

The 59th Annual Meeting of the International Society of Electrochemistry

September 7 to 12, 2008, Seville, Spain



**2nd Announcement and
Call for Papers**

**Electrochemistry Down to
the Molecular Level:
Interfacial Science for Life
and Technology**

<http://event08.ise-online.org>
events@ise-online.org



Invitation to ISE 2008

Electrochemistry Down to the Molecular Level: Interfacial Science for Life and Technology

The organizing committee of the 59th Annual Meeting of the International Society of Electrochemistry warmly invites you to visit Seville on September 7-12, 2008 and contribute to the scientific presentations and discussions related to the main subject of the meeting: Electrochemistry Down to the Molecular Level: Interfacial Science for Life and Technology.

Seville is located in the South of Spain on the plain of the Guadalquivir river, which flows through the city. Seville's origin is linked with the Tartessian civilisation and according to the oldest myths was founded by Hercules. The Romans called the town Hispalis and the Moors Isbiliya. During the XVII Century the harbour was the gate between Europe and America. This period was the golden age of the city. At present, Seville is the capital of the Andalusian Region, the seat of its parliament and government.



The main theme of the Meeting aims to emphasise the importance of electrochemical interactions at a molecular level and the consequences that the detailed knowledge of electrochemical systems have towards the improvement of human life through technological applications. The increasing comprehension of the fundamental aspects involved in electrochemical reactions and in interfacial structure at the atomic level opens a fan-shaped window on the different fields of research in which Electrochemistry is involved: from living cells to fuel cell reactions, from sensors to electrosynthesis, from nanostructures to bulk materials. An awareness of the scientific basis underlying these processes will stimulate further developments and lead to new and more efficient applications.

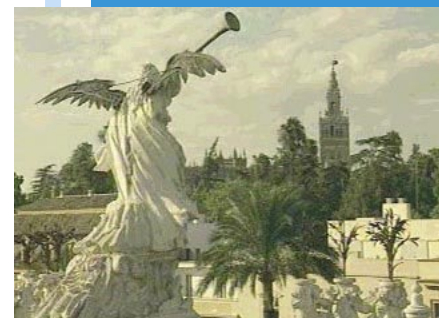
The Annual Meeting will explicitly involve all the different Scientific Divisions into which the International Society of Electrochemistry is organised, pointing out and developing the links between fundamental and applied aspects in each particular domain of research. The objective of meetings is to enable communication between different approaches to a particular subject and to establish links between researchers with common interests to facilitate the growth of new ideas in research. This is particularly important in the complex scenario of interfaces, that fortunately benefit from a common language, that of Electrochemistry.

We look forward to seeing you in Seville in 2008.

Manuela Rueda, Antonio Aldaz, Christopher Brett
Co- chairs, Organizing Committee, ISE Annual Meeting 2008

Organizing Committee

Manuela Rueda, *Spain* (Chair)
Antonio Aldaz, *Spain* (Co-Chair)
Christopher Brett, *ISE President, Portugal* (Co-Chair)
Héctor Abruña, *USA*
Juan Feliu, *Spain*
Lucas Hernández, *Spain*
Petr Novák, *Switzerland*
Miguel A. de la Rosa, *Spain*
Sharon Roscoe, *Canada*
Shi-Gang Sun, *China*



Call for Papers

Authors are invited to submit a one page abstract in English, including figures, tables and references for posters and oral presentations. Abstracts must be submitted electronically through the ISE website (<http://event08.ise-online.org>) where detailed instructions will be found. A template, to which all abstracts must conform, is available at the website; abstracts not conforming to the format or length of the template will be rejected. The site will open for submission of abstracts on December 1 2007. The closing date for submission of Abstracts is March 1 2008. For details please refer to the ISE website.

Authors may discuss informally the most appropriate symposium location for their contribution with the individual symposium organizers, but the abstract must be submitted through the website in order to be processed. At the close of the submission window, the symposium organizers will assign contributions to oral or poster presentations.





