. Tsai ^{1,*} , Y.W. Chen ¹ , S.P. Tsai ¹ , C.Y. Huang ² , and J.R. Yang ¹ ¹ <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i> ² <i>Iron and Steel R&D Department, China Steel Corporation, Kaohsiung, Taiwan</i>
E3-P-0467	In-situ Engineering and Characterization of Graphene in TEM	C.H. Tu ^{1,*} , J.G. Wen ² , D. Miller ² , and C.P. Liu ¹ ¹ <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> ² <i>Electron Microscopy Center, Argonne National Laboratory, Illinois, USA</i>

Paper no.	Paper Title	Authors/Affiliation
E3-P-0468	The Effect of Channel Microstructure on the Heat Dissipation Behavior of A1 Sheet	Jenn-Shing Wang ^{1,*} , Yu-Ching Wang ² , Chia-Yu Wu ³ , Rui-Dong Li ³ , and Chung-Ta Ni ⁴ ¹ Department of Mechanic Engineering, Far East University, Tainan, Taiwan ² Institute of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan ³ Institute of Mechanic Engineering, Far East University, Tainan, Taiwan ⁴ Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
E3-P-0480	Characterization of Bulk and Interface Microstructure and Morphology of SnAgCu Micro-bumps in View of Their Integration in 3D Interconnects	J. Bertheau ^{1,3} , J. Charbonnier ² , P. Bleuet ² , Roland Pantel ¹ , and F. Hodaj ^{3,*} ¹ STMicroelectronics, Crolles, France ² CEA, Leti, Grenoble France ³ SIMAP laboratory - Grenoble Institute of Technology, France
E3-P-0501	The Effect of Etching Modification Pre-treatment of Anodic Phosphors on the Luminous Efficiency of Field Emission Light	Y.H. Hung ^{1,*} , J.W. Huang ¹ , K.J. Chung ² , Kevin Cheng ² , N.W. Pu ³ , Y.M. Liu ¹ , M.J. Youh ⁴ , and M.D. Ger ¹ ¹ Department of Chemical & Materials Engineering, Chung Cheng Institute of Technology, National Defense University, Taiwan ² School of Defense Science, National Defense University Chung Institute of Technology, Taiwan ³ Department of Photonics Engineering, Yuan Ze University, Taiwan ⁴ Department of Information Technology, Hsing Wu University of Technology, Taiwan
E3-P-0534	The Mechanical Properties of ZnO Wafers Loaded along Three Orientations	H.C. Chen, J.C. Huang*, and T.H. Sung Department of Materials and Optoelectronic Science, National Sun Yat-Sen University, Kaohsiung, Taiwan
E3-P-0543	Investigation of Microstructure, Porosity and Optical Properties of WO ₃ /Ta ₂ O ₅ Film by IBAD	P.K. Chiu ^{1,2} , B.H. Liu ¹ , C.-T. Lee ^{1,*} , Donyau Chiang ¹ , C.N. Hsiao ¹ , H.P. Chen ¹ , W.H. Cho ¹ , and J.R. Yang ² ¹ Instrument Technology Research Center, National Applied Research Laboratories, Hsinchu, Taiwan ² Institute of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan
E3-P-0554	The Investigation in Yield Strength of Nb-Mo Low Carbon Bainitic Strip with Aging Process	B.M. Huang ^{1,*} , H.W. Yen ² , Simon P. Ringer ² , J.R. Yang ¹ , Y.L. Chang ¹ , Y.C. Chien ¹ , and C.Y. Huang ³ ¹ Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan ² Australian Centre for Microscopy and Microanalysis, The University of Sydney, NSW, Australia ³ Steel & Aluminum Research & Development Department, China Steel Corporation, Kaohsiung, Taiwan
E3-P-0562	Depositions of MoO _x Thin Films by Pulse DC Magnetron Sputter Method with Various Oxygen Partial Pressures	Tai-Nan Lin ¹ , Yi-Han Lin ² , You-Si Lin ² , Chin-Tan Lee ² , Yu-Pei Huang ² , and Ko-Wei Weng ^{2,*} ¹ Chemical Engineering Division, Institute of Nuclear Energy Research, Taoyuan, Taiwan ² Department of Electronic Engineering, National Quemoy University, Kinmen, Taiwan

Paper no.	Paper Title	Authors/Affiliation
E3-P-0570	The Study of Corrosion Resistance on AZ91D Magnesium Composite Layer by Micro-arc Oxidation and Painting	W.H. Wu* and M.R. Yang <i>Department of Materials Engineering, Tatung University, Taipei, Taiwan</i>
E3-P-0576	The Effect of Zr Doping on Electric-Field-Induced Large Strain of $(\text{Bi}_{0.5}\text{Na}_{0.5})_{0.925}\text{Ba}_{0.075}\text{TiO}_3$ Lead-Free Ceramics	Pin-Yi Chen ^{1,*} , Cheng-Sao Chen ² , Chi-Shun Tu ³ , and Ting-Lung Chang ¹ ¹ <i>Department of Mechanical Engineering, Ming-Chi University of Technology, New Taipei City, Taiwan</i> ² <i>Department of Mechanical Engineering, Hwa-Hsia Institute of Technology, New Taipei City, Taiwan</i> ³ <i>Graduate Institute of Applied Science and Engineering, Fu Jen Catholic University, New Taipei City, Taiwan</i>
E3-P-0580	Effect of Sintering Processes on Electrical Properties of Lead-free $(\text{Bi}_{0.5}\text{Na}_{0.5})\text{TiO}_3$ - BaTiO_3 Ceramics	Cheng-Sao Chen ^{1,*} , Pin-Yi Chen ² , Chi-Shun Tu ³ , and Chih-Kang Chai ² ¹ <i>Department of Mechanical Engineering, Hwa-Hsia Institute of Technology, New Taipei City, Taiwan</i> ² <i>Department of Mechanical Engineering, Ming-Chi University of Technology, New Taipei City, Taiwan</i> ³ <i>Graduate Institute of Applied Science and Engineering, Fu Jen Catholic University, New Taipei City, Taiwan</i>
E3-P-0587	The Influence of the Inhomogeneity in Individual Sides on the Crystallization of Fe-Si-B-C Alloy Amorphous Ribbon	Po-Yu Chen*, Ya-Ling Chang, and Jer-Ren Yang <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i>
E3-P-0588	The Growth of Lenticular Martensite in AISI 440C Stainless Steel	Ya-Ling Chang*, Po-Yu Chen, and Jer-Ren Yang <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i>
E3-P-0596	Ultrathin Oriented BiFeO_3 Films from Deposition of Atomic Layers with Greatly Improved Leakage and Ferroelectric Properties	Yen-Ting Liu ¹ , Ching-Shun Ku ^{2,*} , Shang-Jui Chiu ² , Hsin-Yi Lee ^{2,3,*} , and San-Yuan Chen ³ ¹ <i>Program for Science and Technology of Accelerator Light Source, National Chiao Tung University, Hsinchu, Taiwan</i> ² <i>National Synchrotron Radiation Research Center, Hsinchu, Taiwan</i> ³ <i>Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan</i>
E3-P-0601	A Novel In-situ Doping Process of Atomic Layer Deposition for Al-Doped ZnO Films	Jheng-Ming Huang ¹ , Ching-Shun Ku ² , Hsin-Yi Lee ^{2,3,*} , San-Yuan Chen ³ , and Chih-Ming Lin ⁴ ¹ <i>Program for Science and Technology of Accelerator Light Source, National Chiao Tung University, Hsinchu, Taiwan</i> ² <i>National Synchrotron Radiation Research Center, Hsinchu, Taiwan</i> ³ <i>Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan</i> ⁴ <i>Department of Applied Science, National Hsinchu University of Education, Hsinchu, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
E3-P-0621	Substantial Reduction in Coercivity of Perpendicular CoPt/FePt Graded Films with Near-atomic Flatness on Glass Substrates	S.N. Hsiao ^{1,*} , S.H. Liu ² , S.K. Chen ² , and H.Y. Lee ¹ ¹ Scientific research division, National Synchrotron Radiation Research Center, Hsinchu, Taiwan ² Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan
E3-P-0632	Photoluminescence Property of ZnO Phosphor Prepared by Solid-state Sintering	Shi-Kun Yao* and Tsung-Chieh Kuo Department of Chemical Biology, National Pingtung University of Education, Pingtung, Taiwan
E3-P-0634	Luminescence Property of BaSiO ₃ Phosphor Prepared by Solid-state Sintering	Shi-Kun Yao* and Tsung-Chieh Kuo Department of Chemical Biology, National Pingtung University of Education, Pingtung, Taiwan
E3-P-0644	Research on the Antibacterial Properties of Silver Oxide Graphene Nanocomposites	Kun-Yao Shi* and Ya-Ting Guo Department of Chemical Biology, National Pingtung University of Education, Pingtung, Taiwan
E3-P-0676	Measuring the Fracture Toughness of Thin Film Metallic Glasses Using Focused-ion-beam-machined Micro-cantilevers Method	Chia-Lin Li and Jinn P. Chu* Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan
E3-P-0700	Propagation of Scratches on GaN Substrates during Polishing	J. Serafińczuk ^{1,*} , G. Jóźwiak ¹ , P. Pałetko ¹ , R. Kudrawiec ² , R. Kucharski ³ , M. Zajac ³ , and T.P. Gotszalk ¹ ¹ Faculty of Microsystem Electronics and Photonics, Wrocław University of Technology, Wrocław, Poland ² Institute of Physics, Wrocław University of Technology, Poland ³ AMMONO S. A. Warsaw, Poland
E3-P-0708	Characterization of Three Dimensional Graphene	B.Y. Yu*, J.W. Kao, and L.J. Wei Institute of Materials and Electric-Optical Engineering, Chung-Shan Institute of Science and Technology, Taoyuan, Taiwan
E3-P-0726	Developing S690Q Steel for Offshore Application	T.C. Chen ¹ , C. Yu ¹ , T.C. Yang ² , C.Y. Huang ² , and R.K. Shiue ^{1,*} ¹ Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan ² China Steel Corporation, Hsiao Kang, Kaohsiung, Taiwan
E3-P-0732	The Optimization of the Copper Alloy Plate Process Using DOE Method	M.Y. Teng ^{1,*} and K.S. Chen ² ¹ Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan ² Minchali Metal Industry Co., Ltd., Taoyuan, Taiwan
E3-P-0734	Optical Properties of Wide-band-gap Chalcopyrite CuAl(Se _{0.5} S _{0.5}) ₂ Evaluated by Thermorefectance Spectroscopy	Ching-Hwa Ho* and Chia-Chi Pan Graduate Institute of Applied Science and Technology, National Taiwan University of Science and Technology, Taipei, Taiwan
E3-P-0736	Green Compounds with Thermal Latency Catalysts for Microelectronic Encapsulations	C.C. Su*, C.H. Wei, and B.L. Wu Department of Chemical and Materials Engineering, National University of Kaohsiung, Kaohsiung, Taiwan

