

NEWSLETTER



Serving Electrochemical Science, Technology and Engineering
within the catchment of
The Royal Society of Chemistry
and
The Society of Chemical Industry



Where science meets business
an environment to advance knowledge exchange

RSC | Advancing the
Chemical Sciences

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Editorial

This newsletter is again late – many apologies. But it allows for the reflection of the sheer number of events that have occurred already within this Marie Curie Year, including the celebration of Professor Albery's 75th birthday, ten years of Great Western Postgraduate meetings, and the marking of 50 years since Professor Utley submitted his PhD thesis at Hull University. Triumph and tragedy go hand-in-hand, and, poignantly, this year has also marked a tribute to Professor Sheelagh Campbell – one of my predecessors as Editor of this newsletter – who tragically passed away last July; readers are invited to view a personal insight into Sheelagh's life kindly authored by Professor Walsh, with a report on the meeting convened in her honour written by Victoria Black – a PhD student in Professor Fletcher's group, on pages 4 and 5 of this issue.

In moving this magazine forward, you may find this newsletter pleasingly-different – slim lined! – this is all entirely due to the good advice I have been receiving from the sponsoring groups through my co-editors: Dr. Ritu Katakya (Durham University, sub-editor for the RSC Electroanalytical Sensing Systems Group) and Dr. Paul Sheering (Imperial College London, sub-editor for the SCI Electrochemical Technology Group). I hope you enjoy the new(ish) format, and am pleased to announce the creation of a newsletter supplement.....a monthly newslite.....eChemVIBE!.....which will distribute meetings/conference information on a monthly basis through e-alerts.....watch out for the first issue in July, 2011.

Later this year, the RSC Electrochemistry Group will undergo a major transformation in Executive Committee membership.....Drs. Marken, Mount and Birkin will vacate their offices of Secretary, Chair and Treasurer, respectively. A call for nominations to join the Executive Committee is featured on page 6. Please note that RSC regulations require the holders of these three offices to be RSC members.

This year has also seen a proposed hike in fees for undergraduate university education. Accordingly, it is a pleasure to feature within this issue the announcement for prizes for *published undergraduate* research in electrochemical science and technology – see page 22. I can only urge you all to nominate your eligible co-workers for these awards. I hope this will be an annual feature within this magazine.

Last, I can only encourage you to visit Bath for the Electrochem2011 event this September, generously hosted by Dr. Frank Marken and his group (see page 12 *ff.*). It is not too late to submit abstracts for oral or poster presentations....the deadline is June 30, 2011. The next newsletter will be circulated on August 22, 2011 – it is a special issue featuring the abstracts for those presentations for Electrochem2011.

It remains for me to thank all those who have so generously supplied material for this issue of the Newsletter, and to those companies who have sponsored it.



Jay WADHAWANr

If you wish to notify the editor with your view on the material or the content of any item in this issue, or if you wish to contribute to the newsletter, please write to the editor at:

electrochemistry.newsletter@googlegmail.com

Missed a copy? You can catch up on all the news *via* our webspace hosted by the Royal Society of Chemistry at the following URL.

<http://www.rsc.org/Membership/Networking/InterestGroups/Electrochemistry/news.asp>

Obituary

Dr Sheelagh Anne Campbell, BSc, PhD, Cert Ed, CChem, MRSC, FIMF 1950-2010

Sheelagh Campbell died on 29th July 2010 following a struggle with leukæmia.

Sheelagh made many important contributions to her personal and professional families throughout her full life. She was dedicated to her husband Frank, her brothers, her sons Graham and Alexander, her daughter Natasha and her recent grandchildren. She had two other, professional families which she lavished attention on, namely her research students and undergraduates and international scientific collaborators. She was a strong, caring, patient and dedicated family member.

Sheelagh's career had many facets. She was a medical nurse and a school mistress prior to pursuing a degree in chemistry (the challenging external London BSc at Portsmouth Polytechnic which she graduated from in 1971). A period of research on microbially assisted organic synthesis, supervised by Trevor Crabb and Roger Williams led to a PhD in 1981 and lifelong capabilities in microbial techniques, chemical synthesis and the identification of organics using NMR and other spectroscopy techniques. A move to the University of Southampton in 1985 enabled postdoctoral studies on electrochemical synthesis prior to many years contract research at the Wolfson Centre for Electrochemical Science.

