

Call for Papers



Hilton San Francisco, San Francisco, CA
May 24-29, 2009

Abstracts are due no later than December 15, 2008.

NOTE: Some abstracts are due earlier than December 15, 2008. Please carefully check the symposium listing for any alternate abstract submission deadlines. For complete details on abstract submission and symposium topics, please see www.electrochem.org.

Abstract Submission and Deadlines

Submit one original meeting abstract electronically via www.electrochem.org, no later than **December 15, 2008**. Faxed abstracts, late abstracts, and abstracts more than one page in length will not be accepted. In February 2009, all presenting authors will receive an email from the ECS headquarters office notifying them of the date and time of their presentation. Only authors with a non-U.S. address will receive a hardcopy acceptance letter. Other hardcopy letters will be sent only upon request.

Meeting abstracts should explicitly state objectives, new results, and conclusions or significance of the work. Abstracts **must** be properly formatted and no more than **one page in length**. Please use the preformatted template located at: http://www.electrochem.org/meetings/guidelines/inst_a.htm. Programming for this meeting will occur in January and February of 2009, with some papers scheduled for poster presentation. Check the ECS website for further program details.

Paper Presentation

All authors selected for either oral or poster presentations will be notified in February of 2009. Oral presentations must be in English. Only LCD projectors will be provided for oral presentations. **Presenting authors will be required to bring their own laptops to the meeting.** We strongly suggest that presenting authors verify laptop/projector compatibility in the speaker ready room prior to their presentation at the meeting. Speakers requiring additional equipment must make written request to the ECS headquarters office at least one month prior to the meeting and appropriate arrangements will be worked out, subject to availability, and at the expense of the author. Poster presentations should be displayed in English, on a board approximately 4 feet high by 8 feet wide (1.22 meters high by 2.45 meters wide), corresponding to the abstract number and day of presentation in the final program.

Manuscript Publication

Meeting Abstracts — All meeting abstracts will be published both on the ECS website and in the *Meeting Abstracts* CD-ROM copyrighted by ECS, and become the property of ECS upon presentation.

ECS Transactions — All full papers presented at ECS meetings are eligible for submission to the online publication, *ECS Transactions* (ECST). Each meeting is represented by a "volume" of ECST, and each symposium is represented by an "issue."

Some symposia will publish their issues to be available for sale "AT" the meeting; some of these issues will also be available in a hard-cover edition. Please see each individual symposium listing in this Call to determine if there will be an "AT" meeting issue. In this case, submission to ECST is mandatory, and required in advance of the meeting.

Some symposia will publish their issues to be available "AFTER" the meeting. Even if an individual symposium listing does not specify publication of an ECST issue, all authors are still encouraged to submit their full papers. To determine acceptance in ECST, all submitted manuscripts will be reviewed, either by the symposium organizers or by the ECST Editorial Board. After the meeting, all accepted papers in ECST will be available for sale, either individually, or by issue.

Papers presented at the meeting, and papers submitted to ECST, may also be submitted to the Society's technical journals: the *Journal of The Electrochemical Society* or *Electrochemical and Solid-State Letters*. Full manuscripts must be submitted within six months of the symposium date. "Instructions to Authors" are available from the ECS headquarters office, the journals, or the ECS website.

Please visit the ECST website (<http://ecsd.org/ECST/>) for additional information, including overall guidelines, deadlines for submissions and reviews, author and editor instructions, a manuscript template, and much more.

If publication is desired elsewhere after presentation, written permission from ECS is required.

Financial Assistance

Financial assistance is very limited and generally governed by the symposium organizers. Individuals may inquire directly to the symposium organizers of the symposium in which they are presenting their paper to see if funding is available. Individuals requiring an official letter of invitation should write to the ECS headquarters office; such letters will not imply any financial responsibility of ECS. Students seeking financial assistance should consider awarded travel grants (see page 100 of this issue of *Interface*). Young Faculty travel grants are also available (see page 101).