Scientific Program

Main Theme

Electrochemistry Down to the Molecular Level: Interfacial Science for Life and Technology

Plenary Lecturers

Professor Christian Amatore, (CNRS, Paris, France)

Professor Richard G. Compton, (University of Oxford, UK)

Professor Zhong-Qun Tian (Xiamen University, China)

Professor Henry S. White, (University of Utah, USA)

2007 ISE Prize Winners and Award Lecturers

Tajima Prize

Chi-Chang Hu, National Chung Cheng University, Taiwan

Prix Jacques Tacussel

Bruno Pettinger, Fritz Haber Institut, Berlin, Germany

Hans-Jürgen Engell Prize

Hiroaki Tsuchiya, Osaka University, Japan

Katsumi Niki Prize for Bioelectrochemistry

Philip N. Bartlett, University of Southampton, UK

Klaus-Jürgen Vetter Prize for Electrochemical Kinetics

Magdalena Hromadová, Heyrovský Institute of Physical Chemistry, Prague, Czech Republic

Frumkin Memorial Medal

Jean Clavilier, LEI CNRS, France

Oronzio and Niccolò De Nora Foundation Prize of ISE on Electrochemical Energy Conversion

Priscilla Reale, University "La Sapienza", Rome, Italy

Oronzio and Niccolò De Nora Foundation Prize of ISE on Electrochemical Technology and Engineering

Ruichun Jiang, General Motors Corporation, USA

Oronzio and Niccolò De Nora Foundation Young Author Prize

Nuria Garcia-Araez, University of Alicante, Spain

Electrochimica Acta

A special issue of the Society's journal, *Electrochimica Acta*, is planned based on selected original contributions made at the conference. This will be organized by the symposium chairs in collaboration with the journal Editor in Chief, Professor Sergio Trasatti.

Summary of Symposia

- Symposium 1:** From Single Biomolecule Electrochemistry to Biosensors and Biofuel Cells
- Symposium 2:** Molecular-Level Aspects of Interfacial Electrochemistry: State-of-the-Art, Spectroscopic Techniques and Theoretical and Computational Methods
- Symposium 3:** Electroanalytical Chemistry at the Nanoscale
- Symposium 4:** Molecular Electrochemistry: From Single Molecules to Conducting Polymers
- Symposium 5:** Electrochemistry of New Materials and Novel Microstructures for Sustainable Development
- Symposium 6:** Corrosion: Fundamental Understanding to Practical Applications
- Symposium 7:** Industrial Electrolysis, from the Laboratory to Industry: State of the Art and Innovation in Electrode Materials, Membranes, Electrolytes and Processes.
- Symposium 8:** Electrochemical Energy Conversion and Storage
- Symposium 9:** Micropowered Devices: Energy Harvest, Storage and Conversion
- Symposium 10:** General Session





From Single Biomolecule Electrochemistry to Biosensors and Biofuel Cells

Symposium 1

Sponsoring Division: Division 2, Bioelectrochemistry

Bioelectrochemistry is a highly interdisciplinary research area and it is hoped that this symposium will stimulate fruitful exchanges of ideas and open up new perspectives for the future. This symposium includes a broad variety of scholarly approaches leading to a better understanding of all living things at the macroscopic, microscopic/single-cell and nanoscopic/molecular level. Moreover beneficial applications in medicine, agriculture, industry, and ecology are to be expected.