In 1990, Sheelagh moved to a lectureship in physical chemistry at Portsmouth Polytechnic which became a university in 1992. Success in teaching, research, consultancy and administration duties lead to promotion to a principal lectureship (Physical Chemistry) in 1999. By now, Sheelagh had become an experienced teacher and research supervisor who had also acted as course leader for the BSc degree in Applied Chemistry.

Sheelagh was proud to be an interdisciplinary materials electrochemist who had a sound working knowledge of such black arts as enzyme-assisted synthesis, microbial biodeterioration and classical chemical synthesis as well as etching and electrodeposition. She was equally comfortable in such diverse environments as a lecture theatre, a ship's ballast tank and an operating theatre as well as being happy to talk about delocalised electrons in conductive polymers through to attachment of microbial cells in marine biofouling. She was adept and well dressed at a social reception in evening gown, a white coat in the chemical laboratory, in a pair of overalls in ship's tanks and in a business suit at an examiner's meeting.

Sheelagh was a tireless external examiner for many PhDs at several universities and for undergraduate chemistry courses at the universities of Bangor and Central Lancashire. A generation of undergraduate chemists, environmental scientists, pharmacists and health care practitioners have benefitted from her caring manner and patient tutoring.

She served many professional committees, including acting as chair of the Publications Committee of the Institute of Metal Finishing and Honorary Editor of the Transactions of the Institute of Metal Finishing, secretary then chair of the Industrial Physical Chemistry Group of the Royal Society of Chemistry and a member of the Electrochemical Technology Group of the Society of Chemical Industry. She was Editor of the Electrochemistry Newsletter for many years.

Sheelagh was a proud supervisor to many research students and was instrumental in many successful PhD theses. Publications from her research group spanned electroplating, corrosion and protection, biodeterioration, silicon etching and atomic force microscopy. Fruitful collaborations with colleagues at, e.g., the Hahn Meitner Institute (Berlin) and the universities of Liverpool, Lecce, and Southampton resulted in a wealth of scientific book chapters, research projects and published papers.

Sheelagh was proud of her colourful celtic upbringing which integrated time spent in South Africa, Ireland and Scotland as well as the UK. Portsmouth was her special home and she was a lifelong ambassador for the City and for Southsea.

Sheelagh was a caring friend, a patient research leader and an enthusiastic colleague and co-author. She is deeply missed as a great family member.

It is appropriate that Sheelagh's achievements were celebrated in an event on *Interdisciplinary Electrochemistry*.

Iwona B. Beech
James R. Smith
Frank C. Walsh

The Editor notes that the *Sheelagh Campbell Memorial Symposium on Interdisciplinary Electrochemistry* was held on Friday, April 8, 2011. The meeting was free-of-charge, and intended to cover contemporary aspects of electrochemistry including emerging science and innovative technology. The following is a meeting report.

Sheelagh Campbell Memorial Symposium on Interdisciplinary Electrochemistry
April 8, 2011, London

It is very rare to find someone who can combine genuine scientific talent with vivacity, warmth and lifelong affection, but the late Sheelagh Campbell was clearly one of those special few. It was therefore a privilege to attend the recent symposium on interdisciplinary electrochemistry devoted to her memory. This took place at the Royal Society of Chemistry Headquarters in Burlington House, London, on Friday 8 April 2011. The meeting was organized by the Institute of Metal Finishing, the Royal Society of Chemistry's Industrial Physical Chemistry Group, and the Institute of Solar Fuels within the Helmholtz Centre for Materials and Energy, Berlin. The warmth of the sunshine, filtering through the Burlington House library, clearly put everyone in mind of the warmth of Sheelagh's personality.

The symposium covered a wide range of topics, all delivered by professional associates and former students of Sheelagh. Among the distinguished speakers from overseas were Prof. Dr. H-J Lewerenz (Germany), Dr K Skorupska (Poland), and Prof. B Bozzini (Italy), while from the UK were Prof. L Peter (Bath), Prof. D Schiffrin (Liverpool), and Dr P Farr (Birmingham). Close colleagues who spoke included Dr Z. Makama, Dr J Smith (all Portsmouth), Dr A Osborne (Metrohm), and Dr T Eagleton (Home Office).