Paper no.	Paper Title	Authors/Affiliation
E3-P-0737	Phase Compatibilization in Blends of Copolyesters with Phenoxy	C.C. Su*, C.H. Wei, W.J. Chen, and B.L. Wu <i>Department of Chemical and Materials Engineering, National University of Kaohsiung, Kaohsiung, Taiwan</i>
E3-P-0739	Electron Backscattering Diffraction Studies on Self-accommodation of R-phase in a $\text{Ti}_{50.3}\text{Ni}_{48.2}\text{Fe}_{1.5}$ Ternary Shape Memory Alloy	Chih-Hsuan Chen and Shyi-Kaan Wu* <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i>
E3-P-0741	Study on the Synthesis and Properties of PAAC/ Hydrogel Composites Used for Bone Repairing Implants and the Cell Toxicity	Te-Hsing Wu ^{1,*} , Hong-Ru Lin ² , and Wu-Jyh Lin ¹ ¹ <i>Institute of Nuclear Energy Research, Taiwan</i> ² <i>Department of Chemical and Material Engineering, Southern Taiwan University of Technology, Taiwan</i>
E3-P-0744	Damping Characteristics of $\text{Ti}_{50}\text{Ni}_{50-x}\text{Cu}_x$ ($x = 0\sim 30$ at.%) Shape Memory Alloys at Low Frequency	Chen Chien ¹ , Shyi-Kaan Wu ^{1,2,*} , and Shih-Hang Chang ³ ¹ <i>Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan</i> ² <i>Department of Mechanical Engineering, National Taiwan University, Taipei, Taiwan</i> ³ <i>Department of Chemical and Materials Engineering, National I-Lan University, I-Lan, Taiwan</i>
E3-P-0749	Solubility, Activity and Diffusion Coefficient of Oxygen in Liquid Bismuth, Antimony and Bismuth-antimony Alloys	D. Jendrzeczyk-Handzlik*, J. Łapsa, and K. Fitzner <i>Faculty of Non-Ferrous Metals, AGH University of Science and Technology, Cracow, Poland</i>
E3-P-0751	Temperature Effect on the Fatigue Behavior of Inconel Alloy 617 by <i>In-situ</i> Neutron Diffraction Investigation	B.H. Wu ^{1,*} , E.W. Huang ¹ , Y.L. Huang ¹ , Stefanus Harjo ² , and W. Gong ² ¹ <i>Department of Chemical and Materials Engineering and Center for Neutron Beam Applications, National Central University, Taoyuan, Taiwan</i> ² <i>High Energy Accelerator Research Organization (KEK), Tsukuba, Ibaraki, Japan</i>
E3-P-0752	Structural Study of MonoPEGylated Human Parathyroid Hormone Fragments hPTH(1-34) in Solution Revealed by Small-Angle Neutron and X-ray Scattering	Chih-Ying Liu ^{1,*} , Hsiu-Yun Lai ² , Xin Li ³ , Wen-Yi Chen ¹ , and E-Wen Huang ¹ ¹ <i>Department of Chemical and Materials Engineering and Center for Neutron Beam Applications, National Central University, Taoyuan, Taiwan</i> ² <i>Department of Family Medicine, National Taiwan University Hospital Hsin-Chu Branch, Hsin Chu, Taiwan</i> ³ <i>Biology and Soft Matter Division, Oak Ridge National Laboratory, Tennessee, United States</i>
E3-P-0761	Effects of Alloying Elements on Thermal Conductivity of Binary Aluminum Alloys	J.K. Chen ^{1,*} , H.Y. Hung ¹ , Y.L. Chen ¹ , T.H. Wang ¹ , and N.K. Tang ² ¹ <i>Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan</i> ² <i>Metal Industries Research and Development Center, Kaohsiung, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
E3-P-0765	Microstructure and Electrical Properties of Lead-Free $(\text{Na}_{0.5}\text{K}_{0.5})\text{NbO}_3 - \text{Bi}_{0.5}(\text{Na}_{0.75}\text{K}_{0.05})_{0.5}\text{TiO}_3$ Ceramics	Chun-Huy Wang ^{1,2} , Wei-Zhi Chen ² , and Ming-Qiu Wei ² ¹ <i>Department of Electronic Engineering, Nan-Jeon Institute of Technology, Tainan, Taiwan</i> ² <i>Graduate School of Engineering Science and Technology, Nan-Jeon Institute of Technology, Tainan, Taiwan</i>
E3-P-0782	Development of Si-bearing Co-base Superalloys Containing γ' Precipitates	C.F. Cheng, A.C. Yeh*, and S.C. Chang <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
E3-P-0790	On the Materials Parameters that Affect Antibacterial Properties of Cu Base Metallic Alloys	L.P. Cheng ¹ , A.C. Yeh ^{1,*} , C.C. Huang ² , H.Y. Chang ³ , and Y. Tsou ³ ¹ <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i> ² <i>Metal processing R & D Department, Metal Industries Research & Development Centre, Kaohsiung, Taiwan</i> ³ <i>Institute of Molecular Medicine, National Tsing Hua University, Hsinchu, Taiwan</i>
E3-P-0809	An Amorphous Titanium Oxide Film with Quality Photocatalytic Activity Deposited Onto the Flexible Plastic Substrate Using Selectively Photochemical Fluorination Etching	C.H. Huang ¹ , P.J. Shih ¹ , T.H. Chen ² , L.W. Lai ² , Y.S. Lu ¹ , and D.S. Liu ^{1,*} ¹ <i>Department of Electro-Optical Engineering, National Formosa University, Yunlin, Taiwan</i> ² <i>ITRI South, Industrial Technology Research Institute, Tainan, Taiwan</i>
E3-P-0810	Synthesis of Ultra-high-strength Electroactive Polyimide Membranes with Oligoaniline in the Main Chain via Thermal Imidization Reaction	Kuan-Yeh Huang ¹ , Kung-Chin Chang ^{2,3} , Chang-Jian Weng ² , Yu-Sian Jhuo ² , and Jui-Ming Yeh ^{2,*} ¹ <i>Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan</i> ² <i>Department of Chemistry, Center for Nanotechnology and Institute of Biomedical Technology at Chung-Yuan Christian University (CYCU), Chung-Li, Taiwan</i> ³ <i>R&D Center for Membrane Technology, Chung-Yuan Christian University, Chung-Li, Taiwan</i>
E3-P-0814	Light Emission Characteristics of Microwave-excited Electrodeless Lamp for Solar Simulator	Jen-Hung Hsu ^{1,*} , Hong-Jen Lai ¹ , and Kung-Jen Ma ² ¹ <i>Industrial Technology Research Institute, Hsinchu, Taiwan</i> ² <i>Department of Mechanical Engineering, Chung Hua University, Hsinchu, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
E3-P-0816	Fe-Vacancy Orders and Nanoscale Phase Separation in Nonsuperconducting Tetragonal β -Fe _{1-x} Se	T.K. Chen ^{1,*} , C.C. Chang ¹ , A.H. Fang ¹ , C.H. Wang ¹ , Y.R. Wu ¹ , M.H. Wen ¹ , W.H. Chao ¹ , C.M. Tseng ¹ , H.Y. Tang ² , F.R. Chen ^{1,2} , H.H. Chang ³ , M.J. Wang ^{1,3} , M.K. Wu ^{1,3,4} , and D. Van Dyck ⁵ ¹ <i>Institute of Physics, Academia Sinica, Taipei, Taiwan</i> ² <i>Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan</i> ³ <i>Institute of Astronomy and Astrophysics, Academia Sinica, Taipei</i> ⁴ <i>Department of Physics, National Dong Hwa University, Hualien, Taiwan</i> ⁵ <i>EMAT Department of Physics, University of Antwerp, Antwerp, Belgium</i>
E3-P-0828	Characteristic Evaluation of the Interface Layer for Ti-6Al-4V Coated Implant Implants	Tai-Sheng Chen, Wei-Tien Hsiao, Ming-Sheng Leu, and Hong-Ren Lai* <i>Materials and Chemical Laboratory (MCL), Industrial Technology Research Institute (ITRI), Hsinchu, Taiwan</i>
E3-P-0862	Flow Behavior of 6069 Al Alloy Extruded Tube under Tension at Elevated Temperatures	F.J. Zhu ¹ , H.Y. Wu ^{2,*} , C.T. Wu ² , S. Lee ¹ , and C.H. Chiu ³ ¹ <i>Department of Mechanical Engineering, National Central University, Zhongli, Taiwan</i> ² <i>Department of Mechanical Engineering, Chung Hua University, Hsinchu, Taiwan</i> ³ <i>Material and Chemical Research Laboratories, Industrial Technology Research Institute, Chungli, Taiwan</i>
E3-P-0872	The Effect of Tempering Conditions on the Secondary Hardening Behavior of AISI M2 High Speed Steel	Y.H. Lu, T.Y. Lin, and D.Y. Lin* <i>Department of Chemical and Materials Engineering, National University of Kaohsiung, Kaohsiung, Taiwan</i>
E3-P-0892	Microstructure and Thermal Conductivity of Si ₃ N ₄ Based Nanocomposites	S.Y. Lin ¹ , C.Y. Chen ¹ , C.H. Lee ¹ , H.H. Lu ² , and J.L. Huang ^{1,3,*} ¹ <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> ² <i>Institute of Mechanical and Engineering, National Chin Yi University of Technology, Taichung, Taiwan</i> ³ <i>Department of Chemical and Materials Engineering, National University of Kaohsiung, Kaohsiung, Taiwan</i>
E3-P-0899	Influence of Sintering Temperature on Dielectric Properties of BaCo ₆ Ti ₆ O ₉ Ceramic at Microwave Frequency	Chia-Hui Su*, Yi-Da Ho, and Cheng-Liang Huang <i>Department of Electrical Engineering, National Cheng Kung University (NCKU), Tainan, Taiwan</i>
E3-P-0906	The Influence of Superheat Parameters on Microstructure of Inconel 718 in Pouring Process	C.I. Yu ¹ , Y.T. Pan ² , and D.Y. Lin ^{1,*} ¹ <i>Department of Chemical and Materials Engineering, National University of Kaohsiung, Kaohsiung, Taiwan</i> ² <i>New Materials Research and Development Department China Stell Corporation, Kaohsiung, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
E3-P-0917	Crystallization Behavior and Mechanical Property of PLA/CaO Composites	Shu-Chih Liu ¹ , Maw-Cherng Suen ¹ , Chih-Kuei Chu ² , Yu-Ting Hu ² , Jui-Chin Chen ² , Wei Hua Yao ² , Lien-Yao Sun ³ , Zhi-Ling Huang ⁴ , Xin-Ming Tuan ⁴ , Bo-Jyue Kao ⁴ , Ming-Chien Yang ³ , and Chi-Hui Tsou ^{2,4,5,*} ¹ Graduate School of Materials Applied Technology, Taoyuan Innovation Institute of Technology, Jongli, Taiwan ² Department of Materials and Textiles, Oriental Institute of Technology, Pan-Chiao, Taiwan ³ Department of Molecular Science and Engineering, National Taipei University of Technology, Taipei, Taiwan ⁴ Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan ⁵ R&D Center for Membrane Technology, Department of Chemical Engineering, Chung Yuan University, Chung-Li, Taiwan
E3-P-0924	Investigations on the Element Distribution of RRAM Devices with Sub-Angstrom Resolution EELS Spectrum Imaging	M.T. Chang*, S.C. Lo, and C.Y. Hsieh Department of Electron Microscopy Development and Application, Material and Chemical Research Laboratories, Industrial Technology Research Institute (ITRI), Hsinchu, Taiwan
E3-P-0932	Effects TiN and TaN Barrier Layers on the Emergence of Ag and Cu Particles and the Subsequent Mechanical and Antibacterial Properties of TaN-(Ag,Cu) Nanocomposite Films	J.H. Hsieh*, Y.R. Cho, and Y.H. Lie Ming Chi University of Technology, Taiwan
E3-P-0933	Investigation of Resistive Switching Mechanism in Ag/TaO _x /Pt Memory Device Using Impedance Spectroscopy	Yu-Lung Chung*, Jiun-Jie Fang, Jeng-Ting Li, and Jen-Sue Chen Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
E3-P-0942	Characterization and Electrochromic Properties of Flower-like WO ₃ via Microwave-assisted Hydrothermal Synthesis	W.P. Weng ¹ , Y.J. Wu ² , C.H. Chaing ² , and Z.A. Ding ¹ ¹ Department of Chemical and Materials Engineering, Lunghwa University of Science and Technology, Taoyuan, Taiwan ² Department of Mechanical Engineering, Lunghwa University of Science and Technology, Taoyuan, Taiwan
E3-P-0973	Recent Developments and Researches of Phosphors in Taiwan Reviewed from 2013 MRS-T Annual Meeting	J.K. Yu* and Y.T. Nien Graduate Institute of Materials Science and Green Energy Engineering, National Formosa University, Yunlin, Taiwan
E3-P-0981	Effects of Silicon Contents on the Anticorrosion Properties of Zr-based Thin Film Metallic Glasses	Yu-Lun Deng ¹ and Jyh-Wei Lee ^{1,2,*} ¹ Department of Materials Engineering, Ming Chi University of Technology, New Taipei City, Taiwan ² Center for Thin Films Technologies and Applications, Ming Chi University of Technology, New Taipei City, Taiwan
E3-P-0985	A Method of Thermal Diffusivity Measurement for Nanometer-scale Samples	C.C. Shih*, J.B. Wu, and M.S. Leu Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan

Paper no.	Paper Title	Authors/Affiliation
E3-P-0994	Biological Properties of the Mesoporous Bioglass	Xue-Shi Lai and Yung-Chin Yang* <i>Department of Materials and Mineral Resources Engineering, National Taipei University of Technology, Taipei, Taiwan</i>
E3-P-1001	Effect of Li_2CO_3 Addition on the Microstructure and Electrical Properties of Lead-Free $(\text{Na}_{0.5}\text{K}_{0.5})\text{NbO}_3\text{-Bi}_{0.5}(\text{Na}_{0.90}\text{K}_{0.10})_{0.5}\text{TiO}_3$	Chun-Huy Wang ^{1,2,*} , Ming-Qiu Wei ² , and Wei-Zhi Chen ² ¹ <i>Department of Electronic Engineering, Nan-Jeon University of Technology, Tainan, Taiwan</i> ² <i>Graduate School of Engineering Science and Technology, Nan-Jeon University of Technology, Tainan, Taiwan</i>
E3-P-1009	Evolution of Surface Morphologies on Wet-Etched Patterned Sapphire Substrate	Y.C. Chen, W.Y. Hsu, B.W. Lin, and Y.S. Wu* <i>Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan</i>
E3-P-1026	Optoelectronic Properties of Large-scaled AZO Thin Film by Pulsed-DC Magnetron Sputtering	C.C. Wang ¹ , Y.C. Chen ¹ , F.S. Shieu ¹ , and H.C. Shih ^{1,2,*} ¹ <i>Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan</i> ² <i>Department of Chemical Engineering and Materials Science, Chinese Culture University, Taipei, Taiwan</i>

Group F: Oxide Materials for Advanced Electronics

Paper no.	Paper Title	Authors/Affiliation
Symposium F1: Advanced thin Films and Heterostructure Towards Novel Oxide Electronics Date: 2014/6/12, Time: 13:00~17:00 PM, Room: 401		
F1-P-0021	Bioinspired Retroreflection Coatings	K.Y. Tsao, C.Y. Lin, T.W. Yang, and H. Yang* <i>Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan</i>
F1-P-0022	Fabrication of Self-Cleaning UV and Near-IR Protection Coatings	C.Y. Cai, L.C. Hsiang, and H. Yang* <i>Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan</i>
F1-P-0175	Electric Properties of MgZnO Thin Film with Different Working Pressure on Soda-lime Glass	G.J. Song ¹ , H.H. Sung ¹ , S.C. Liang ² , D.C. Tsai ¹ , and F.S. Shieu ^{1,*} ¹ <i>Department of Materials Science and Engineering at National Chung Hsing University, Taichung, Taiwan</i> ² <i>Chung shan institute of science and Technology. Armaments Bureau. M.N.D.</i>
F1-P-0256	The Structural, Electrical and Optical Properties of IZO Thin Films Prepared by DC Magnetron Sputtering with Different Oxygen Partial Pressure	S.C. Liang ¹ , K.D. Li ¹ , C.Y. Ni ¹ , C.N. Wei ¹ , H.Y. Bor ¹ , and V.S. Chengn* ¹ <i>Metallurgy Section, Materials & Electro-Optics Research Division, Chung-Shan Institute of Science and Technology, Lung Tan, Taiwan</i> ² <i>Department of Optometry, Central Taiwan University of Science and Technology, Taichung, Taiwan</i>
F1-P-0299	Fabrication of Characterization of a-oriented ZnO Epitaxial Thin Films by rf-Sputtering	H.H. Ko ¹ , Q.Y. Chen ^{1,2,*} , P.V. Wadekar ^{1,2,3} , C.F. Chang ¹ , H.C. Huang ¹ , L.W. Tu ¹ , N.J. Ho ⁴ , W.K. Chu ² , W.C. Hsieh ¹ , W.Y. Lin ¹ , Q.J. Lin ¹ , H.H. Liu ¹ , C.W. Chang ¹ , Y.T. Lin ¹ , Y.S. Wang ¹ , O. Lozano ³ , H.W. Seo ⁵ , C.H. Liao ⁶ , and H.H. Liao ⁷ ¹ <i>National Sun-Yat Sen University, Taiwan</i> ² <i>University of Houston, USA</i> ³ <i>University of Liverpool, UK</i> ⁴ <i>University of Namur, Belgium</i> ⁵ <i>University of Arkansas, USA</i> ⁶ <i>Military Academy, Kaohsiung, Taiwan</i> ⁷ <i>Enli Technology Inc., Kaohsiung, Taiwan</i>
F1-P-0358	The Orientation Growth and the Electrical Properties of VO ₂ Thin Films on Si (100) Substrate via Post-Annealing	Nurul Hanis Azhan* and Kunio Okimura <i>Department of Electrical and Electronic System Engineering Tokai University, 4-1-1 Kitakaname, Hiratsuka, Kanagawa, Japan</i>
F1-P-0359	Growth of VO ₂ Films on TiN Conductive Layer with Out-of-plane Insulator-metal Transition by ICP-assisted Sputtering Method	Md. Suruz Mian* and Kunio Okimura <i>Graduate School of Science and Technology, Tokai University 4-1-1 Kitakaname, Hiratsuka, Kanagawa, Japan</i>

