

## INVITATION

On behalf of the ICAE2013 Organizing Committee, I would like to welcome you and solicit your participation for the upcoming conference which will be held from Nov. 12 until Nov. 15, 2013, in gorgeous Jeju Island, which has recently been selected as one of the New Seven Wonders of Nature! The conference venue is ICC Jeju, which is conveniently located near the famous Joongmun Resort, Seoguipo.

Following the footsteps of the huge success of ICAE2011, which attracted more than 900 participants from 19 countries, the bi-annual conference is intended for the world renowned scholars, researchers and young students in the field of "electromaterials".

The scope of ICAE2013 will include but not limited to the various disciplines of electronic materials, including ferroelectric and piezoelectric materials and devices, green energy materials such as solar cells and fuel cells, functional thin films and devices, energy storage materials, transparent electronics, printable electronics, "soft" organic electronics, smart nano-materials and devices, advances in nanotechnologies, new and emerging optoelectronic materials and devices based on LEDs and OLEDs, advances in semiconductor technologies, materials for condition monitoring diagnosis, and so on.

It is expected that the conference is going to be composed of more than 10 symposia which will be organized by world leading experts in the fields.

Through your active participation, I am certain that you will have chances to obtain the state-of-the-art in the fields mentioned above, and thereby equip yourself with the most up-to-date knowledge. This will, in turn, contribute to the advancement or progress in every field in which ICAE2013 is preparing open forums.

Again, I would like to extend my sincere invitation to you and your colleagues to attend ICAE2013, The International Conference on Advanced Electromaterials.

We look forward to meeting you here in Korea in November!

**Prof. Hee Young Lee**  
General Chairman, ICAE2013

## REGISTRATION

### Registration Fee

Classification	Early Registration	On-site Registration
Regular	USD 550	USD 650
Student	USD 250	USD 300
Accompanying Person	USD 200	USD 250

※ Please note that the publication expense for each journal is not included in registration fee.

### Registration Fee Includes

- **Regular & Student:** Technical Sessions, Conference Kit, Welcome Reception, Banquet, Lunches
- **Accompanying Person:** Welcome Reception, Banquet, Lunches

## ABSTRACT SUBMISSION

1. Abstract MUST be submitted online through the ICAE2013 website by **June 30, 2013**.
2. Abstract MUST be written in English ONLY.
3. **The total length of the abstract must not exceed 500 words.**
4. **Please input your abstract into online submission program.**
5. Acceptance notification will be sent to the corresponding author by **July 15, 2013**.

## PAPER PUBLICATION

1. Authors whose abstracts are accepted will be requested to submit manuscript by **November 12, 2013**. (Manuscript submission is not mandatory.)
2. After peer review, all accepted papers will be published in the following leading Journals.

- **Physica Status Solidi** (SCI / max. 100 papers confirmed)
- **Japanese Journal of Applied Physics** (SCI / 70 papers confirmed)
- **Journal of Electroceramics** (SCI / 30 papers confirmed)
- **Journal of the Korean Physical Society** (SCI / 100 papers confirmed)
- **International Journal of Hydrogen Energy** (SCI / 40 papers confirmed)
- **Transactions on Electrical and Electronic Materials** (Scopus, EI Compendex, DOAJ / confirmed)

### CONFERENCE SECRETARIAT

For registration & inquires: ICAE2013 Secretariat  
Tel: +82-2-565-3571 Fax: +82-2-3412-8723 E-mail: secretariat@icae.kr

# ICAE 2013

## The 2<sup>nd</sup> International Conference on Advanced Electromaterials

**November 12 (Tue.) - 15 (Fri.), 2013**  
**ICC Jeju, Jeju, Korea**



• **Organized by:**  The Korean Institute of Electrical and Electronic Material Engineers

• **Sponsored by:**  Jeju Convention & Visitors Bureau

• **Technically Sponsored by:**       

      

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## IMPORTANT DATES

Abstract Submission	<b>June 30, 2013</b>
Acceptance Notice	<b>July 15, 2013</b>
Early Registration	<b>July 31, 2013</b>
Hotel Reservation	<b>August 15, 2013</b>
Manuscript Submission	<b>November 12, 2013</b>



## SYMPOSIUM LIST

### 1. Ferroelectrics and Piezoelectrics: Fundamentals and New Materials

We intend to introduce a symposium that allows all the participants to enjoy sharing up-to-dated research achievements in the field of piezoceramics with respect to fundamentals and applications. The ultimate goal of the symposium is to attempt to seek the future research directions inspired by insightful and experienced as well as fresh and creative ideas from all the generations.