The many friends of Sheelagh were welcomed by Dr Simon Port (Chairman of the RSC Industrial Physical Chemistry Committee) and personal reminiscences were provided by Dr Frank Price (Sheelagh's husband) and Dr Mary Saunders. Closing Remarks were made by Dr Peter Farr.

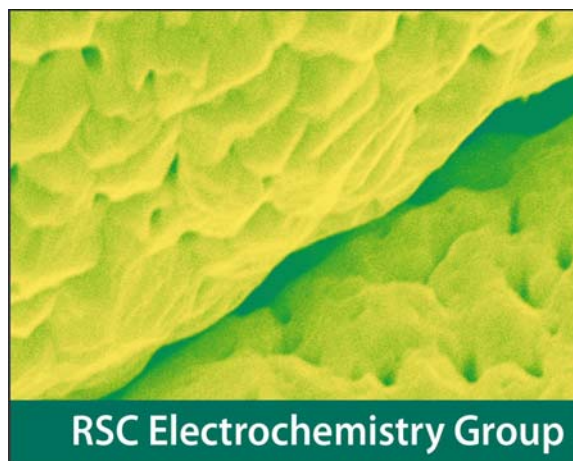
The topics covered were very diverse, reflecting Sheelagh's eclectic interests. These included chemical oceanography, metal finishing, corrosion in marine environments, microbial corrosion, conducting polymers, and solar energy. I learned a lot.

Vicky Black
Loughborough University

Call for Nominations.....RSC Electrochemistry Group

The RSC Electrochemistry Group Committee membership changes regularly, and in 2011 during the Electrochem 2011 event 5th 6th September the following positions will have to be filled again:

- **Chairman** (currently Dr .Andrew Mount) for a 3 year duration
- **Treasurer** (currently Dr. Pete Birkin) for a 5 year duration
- **Secretary** (currently Dr. Frank Marken) for a 5 year duration



Please send nomination to the current secretary (email f.marken@bath.ac.uk) before the Electrochem event or participate in the AGM 5th September 2011 at the University of Bath.

Congratulations to....



Dr. Tim ALBRECHT of Imperial College London, on his election to ISE Representative for the United Kingdom.

Professor Christian AMATORE, *Honorary Fellow of The Royal Society of Chemistry*, of Ecole normale supérieure, Paris, France, on his election to a Fellowship of the Chinese Chemical Society. Readers are advised that Professor Amatore will receive his Honorary Fellowship from the RSC on July 12, 2011 in a private ceremony; the Editor has been advised that a lecture held in his honour will take place within the UK later in this year.



Dr. Stéphane ARBAULT of ENSCBP, Bordeaux, France, recipient of the *Luigi Galvani Prize of The Bioelectrochemical Society*. This prize is awarded every two years to a scientist who has made an important contribution to the field of bioelectrochemistry. Stéphane's prize lecture was entitled *Electrochemistry at Living Cells Unravels Single Events in Biology*.

Dr. Craig E. BANKS of Manchester Metropolitan University, recipient of the 2011 RSC Harrison-Meldola Prize for "his contributions to the understanding of carbon materials, in particular graphene and its application as an electrode material." The following has been adapted from the RSC website.

"Craig is currently a Senior Lecturer in Chemistry at Manchester Metropolitan University and has published over 190 papers with an H-index of 32, inventor of 11 patents and recently co-authored the book *Understanding Voltammetry* (first edition September, 2007; second edition December, 2010).

"Craig has also spun out two companies from his research contributions, and currently his research interests are diverse encompassing all aspects of electroanalysis and sonoelectroanalysis.

"Current research is directed towards the pursuit of studying the fundamental understanding and applications of nanoelectrochemical systems such as graphene, carbon nanotube and nanoparticle-derived sensors.

"Craig is a Fellow of The Royal Society of Chemistry, a committee member of The Society of Chemical Industry's Electrochemical Technology Group, and is also an advisory board member of the journal *Analytical Methods*.

"Prior to joining Manchester Metropolitan University in 2008, Craig was appointed as a lecturer at The Nottingham Trent University (2006), before which he undertook a postdoctoral research with Professor Richard Compton within the Physical and Theoretical Chemistry Laboratory at Oxford University, where he also completed his D.Phil. (2004)."