Topics will include:

- Imaging biological and biomimetic charged interfaces
- Electron transfer pathways between proteins, redox enzymes and cells (prokaryotic and eukaryotic) and electrode surfaces
- Biosensors - novel sensor architectures and immobilization strategies of enzymes, cells, and tissues
- Biofuel cells - cathodes and anodes, limitations of the present devices and challenges
- In vivo electrochemical sensing

Symposium organizers:

Ana Maria Oliveira-Brett (coordinator), Universidade de Coimbra, Portugal, brett@ci.uc.pt

Renata Bilewicz, Warsaw University, Poland, bilewicz@chem.uw.edu.pl

Ernesto Calvo, Universidad de Buenos Aires, Argentina, calvo@qi.fcen.uba.ar

Lo Gorton, Lund University, Sweden, Lo.Gorton@analykem.lu.se

Wolfgang Schuhmann, Ruhr-Universität Bochum, Germany, wolfgang.schuhmann@ruhr-uni-bochum.de

Molecular-Level Aspects of Interfacial Electrochemistry: State-of-the-Art, Spectroscopic Techniques and Theoretical and Computational Methods

Symposium 2

Sponsoring Division: Division 7, Physical Electrochemistry

This symposium focuses on molecular-level aspects of interfacial electrochemistry, emphasizing the application of state-of-the-art spectroscopic techniques in conjunction with theoretical and computational methods such as molecular dynamics, Monte Carlo simulations and density functional theory trying to correlate the behavior observed with well defined surfaces to that obtained for nanostructured electrodes.

The symposium will place special emphasis on bridging electrochemistry and electrocatalysis with neighboring fields such as heterogeneous catalysis (both gas-phase and liquid phase) and bio-catalysis.

Topics include:

- Time- and space-resolved molecular descriptions of double-layer phenomena
- Reactivity
- Electrocatalysis
- Single crystal and nanostructured electrodes

Symposium organizers:

Marc Koper (coordinator), University of Leiden, Netherlands, m.koper@lic.leidenuniv.nl

Rafael Andreu, University of Seville, Spain, fondacab@us.es

Gary Attard, University of Cardiff, United Kingdom, attard@cardiff.ac.uk

Enrique Herrero, University of Alicante, Spain, herrero@ua.es

Antonio Rodes, University of Alicante, Spain, Antonio.rodes@ua.es



Symposium 3

Electroanalytical Chemistry at the Nanoscale

Sponsoring Division: Division 1, Analytical Electrochemistry

This symposium is aimed at presenting the most important fundamental and applied achievements in analytical electrochemistry including biosensors with the emphasis focused on the use of nanomaterials and nanotechnology.

Topics will include but are not limited to:

- Developments in imaging techniques for electroanalysis (STM and AFM applied to electrochemical systems and scanning electrochemical microscopy)
- Designer nanostructured materials/interfaces for electroanalysis (polymer films, nanoparticles and nanotubes)
- Developments in massively parallel electroanalytical methods
- Techniques for ultra-trace analysis of ultra-small volumes – towards the analysis of a small number of molecules or single molecules
- Bioanalysis: from single cells to single molecules. Nano biochips
- Electroanalysis of nanocrystal/microcrystals

Symposium organizers

György Inzelt (coordinator), Eötvös Loránd University, Budapest, Hungary, inzeltgy@chem.elte.hu

Agustín Costa, University of Oviedo, Spain, costa@fq.uniovi.es

Salvatore Daniele, University of Venice, Italy, sig@unive.it

Hasuck Kim, Seoul National University, Korea, hasuckim@snu.ac.kr

José M. Pingarrón, Complutense University of Madrid, Spain, pingarro@quim.ucm.es

Patrick Unwin, University of Warwick, Coventry, UK, P.R.Unwin@warwick.ac.uk

Molecular Electrochemistry: From Single Molecules to Conducting Polymers

Sponsoring Division: Division 6, Molecular Electrochemistry

The chemical transformations that accompany the exchange of electrons between suitable substrates and electrodes are at the heart of molecular electrochemistry. Progress in the field has been closely related to advances in software and hardware technology and it is now possible to address electrochemical processes and other electrochemical phenomena in the range from single molecules to polymers. The symposium will focus on recent developments in the basic science behind this progress and on applications in, for instance, catalysis and materials science and in neighboring fields such as biology and medicine. Special attention will be given to the effects of the molecular surroundings on the electrochemistry of organic and inorganic species and on the electrochemical behavior of molecules attached to surfaces and nanoparticles.