- New dielectric, ferroelectric, and piezoelectric materials, single crystals
- Understanding of ferroelectricity, piezoelectricity, field-induced strain and relaxor behaviors

*Organizer: Dr. Wook Jo (Technical Univ. of Darmstadt, Germany)*

*Co-Organizer: Dr. Jae-Ho Jeon (KIMS, Korea), Prof. Jing Feng Li (Tsinghua Univ., China)*

### 2. Ferroelectrics, Piezoelectrics, and Dielectrics: Processing and Applications

This session is designed for Ferroelectric, Piezoelectric, and Dielectric scientists, engineers, researchers and manufacturers, delivering the opportunity to share knowledge and state-of-the-art advancements in technology.

The scope of the session includes Ferroelectric, Piezoelectric, and Dielectric materials and devices processing including fabrication of thin films, thick films, nano-structures, MEMS processing and so on. Also, the session is aimed at bringing their related innovative devices including microwave devices, ultrasonic transducers, sensors, actuators, energy harvesters and so on.

*Organizer: Dr. Chong-Yun Kang (KIST, Korea)*

*Co-Organizer: Dr. Jungho Ryu (KIMS, Korea), Prof. Takeshi Morita (The Univ. of Tokyo, Japan)*

### 3. Nanostructured Materials for Energy Devices

This symposium aims to explore recent advances in various nanostructured materials and their applications to green energy devices such as highly efficient photonic and optoelectronic devices, green display devices, energy conversion devices, and environment-friendly power conversion devices like advanced power semiconductor devices. Furthermore, the design and fabrication technologies of the devices which play a crucial role in highly efficient energy conversion of low carbon footprint will be emphasized.

*Organizer: Dr. Eun Dong Kim (KERI, Korea)*

*Co-Organizer: Prof. Aldo Di Carlo (Univ. of Rome "Tor Vergata", Italy), Prof. Nosang V. Myung (Univ. of California at Riverside, USA), Dr. Geon-Woong Lee (KERI, Korea)*

### 4. Advanced LED and Lighting Technology

The symposium, "Advanced LED and Lighting Technology" covers all the fields of light-emitting diodes and the solid-state lightings, which are regarded as an emerging technology. The representative topics are listed below:

- Growth of III-Nitrides and the characterizations
- Novel ways to enhance the internal quantum and light-extraction efficiency
- Flexible LEDs
- Ohmic&Schottky contacts for high-performance LEDs
- Device reliability and ESD/EOS
- Red and Green LEDs and the related materials
- Phosphors and the white LED technologies

VIII. Advanced packaging materials and the processing technologies

IX. General solid-state lighting technologies

X. Visible light-communication technologies

XI. Advanced lighting control and the power saving technologies Eco-friendly and human attractive lighting technologies

*Organizer: Prof. Ja-Soon Jang (LIFTRC &Yeungnam Univ., Korea)*

*Co-Organizer: Prof. Jong-Kyu Kim (POSTECH, Korea), Dr. Jong-Hyeob Baek (KOPIT, Korea),*

*Prof. Tohru Honda (Kogakuin Univ., Japan), Prof. Chih-Chung Yang (Nat'I Taiwan Univ.,*

*Taiwan), Dr. Jaehee Cho (Rensselaer Polytechnic Inst., USA)*

### 5. Thin Film Processing and Devices

Recently, because all of electronic components were miniaturized, thin film technology should be developed and thin films for new applications have been interested. Divisions of Thin Film Processing and Devices will cover all of fields for thin film technology of materials. The session of Thin film processing and devices also includes the special parts of the Electrospinning, Gas barrier film, Plasma engineering for nano materials, and Superconductor thin films.