Many CONGRATULATIONS to Dr. Laurent BOUFFIER, formerly of Liverpool University, for his appointment to the CNRS based in Bordeaux, France. In the UK, Laurent worked with Professor Matt Rosseinsky, FRS, Dr. Simon Higgins and Professor Richard Nichols.

Professor Ernesto J. CALVO of Universidad de Beunos Aires, Argentina on his election to *Vice Chair* of the *International Society of Electrochemistry*.



Professor Richard G. COMPTON of Oxford University, on his election to The Aldrichian Praelectorship in Chemistry at Oxford University. This award is “in recognition of his outstanding academic achievements. Past holders of this prestigious post include E. J. Bowen (1952-65), R. Freeman (1982-7), M. S. Child (1988-94), C. M. Dobson (1995-2001) and R. K. Thomas (2002-9).”

Professor Richard G. COMPTON of Oxford University, recipient of the 2011 RSC Sir George Stokes Award which recognises outstanding and sustained contributions to analytical science by someone working in a complementary field, which has led to developments of seminal importance for chemical analysis. Professor Compton’s citation is for “his work in translating original and fundamental insights in interfacial charge transfer mechanisms and their kinetics into innovative and robust analytical sensing protocols [which has] revolutionised the field of electroanalysis”. The award consists of a medal and £2000.



Professor Richard G. COMPTON of Oxford University and *Editor-in-Chief* of *Electrochemistry Communications*, who has just begun his duties as Editor of the relaunched book series by RSC Publishing, *Specialist Periodical Reports in Electrochemistry*. The Editor understands that the first volume produced under Professor Compton’s auspices (volume 11) will appear in September, 2012.

Professor Richard G. COMPTON of Oxford University, who recently published his first history book: *A. G. Stromberg: First Class Scientist, Second Class Citizen – Letters from the GULAG and a History of Electroanalysis in the USSR* (see page 41 for further details).



Professor Edwin CONSTABLE of University of Basel, recipient of the 2011 RSC Sustainable Energy Award, awarded for “his work on supramolecular co-ordination chemistry for the design and fabrication of next-generation energy devices, especially his work centred on energy generation from photovoltaics and efficient lighting devices based on LECs and OLEDs.”

Dr. Christophe DEMAILLE of Université Paris Diderot on his recent promotion to *Chargé de Recherche au CNRS, Première Classe*.



Many CONGRATULATIONS to Edmund DICKINSON, a PhD student working with Professor Richard Compton at Oxford University, on his recent televised successes as a contestant in *Mastermind*.

Many, MANY CONGRATULATIONS to Professor Marilia GOULART of Universidad Federal de Alagoas, Brazil, on her election to the position of Chair-Elect of Molecular Electrochemistry (Division VI) of the *International Society of Electrochemistry*.



Professor Gillian GREENWAY, President of the RSC Analytical Division, on her election to Head of the Department of Physical Sciences (CHEMISTRY & PHYSICS) at Hull University. The Editor notes that her appointment, within this Marie Curie Centenary Year, is quite an achievement; Professor Greenway was the first female member of Academic Staff at Hull University's Chemistry Department, and she is the first female member of staff to hold its reigns.

Professor Anthony HARRIMAN, of Newcastle University, recipient of the 2011 RSC Chemical Dynamics Award for his "pioneering work in the area of photochemistry and in the elucidation of energy transfer mechanisms for the efficient use of solar energy."



Professor Andrew HOLMES, of Melbourne University, Australia, recipient of the 2011 RSC John B. Goodenough Award for his "groundbreaking contributions to our understanding of the synthesis, properties and practical device-applications of polymeric materials for optoelectronics and for harvesting energy from light."

Dr. Frédéric KANOUI of ESPCI, Paris, France on his recent promotion to *Chargé de Recherche au CNRS, Première Classe*.



Professor Mark RATNER, of Northwestern University, USA, recipient of the 2011 RSC Bourke Award for his “seminal contributions to the areas of electron transfer, nonlinear optics, relaxation dynamics, polymer electrolyte and theoretical chemistry, and for key efforts in establishing, defining and championing of the field of molecular electronics.”