Paper no.	Paper Title	Authors/Affiliation
F1-P-0445	Optical and Structural Properties of NiO Thin Films on c-Sapphire by Pulsed Laser Deposition	Q.J. Lin ¹ , S.Y. Lai, Q.Y. Chen ^{1,2,*} , H.W. Seo ³ , H.C. Huang ⁴ , C.F. Chang ¹ , W.C. Hsieh ¹ , P.V. Wadekar ⁵ , L.W. Tu ¹ , N.J. Ho ⁴ , W.K. Chu ² , W.Y. Lin ¹ , H.H. Ko ¹ , H.H. Liu ¹ , C.W. Chang ¹ , Y.T. Lin ¹ , Y.S. Wang ¹ , C.H. Liao ⁶ , and H.H. Liao ⁷ ¹ Department of Physics and Center for Nanoscience and Nanotechnology, National Sun-Yat Sen University, Kaohsiung, Taiwan ² Department of Physics, University of Houston, USA ³ Department of Physics and Astronomy, University of Arkansas, USA ⁴ Department of Materials Engineering and Optoelectronic Science, National Sun-Yat Sen University, Kaohsiung, Taiwan ⁵ Department of Chemistry, University of Liverpool, UK ⁶ Department of Physics, ROC Military Academy, Kaohsiung, Taiwan ⁷ Enli Technology, Kaohsiung Science Park, Kaohsiung, Taiwan
F1-P-0542	Photocatalytic Activity of Bipolar Pulsed Magnetron Sputter Deposited TiO ₂ Thin Films	Tai-Nan Lin ¹ , Yi Han Lin ² , Chin Tan Lee ² , Yu-Pei Huang ² , and Ko Wei Weng ^{2,*} ¹ Chemical Engineering Division, Institute of Nuclear Energy Research, Taoyuan, Taiwan ² Department of Electronic Engineering, National Quemoy University, Kinmen, Taiwan
F1-P-0843	Light-enhanced Thermal Process of Chemical-solution-deposited BiFeO ₃ Ferroelectric Thin Films	Shu-Yu Chen ¹ , Ching-Chich Leu ² , and Chen-Ti Hu [*] ¹ Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan ² Department of Chemical and Materials Engineering, National University of Kaohsiung, Kaohsiung, Taiwan
F1-P-0893	Characterization of Sol–Gel-Derived Nanocrystalline Mg ₂ TiO ₄ Thin Films	Yi-Da Ho [*] , Chia-Hui Su, and Cheng-Liang Huang Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan
F1-P-0916	The Study of Epitaxial Ba(Mg _{1/3} Ta _{2/3})O ₃ Thin Films Prepared by Pulsed-Laser Deposition	C.H. Ma ^{1,*} and Y.H. Chu ² Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan
F1-P-0964	Synthesis of Barium Titanate Films on TiN-coated Substrates by Atmospheric Pressure Plasma Jet	I.-T. Sun and F.-H. Lu [*] Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan
F1-P-0965	Formation of Zirconia Films on ZrN/Si by Plasma Electrolytic Oxidation	C.-H. Hsiao and F.-H. Lu [*] Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan

Paper no.	Paper Title	Authors/Affiliation
Symposium F2: p- or n-type Oxide Films, Transparent Conductive Films and Devices: Photovoltaic, Optoelectronic, Plasmonic, Gas Sensor and Microwave Devices Date: 2014/6/12, Time: 13:00~17:00 PM, Room: 401		
F2-P-0056	Titanium Dioxide and Silicon Nitride Stacks for Crystalline Silicon Solar Cells	H.E. Cheng ¹ , J.N. Su ¹ , I.H. Chang ¹ , and I.S. Yu ^{2,*} ¹ <i>Department of Electro-Optical Engineering, Southern Taiwan University of Science and Technology Tainan, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan</i>
F2-P-0112	A HF Vapor Etching Process to Improve the Electrical Properties of ZnO/AlO _x /Si pin Diodes	W.Y. Lin ¹ , Q.Y. Chen ^{1,2,*} , P.V. Wadekar ^{1,2,3} , C.F. Chang ¹ , H.C. Huang ¹ , L.W. Tu ¹ , N.J. Ho ⁴ , W.K. Chu ² , W.C. Hsieh ¹ , H.H. Ko ¹ , Q.J. Lin ¹ , H.H. Liu ¹ , C.W. Chang ¹ , Y.T. Lin ¹ , Y.S. Wang ¹ , O. Lozano ³ , H.W. Seo ⁵ , C.H. Liao ⁶ , and H.H. Liao ⁷ ¹ <i>Department of Physics, National Sun Yat-Sen University, Kaohsiung, Taiwan</i> ² <i>Department of Physics, University of Houston, Texas, USA</i> ³ <i>Department of Chemistry, University of Liverpool, Liverpool, UK</i> ⁴ <i>Department of Physics, University of Namur, Namur, Belgium</i> ⁵ <i>Department of Physics and astronomy, University of Arkansas, Little Rock, USA</i> ⁶ <i>Department of Physics, Military Academy, Kaohsiung, Taiwan</i> ⁷ <i>Enli Tech., Kaohsiung, Taiwan</i>
F2-P-0130	The Structural and Magnetic Characterization of Si-oxide/Fe Bilayers	H.-T. Liang ¹ , H.-F. Hsu ¹ , K.-W. Lin ^{1,*} , N. Galkin ² , Y. Wroczynskyj ³ , and J. van Lierop ³ ¹ <i>Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan</i> ² <i>Institute of Institute of Automation & Control Processes, FEB RAS, Vladivostok, Russia</i> ³ <i>Department of Physics and Astronomy, University of Manitoba, Winnipeg, Canada</i>
F2-P-0155	The Effect of Ti-doped on GZO Thin Films Prepared by DC Magnetron Sputtering	Bing-Hau Kuo ¹ , Du-Cheng Tsai ¹ , Yen-Lin Huang ¹ , Huan-Hsin Sung ¹ , Chia-Tai Tsao ¹ , Shih-Chang Liang ² , and Fuh-Sheng Shieu ^{1,*} ¹ <i>Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan</i> ² <i>Materials & Electro-Optics Research Division, Chung-Shan Institute of Science and Technology, Lung Tan, Taiwan</i>
F2-P-0202	Dependence on the Film Thickness of the Properties of ZnO Thin Films Grown on a-plane Sapphire Substrates Using High-temperature H ₂ O Generated from a Catalytic Reaction	Y. Oohashi, T. Nakamura, N. Yamaguchi, Y. Tamayama, and K. Yasui* <i>Department of Electrical, Electronics and Information Engineering, Nagaoka University Technology, Nagaoka, Japan</i>

Paper no.	Paper Title	Authors/Affiliation
F2-P-0235	Effects of Working Pressure and Power on Structure and Optoelectronic Properties of IZO Thin Films Deposited by DC Magnetron Sputtering	H.Y. Chen ¹ , D.C. Tsai ¹ , L.S. Chang ² , and F.S. Shieu ^{1,*} ¹ Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan ² Materials & Electro-Optics Research Division, Chung-Shan Institute of Science and Technology, Lung Tan, Taiwan
F2-P-0236	Deposition of Amorphous Indium Gallium Zinc Oxide (a-IGZO) Thin Films at Room Temperature by rf Magnetron Sputtering	Ying-Tse Li ^{1,*} , Kai-Chun Chen ¹ , Hau-Wei Yu ¹ , Nen-Wen Pu ¹ , Shi-Chang Liang ² , Yao-Leng Lin ² , and Rong-Mao Xu ¹ ¹ Department of Photonics Engineering, Yuan Ze University, Chung-Li, Taiwan ² Materials & Electro-Optics Research Division, Chung Shan Institute of Science and Technology, Long-Tan, Taiwan
F2-P-0261	Characterizations of In-Zn-O/SiO _x /n-Si Hetero-junction Structure and Its Applications to Photodetectors	Hau-Wei Fang ¹ , Tsung-Eong Hsieh ^{1,*} , and Jenh-Yih Juang ² ¹ Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan ² Department of Electrophysics, National Chiao Tung University, Hsinchu, Taiwan
F2-P-0268	The Effects of the Sputtering Power on the Al-doped MgZnO Thin Films Deposited by rf Magnetron Sputtering	Hau-Wei Yu ^{1,*} , Ying-Tse Li ¹ , Nen-Wen Pu ¹ , Shi-Chang Liang ² , Yao-Leng Lin ² , Rong-Mao Xu ¹ , and Kai-Chun Chen ¹ ¹ Department of Photonics Engineering, Yuan Ze University, Chung-Li, Taiwan ² Materials & Electro-Optics Research Division, Chung Shan Institute of Science and Technology, Long-Tan, Taiwan
F2-P-0271	High Transparent and Low Resistivity of WO ₃ /Ag/WO ₃ Multilayer Prepared by Electron Beam Evaporation	Yu-Dong Chen [†] , Shen-Hao Zhu, Cheng Hsiung Peng, Pang Shiu Chen*, Tze-Wei Lin ^{1,2} , Sheng-Wee Lee ¹ , Jhang, jheng-kun*, and Sie Chang Yen [†] Department of Chemical and Materials Engineering, MingHsin University of Science and Technology, Hsin-Feng, Hsinchu, Taiwan ¹ National Central University Institute of Material Science and Engineering, Taoyuan, Taiwan ² Chemical Defence Section, Chemical Systems Research Division, Chung-Shan Institute of Science Technology, Long-Tan, Taiwan
F2-P-0300	All-plastic Flexible Dye-sensitized Solar Cell Based on Novel Solution Synthesized Mesoporous Anatase TiO ₂ Beads	Chun-Ren Ke and Jyh-Ming Ting* Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
F2-P-0301	Electrophoretic Deposition of TiO ₂ Film Photoanodes for Use in All-plastic Flexible Dye-Sensitized Solar Cells Having Gel Electrolyte	Li-Chieh Chen and Jyh-Ming Ting* Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
F2-P-0317	Characterization of Nb-doped TiO ₂ Films Prepared by rf Magnetron Sputtering	K.D. Li ¹ , S.C. Liang ¹ , C.Y. Ni ¹ , C.N. Wei ¹ , H.Y. Bor ¹ , and V.S. Chengn ^{2,*} ¹ Metallurgy Section, Materials & Electro-Optics Research Division, Chung-Shan Institute of Science and Technology, Lung Tan, Taiwan ² Department of Optometry, Central Taiwan University of Science and Technology, Taichung, Taiwan