Topics will include

- Organic, Inorganic and Organometallic Electrochemistry, including
 - New mechanisms and a new look at old ones
 - Structure-reactivity relationships
 - Redox processes associated with the formation or changes of chirality
 - Electrosynthesis and electrocatalysis at the laboratory and industrial scales
- Molecular and Materials Electrochemistry, including
 - Conducting single molecules and molecular wires
 - The formation and mechanisms for formation of conducting polymers
- Conducting Polymers in Biology and Medicine, including
 - The electrochemistry of biological molecules at polymer-modified electrodes

Symposium 4

continued overleaf



Symposium 4



☛ continued

- The development of detectors based on conducting polymer electrodes
- The Electrochemistry of Embedded and Attached Redox Centers, including
 - Redox centers confined in cavities such as crown ethers, callixarenes, cryptates and cyclodextrines
 - Redox centers in dendrimer cores and on dendrimer surfaces
 - Redox processes in molecules with two or more redox centers
 - Redox centers attached to surfaces and nanoparticles

Symposium organizers

Ole Hammerich (coordinator), University of Copenhagen, Denmark,
o.hammerich@symbion.ki.ku.dk

Luis Camacho, University of Cordoba, Spain; qf1cadel@uco.es

Jiří Ludvík, J. Heyrovský Institute of Physical Chemistry, Czech Republic,
jiri.ludvik@jh-inst.cas.cz

Marcin Opallo, Polish Academy of Sciences, Poland, mopallo@ichf.edu.pl

Lubomír Pospíšil, J. Heyrovský Institute of Physical Chemistry, Czech Republic,
lubomir.pospisil@jh-inst.cas.cz

J. Faye Rubinson, Georgetown University, Washington DC, USA,
jfr@georgetown.edu

Electrochemistry of New Materials and Novel Microstructures for Sustainable Development

Symposium 5

Sponsoring Division: Division 4, Electrochemical Materials Science

This symposium will build upon the convergence between synthesis of new materials and nanostructured architectures aimed towards sustainable technological development of energy resources as well exploring new opportunities in the design and manufacture of microelectronic, magnetic and MEMS devices.

The symposium will focus on:

- A. Surface engineered, patterned materials
- Self-organized 2D or 3D structuring and pattern formation via dissolution or deposition approaches
- B. Electrochemical aspects of solar materials and devices
- Synthesis or processing of solar materials (silicon, CuInSe_2 , GaAs, CdTe, inorganic ETA cells, dye cells, organic solar cells)
- C. Electrochemical approaches for new materials
- Nano composites by electrodeposition (magnetic materials; functional coatings, biomimicking materials and devices)
- D. Conducting polymers
- Electrochemical properties and electrochemical applications

Symposium organizers

Daniel Lincot, Ecole Nationale Supérieure de Chimie de Paris, France, daniel-lincot@enscp.fr

Carlos Muller, University of Barcelona, Spain, c.muller@ub.edu

Toribio F. Otero, University of Cartagena, Spain, toribio.fotero@upct.es

Patrik Schmuki, University of Erlangen, Germany, schmuki@www.uni-erlangen.de



Corrosion: Fundamental Understanding to Practical Applications

Sponsoring Division: Division 4, Electrochemical Materials Science

This symposium invites papers describing new investigation techniques, modeling efforts, and applications. The subjects of interest encompass:

- Development of novel investigation techniques including impedance and transfer-function spectroscopies, electrochemical noise, and surface imaging
- Modeling of corrosion from nano-scale to large-scale systems; and
- Applications including archaeological investigations, life-time prediction of nuclear storage containers, and corrosion in the electronics and other industries

Symposium organizers

Mark Orazem (coordinator), University of Florida, USA, meo@che.ufl.edu

Claude Gabrielli, CNRS, Paris, France, cg@ccr.jussieu.fr

Symposium 6

Industrial Electrolysis, from the Laboratory to Industry: State of the Art and Innovation in Electrode Materials, Membranes, Electrolytes and Processes