Hotel Reservations

The 215th Meeting will be held at the Hilton San Francisco, located at 333 O'Farrell Street, San Francisco, CA 94102. Special rates have been reserved at the Hilton San Francisco for participants attending this meeting. The reservation deadline is **April 24, 2009**. Please refer to ECS website for rates and reservations.

Meeting Registration

All participants, including authors and invited speakers of the 215th Meeting, are required to pay the appropriate registration fees. Hotel and meeting registration materials will be distributed in February of 2009 and will also be available on the ECS website (www.electrochem.org). The deadline for advance registration is **April 24, 2009**.

Short Courses

A number of short courses will be offered on Sunday, May 24, 2009, from 9:00 AM-4:30 PM. Short Courses require advance registration and may be cancelled if enrollments are too low. The Short Courses topics as of press-time are: Advanced Impedance Spectroscopy, Solid State Lighting, Fullerenes and Carbon Nanotubes, and Atomic Layer Deposition. Please check the ECS website for the final list of offerings.

Technical Exhibit

The 215th ECS Meeting will also include a Technical Exhibit, featuring presentations and displays by over 30 manufacturers of instruments, materials, systems, publications, and software of interest to meeting attendees. Full exhibit booths manned by company representatives cost \$1,800 and include one free meeting registration. Literature display tables (unmanned by company representatives; no meeting registration included) will also be available for \$850. Parties interested in exhibiting should contact Amir Zaman at the ECS headquarters office for more information. Coffee breaks are scheduled each day in the exhibit hall along with evening poster sessions to increase traffic.

Sponsorship Opportunities

ECS biannual meetings are wonderful chances to market your company through sponsorship. Sponsors will be recognized by level in *Interface*, the Meeting Program, the Exhibit Guide, on registrant bags, and on the ECS website.

The Levels are: Platinum: \$5,000+, Gold: \$2,500+, Silver: \$1,000+, and Bronze: \$1,000.

In addition, sponsorships are available for the plenary talks and other special events. These opportunities include the recognition stated above along with additional personalized packages. Special event sponsorships will be assigned by the Society on a first-come, first served basis. For more information, contact Amir Zaman at ECS headquarters.

Contact Information

If you have any questions or require additional information, contact ECS, 65 South Main Street, Pennington, New Jersey, 08534-2839, USA, tel: 609.737.1902, fax: 609.737.2743, e-mail: ecs@electrochem.org; Web: www.electrochem.org.

SYMPOSIUM TOPICS

A General Topics

- A1 — General Student Poster Session
- A2 — Nanotechnology General Session

B Batteries, Fuel Cells, and Energy Conversion

- B1 — Battery / Energy Technology Joint General Session
- B2 — Battery Modeling at Cell Level
- B3 — Characterization of Porous Materials 2
- B4 — Fuel Cells for Portable Power
- B5 — Hydrogen Production, Transport, and Storage 3
- B6 — Measurement and Diagnostics for Energy Systems
- B7 — Nanostructured Materials for Energy Storage and Conversion
- B8 — Photoelectrochemical Energy Conversion
- B9 — Advanced Materials and Concepts for Energy Harvesting

C Biomedical Applications and Organic Electrochemistry

- C1 — Organic and Biological Electrochemistry General Poster Session
- C2 — Dielectrics and Engineered Interfaces in Biological and Biomedical Applications
- C3 — Mechanistic and Synthetic Aspects of Organic Electrochemistry

D Corrosion, Passivation, and Anodic Films

- D1 — Corrosion General Session

E Dielectric and Semiconductor Materials, Devices, and Processing

- E1 — Advanced Gate Stack, Source/Drain, and Channel Engineering for Si-Based CMOS 5: New Materials, Processes, and Equipment
- E2 — Chemical Mechanical Polishing 10
- E3 — Nanocrystal Embedded Dielectrics for Electronic and Photonic Devices
- E4 — Novel Plasma Techniques for Low Temperature Processing of Thin Films for Flexible Electronics
- E5 — Silicon Nitride, Silicon Dioxide, and Alternate Emerging Dielectrics 10
- E6 — Solid-State Lighting
- E7 — State-of-the-Art Program on Compound Semiconductors 50 (SOTAPOCS 50)
- E8 — Processes at the Semiconductor Solution Interface 3
- E9 — SOI Device Technology 14

