

Call for Papers



Electrochemical Conference
on Energy & the Environment

Electrochemical Conference on Energy and the Environment: Bioelectrochemistry and Energy Storage



July 21st -26th 2019
Glasgow, Scotland
Scottish Events Campus

Abstract Submission Deadline: January 4, 2019
www.electrochem.org/ECEE2019cfp

MEETING INFORMATION

General Information

The Electrochemical Conference on Energy and the Environment (ECEE 2019): Bioelectrochemistry and Energy Storage will be held in Glasgow, Scotland from July 21-26, 2019 at the Scottish Event Center (SEC). This international meeting will focus on the following areas:

- Lithium-ion Batteries: From the Design of New Electrode Materials and Electrolytes to the Performance and Recycling of Industrial Systems
- In Situ and Operando Characterization of Energy Storage Systems
- Mass and Charge Transfer across Electrochemical Interfaces
- From Qualitative Models to Quantitative Predictions
- Alternative Battery Chemistries and High-power Devices
- Metal Anodes meet Solid Electrolytes
- Enzymatic Bioelectrochemistry
- Microbial Bioelectrochemistry
- Bio-inspired Electrocatalysis

The purpose of the ECEE meetings is to focus on electrochemical energy conversion/storage materials, concepts, and systems, with the intent to bring together scientists, engineers, and researchers to share results and discuss issues on these topics. Oral presentations will be scheduled from Monday through Friday with poster sessions on Monday, Tuesday, and Wednesday, and a welcome reception on Monday evening.

Abstract Submission

To give an oral or poster presentation at the ECEE 2019 conference, you must submit an original meeting abstract for consideration via the ECS website, <https://ecs.confex.com/ecs/ECEE2019/cfp.cgi> **no later than January 4, 2019**. Faxed, e-mailed, and/or late abstracts will not be accepted. Meeting abstracts should explicitly state objectives, new results, and conclusions or significance of the work.

Once the submission deadline has passed, the symposium organizers will evaluate all abstracts for content and relevance to the symposium topic, and will schedule all acceptable submissions as either oral or poster presentations.

In March 2019, Letters of Acceptance/Invitation will be sent via email to the corresponding author of all accepted abstracts, notifying them of the date, time, and location of their presentation. Regardless of whether you requested a poster or an oral presentation, it is the symposium organizers' discretion to decide how and when it is scheduled.

Paper Presentation

Oral presentations must be in English; LCD projectors and laptops will be provided for all oral presentations. **Presenting authors MUST bring their presentation on a USB flash drive to be used with the dedicated laptop that will be in each technical session room.** Speakers requiring additional equipment must make written request to meetings@electrochem.org at least one month prior to the meeting so that appropriate arrangements may be worked out, subject to availability, and at the expense of the author.

Poster presentations must be displayed in English, on a board approximately 1.17 meters high by 1.17 meters wide (3 feet 10 inches high by 3 feet 10 inches wide), corresponding to their abstract number and day of presentation in the final program.

Meeting Publications

ECS Meeting Abstracts—All meeting abstracts will be published in the ECS Digital Library (www.ecsdl.org), copyrighted by ECS, and all abstracts become the property of ECS upon presentation.

ECSarXiv – All authors are encouraged to submit their full-text manuscripts, posters, slides, or data sets to ECS's preprint service, ECSarXiv. For more information on this new offering, please visit <http://www.electrochem.org/ecsarxiv>.

ECS Journals—Authors presenting papers at ECS meetings are also encouraged to submit to the Society's technical journals: *Journal of The Electrochemical Society* and *ECS Journal of Solid State Science and Technology*. Although there is no hard deadline for the submission of these papers, it is considered that six months from the date of the symposium is sufficient time to revise a paper to meet the stricter criteria of the journals. Author instructions are available from <http://www.electrochem.org/submit>.

Technical Exhibit

ECEE 2019 will include a Technical Exhibit, featuring presentations and displays by manufacturers of instruments, materials, systems, publications, and software of interest to meeting attendees. Coffee breaks are scheduled in the exhibit hall along with evening poster sessions.