Paper no.	Paper Title	Authors/Affiliation
F2-P-0379	The Partial Flux Measurement of Light-Emitting Diodes with Solar Cell Module	You-Chen Yan*, Shang-Ping Ying, and An-Yung Shiu <i>Department of Optoelectronic System Engineering, Minghsin University of Science & Technology, Hsinchu, Taiwan</i>
F2-P-0382	The Optical Characteristics of SPE Structure with Reflection Layer	An-Yung Shiu*, Shang-Ping Ying, and You-Chen Yan <i>Department of Optoelectronic System Engineering, Minghsin University of Science & Technology, Hsinchu, Taiwan</i>
F2-P-0401	High-Efficiency White LED Packaging with Optical Properties of Different Concentrations of Phosphor on the Different Reflectivity Leadframe	Huan-yu Chien*, Shang-Ping Ying, and Rong-Ci Hong <i>Department of Optoelectronic System Engineering, Minghsin University of Science & Technology, Hsinchu, Taiwan</i>
F2-P-0409	Electrical and Optical Properties of ITO: Mo Transparent Conductive Films Prepared by DC Magnetron Sputtering	Rong-Mao Xu ^{1,*} , Hau-Wei Yu ¹ , Ying-Tse Li ¹ , Nen-Wen Pu ¹ , Shi-Chang Liang ² , Yao-Leng Lin ² , and Kai-Chun Chen ¹ ¹ <i>Department of Photonics Engineering, YuanZe University, Chung-Li, Taiwan</i> ² <i>Materials & Electro-Optics Research Division, Chung Shan Institute of Science and Technology, Long-Tan, Taiwan</i>
F2-P-0424	Effects of Fluxes on Luminescence Properties of $\text{Ca}_3(\text{ScZn})_2\text{Si}_3\text{O}_{12}:\text{Ce}^{3+}$ Green Phosphor for White LEDs	Arman Kusuma Wijaya ^{1,*} , Yung-Tang Nien ² , and In-Gann Chen ¹ ¹ <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Formosa University, Yunlin, Taiwan</i>
F2-P-0452	Properties of Hf-InZnO Semiconductor Thin Films Prepared by Excimer Laser Annealing of Sol-Gel Derived Precursor Films	C.Y. Tsay* and T.T. Huang <i>Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan</i>
F2-P-0498	Fabrication and Characterization of Indium tin Oxide (ITO) Thin Films by Low Temperature Chemical Bath Deposition	R.F. Louh, Jay Kuo, and Rick Tsao <i>Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan</i>
F2-P-0503	Mechanical Bending of the Indium Tin Oxide Films on Polyethylene Terephthalate Deposited by High Power Impulse Magnetron Sputtering	Yao-Chi Chen*, Ying-Hung Chen, and Ju-Liang He <i>Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan</i>
F2-P-0529	Surface Morphology and Optical Properties Characteristics of Ga Doping ZnO Thin Films Prepared by DC Magnetron Sputtering	S.F. Chen ^{1,*} , Y.F. Lin ¹ , S.J. Wang ¹ , S.L. Lin ¹ , Y.L. Lin ¹ , H.Y. Bor ² , and C.N. Wei ² ¹ <i>Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan</i> ² <i>Chung Shan Institute of Science and Technology Materials and Electro-Optics Research Division, Tao-yuan, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
F2-P-0536	Low Resistance of Transparent Indium Tin Oxide Films with an Embedded Silver Layer by Sputtering at Room Temperature	Jia-Syuan Hsu [†] , Chen-Jie Jiang, Ya Ru Ma, Jun Yu Huang, Ji Yu Wu, Jyun Rong Lai, Cheng-Hsiung Peng, Tsong-Huei Chang, Pang Shiu Chen*, and Chao An Jong [†] Department of Chemical and Materials Engineering, MingHsin University of Science and Technology, Hsin-Feng, Hsinchu, Taiwan [*] National Nano Device Laboratories (NDL), NARLabs, Hsinchu, Taiwan
F2-P-0550	Preparation of α -Fe ₂ O ₃ -Zinc Oxide Inverse Opal Film and Its Application in Low Ammonia Detection	J.W. Wang*, P.X. Yang, and Y.M. Kuo Department of Environmental and Safety Engineering, Chung Hwa University of Medical Technology, Tainan, Taiwan
F2-P-0636	Optical Logical Gate in Liquid Crystal Thin Film	C.C. Shih ^{1,*} , C.C. Tsai ² , and H.H. Hsieh ² ¹ General Education Center, Tung Fang Design Institute, Kaohsiung County, Taiwan ² Department of Electronics Engineering and Computer Science, Tung Fang Design Institute, Kaohsiung County, Taiwan
F2-P-0670	Optimized Process of AZO Thin Films Deposited by the Sputtering Method	Joongwon Kim, Abhishek Sharma, and Sang-Im Yoo* Department of Materials Science and Engineering, Research Institute of Advanced Materials (RIAM), Seoul National University, Seoul, Korea
F2-P-0691	Dip Coating of Aluminum Doped Zinc Oxide Transparent Conductive Thin Films by Ultraviolet and Infra Assisted Sol-gel Method	Y.K. Tseng ^{1,2,*} , F.M. Pai ² , and C.H. Wu ² ¹ Department of Cultural Heritage Conservation, National Yunlin University of Science & Technology, Yunlin, Taiwan ² Graduate School of Materials Science, National Yunlin University of Science & Technology, Yunlin, Taiwan
F2-P-0863	Liquid Phase Deposited SiO ₂ /Ultrathin-Si on InP MOS Capacitor	M.K. Lee ¹ and C.F. Yen ^{2,*} ¹ Department of Electronic Engineering, Chung Yuan Christian University, Chung Li, Taiwan ² Department of Materials Science and Engineering, MingDao University, ChangHua, Taiwan
F2-P-0874	Influence of Argon Ion Bombardment on Microstructures and Optoelectronic Properties of Nickel Oxide Films	S.C. Chen ^{1,*} , C.H. Wang ¹ , C.K. Wen ¹ , Y.C. Lin ¹ , T.Y. Kuo ² , and H.C. Lin ² ¹ Department of Materials Engineering and Center for Thin Film Technologies and Applications, Ming Chi University of Technology, Taipei, Taiwan ² Institute of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan
F2-P-0875	Microstructures and Optoelectronic Properties of n-type Conductive NiO Composite Films	S.C. Chen ^{1,*} , C.H. Wang ¹ , S.W. Hsu ¹ , Y.C. Lin ¹ , T.Y. Kuo ² , and H.C. Lin ² ¹ Department of Materials Engineering and Center for Thin Film Technologies and Applications, Ming Chi University of Technology, Taipei, Taiwan ² Institute of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan
F2-P-0883	Preparation and Characterization of Ag ₂ O Thin Film from Electrochemical Deposition	M.L. Cheng, Yi. Hu*, Tung-Cheng Liu, and C.-C. Lin Department of Materials Engineering, Tatung University, Taipei, Taiwan

Paper no.	Paper Title	Authors/Affiliation
F2-P-0886	Preparation and Characterization of $\text{Cu}_{1-x}\text{Na}_x\text{O}$ Thin Films Through Evaporation Deposition Method	C.P. Shih, Yi. Hu*, C.-C. Lin, and Tung-cheng Liu <i>Department of Materials Engineering, Tatung University, Taipei, Taiwan</i>
F2-P-0929	High Performance Indium-based Oxide Films Grown by Electron-assisted Sputtering Process	Young Joon Yoon* and Sung Hwan Cho <i>Nano-Convergence Intelligence Materials Team, Korea Institute of Ceramic Engineering and Technology, Seoul, Korea</i>
F2-P-0947	High-sensitivity H_2 Gas Sensing Properties of PdO Nanoflake Thin Film	Y.J. Chiang, F.M. Pan*, K.C. Li, and Y.C. Lin <i>Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan</i>
F2-P-0953	Fabrication of p-type Mg-doped ZnO Films by Spin-coating	P.W. Cheng* and J.H. Jean <i>Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan</i>
F2-P-0998	Mist CVD Growth of Ga-In-O Films Grown on $\alpha\text{-Al}_2\text{O}_3$ Substrates	K. Tanuma ^{1,*} , T. Hatakeyama ¹ , T. Onuma ^{1,2} , T. Yamaguchi ¹ , and T. Honda ¹ ¹ <i>Department of Information and Communications Engineering, Kogakuin University, 2665-1 Nakano-machi, Hachioji, Tokyo, Japan</i> ² <i>Department of Liberal Arts, Tokyo National College of Technology, 1220-2 Kunugida, Hachioji, Tokyo, Japan</i>
F2-P-1000	Spin-coating Fabrication of In-doped ZnO Films by Molecular Precursor Method	R. Goto, T. Yasuno, H. Nagai, H. Hara, M. Sato, T. Yamaguchi, and T. Honda* <i>Department of Information and Communications Engineering, Kogakuin University, Tokyo, Japan</i>
F2-P-1040	Fabrication and Characteristics of ZnO NiCo_2O_4 Thin Films Deposited by RF Sputtering for Optoelectronic Application	Shu-Yi Tsai ^{1,*} , Kuan-Zong Fung ¹ , Chung-Ta Ni ¹ , Chao-Nan Wei ² , and Hui-Yun Bor ² ¹ <i>Department of Materials Science and Engineering, Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan</i> ² <i>Metallurgy Section, Materials & Electro-Optics Research Division, Chung-Shan Institute of Science and Technology (CSIST), Taoyuan County, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
Symposium F3: Oxide Devices: Thermoelectric Conversion, Resistive Sensors, Spintronics, and Superconductors Date: 2014/6/12, Time: 13:00~17:00 PM, Room: 401		
F3-P-0138	Resistive Switching Characteristics in Transparent ZnO-based Memory Devices	Fu-Chien Chiu*, Peng-Wei Li, Wen-Ping Chiang, Chih-Chi Chen, Min-Yu Yang, Chin Wang, Ko-Chia Liao, and Hsien-Mei Wang <i>Department of Electronic Engineering, Ming-Chuan University, Gui-Shan, Taoyuan, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
F3-P-0220	Graphene/MnO ₂ Composites for Applications as Asymmetric Supercapacitor	Shi-Hong Huang ^{1,*} , Chun-Liang Chen ¹ , and Yen-Hsun Su ² ¹ Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan ² Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan
F3-P-0745	Resistive Switching of Ti and ITO Bilayer Coatings	H.P. Huang and S. Jou* Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan
F3-P-0821	X-ray Absorption Spectroscopy Study of Rubidium Tungsten Bronze Rb _x WO ₃	C.H. Hsu ^{1,*} , Y.C. Wang ^{1,2} , C.L. Chen ^{1,3} , C.W. Wu ³ , L. Zhao ¹ , C.L. Dong ³ , T.S. Chan ³ , D.C. Lin ⁴ , H.L. Liu ² , and M.K. Wu ¹ ¹ Institute of Physics, Academia Sinica, Taipei, Taiwan ² Department of Physics, National Taiwan Normal University, Taipei, Taiwan ³ National Synchrotron Radiation Research Center (NSRRC), Hsinchu, Taiwan ⁴ Department of Physics, Tamkang University, New Taipei City, Taiwan
F3-P-0849	Characteristics of (Cr, Al)ON Coatings by Cathodic Arc Deposition	Wei-Yu Ho* and Ping-Hua Hsu Department Materials Science and Engineering, MingDao University, Chung Hua, Taiwan
F3-P-0905	Investigation of Synthesis and Superconductivity in Novel Bismuth-oxy-sulfide Compound Bi ₄ O ₄ S ₃	W.H. Chao ^{1,*} , C. Ying ¹ , J. Li ^{1,2} , C.F. Wang ^{1,2} , W.R. Liao ¹ , M.H. Wen ¹ , C.C. Chang ¹ , M.J. Wang ^{1,3} , and M.K. Wu ^{1,2} ¹ Institute of Physics, Academia Sinica, Taipei, Taiwan ² Department of Physics, National Dong Hwa University, Hualien, Taiwan ³ Institute of Astronomy and Astrophysics, Academia Sinica, Taipei, Taiwan