F Electrochemical / Chemical Deposition and Etching

- F1 — Electrochemical Processing in ULSI and MEMS 4

G Electrochemical Synthesis and Engineering

- G1 — Industrial Electrochemistry and Electrochemical Engineering General Session
- G2 — Leadership and Entrepreneurship in Electrochemical Engineering: A Tutorial Symposium
- G3 — Separators and Membranes for Batteries, Capacitors, Fuel Cells, and Other Electrochemical Systems
- G4 — Multiscale Modeling of Electrochemical Systems 3
- G5 — Tutorials in Electrochemical Technology — Current Distribution

H Fullerenes, Nanotubes, and Carbon Nanostructures

- H1 — Electron Transfer and Applications of Fullerenes and Nanostructured Materials
- H2 — Molecular and Supramolecular Chemistry of Fullerenes and Carbon Nanotubes
- H3 — Carbon Nanotubes and Nanostructures: Fundamental Properties and Processes
- H4 — Carbon Nanotubes and Nanostructures: Applications and Devices
- H5 — Endofullerenes and Carbon Nanocapsules
- H6 — Energetics and Structure and Solid-State Physics
- H7 — Carbon Nanotubes and Nanostructures: Medicine and Biology
- H8 — Porphyrins and Supramolecular Assemblies
- H9 — Metallic and Semiconducting Nanoparticles for Energy Conversion
- H10 — First International Symposium on Graphene and Emerging Materials for Post-CMOS Applications

I Physical and Analytical Electrochemistry

- I1 — Physical and Analytical Electrochemistry General Session
- I2 — Electrochemical Detection of Pathogens
- I3 — Electrochemistry in Medicine and Biomedical Applications
- I4 — Impedance in Electrochemistry: From Analytical Applications to Mechanistic Speculation 2
- I5 — Nanostructured Materials: Chemistry and High Temperature Applications
- I6 — Novel Electrode Materials
- I7 — Role of Electrochemistry in Addressing Climate Change

J Dielectric and Semiconductor Materials, Devices, and Processing

- J1 — Sensors, Actuators, and Microsystems General Session
- J2 — Thirty-Five Years of Chemical Sensors: A Symposium in Honor of Professor Jiri Janata
- J3 — Sensor Applications: Food Safety, Agricultural, and Environmental Sensors

215th ECS Meeting — San Francisco, CA

Call for Papers

A — General Topics

A1

General Student Poster Session

All Divisions

This poster session provides a forum for graduate and undergraduate students to present research results of general interest to ECS. The purpose of this session is to foster and promote work in both electrochemical and solid-state science and technology, and to stimulate active student interest and participation in ECS. A competition for the two best posters will be part of the session. A cash prize of \$250 and a scroll will be awarded to the winning student authors. In the case of coauthors, a maximum award of \$750 per winning poster will be divided equally between student coauthors. The awards will be made without regard to gender, citizenship, race, or financial need.

An issue of *ECS Transactions* is planned to be published "AFTER" the meeting. All authors accepted for presentation are encouraged to submit their full text manuscript for the issue no later than June 22, 2009. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **V. Desai**, New Mexico State University, e-mail: vimalc@nmsu.edu; **G. Botte**, Ohio University, e-mail: botte@ohio.edu; **P. Kulesza**, University of Warsaw, e-mail: pkulesza@chem.uw.edu.pl; **V. Subramanian**, Tennessee Tech University, e-mail: vsubramanian@tntech.edu; and **X. Zhang**, North Carolina State University, e-mail: xiangwu_zhang@ncsu.edu.