Sponsoring Division: Division 5, Electrochemical Process Engineering and Technology

The increasing need for the minimization of environmental impact of industrial production and energy conversion draws more and more attention on electrochemical technologies and on electrochemical process engineering in particular. Research on new materials, chemical compositions, electronic structures, and geometries for electrodes as well as development of functional electrode surfaces modified by nanostructures or semiconductors are contributing to new and better processes. On the other hand the relative facility of scaling-up, typical of electrochemical experimentation, and modelling maintains an extremely effective exchange of information between fundamental and applied areas, from performance of electrode materials, to process kinetics and reactor engineering.

More specifically, papers are encouraged on but not limited to:

- Inorganic electrosynthesis: chlor-alkali, chlorate, hydrogen peroxide, ozone and hydrogen production
- Electrometallurgy in its different branches
- Electrochemical cell and reactor design
- Electrode materials and electrocatalysts
- Energy efficient membranes for electrolytic processes
- Novel electrolytes, such as ionic liquids and supercritical fluids, for more efficient processes
- Electrolytic water treatment and purification processes, such as advanced oxidation, electrodialysis, and membrane electrolysis
- Descriptions of industrial applications that consider mechanistic aspects of electrode processes and engineering issues, including scale-up and reactor design
- Electrochemical sequestration of carbon dioxide sequestering and its use in synthesis

Presentations dealing with business, economics, environmental or historical aspects of the different processes are also encouraged.

Symposium Organisers

Achille De Battisti (coordinator), University of Ferrara, Italy, dbtcll@unife.it

Christos Comninellis, EPFL, Switzerland, christos.comninellis@epfl.ch

Claude Deslouis, University P. and M. Curie, Paris, France, cld@ccr.jussieu.fr

Yunny Meas, CIDETEQ, Mexico, yunnymeas@cideteq.mx

Constantinos G. Vayenas, University of Patras, Greece, cat@chemeng.upatras.gr

Symposium 7

Electrochemical Energy Conversion and Storage

Symposium 8

Sponsoring Division : Division 3, Electrochemical Energy Conversion and Storage

The symposium will focus on the fundamental and applied aspects of energy conversion and storage using fuel cells, batteries and electrochemical capacitors. Papers are solicited addressing the more recent advances in the science and technology of these power sources and their hybrid combinations.

Particular emphasis will be given to experimental and theoretical studies related to the design of novel materials preferentially on the molecular level and using modern in situ analytical tools for interfacial studies.

Topics will include:

- Novel electrolytes for improved temperature behavior in fuel cells, batteries and capacitors
- Synthesis and design of new electrodes and catalyst materials with nanostructured porosity and chemical surface modifications
- Fuels and electrode materials for direct organic oxidation fuel cells. New anodes and organic tolerant cathodes
- New experimental approaches and theoretical insight into the understanding of degradation mechanisms and lifetime aspects of electrochemical devices
- Development of materials exhibiting low cost and high performance
- Development of in situ and ex situ methods of analysis for the understanding of electrochemical processes at real electrodes and devices
- Novel in situ diagnostic methods for the characterization of cells at a technical scale. Real systems at work: control systems, economic studies, lifetime aspects
- Hybrid electrochemical materials, devices and systems

Symposium organizers

Nicolas Alonso-Vante, *University of Poitiers, France, nicolas.alonso.vante@univ-poitiers.fr*

Ernesto Rafael González, *Institute of Chemistry of Sao Carlos, Brazil, ernesto@iqsc.usp.br*

Rüdiger Kötz, *Paul Scherrer Institute, Villigen, Switzerland, Ruediger.koetz@psi.ch*

Claude Lamy, *University of Poitiers, France, claude.lamy@uni-poitiers.fr*

Günther Scherer, *Paul Scherrer Institute, Villigen, Switzerland, Guenther.scherer@psi.ch*

Micropowered Devices: Energy Harvest, Storage and Conversion

Symposium 9

Sponsoring by the New Topics Committee

Miniaturized microdevices are expected to find multiple applications in such diverse areas as bio-medical engineering and environmental monitoring. Their limited size places severe restrictions not only on the amount of energy these units can store but also their lifetime. This symposium addresses electrochemical, photoelectrochemical and other strategies involved in energy harvesting from light and biofluids, energy storage and power management of autonomous microdevices.