Dr. Neil V. REES, of Oxford University (Lady Margaret Hall), whose work with Professor Richard Compton on the development of food sensors to examine the piquancy of chillies and the strength of garlic, has been featured in a radio-broadcast by BBC Worldwide Service’s *Science in Action* programme. The programme may be downloaded from the following URL. <http://www.bbc.co.uk/iplayer/console/p00fh744>



Professor Anthony Turner, of Linköpings University, Sweden recipient of the 2011 RSC Theophilus Redwood Award for his “outstanding work in biosensors, [and] in particular, his pioneering work which has led to the development of home blood glucose monitoring technology.”

Professor Jim H. P. Utley, of Queen Mary’s College, London, who submitted his Ph.D. thesis at Hull University, 50 years ago.



Dr. Greg G. WILDGOOSE of University of East Anglia, who recently published his first history book: *A. G. Stromberg: First Class Scientist, Second Class Citizen – Letters from the GULAG and a History of Electroanalysis in the USSR* (see page 41 for further details).

Many CONGRATULATIONS to Dr. Dodzi ZIGAH, on his appointment to an assistant professorship at Université de Bordeaux I, France.



In Pictures...

Professor W. John ALBERY, FRS celebrated his 75th Birthday on April 5, 2011 at the Inorganic Chemistry Laboratory, Oxford.



Professor Albery, FRS listening to Professor R. A. Marcus



Professor Albery, later that evening, at the dinner held in his honour at University College.



The programme for his birthday symposium included talks by his peers and former students, and included Professor H. A. O. Hill, Professor R. A. Marcus, Professor J. Ulstrup, Professor D. J. Schiffrin, Professor H. H. J. Girault, Professor E. Magner, Professor M. E. Lyons, Professor Dr. C. M. A. Brett, Professor J. Hadgraft, Professor Dr. A. M. O. Brett, Professor M. Boutelle, Professor D. O'Hare and Professor C. Boxall. The colloquium was well-attended: across the channel, Professor J.-M. Savéant used the day to reminisce on his long-standing friendship with Professor Albery.

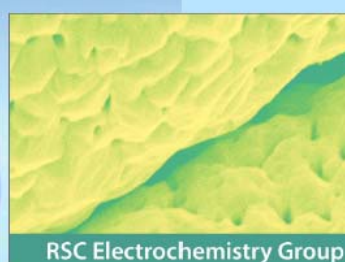
Electrochem2011

... Electrochem 2011 ... *Call for Papers* ...

Abstract submission now open: www.regonline.co.uk/electrochem_abstract

Registration now open: www.regonline.co.uk/Electrochem_2011

Electrochemical Horizons



University of Bath
5th - 6th September 2011



Electrochem 2011 is a Electrochemical Science and Technology Forum for the UK & Ireland electrochemistry community in industry and academia and for the upcoming generation of interdisciplinary researchers. Highlights:

Faraday Medal 2011: Award Lecture by Professor Hector Abruña
Department of Chemistry and
Chemical Biology, Cornell University

Evans Award 2011: Award Lecture by Professor Gerald Frankel
The Fontana Corrosion Center at
Ohio State University

Many more international guest speakers confirmed!

Registration site: www.regonline.co.uk/Electrochem_2011

SYMPOSIA:

The 52nd Corrosion Science Symposium

Convenors: Dr. Nick Stevens & Dr. Gareth Hinds

Nano-Electro-Crystallization Symposium

Convenors: Prof W. Schwarzacher & Prof. S. Bending

Sensor Innovation and Electroanalytical Processes

Convenors: Prof J. Hart, Prof P. Fielden, Dr. R. Kataký

Nano-Electroanalysis Symposium

Convenors: Dr. Nathan Lawrence & Dr. Greg Wildgoose

International Year of Chemistry – Sensors for Africa

Convenors: Dr. K. Ozoemena & Dr. J. Limson

Nano-Carbon Technology Symposium

Convenors: Dr. Ian Kinloch & Dr. Katherine Holt

Microbial Electrochemistry Symposium

Convenors: Dr. Petra Cameron & Dr Ioannis Ieropoulos

Electrochemical CO₂ Conversion Symposium

Convenors: Dr. David Fermin & Dr. Frank Marken

Fundamental Electrochemistry Symposium

Convenors: Dr. Jay Wadhawan & Prof Robert Dryfe

Light Driven Electrochemistry

Convenors: Andrew Collins & Dr. F. Marken

Electrochemical Processes in Exotic Media

Convenors: Dr. Darren Walsh & Dr. Daren Caruana

Electrosyntheses: Processes in New Reactors and Media

Convenors: J.D. Watkins & Dr. P. Birkin

Inorganic & Molecular Electrochemistry

Convenors: Prof. Paul Low & Prof. Franti Hartl

Fuel Cells and Energy Systems

Convenors: Dr. Carlos Ponce-de-Leon & Dr. B. Pollet

Green Electrochemistry

Convenors: Postgraduate Committee

Post-Graduate Symposium
"Green Electrochemistry"
At Electrochemical Horizons
Electrochem 2011
Bath, UK
5th - 6th September 2011
Abstract Submissions now open at
www.regonline.co.uk/Electrochem_abstract
RSC | Advancing the Chemical Sciences Further information email jdw24@bath.ac.uk
Electrochemical Horizons
ELECTROCHEM 2011
University of Bath
5th - 6th September 2011

Deadline for oral presentations: 30 June 2011

Deadline for poster presentations: 30 July 2011

Abstract submission site: www.regonline.co.uk/electrochem_abstract

More information: Frank Marken – Email F.Marken@bath.ac.uk

REGISTRATION & ACCOMMODATION

Accommodation will be available at the University of Bath Campus Village. Online booking together with registration is possible at:

Registration site: www.regonline.co.uk/Electrochem_2011

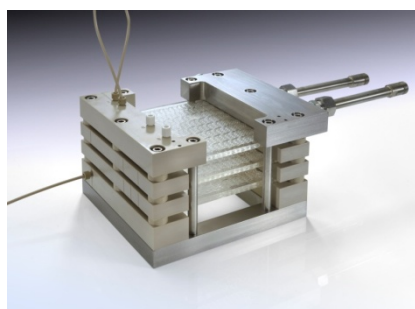
	Early bird (before 30 th June 2011)	Late (after 30 th June 2011)
Student member	£150.00	£195.00
Member	£240.00	£290.00
Non member student	£190.00	£240.00
Non member	£310.00	£360.00

Puits de Science

The Editor is delighted to feature two University Spin-Out companies here who are impacting on the UK Electrochemistry Industry.

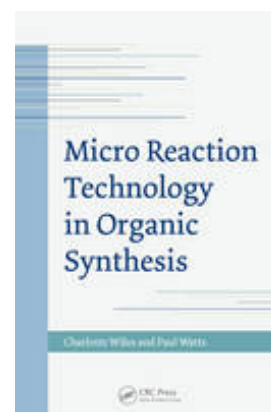


Chemtrix is a manufacturer of Flow Chemistry Equipment, offering a total Flow Chemistry concept, covering the total process from R&D (Labtrix® Start and Labtrix®) to production (Plantrix®). Labtrix® Start is a “plug-and-play” platform for laboratory based optimization of reactions within glass micro reactors at temperatures ranging from -15 °C to +195 °C (25 bar). Labtrix® Start can be used to access forbidden chemistry and to evaluate many reaction parameters in a short period of time, employing very little raw material and represents a low risk, cost-effective way to introduce flow chemistry to your research department. Plantrix® is a flexible method development platform that uses glass meso reactors to enable previously forbidden chemistries to be scaled, with capacities ranging from 29 g to 14.4 kg day⁻¹ whilst staying in the research laboratory and offering further increases in capacity by the addition of reactor modules.



With an ever increasing number of commercial flow reaction platforms available, the knowledge of two of the founders of Chemtrix BV, Dr. Paul Watts (Chief Scientific Advisor) and Dr. Charlotte Wiles (CTO of Chemtrix), has been compiled into a book which highlights the current state of the technology with the vision that more synthetic chemists in companies and academia will embark upon flow chemistry programs of research. Advantages and disadvantages of the technology are highlighted, giving the reader an idea of where future research needs to be targeted and a comprehensive collection of synthetic reactions that have been investigated over the past decade; including a chapter on the cutting edge electroorganic syntheses researched using this technology.

Chemtrix headquarters are located in Geleen, The Netherlands and the Chemical Department is located at The University of Hull, United Kingdom. Chemtrix also has an establishment in Northern America, Chemtrix USA, which allows us to build and maintain relationships with clients in this important market, supporting them with efficient purchasing and product delivery along with local technical support and customer service. Please visit www.chemtrix.com for more information.