A2

Nanotechnology General Session

All Divisions

The emergence of nanotechnology as a major field of research has touched almost every scientific discipline. The number of applications for materials that are prepared on a nanometer scale is expanding rapidly. The advancement of these applications is made possible by the new methods of preparation and characterization of materials and composites on a nanometer scale. Examples include catalysts for fuel cell applications, semiconductors for photovoltaic and photoelectrochemical solar energy conversion, and chemical and biological sensors.

This symposium will focus on critical issues and state-of-the-art developments in the science and technology of nanostructured materials and devices for electrochemistry applications. Papers are solicited in all areas related to materials including metals, ceramics, semiconductors, organic compounds and polymers, and to devices including molecular/nano electronics, chemical and biological sensors, and actuators.

Areas of interest include: semiconductor and metal nanoparticles and metal/semiconductor nanocomposites; size quantization effects in semiconductor nanoparticles; fundamentals of nucleation and growth of nanoparticles; novel synthesis methods of nanostructured materials; processing of nanostructured materials; advanced characterization techniques for nanostructured materials; modelling and tailoring of nanostructured materials; nanocomposites and interfacial phenomena; photoinduced charge separation

and interfacial charge transfer; photoelectrochemistry of nanostructured films; photocatalysis and environmental applications; nano-ionic; nanostructured catalysts for fuel cells; nanostructured sensor surfaces; and biological applications of nanomaterials.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **E. Traversa**, University of Rome Tor Vergata, e-mail: traversa@uniroma2.it; and **C. Bock**, National Research Council of Canada, Institute for Chemical Processes and Environmental Technologies, e-mail: Christina.Bock@nrc-cnrc.gc.ca.

B — Batteries, Fuel Cells, and Energy Conversion

B1

Battery / Energy Technology Joint General Session

Battery / Energy Technology

Original papers are solicited on all types of batteries. Of particular interest are recent developments of advanced battery materials, novel battery designs, emerging battery technology, and optimization and breakthroughs in performance. Reviews of the state-of-the-art battery performance for specific applications, including consumer devices, hybrid or electric vehicles, and distributed energy systems, may also be submitted.

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Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **N. J. Dudney**, Oak Ridge National Laboratory, e-mail: dudneynj@ornl.gov; **S. R. Narayanan**, Jet Propulsion Laboratory, e-mail: s.r.narayanan@jpl.nasa.gov; and **C. R. Walk**, BAE Systems Applied Technologies, e-mail: dick.walk@gmail.com.

B2

Battery Modeling at Cell Level

Battery / Energy Technology / Industrial Electrochemistry and Electrochemical Engineering

Computer simulations of battery behavior has served as a useful means of understanding performance limitations and in optimizing the design of cells for use in various applications. This symposium will aim to cover the breadth of the capabilities of mathematical models when applied to cell level studies. Specific topics of interest include: (1.) performance simulation; (2.) abuse simulation; (3.) Calendar and cycle life estimation; (4.) SOC monitoring and control; and (5.) models for physical property estimation. Models that describe the behavior of electrochemical capacitors (EDLC and Faradaic capacitors) are also encouraged. Methods based on a first principles approach as well as equivalent circuit and statistical approaches will be covered.

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B3

Characterization of Porous Materials 2 Industrial Electrochemistry and Electrochemical Engineering / Physical and Analytical Electrochemistry / Energy Technology

This symposium provides a forum for recent advances in experimental techniques and mathematical models to characterize the properties of porous materials employed in a wide range of electrochemical applications. Porous materials are used in practical applications of electrocatalysis, batteries, supercapacitors, fuel cells, and other electrochemical technologies. The understanding of porous materials through characterization techniques and models is critical to improve the performance, durability, and reliability of these devices. Papers dealing with every aspect of the electrochemistry of porous electrode materials will be accepted, including theory of porous materials, description of the preparation procedure, property characterization and modeling techniques including (but limited to) electronic and ionic conductivity, porosity, reactivity, gas and liquid transport, surface energy and interaction between different phases and interfaces and also the distribution of the same within the porous material, studies of their electrochemical responses and applications. Furthermore, understanding the life cycle of porous materials from beginning of life properties till end of life properties and its impact on durability of electrochemical devices is essential for commercial viability of these electrochemical technologies. Contributions covering any of these aspects are welcomed.