Interested in exhibiting at the meeting with your company? Exhibitor opportunities include unparalleled benefits and provide an extraordinary chance to present your scientific products and services to key constituents from around the world. Exhibit opportunities can be combined with sponsorship items and are customized to suit your needs. Please contact sponsorship@electrochem.org for further details.

Meeting Registration

All participants—including authors and invited speakers—are required to pay the appropriate registration fees. Meeting registration information will be posted on the website as it becomes available. **The deadline for discounted early-bird registration is June 7, 2019.**

Hotel Reservations

Several hotel options will be available on the ECEE website. Please refer to the meeting website for the most up-to-date information on hotel availability and information about the blocks of rooms where special rates have been reserved for participants attending the meeting. The hotel block will be open until **June 7, 2019 or until it sells out.**

Letter of Invitation

Individuals requiring an official letter of invitation should email abstracts@electrochem.org; such letters will not imply any financial responsibility of ECS.

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.

Sponsorship Opportunities

ECEE meetings offer a wonderful opportunity to market your organization through sponsorship. Sponsorship allows exposure to key industry decision makers, the development of collaborative partnerships, and potential business leads. ECEE welcomes support in the form of general sponsorship at various levels. Sponsors will be recognized by level in the meeting program, meeting signage, and on the ECEE website. In addition, sponsorships are available for the plenary, meeting keepsakes and other special events. Advertising opportunities for the Meeting Program as well as in Interface magazine are also available. Please contact sponsorship@electrochem.org for further details.



SYMPOSIUM TOPICS & DEADLINES

A—Batteries and Energy Storage

A01—Lithium-ion Batteries: From the Design of New Electrode Materials and Electrolytes to the Performance and Recycling of Industrial Systems

A02—In Situ and Operando Characterization of Energy Storage Systems

A03—Mass and Charge Transfer across Electrochemical Interfaces

A04—From Qualitative Models to Quantitative Predictions

A05—Alternative Battery Chemistries and High-power Devices

A06—Metal Anodes meet Solid Electrolytes

L—Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry

L01—Enzymatic Bioelectrochemistry

L02—Microbial Bioelectrochemistry

L03—Bio-inspired Electrocatalysis



IMPORTANT DATES AND DEADLINES

Meeting abstract submission opens August 2018

Meeting abstract
submission deadline January 4, 2019

Notification to corresponding authors
of abstract acceptance or rejection March 1, 2019

Technical program published online March 2019

Meeting registration opens..... March 19, 2019

Hotel and early-bird
meeting registration deadline..... June 7, 2019

SYMPOSIUM TOPICS

A—Batteries and Energy Storage

A01 **Lithium-ion Batteries: From the Design of New Electrode Materials and Electrolytes to the Performance and Recycling of Industrial Systems**
Battery Division

The symposium is devoted to the discussion on both fundamental and applied aspects of rechargeable lithium-ion batteries, from the design of new electrode materials and electrolytes to the performance and recycling of industrial batteries. Examples of specific topics that will be covered are: (i) development and optimization of positive and negative electrode materials; (ii) design of new electrolytes; (iii) electrode formulation and cell design; (iv) performance of industrial batteries for targeted applications and (v) recycling and life cycle analysis. The program will consist of both invited and contributed papers, contribution of young researchers will be encouraged.

All authors are encouraged to submit a full text preprint, slides, or other presentation-related materials to the preprint server, ECSarXiv (<http://www.electrochem.org/ecsarxiv/>).

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **Laurence Croguennec**, ICMCB du CNRS, email: laurence.croguennec@icmcb-bordeaux.cnrs.fr; **Khalil Amine**, Argonne National Laboratory, email: amine@anl.gov; **Margret Wohlfahrt-Mehrens**, ZSW, email: margret.wohlfahrt-mehrens@zsw-bw.de; **Brett L. Lucht**, University of Rhode Island, email: blucht@chm.uri.edu; **Minoru Inaba**, Doshisha University, email: minaba@mail.doshisha.ac.jp; **Kisuk Kang**, Seoul National University, email: matlgen1@snu.ac.kr; **Andreas Hintennach**, Daimler AG, email: andreas.hintennach@daimler.com; **Martin Winter**, Forschungszentrum Juelich GmbH, email: martin.winter@uni-muenster.de.