Puits de Science - bis



Durham ElectroAnalysis Ltd is a business created to develop electrochemical sensing devices for use in the Health, Pharmaceutical and Environmental sectors. It also provides electrochemical support services to Universities and Industry.

It was founded as a Durham University Spinout Company by Dr. Ritu Katakya in 2010 for the purpose of exploiting electrochemical technology for a variety of research areas that require point of care diagnostics and Electrochemical biosensors.

Technical development is carried out through defined projects with specific milestones and objectives leading to commercial products and services relating to electrochemical biosensors, diagnostics and point of care sensors specifically relating to Health, Pharmaceutical and Environmental sectors.

Please visit www.durhamelectroanalysis.co.uk/ for further information.

Echem.NET

Electrochemical Science and Technology Information Resource (ESTIR)

The ESTIR and related websites operate under the auspices of the Ernest B. Yeager Center for Electrochemical Sciences (YCES), Case Western Reserve University.

Currently only around 50 UK Electrochemistry Groups are featured on this website.

Check them out, update your profile or add your group at the following URL.

<http://electrochem.cwru.edu/estir/grads.htm#United Kingdom>

For more information, contact:

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The University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-3290, USA
Telephone: USA-(919) 272-2228
E-mail: nagyz@email.unc.edu



INTERNATIONAL SOCIETY
OF ELECTROCHEMISTRY

ISE REGIONAL STUDENT MEETINGS

Graduate Students who are members of ISE and intend to organize a Regional Student Meeting can apply for ISE financial support. Regional Student Meetings are typically one-day meetings involving graduate students active in the geographic area where the meeting takes place.

The format of the meeting (oral presentations, posters, discussion sessions, other) is autonomously decided by the organizers who will be responsible for securing a venue and collecting registrations. No registration fee should be requested. No later than one month after the meeting, the organizer(s) will send to the ISE Office a report on the event, including the names and the e-mail addresses of the participants. The participants will be encouraged to apply for ISE membership. An overview of the report accompanied by suitable pictures if available will be posted on the ISE website under Student Activities.

Applications for ISE support must be sent by e-mail to the ISE Office (info@ise-online.org), with a copy to the Regional Representative of the country where the meeting is organized, 3-12 months before the meeting date, using the application form (*q.v.* page 19). The local ISE Regional Representative (*Dr. Tim ALBRECHT of Imperial College London, for the United Kingdom*), if requested, will assist the potential meeting organizer in the preparation of the application. Applications will be analyzed by a committee consisting of (i) ISE Secretary General, (ii) ISE Treasurer, (iii) ISE Vice President responsible for Educational Activity and (iv) ISE Vice President responsible for Regional Sections.

The response will be communicated to the applicant and to the relevant Regional Representative no later than 1 month after the application submission.

The maximum financial support will be 600 €; the expected use of the funds must be specified in the application. Co-sponsoring by other Societies and/or institutions is possible.

Want to know more?

<http://www.ise-online.org>

APPLICATION FORM FOR SPONSORSHIP OF REGIONAL STUDENT MEETINGS

Send the filled in form by e-mail to the ISE OFFICE : info@ise-online.org

ALL the parts of this form, including the bank details, must be filled by the meeting organizer, in collaboration with the local Regional Representative. Incomplete forms will not be processed.	
ISE REGIONAL SECTION:	
SCIENTIFIC THEME(S) OF THE MEETING:	
MEETING DATES (day-month-year):	
MEETING VENUE:	
MEETING ORGANIZER First Name: Last Name: Institution: E-mail:	
FACULTY SPONSOR First Name: Last Name: Institution: E-mail:	
REGIONAL REPRESENTATIVE First Name: Last Name: Institution: E-mail:	
EXPECTED NUMBER OF PARTICIPANTS - From the local Region - From other Regions	
REQUEST OF FINANCIAL SUPPORT - Support requested (maximum 600 €) - Proposed use of funds (itemized)	
OTHER EXPECTED SPONSORS, if any	
BANK DETAILS: FOR TRANSFER OF FUNDS: Beneficiary's details Name and address: Postcode: City: Country: Bank Account number / IBAN: Details of beneficiary's bank Name and address: Postcode: City: Country: SWIFT address:	

Student Notice

The Electrochemical Technology Group of the Society of Chemical Industry (SCI) is developing a post-graduate network for students involved in all areas of electrochemistry and electrochemical engineering.