Topics will include

- Biofuel cells
- Design, construction and performance assessment of microbatteries, electrochemical double layer capacitors and microfuel cells
- Integration of autonomous microsensors

This symposium will also be of interest to researchers working in the highly multidisciplinary areas of biophysics, biomedical engineering and sensor technology.

Symposium organizer

Daniel Scherson, *Case Western Reserve University, Cleveland, OH USA, daniel.scherson@case.edu*

General Session

Sponsoring division: all Divisions

The General Session will cover all those topics not specifically included in the other Symposia. Papers concerning all aspects related to fundamental electrochemistry, environmental electrochemistry, novel electrochemical techniques, technological applications of electrochemistry, etc are welcome. As far as possible, we shall try to ensure that the contributions presented in each session cover the same topic.

Symposium organizers

Claudio Gutiérrez (coordinator), C.S.I.C. Spain, claudio@iqfr.csic.es

Annick Hubin, University of Brussels, Belgium, anhubin@vub.ac.be



General Information

Seville, Spain

Set in the heart of Andalucía, Seville is an ideal spot for visitors. Its historical monuments reflect the richness of its past; the Guadalquivir River and the magnificent Doñana Nature Reserve on the coast are a delight for nature lovers; its gastronomy is very varied and its cultural life, of which the star is undoubtedly flamenco, is of a very high quality. Finally, those who like wandering will find that the streets of the old part of the city still have the mystery that romantic authors described in masterpieces like Carmen, Don Juan or Il Barbiere di Siviglia.

Moreover, Seville is a first order destination with a wide variety of accommodation, from student residences to five star luxury hotels. Seville also has frequent and convenient connections to other Spanish and European cities.

The Meeting

The meeting will take place at the School of Engineering (Escuela Superior de Ingenieros ESI), the former American pavilion at the 1992 Universal Exhibition, which has been adapted for use as an academic building. It is located on the northern side of the Cartuja Island (Isla de la Cartuja) in the "Scientific and Technological Park" of Seville, 2 km from the city centre and can be reached by bus and taxi.

The Congress will start with the Welcome Party at the University Hall (Rectorado de la Universidad de Sevilla), located in the Eighteenth Century former Tobacco Factory (Fábrica de Tabacos), where Carmen was assumed to work. The leisure and social programme includes a reception at Los Reales Alcázares of Seville (a royal residence from Arabian times), an organ concert in the Cathedral, an excursion to one of several possible destinations: Córdoba, Jerez (including a visit to the cellars and an Andalusian horse exhibition), the Roman ruins in Italica and Carmona, and the gala dinner. Moreover, a full programme of tours within Seville and its surrounding area will be available for attendees and accompanying persons.



Transportation

Seville international airport is located at 10 km from the city centre. Regular bus services or taxi (fixed rate) can be used to reach the city. There are regular flights to main European airports. A high speed train connects Seville to Madrid in two and a half hours. A Motorway network permits direct access to Seville by car from the main European cities.

Climate

Seville is usually dry in September with maximum temperatures ranging from 25 to 35°C and a medium to moderate humidity level. Nights can be cooler, so it is advisable to bring a light jacket for outdoor activities and also for indoors (air conditioning)

Important dates and deadlines

Opening Date for Abstracts:	December 1, 2007
Closing Date for Abstracts:	March 1, 2008
Author Notification:	April 1, 2008
Deadline for Early Registration:	June 1, 2008
Deadline for Registration for Oral and Poster Presentation(s) to be Listed in the Program:	July 1, 2008
Meeting Begins:	September 7, 2008