Paper no.	Paper Title	Authors/Affiliation
Symposium F4: Oxide Nanocomposites, Nanowire, Nanoparticle and Bulks Date: 2014/6/12, Time: 13:00~17:00 PM, Room: 401		
F4-P-0159	Effects of Growth Concentration and Temperature on ZnO Nanorod Growth on ITO Substrate by Electrochemical Deposition	T.H. Lee ¹ , T.G. Kim ¹ , H.B. Oh ¹ , J.T. Jang ¹ , H. Ryu ^{1,*} , and W.J. Lee ² ¹ Department of Nano Science and Engineering, Center for Nano Manufacturing, Inje University, Obang-dong, Gimhae-si, Gyeongnam, Korea ² Department of Materials and Components Engineering, Dong-Eui University, 995 Eomgwangno, Busanjin-gu, Busan, Korea
F4-P-0160	The Morphological, Structural and Photoelectrochemical Properties of Cu ₂ O Thin-films Grown by Electrochemical Deposition	T.G. Kim ¹ , T.H. Lee ¹ , H.B. Oh ¹ , J.T. Jang ¹ , H. Ryu ^{1,*} , and W.J. Lee ² ¹ Department of Nano Science and Engineering, Center for Nano Manufacturing, Inje University, Obang-dong, Gimhae-si, Gyeongnam, Korea ² Department of Materials and Components Engineering, Dong-Eui University, 995 Eomgwangno, Busanjin-gu, Busan, Korea

Paper no.	Paper Title	Authors/Affiliation
F4-P-0223	Electromagnetic and Enhanced Microwave Absorption Properties of Ni/Carbon Nano-Coils Hybrid	Szu-Chen Wu ^{1,*} , Cheng-Hsiung Peng ² , Ruey-Bin Yang ³ , Ming-Der Ger ¹ , Yin-Ming Liu ¹ , and Nen-Wen Pu ⁴ ¹ <i>Department of Chemical and Materials Engineering, Chung Cheng Institute of Technology, Nation Defense University, Taiwan</i> ² <i>Department of Chemical and Materials Engineering, MingHsin University of Science and Technology, Hsin-Feng, Hsinchu, Taiwan</i> ³ <i>Department of Aerospace and System Engineering, Feng Chia University 407, Taichung, Taiwan</i> ⁴ <i>Department of Photonics Engineering, Yuan Ze University, Zhongli, Taoyuan, Taiwan</i>
F4-P-0226	The Synthesis and Optical Property of YAG: Ce Phosphors Prepared by a Atmospheric-pressure Plasma Method	Hao-Long Chen*, Cian-Yi Wu, and Yang-Hao Gu <i>Department of Electronic Engineering, Kao Yuan University, Kaohsiung, Taiwan</i>
F4-P-0263	Electromagnetic Properties and Radar Wave Absorbing Characteristics of Silicate Carbide Coated Carbonyl Iron Core Shell Structure Composite Materials	Y.T. Hsu, C.H. Peng*, P.S. Chen, W.S. Chiu, H.L. Chen, and C.M. Chang <i>Department of Chemical and Materials Engineering, MingHsin University of Science and Technology, Hsin-Feng, Hsinchu, Taiwan</i>
F4-P-0266	Microwave Absorbing Materials of ZrO ₂ /Cl Core-shell Nanopowders Prepared via Mechano-fusion Method	Y.T. Hsu, C.H. Peng*, P.S. Chen, P.J. Chen, H.H. Wei, Y.T. Shie, and Y.F. Han <i>Department of Chemical and Materials Engineering, MingHsin University of Science and Technology, Hsin-Feng, Hsinchu, Taiwan</i>
F4-P-0277	A New Raman Spectroscopic Method of Determining the Size of Silver Nanoparticles	ZY Yang, NH Ko, TH Yang, CC Chang, WH Cheng, and YT Lee* <i>Department of Photonics, Feng Chia University, Taichung, Taiwan</i>
F4-P-0278	The Experimental and Theoretical Analysis of the Silver Nanoparticles Effects on the Fermi-Resonance of Ethylene Carbonate	ZY Yang, LZ Yu, RH Yang, and YT Lee* <i>Department of Photonics, Feng Chia University, Taichung, Taiwan</i>
F4-P-0294	Surface Plasmon Resonance of Silver Nanoparticles Assisting Enhancement of Fluorescence Resonance Energy Transfer by Water Splitting Photochemistry	Po-Yen Kung ^{1,*} , Chun-Liang Chen ¹ , Tin-Wei Shen ² , and Yen-Hsun Su ² ¹ <i>Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan</i> ² <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
F4-P-0387	The Study of Cu ₂ O/Graphene Nanoparticles as Catalysts for Hydrogen Generation by Using Electroless Plating	Kung-Ning Huang ^{1,*} , W.J. Chen ² , and S.H. Hsieh ¹ ¹ <i>Department of Materials Science and Engineering, National Formosa University, Yunlin, Taiwan</i> ² <i>Graduate School of Materials Science, National Yunlin University of Science and Technology, Yunlin, Taiwan</i>
F4-P-0393	The High-temperature Synthesis of Nano-scaled White Phosphors Applied in the Encapsulation of White-light LED	Hao-Ying Lu* and Meng-Han Tsai <i>Department of Electronic Engineering, College of Science and Engineering, National Quemoy University, Kinmen, Taiwan</i>

Paper no.	Paper Title	Authors/Affiliation
F4-P-0483	Fabrication and Kinetics of ZnO Nanowires by Hydrothermal Method	S.Y. Liou*, J.H. Syu, and S.L. Cheng <i>Department of Chemical and Materials Engineering, National Central University, Taoyuan, Taiwan</i>
F4-P-0495	Kinetic Investigations of the Hydrothermal Synthesis of Vertically-aligned ZnO Nanowire Arrays	S.Y. Liou*, J.H. Syu, and S.L. Cheng <i>Department of Chemical and Materials Engineering, National Central University, Taoyuan, Taiwan</i>
F4-P-0545	One-pot Synthesis of Fe ₃ O ₄ Nanoparticles and Fe ₃ O ₄ /Graphene Hybrid Composites	J.H. Han ¹ , Y.D. Chen ¹ , Y.T. Hsu ¹ , C.S. Liu ¹ , W.C. Sun ¹ , H.C. Shin ¹ , J.E. Yang ¹ , C.H. Peng ¹ , P.S. Chen ^{1,*} , T.W. Lin ^{2,3} , and S.W. Lee ² ¹ <i>Department of Chemical and Materials Engineering, MingHsin University of Science and Technology, Hsin-Feng, Hsinchu, Taiwan</i> ² <i>National Central University Institute of Material Science and Engineering, Taoyuan, Taiwan</i> ³ <i>Chemical Defense Section, Chemical Systems Research Division, Chung-Shan Institute of Science Technology</i>
F4-P-0553	Al-Ni-Y-based Metallic Glass/Nanocrystalline Composite Films for Optical Reflector Applications	Che-Min Chang*, Chun-Hsiung Wang, Jui-Hung Hsu, and J.C. Huang <i>Department of Materials and Optoelectronic Science, National Sun Yat-Sen University, Kaohsiung, Taiwan</i>
F4-P-0599	Fabrication of Nanostructured Cuprite Using A Hydrothermal Method and Its Application in Photocatalysis	H.-W. Wu and K.-S. Chang* <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i>
F4-P-0627	Characterization and Synthesis of SrTiO ₃ : Pr ³⁺ , Al ³⁺ Phosphor Powder Using Spray Pyrolysis	Wei-Lung Tzeng and Shao-Ju Shih* <i>Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan</i>
F4-P-0692	Density-Controlled Growth of ZnO Nanowires Using ZnO Seeds and Their Field Emission Characteristics	Y.K. Tseng ^{1,2,*} , S.L. Su ² , and S.K. Li ² ¹ <i>Department of Cultural Heritage Conservation, National Yunlin University of Science & Technology, Yunlin, Taiwan</i> ² <i>Graduate School of Materials Science, National Yunlin University of Science & Technology, Yunlin, Taiwan</i>
F4-P-0699	Two-step Synthesis of Aligned TiO ₂ /SrTiO ₃ Core/Shell Nanorod Arrays	Y.K. Tseng ^{1,2,*} , C.L. Fern ² , and M.L. Huang ² ¹ <i>Department of Cultural Heritage Conservation, National Yunlin University of Science & Technology, Yunlin, Taiwan</i> ² <i>Graduate School of Materials Science, National Yunlin University of Science & Technology, Yunlin, Taiwan</i>
F4-P-0778	Preferential Oriented TiO ₂ Thin Films Prepared with Ca ₂ Nb ₃ O ₁₀ Additive	Yi-An Chen* and Te-Wei Chiu <i>Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan</i>