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Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **B. Lakshmanan**, General Motors, e-mail: balsu.lakshmanan@gm.com; **G. Brisard**, University of Sherbrooke, e-mail: Gessie.Brisard@USherbrooke.ca; and **A. Lasia**, University of Sherbrooke, e-mail: A.Lasia@USherbrooke.ca.

B4

Fuel Cells for Portable Power Energy Technology

Fuel cells based on high energy fuels have the potential of meeting the long run-time requirements for portable power in consumer and military applications. Fuel cells operating on high energy fuels including, methanol, ethanol, borohydride, hydrogen and hydrocarbons are of particular interest for portable applications. The symposium will explore various aspects of research and engineering that include catalysis, cell design, membranes and electrolytes, system design, fabrication of components, and durability. Oral and poster presentations are invited.

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Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **S. R. Narayanan**, Jet Propulsion Laboratory, e-mail: s.r.narayanan@jpl.nasa.gov; **D. Chu**, Army Research Laboratory, e-mail: dchu@arl.army.mil; and **E. Plichta**, Chief, Army Power Division, CERDEC, Command and Control Directorate, e-mail: Edward.J.Plichta@us.army.mil.

B5

Hydrogen Production, Transport, and Storage 3

High Temperature Materials / Energy Technology / Physical and Analytical Electrochemistry / Industrial Electrochemistry and Electrochemical Engineering

Hydrogen is the most abundant chemical-energy resource in the world, but unlike oil and natural gas it is an "energy carrier" not an "energy source." There are no H₂ "wells" available in the world. Further, we do not have a hydrogen infrastructure. The longest pipeline in the world is only 950 miles long. The largest plant operating today produces only 250 million standard cubic feet per day of H₂. Therefore, the hydrogen infrastructure will have to be created and production will have to be increased an order of magnitude to meet DOE's 2015-18 projections.

The objective of this symposium is to bring together researchers working on developing the required hydrogen infrastructure. Papers are solicited in all areas of hydrogen production, transportation and storage. Specific topics include the conversion of fossil fuels and biomass to hydrogen, electrolysis, and thermo-chemical routes to hydrogen production; electrocatalysis, proton/hydrogen transport materials and processes; and hydrogen storage technology from adsorption media to metal hydrides.

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Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **M. C. Williams**, University of Utah, e-mail: markwilliams1@verizon.net; **E. D. Wachsman**, University of Florida, e-mail: ewach@mse.ufl.edu; **M. Heben**, National Renewable Energy Laboratory, e-mail: michael_heben@nrel.gov; **S. N. Lvov**, Pennsylvania State University, e-mail: lvov@psu.edu; **M. Manivannan**, U.S. Department of Energy, National Energy Technology Laboratory, e-mail: manivana@netl.doe.gov; **P. H. Maupin**, U.S. Department of Energy, e-mail: Paul.Maupin@science.doe.gov; **S. Narayanan**, Jet Propulsion Laboratory, e-mail: s.r.narayanan@jpl.nasa.gov; and **J. W. Weidner**, University of South Carolina, e-mail: weidner@engr.sc.edu.

B6

Measurement and Diagnostics for Energy Systems

Energy Technology / Sensor / Physical and Analytical Electrochemistry

Over the years many *in situ* methods have been used in the performance and failure modes of power sources and energy conversion systems. These techniques include impedance spectroscopy, NMR, voltammetry, neutron imaging, X-ray spectroscopy, Mossbauer spectroscopy, and XRD. This symposium will feature work on the fundamentals of the techniques and applications of these techniques to research of various types of energy systems including fuel cells, batteries, photovoltaics, and photoelectrochemical systems. Oral and poster presentations are invited.