A02 **In Situ and Operando Characterization of Energy Storage Systems**
Battery Division

This symposium welcomes reports on new advancements in advanced analytical tools, instrumental techniques and experimental methodologies for all types of batteries including aqueous, non-aqueous, polymer electrolyte, solid electrolyte, and flow systems. Of particular interest are (1) in situ, ex situ and operando analytical techniques using X-ray, TEM, SEM, AFM, NMR, Raman, FT-IR, etc., (2) characterization approaches using model electrodes such as thin films, single crystals, etc., (3) characterization methods that elucidate the physical structures and fundamental electrochemical processes of new electrode materials and architectures, (4) analysis of bulk and interfacial phenomena associated with kinetics of charge transfer and mass transport, and (5) studies of degradation and failure mechanisms across various length- and time-scales.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **Robert Milosz Kostecki**, Lawrence Berkeley National Laboratory, email: r_kostecki@lbl.gov; **Shirley Meng**, University of California at San

Diego, email: shirleymeng@ucsd.edu; **Laurence J. Hardwick**, University of Liverpool, email: hardwick@liverpool.ac.uk; **Martin Winter**, Forschungszentrum Juelich GmbH, email: martin.winter@uni-muenster.de.

A03 **Mass and Charge Transfer across Electrochemical Interfaces**
Battery Division

Interfaces in batteries and electrochemical supercapacitors are necessary to understand due to their influence on aging processes, safety and lifetime. Experimental efforts are necessary to improve interfacial chemistries through coatings, surface treatment, electrolyte additives, or synthesis conditions of the active material. Interfaces are challenging to model but multiscale approaches could bring in improvements for the understanding of mass and charge transfer reactions across electrochemical interfaces. This symposium addresses both experimental and theoretical considerations about how to describe and develop interfaces in batteries to suggest modification of them to improve lifetime and safety. Contributions are welcome related to characterization or modeling of electrode/electrolyte interfaces and interphases in solid state batteries, lithium- and sodium-ion batteries or new battery chemistries. The program will consist of both invited and contributed papers. A special session for young investigators is also planned.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **Kristina Edstrom**, Uppsala Universitet, email: kristina.edstrom@kemi.uu.se; **Tejs Vegge**, Technical University of Denmark, email: teve@dtu.dk; **Ryoji Kanno**, Tokyo Institute of Technology, email: kanno@echem.titech.ac.jp; **Martin Winter**, Forschungszentrum Juelich GmbH, email: martin.winter@uni-muenster.de.

A04 **From Qualitative Models to Quantitative Predictions**
Battery Division

This symposium will focus on all aspects of mathematical modeling of energy storage devices, from ab initio approaches to continuum scale models. Modeling on all types of batteries, including aqueous, non-aqueous, contained and flow systems are welcome, with chemistries ranging from Li-ion, to beyond Li-ion to beyond lithium. Special interest is in models that are predictive in nature and can help drive the development of new materials, electrode designs, and cell and pack-level approaches. Electrochemical, thermal, and mechanical aspects of batteries will be covered. Papers are encouraged to combine modeling approaches with experimentation for physical insights, parameter estimation, and for model validation.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **Venkat Srinivasan**, Argonne National Laboratory, email: vsrinivasan@anl.gov; **Perla B. Balbuena**, Texas A&M University, email: balbuena@tamu.edu; **Arnulf Latz**, Helmholtz Institute Ulm, email: Arnulf.Latz@dlr.de; **Gregory Offer**, Imperial College London, email: gregory.offer@imperial.ac.uk; **Martin Winter**, Forschungszentrum Juelich GmbH, email: martin.winter@uni-muenster.de.