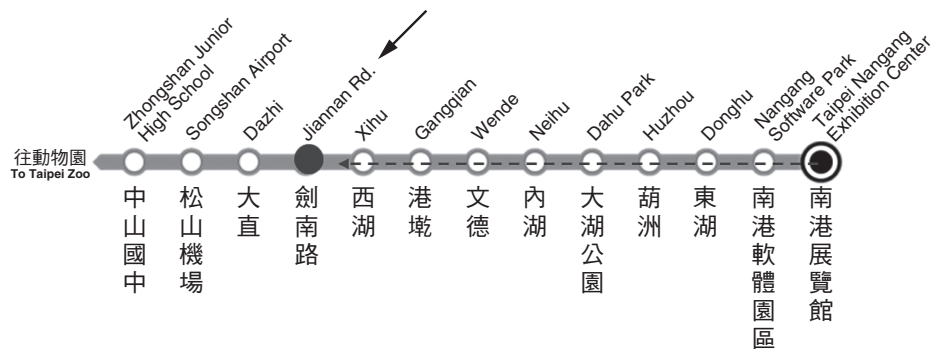
Paper no.	Paper Title	Authors/Affiliation
F4-P-0807	Isotactic Polypropylene/Copper Nanowires Nanocomposites	P.W. Tsai ¹ , C. Wang ² , C.C. Chen ³ , J.C. Yang ^{4,*} , and H.T. Wang ¹ ¹ Department of Molecular Science and Engineering & Institute of Organic and Polymeric Materials, National Taipei University of Technology, Taipei, Taiwan ² Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan ³ Graduate Institute of Biomedical Materials and Tissue Engineering, Taipei Medical University, Taipei, Taiwan ⁴ School of Dental technology, College of Oral Medicine, Taipei Medical University, Taipei, Taiwan
F4-P-0826	Colloidal Synthesis of Orthorhombic and Zinc Blende Phase SnS Nanocrystals	S.C. Wang ^{1,*} and B.J. Huang ² <i>Department of Mechanical Engineering, Southern Taiwan University of Science and Technology, Tainan, Taiwan</i>
F4-P-0846	Preparation of the Highly Transparent Superhydrophobic Thin Film by Modified Silica Nanoparticle Coatings	H.S. Wei ^{1,2} , Y.C. Chang ^{1,2} , C.C. Kuo ^{1,3} , C.C. Jaing ⁴ , and C.C. Lee ^{1,2,*} ¹ Thin Film Technology Center, National Central University, Chung-Li, Taoyuan, Taiwan ² Department of Optics and Photonics, National Central University, Chung-Li, Taoyuan, Taiwan ³ Graduate Institute of Energy Engineering, National Central University, Chung-Li, Taoyuan, Taiwan ⁴ Department of Optoelectronic System Engineering, Minghsin University of Science and Technology, Hsinchu, Taiwan
F4-P-0870	External Stimuli Controllable the Conduction at the Perovskite-Spinel System	Ying-Hui Hsieh ^{1,*} , Evgheni Strelcov ² , Jia-Ming Liou ³ , Chia-Ying Shen ¹ , Yi-Chun Chen ³ , Sergei V. Kalinin ² , and Ying-Hao Chu ¹ ¹ Department of Materials Science and Engineering, National Chiao Tung University, Tainan, Taiwan ² Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN, USA ³ Department of Physics, National Cheng Kung University, Tainan, Taiwan
F4-P-0895	The Investigation of Different Transparent Conductive Thin Film Electrode with Nanowire on Organic Light Emitting Diode	H.J. Shiao ¹ , Y.W. Yen ² , G.Y. Chen ¹ , Y.P. Lin ¹ , J.Y. Li ¹ , and S.P. Chen ¹ ¹ Green Energy & Environment Research Laboratories, Industrial Technology Research Institute, Chutung, Taiwan ² Department of Electronic Engineering, Chung Yuan Christian University, Chungli, Taiwan
F4-P-0963	The Synthesis of Silicon/Silver Core Shell Nanospheres and Their Photocatalysis Tests	
F4-P-0974	Well Aligned Tin-doped ZnO Nanorods and Corresponding Nanotubes on ITO-glass Prepared by Wet Processes and Their Characterization	Yao-Tien Tseng ¹ , Sheng-Yi Huang ² , Mao-Chia Huang ¹ , Guo-Zhi Lee ² , and Jing-Chie Lin ^{1,*} ¹ Institute of Materials Science and Engineering, National Central University, Taoyuan, Taiwan ² Department of Mechanical Engineering, National Central University, Taoyuan, Taiwan

Paper no.	Paper Title	Authors/Affiliation
F4-P-0979	Development and Research of Gas Sensor, SERS and Nanomaterials in Taiwan from the Viewpoint of 2013 MRS-T Annual Meeting	M.R. Hu*, Y.S. Lin*, and Y.T. Nien <i>Department of Materials Science and Engineering, National Formosa University, Yunlin, Taiwan</i>
F4-P-1020	Hydrothermal Synthesis of VO ₂ (M) Nanoparticle by Ethanol Reduction of Peroxovanadium Complexes	YingChou Lu ^{1,*} , ChiYung Kuan ¹ , and MinHsiung Hon ^{1,2} ¹ <i>Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan</i> ² <i>Research Center for Energy Technology and Strategy, National Cheng Kung University, Tainan, Taiwan</i>
F4-P-1027	Cathodoluminescence and Photon-Sensing Characterization of the CVD ZnS Nanowires	Wei-Chen Lin ¹ , Yin-Wei Cheng ¹ , Meng-Wen Huang ² , Sheng-Kun Chen ¹ , Bo-Chen Lee ¹ , Fu S. Shieu ² , and Han C. Shih ^{1,2,*} ¹ <i>Department of Chemical and Materials Engineering Chinese Culture University, Taipei, Taiwan</i> ² <i>Department of Materials Science and Engineering National Chung Hsing University, Taichung, Taiwan</i>
F4-P-1028	The Fabrication and Characterization of V ₂ O ₅ Nanowires by Microwave Plasma CVD	Bo-Chen Lee ¹ , Meng-wen Huang ² , Wei-Chen Lin ¹ , Sheng-Kun Chen ¹ , Fu S. Shieu ² , and Han C. Shih ^{1,2,*} ¹ <i>Department of Chemical and Materials Engineering Chinese Culture University, Taipei, Taiwan</i> ² <i>Department of Materials Science and Engineering National Chung Hsing University, Taichung, Taiwan</i>

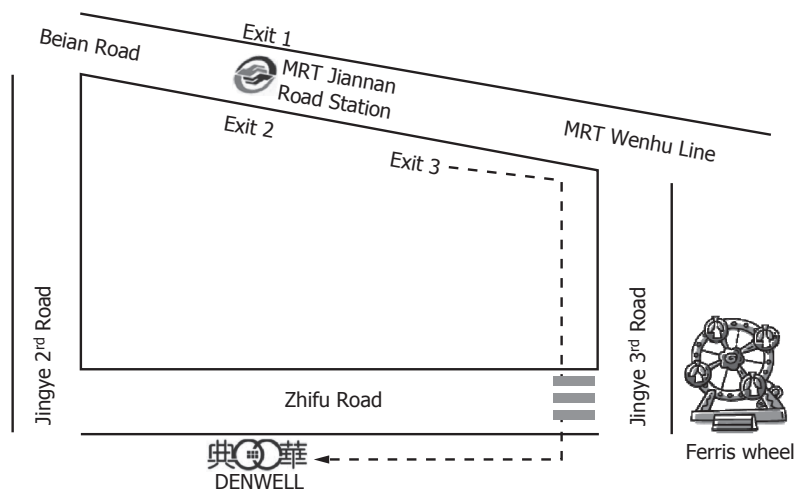
Banquet Information

Time	6/13 18:30
Venue	Denwell (典華)
How to reach: MRT Wenhu Line, Jiannan Road Station, Exit 3, then walk about 3 minutes. Address: No. 8, Zhifu Rd., Jhongshan District, Taipei 台北市中山區植福路 8 號	