*Organizer: Prof. Soon-Gil Yoon (Chungnam Nat'I Univ., Korea)*

*Co-Organizer: Prof. Sang-Im Yoo (Seoul Nat'I Univ., Korea)*

### 6. Flexible and Printable Electronic Materials and Devices

This symposium aims to cover all aspects of flexible and printed electronics including materials, device physics, and manufacturing process. The symposium topics will include the following areas. All aspects of (1) printed organic and oxide thin film transistors (OTFTs and Oxide TFTs) and related topics, (2) printed organic light emitting diodes (OLEDs), OLED lighting and related topics, (3) flexible electronics and displays and related topics, (4) printed organic photovoltaic cell (OPVs) and related topics, (5) material and manufacturing process technologies, and device physics in flexible and printed electronic devices.

*Organizer: Dr. ByoungGon Yu (ETRI, Korea)*

*Co-Organizer: Prof. Yong-Young Noh (Dongguk Univ., Korea), Prof. Taishi Takenobu*

*(Waseda Univ., Japan), Dr. Jae-Bon Koo (ETRI, Korea)*

### 7. Oxide Semiconductors: Fundamentals and Advanced Applications

There has been an explosive growth of interest in both fundamental research and device applications based on Transparent Oxide Semiconductor (TOSs) over the past few years. This fascinating class of wide band-gap materials has been attracted a variety of advanced applications in the fields of, among others, liquid crystal and high definition displays, transparent conducting oxides for solar cells, gas sensors, nanoelectronics, oxides and other materials convergence devices, electrochromic, thermochromic and smart windows, in architectural coatings as well as in organic light-emitting diodes, in which they are regarded as the main candidates for the forthcoming "post-Si" electronics era. Driven by the worldwide research activities that range from fundamental physics to materials fabrication and TOS-based device development, the "Oxide Semiconductors" have been decided on the organization of the follow-up ICAE 2013.

*Organizer: Prof. Sang Yeol Lee (Cheongju Univ., Korea)*

*Co-Organizer: Prof. George Kiriakidis (Univ. of Crete and FORTH, Greece), Prof. Jun Seop*

*Kwak (Suncheon Nat'I Univ., Korea)*

### 8. Power Electronic Materials and Devices

High-Voltage Materials and Devices, Power-MOS(LDMOS, TDMOS, SJ-MOS), Power-BJT(IGBT, HBT), Power-HFET(MODFET, HEMT), Power Diode(TVS, SCR, Thyristor, FRD, SBD), Materials(Si/SiGe, GaN, SiC), Advanced Process Technology (Epitaxy, Thin Film Growth), Advanced Applications(Automotive, LED, Solar Plant, Wind Plant, IT)

*Organizer: Prof. Kyu-Hwan Shim (Chonbuk Nat'I Univ., Korea)*

*Co-Organizer: Dr. Jin Ho Lee (ETRI, Korea), Dr. Nam-Kyun Kim (KERI, Korea), Prof. Kevin*

*J. Chen (Hong Kong Univ., Hong Kong)*

### 9. Advanced Photovoltaic Materials and Devices

This symposium focuses on the advanced photovoltaic materials and devices including following subcategories:

- New Conceptual Approaches for Photovoltaic Phenomena
- Advanced Electromaterials for Organic Photovoltaic Devices
- Advanced Electromaterials for Inorganic Photovoltaic Devices
- New Device Architectures for Photovoltaic Devices
- Advanced Characterization Results for Photovoltaic Devices

*Organizer: Dr. Sang Il Seok (KRICT, Korea)*

*Co-Organizer: Prof. Kyungkon Kim (Ewha Womans Univ., Korea), Prof. Jaehyeong Lee*

*(Sungkyunkwan Univ., Korea), Dr. Sohee Jeong (KIMM, Korea)*

### 10. Advanced Materials for Fuel Cell Technology

The aim of this symposium is to establish an information platform in the science and technology related to advanced materials for Fuel Cells. The symposium will cover issues relevant to materials for fuel cell components to improve performance and durability as well as to reduce cost of the devices. The symposium topics include the following fields: (1) Catalyst and support materials for low/high temperature fuel cells, (2) Catalysts for hydrogen production, (3) Polymer electrolyte membranes, (4) Ceramic and molten salt electrolytes, (5) Materials for gas diffusion and separator/bipolar plate. Other topics relevant to fuel cell materials are also welcome.