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Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **S. R. Narayanan**, Jet Propulsion Laboratory, e-mail: s.r.narayanan@jpl.nasa.gov; **S. Mukerjee**, Northeastern University, e-mail: s.mukerjee@neu.edu; **R. Mukundan**, Los Alamos National Laboratory, e-mail: mukundan@lanl.gov; and **P. Strasser**, University of Houston, e-mail: pstrasser@uh.edu.

B7

Nanostructured Materials for Energy Storage and Conversion

Energy Technology / Battery

Nanostructured materials exhibit greatly altered interface, bulk, and surface properties compared to micron materials. Some of these properties include electrochemical catalysis, nanopainting, bulk and intergranular diffusion, electronic and ionic conductivity nano structured materials manipulation to produce desirable enhancement in performance of fuel cell, batteries, energy storage and active research.

This symposium will focus on nanostructured materials in the area of electrochemical, energy storage, and conversion. In the area of batteries and supercapacitors, intercalation anodes and cathodes, nanocomposites polymers, and metal hydrides. Topics of interest in the general area of fuel cells include catalysts of the electro-oxidation of hydrogen, reformatted and organic fuels, catalysts for oxygen reduction, supported and unsupported materials, and polymer electrolytes for PEM.

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Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **K. Zaghbi**, Institute de Recherche d'Hydro-Québec (IREQ), e-mail: zaghbi.karim@ireq.ca; **K. M. Abraham**, E-KEM Sciences, e-mail: kmabraham@comcast.net; and **C. Julien**, Université Pierre et Marie Curie, e-mail: cjul@ccr.jussieu.fr.

B8

Photoelectrochemical Energy Conversion

Energy Technology / Physical and Analytical Electrochemistry

This symposium will address all fundamental and applied aspects of inorganic and organic semiconductor-electrolyte interfaces (SEIs). Topics of interest include but are not limited to the following: (1.) charge transfer across SEIs in the dark and under irradiation; (2.) role of traps and surface states in mediating charge transfer; (3.) chemical modification and passivation of SEIs; (4.) semiconductor nanoparticle-electrolyte interfaces; (5.) semiconductor nanotubes, nanorods, and other configurations; (6.) mild and energy-efficient methods for preparing semiconductor films, nanoparticles, and other morphologies listed above; (7.) novel methods for characterizing SEIs; (8.) use of SEIs for photoassisted hydrogen generation; (9.) dye-sensitized solar cells; (10.) use of SEIs for storing solar energy; (11.) use of SEIs in third generation solar cells; and (12.) photocatalysis and environmental remediation aspects coupled with energy conversion or storage (e.g., hybrid dye destruction and hydrogen generation schemes).

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Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **K. Rajeshwar**, University of Texas at Arlington, e-mail: rajeshwar@uta.edu; **J. Hupp**, Northwestern University, e-mail: j-hupp@northwestern.edu; and **B. Parkinson**, Colorado State University, e-mail: baparkin@lamar.colostate.edu.

B9

Advanced Materials and Concepts for Energy Harvesting

High Temperature Materials / Energy Technology / New Technology Subcommittee

This symposium is aimed at providing a platform to discuss the latest materials research on energy harvesting systems based on fuel cells, thermoelectrics, piezoelectrics, supercapacitors, batteries, and hybrid systems. Special interest is on fundamental electrochemical and electromechanical phenomena involved in the energetic materials, including but not limited to, formation of charge carriers (e.g. electrons and ions), nonstoichiometry and defect chemistry, charge exchange, charge disproportionation, charge transport, electrochemically active catalysts, anomalous charge and mass transport in reduced dimensional systems, and modeling/simulation. In addition, general topics of interest are micro/nanostructures processing, crystallographic investigations, composition and stoichiometry optimization, physical and electrochemical properties, and performance of constituents for aforementioned systems, including: (1.) materials for the electrodes and electrolytes for fuel cells and their stability; (2.) novel n and p type oxides or composites for thermoelectric devices; (3.) inorganic materials for the electrodes and electrolytes of supercapacitors and batteries; and (4.) novel materials for high temperature piezoelectrics, especially lead-free compounds. The symposium will include both invited and contributed papers.

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