MRT Wenhu Line Route Map

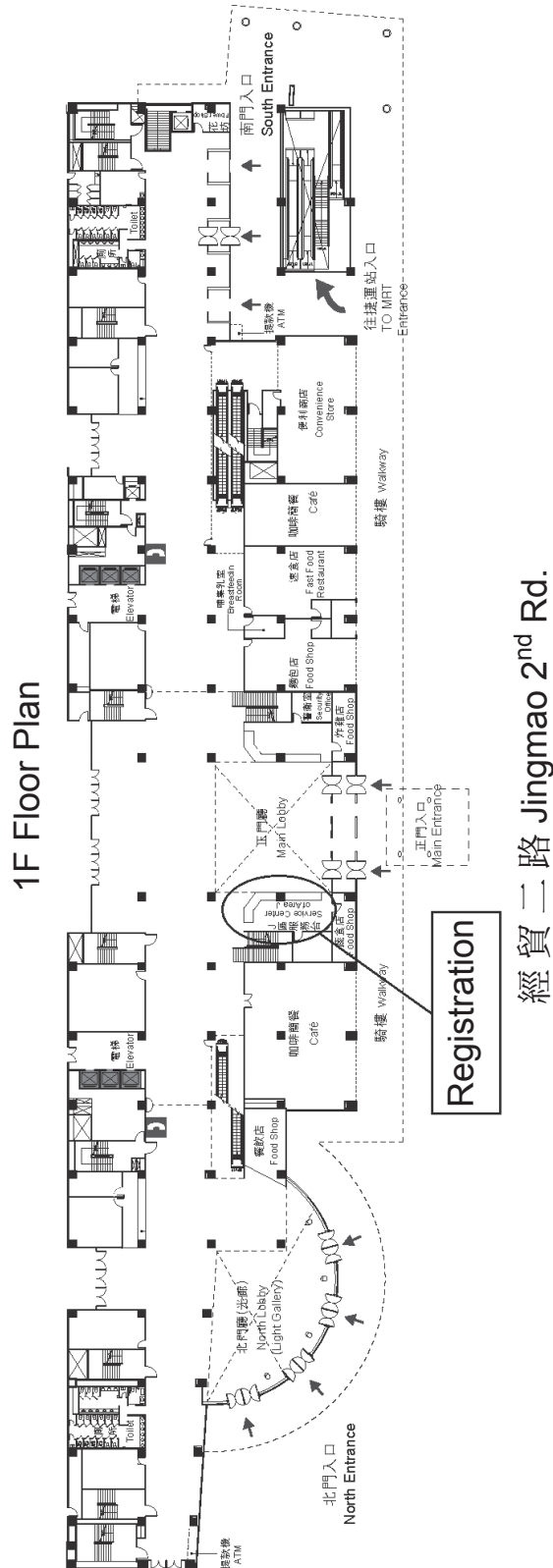


Location of Denwell



Conference Room and Poster Locations

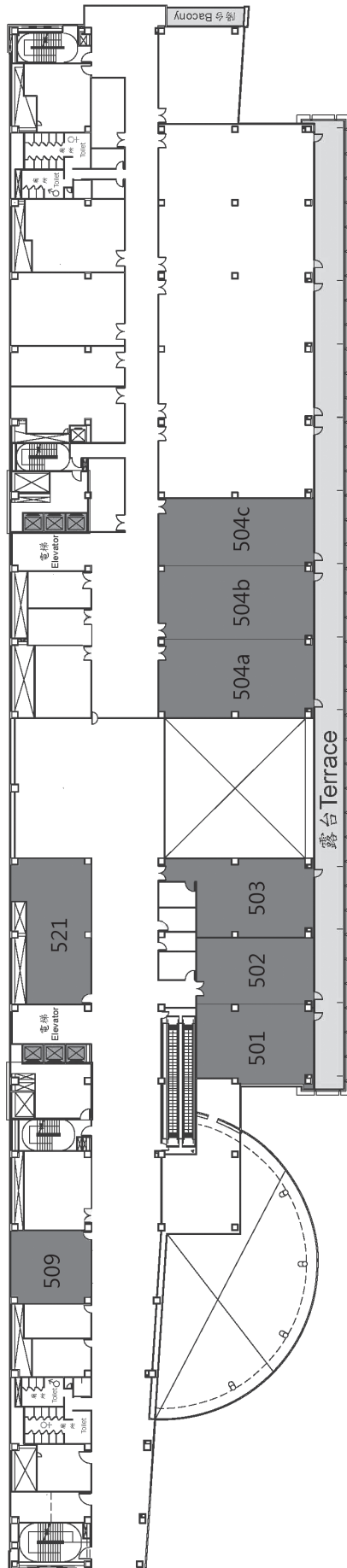
南港路 1 段 Nangang Rd., Sec. 1



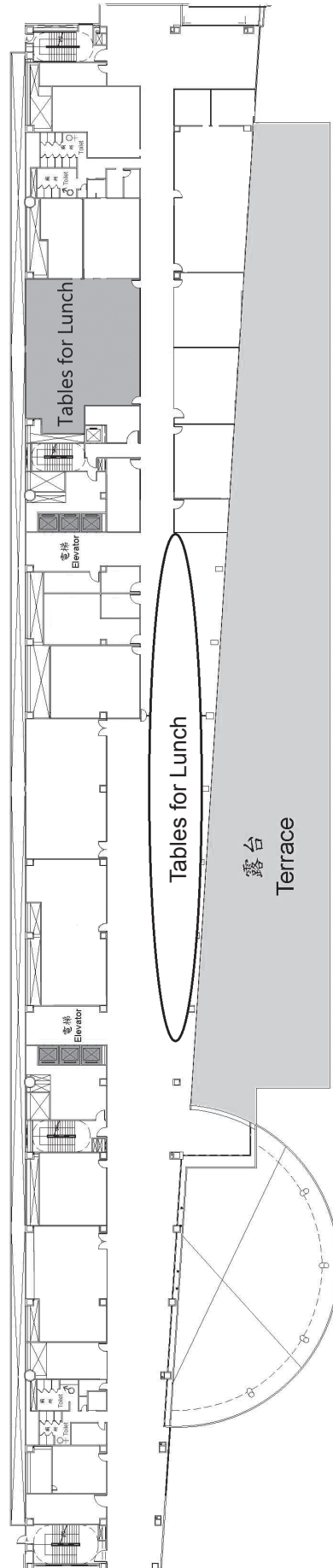
4F Floor Plan



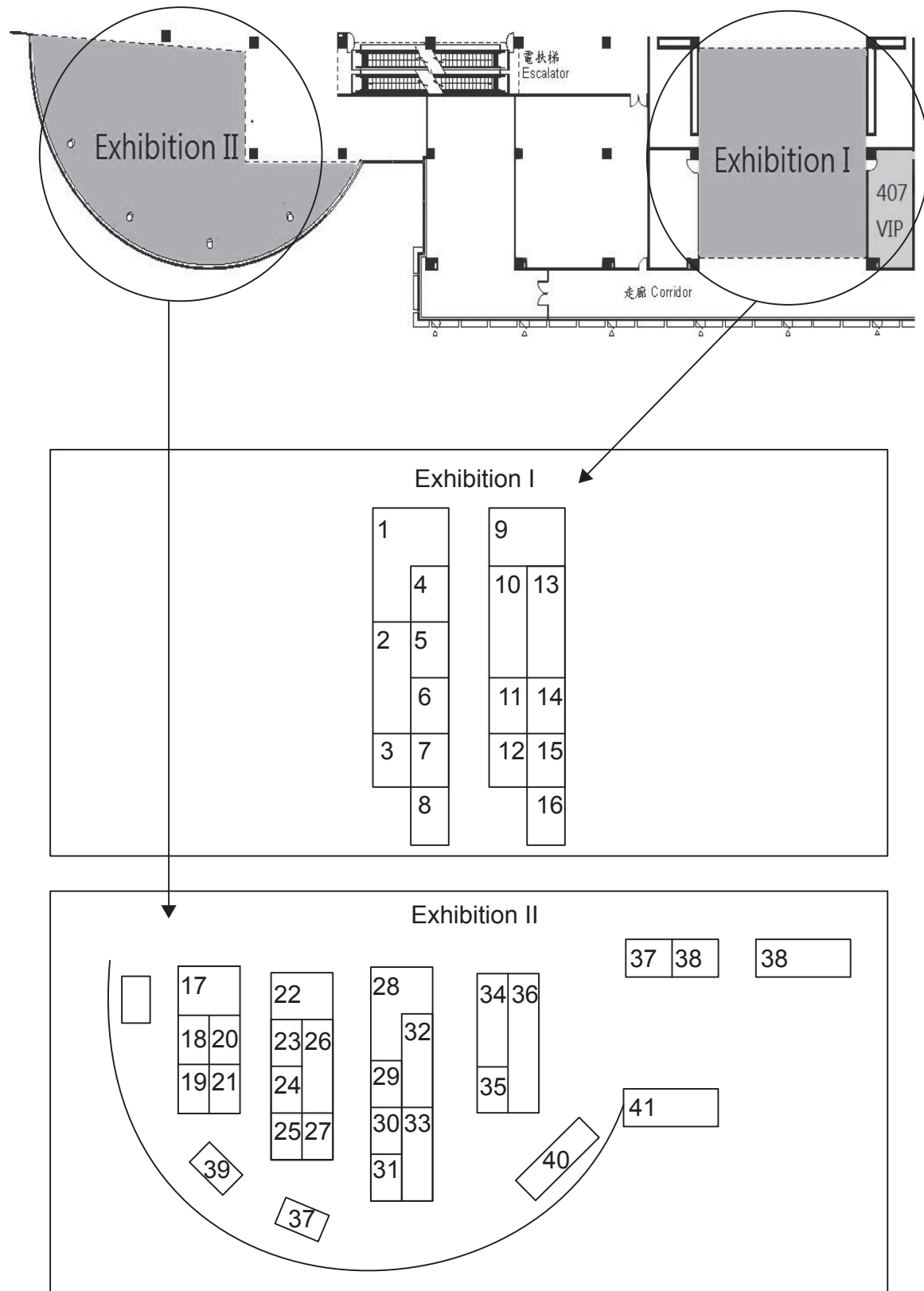
5F Floor Plan



6F Floor Plan



Exhibition Layout (4th Floor)



Note: Booth numbers and company information are detailed on next pages.

IUMRS-ICEM 2014

Booth No.	Company	Website/Contact info.
1	Chief Up International Corp.	www.chiefup.com.tw/
2	Major Instruments Co., Ltd.	www.major.com.tw/About.aspx
3	Cameca Taiwan Co., Ltd.	www.cameca.com/company/worldwide/index.aspx
4	Materials Analysis Technology Inc. (MA-tek)	www.ma-tek.com/
5	Scientek Corp.	www.scientek.com.tw/ct/index.php
6	Precision International Corp.	www.pic.com.tw/
7	Environment & Materials & Electronics Group	www.britnix.com.tw/dealer.html
8	Yuanli Instrument Co., Ltd.	www.yuanli.tw/yuanli/main.asp
9	Jing Teng Tech Limited Co.	http://www.emtech.com.tw/
10	Kintech Co., Ltd.	http://www.kintech-corp.com.tw/
11	Zeiss Corp.	http://www.zeiss.com/corporate/en_de/home.html
12	Hephas energy Co., Ltd.	http://www.hephasenergy.com/
13	德瑞精密機械有限公司	(037)68-8235
14	Palmeso Co., Ltd.	http://www.palmeso.co.jp/en/about/index.html
15	National formosa uniwersity Department of Materials and Engineering Alumni Association	http://nfusparc.nfu.edu.tw/bin/home.php
16	Unice E-O Services Inc.	http://www.unice.com.tw/
17	PerkinElmer Co., Ltd.	http://www.perkinelmer.com.cn/
18	Usil Corp.	http://www.usils.com.tw/front/bin/home.phtml
19	Samwell Testing Inc.	http://www.samwells.com/bc/
20	Sunray Science & Technology Co., Ltd.	http://www.sun-ray.com.tw/front/bin/home.phtml
21	Sanpany Instruments Co., Ltd.	http://www.sanpany.com.tw/
22	Zwick/Roell Co., Ltd.	http://www.zwick.com/en.html
23	Lih Yuan Enterprise Co., Ltd. Twinson International Limited	http://www.lihyuan.com.tw/en/index.html
24	National Nano Device Laboratories.	http://www.ndl.narl.org.tw/web/index.html
25	KeyenceCo., Ltd.	http://www.keyence.com/about-us/index.jsp
26	LJ-UHV Corp.	http://www.ljuhv.com/index_e.php
27	China Steel	http://www.csc.com.tw/indexe.html
28	Industrial Technology Research Institute	https://www.itri.org.tw/
29	TA Instruments	http://www.tainstruments.com.tw
30	Pyat Ltd.	http://www.pyat.com.tw/en/
31	Hong-Ming Technology Co., Ltd.	http://www.hmtech.com.tw/company.php
32	Pentad Scietific Corp.	http://www.pentad.com.tw/new_product.html
33	National Chung-Shan Institute of Science & Technology	http://www.csist.org.tw/

Booth No.	Company	Website/Contact info.
34	TechMark Precision Instrument Co., Ltd.	http://www.techmark-asia.com/
35	Sunway Scientific Corp.	http://www.sun-way.com.tw/
36	Jie Dong Co., Ltd.	http://www.jiedong.com.tw/index.aspx
37	Rigaku Corp.	http://www.regularcorp.com/index.html
38	Bruker Taiwan Co., Ltd.	http://www.bruker.com.tw
39	Protech Pharmservices Corp.	http://www.ppccro.com/
40	Titanex Corp.	http://www.titanex.com.tw/
41	EMO Materials and Nanotechnology at National Taipei University of Technology	http://www.cc.ntut.edu.tw/~wwwemo/english/english.htm

MEMO