*Organizer: Dr. Tae-Hoon Lim (KIST, Korea)*

*Co-Organizer: Prof. Soo-Kil Kim (Chung-Ang Univ., Korea), Dr. Jong Hyun Jang (KIST, Korea)*

### 11. Energy Storage Materials and Devices

The significant demand of world energy consumption with clean and efficient energy resources has promoted the searches of new materials and technologies. This symposium will focus on the advanced materials and technologies that could help the community to achieve the clean energy storage. Materials design, electrodes architecture, and cell chemistry are key factors to extend the life, enhance the safety, and lower the cost of rechargeable batteries, which are the most efficient energy storage systems for portable electronics, renewable energy storage, smart grid, and transportation applications. A deeper understanding of the battery materials/property relationship and electrode/electrolyte interface phenomena is critical issue for the highly efficient batteries. The search for advanced high capacity electrode materials and the implementation of the challenging metal-air batteries and non-lithium batteries will be necessary for the next generation energy storage system.

*Organizer: Prof. Do Kyung Kim (KAIST, Korea)*

*Co-Organizer: Prof. Hyunjung Shin (Sungkyunkwan Univ., Korea)*

### 12. Application Technology for Advanced Electromaterials and Devices

The primary objective of the "Application Technology for Advanced Electromaterials and Devices" is to provide a symposium for discussion on all the aspects of application technology for advanced electromaterials and devices and related areas. This symposium wants to promote interdisciplinary collaborations among the fields of chemistry, physics, materials science, polymer science, semiconductor technology, optics and photonics, NEMS technology, life science, measurement and analysis, superconducting and magnetic materials and composite devices, application technology for materials and devices and others, thereby creating more effective networking among the scientists working in these fields. In particular, this year's symposium focuses on Application Technology, and its themes are the following (but are not limited to):

- Application Technology for Advanced Materials
- Application Technology for Electro-physical, Electro-chemical and Electro-optical
- Advanced Materials for Organic Devices, Photonic Devices, Nano-Bio Devices and Soft Devices
- Advanced Materials for NEMS, Sensors, Advanced Display
- Graphene, CNT, Carbon Materials
- Nano-scale Devices and Advanced Materials
- Measurement and Analysis for Advanced Materials
- Application Technology and Advanced Materials for Semiconductor
- Superconducting and Magnetic Materials and Composite Devices

*Organizer: Prof. Hoon-Kyu Shin (POSTECH, Korea)*

*Co-Organizer: Prof. Takaaki Manaka (Tokyo Inst. of Tech., Japan), Prof. Sang Jeon Hong*

*(Myongji Univ., Korea), Prof. Sang Heon Lee (Sunmoon Univ., Korea)*

### 13. Korea-China Joint Symposium on Ferroelectricity and Multiferroics

Multiferroics represent an interesting and potentially very important class of materials with coexisting ferroelectric/ferroelastic and magnetic order. The coupling between their order parameters offers the unique opportunity to manipulate the magnetic state through the application of electric fields and tune ferroelectricity by a magnetic field. Increasing theoretical and experimental effort aims at unraveling the mechanism responsible for the extraordinary effect of multiferroicity and the discovery of novel materials with improved functionality. Multiferroic structures in bulk form are actively being explored for high-sensitivity field sensors and electrically tunable microwave devices and oscillators. Thin film forms can be also useful for magnetoelectronic devices including low dimensional spintronic devices with electric field tunable functions. In this symposium, we will discuss in depth the progresses in South Korea and China for the applications and physics understandings of the emergent multiferroic bulk materials as well as multiferroic composite/film structures. In particular, as the major two countries of manufacturing worldwide electronic devices, we will observe recent frontiers and discuss future directions for launching practical devices in the industries of South Korea and China.

*Organizer: Prof. Ill Won Kim (Univ. of Ulsan, Korea)*

*Co-Organizer: Prof. Kee Hoon Kim (Seoul Nat'I Univ., Korea), Prof. Di Wu (Nanjing Univ.,*

*China), Prof. Shuxiang Dong (Peking Univ., China)*