SYMPOSIUM TOPICS

A05

Alternative Battery Chemistries and High-power Devices*Battery Division*

Battery prospects in large scale applications have prompted the interest in developing non lithium based technologies based on abundant elements which could bring in improvements in cost/energy density. In parallel, electrochemical capacitors (i.e., “supercapacitors” or “ultracapacitors”) are emerging as an attractive energy-storage solution for new technologies with challenging power/energy requirements. This symposium addresses both alternative battery technologies based on Na, Mg, Zn, Ca, etc. and electrochemical capacitors (both nanostructured carbons and materials that exhibit primarily faradaic pseudocapacitance). Contributions are welcome related to electrode materials and electrolytes (including aqueous bases systems), characterization methods, and technological development. The program will consist of both invited and contributed papers. A special session for young investigators is also planned.

All authors are encouraged to submit a full text preprint, slides, or other presentation-related materials to the preprint server, ECSarXiv (<http://www.electrochem.org/ecsarxiv/>).

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **M. Rosa Palacin**, Instituto de Ciencia de Materials de Barcelona, email: rosa.palacin@icmab.es; **Andrea Balducci**, Friedrich Schiller Universitaet Jena, email: andrea.balducci@uni-jena.de; **Wataru Sugimoto**, Shinshu University, email: wsugi@shinshu-u.ac.jp; **Atsuo Yamada**, University of Tokyo, email: yamada@chemsys.t.u-tokyo.ac.jp; **Debra R Rolison**, Naval Research Laboratory, email: rolison@nrl.navy.mil; **Martin Winter**, Forschungszentrum Juelich GmbH, email: martin.winter@uni-muenster.de.

A06

Metal Anodes meet Solid Electrolytes*Battery Division*

Compared to current commercial designs, batteries based on metal anodes (MA) and solid electrolytes (SE) represent a particularly intriguing and potentially fruitful solution to increase safety, specific energy density and power density. These advancements would be enabled by the use of a non-flammable SE with chemical and electrochemical stability towards the metal anode. There are, however, several important challenges to overcome before systems based on this design can become a commercial reality. One is to understand and improve ion kinetics in bulk and interfaces which requires a deeper knowledge on the involved defect chemistry and visualisation of the dynamics under operating conditions. A second related challenge is to control the mechanical, chemical and electrochemical evolution of the dynamic MA/SE interface upon cycling. This symposium aims to discuss theoretical and experimental strategies to address these issues. Contributions are welcome on any aspect of metal anodes, solid electrolytes or solid state batteries including: - Crystalline oxide and sulphide solid electrolytes - Polymer, glass and glass-ceramic solid electrolytes - Composite solid electrolytes: use of

coatings and hybrid solid electrolytes - MA/SE interface degradation processes - Mechanistic insights of dendrite formation - Dynamics in the MA/SE interface: structure, chemical composition, defect chemistry and impedance - New processing routes: 3D architectures, thin films, protected lithium anodes (PLA) - Quantification of ion dynamics in solid electrolytes and MA/SE interfaces - Modelling of solid electrolytes, MA/SE interfaces and full cells - Novel in situ characterisation techniques - Mechanical properties and their role in degradation of solid electrolytes and MA/SE interfaces, chemo-mechanics - Full cell studies (with lithium metal anode) including Li/air, Li/S and other Li metal anode technologies

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **Jurgen Janek**, Universitaetsbibliothek Giessen, email: juergen.janek@phys.chemie.uni-giessen.de; **Peter G. Bruce**, University of Oxford, email: peter.bruce@materials.ox.ac.uk; **Ainara Aguadero**, Imperial College London, email: a.aguadero@imperial.ac.uk; **Adam Best**, CSIRO Manufacturing, email: Adam.Best@csiro.au; **Qiang Zhang**, Tsinghua University, email: zhang-qiang@mails.tsinghua.edu.cn; **Martin Winter**, Forschungszentrum Juelich GmbH, email: martin.winter@uni-muenster.de.

L — Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry

L01

Enzymatic Bioelectrochemistry*Physical and Analytical Electrochemistry Division, Organic and Biological Electrochemical Division*

Papers are solicited on fundamental and applied aspects of enzymatic bioelectrochemistry: including the design, fabrication, and evaluation of biosensors, bioelectronics, biofuel cells, bioelectrosynthesis, and bioprocesses, as well as electrochemical lab-on-a-chip devices for bioanalysis and biomedical applications. All papers in electroanalytical techniques for enzymes are invited, as well as papers focused on fundamental bioelectrocatalysis for sensing, electrosynthesis, and energy applications. Direct and mediated enzymatic bioelectrocatalysis are of particular interest.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **Shelley D. Minteer**, University of Utah, email: minteer@chem.utah.edu; **S. Calabrese Barton**, Michigan State University, email: scb@msu.edu; **Ross D. Milton**, National University of Ireland Galway, email: rm7745@hotmail.co.uk.

SYMPOSIUM TOPICS

L02

Microbial Bioelectrochemistry*Physical and Analytical Electrochemistry Division,
Organic and Biological Electrochemical Division*

Papers are solicited in all areas of microbial bioelectrochemistry, including biocorrosion, electrostimulated biofilm formation, microbial fuel cells, and bioelectrochemical systems. All papers in direct and mediated microbial bioelectrocatalysis and photobioelectrocatalysis are invited, as well as papers focused on understanding the mechanism of microbial bioelectrocatalysis. Microbial fuel cells for wastewater treatment and bioelectrochemical systems for electrofuels are of particular interest.

All authors are encouraged to submit a full text preprint, slides, or other presentation-related materials to the preprint server, ECSarXiv (<http://www.electrochem.org/ecsarxiv/>).

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **Plamen B. Atanasov**, University of New Mexico, email: plamen@unm.edu; **I. Ieropoulos**, BRL, email: ioannis.ieropoulos@brl.ac.uk; **P. Cristiani**, RSE, email: pierangela.cristiani@rse-web.it.

L03

Bio-inspired Electrocatalysis*Physical and Analytical Electrochemistry Division,
Organic and Biological Electrochemical Division*

Physiological environment of living organisms provides perhaps the best clues on catalysis exhibiting the highest level of selectivity and turnover frequency. Design of catalytic sites have often taken inspiration from this and together with new chemistry synthetic tools and methods are furthering the goals of improving health and living standards. Towards

this endeavor, the desire to better meld the bio-inspired active site designs with electrochemical interfaces, have resulted in novel redesigns to accommodate effect of double layer charging, electron mobility, and imposed potentials among other things typical of electrochemical environments. This symposium welcomes the submission of papers related to this general theme in terms of five broad categories: 1. Design of bio-inspired electrocatalytic sites: Here papers related to design of bio-inspired electrocatalysts will be presented for a wide variety of electrochemical processes such as chemical conversion (i.e., fuel cell reactions such as oxygen reduction), sensing (direct or mediated charge transfer systems) etc.; 2. Cascade Catalytic Processes: Here papers are invited describing electrocatalytic processes involving complex charge transfer steps in multielectron chemical transformations; 3. Photo-electrocatalysis/artificial photosynthesis: Papers are invited for description of novel design of photo-excited processes in an electrochemical context, covering photo-electrocatalysis, recombination processes etc.; 4. Nanoscale and Single Entity Bio-electrocatalytic Processes: Here papers are invited describing the study of sub-ensemble systems using electrochemical methods such as microelectrodes, nano-pipettes and scanning probes that include, single molecules and biological macromolecules, proteins and biomimetic catalysts; 5. Bio-inspired electrochemical Convertors: Papers describing advances in bio-electrochemical reactors and related topics are invited.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **Sanjeev Mukerjee**, Northeastern University, email: s.mukerjee@neu.edu; **K. Stevenson**, Skoltech, email: K.Stevenson@skoltech.ru; **Smaranda Marinescu**, University of Southern California, email: smarines@usc.edu; **Vincent Artero**, Université Grenoble Alpes, CEA, email: vincent.artero@cea.fr.



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