The network will provide a forum for discussions, symposia and networking events and seeks to engage it's members with the wider activities of the SCI.

Current students (Masters or PhD level) who may wish to join the network may contact the organiser (*vide infra*) directly to join and with any queries.

p.shearing@imperial.ac.uk <p.shearing@imperial.ac.uk>

Paul Shearing
Postgraduate Representative
Society of Chemical Industry Electrochemical Technology Group

For further information on the SCI and the Electrochemical Technology Group, please visit our website:

<http://www.soci.org/Membership-and-Networks/Technical-Groups/Electrochemical-Technology-Group.aspx>

Student Conference Bursaries

The Student Bursary Scheme provides financial support to promising postgraduate students to attend a major electrochemistry conference abroad. This includes UK based students travelling to a conference abroad and students based abroad wishing to attend a conference in the UK. The Bursary Scheme is open to all postgraduate student members of the RSC's Electrochemistry Group undertaking research in electrochemistry. Applications shall consist of:

- (i) the application form (download from <http://www.rsc.org/lap/rsccom/dab/fara005bursary.htm>),
- (ii) the abstract submitted to the conference organisers,
- (iii) one A4 page *curriculum vitae* stressing academic and scientific achievements (*e.g.*, research articles, oral and poster presentations *made by the applicant*).

Applications may be made at any time of the year and shall be submitted to the Group Secretary in electronic form.

The selection committee of the Electrochemistry Group shall decide the sum awarded. Under normal circumstances this sum shall not exceed £300.

*Successful applicants shall produce a conference report article for the Newsletter. The Editor asks applicants and their supervisors to note this particular condition, and respectfully requests that successful applicants send in their report *quam primum*.*

Candidates should submit their applications directly to the Dr. Frank Marken, the Group Secretary (f.marken@bath.ac.uk).

Published Undergraduate Research Prizes

A new prize has been launched to celebrate the published work of undergraduate research students. Depending on the number of applicants, and of the quality and originality of the published research, the exact size of the prize will vary for a sum of up to £1000.

Nominations for eligible prize winners are encouraged; the criteria pertaining to this award are as follows.

1. The candidate must have been a final-year undergraduate at a UK university at the time of undertaking the research.
2. The research must have been published in the year 2011 with page numbers, or equivalent index.
3. The research must have been into some form of electrochemical science or technology.
4. All applications will be judged by Jay Wadhawan, Department of Physical Sciences, Hull University.

Nominations should be received by Jay Wadhawan in hardcopy by October 1, 2011. Each nomination should be accompanied by (1) a signed letter of support from the student's research supervisor on headed notepaper, and (2) a copy of the published work. The nominated student's research supervisor will learn of the outcome by November, 2011.

Future Events



Biophysical Sciences Institute Workshop:

Emerging Label-Free Technologies for probing Biological Processes

10.00am - 16.00pm 27th June 2011

Venue : Old Library at Grey

The Biophysical Sciences Institute is pleased to invite you to a workshop on Emerging Label-Free Technologies for probing Biological Processes. Label-free techniques for probing of biological processes in real time are desirable for probing complex biological pathways. These methods are not compromised by undesirable effects such as steric hindrance or reduced mobility, which can complicate tagged methods.

This workshop will include presentations on recent advances in non-labelled technologies and problems in the biological sciences that can be addressed using these techniques. The aim is to instigate discussions that may lead to new collaborations between academics and industry.

Invited speakers include:

Dr Alistair Elfick (Edinburgh University): Reporterless Imaging and Measurement of Cellular Metabolism

Prof Michael Thompson (University of Toronto, Canada): *Strategies for label-free detection of biomarkers in biological fluids*

Dr Benjamin Horrocks (Newcastle University): *Templating conductive materials on DNA molecules*

Local Speakers:

John Churchwell (Bain group): Internal Reflection Raman Spectroscopy of Supported Lipid Bilayers.

Rui Campos (Katakya group): Rates of electron transfer in bilayer lipid membranes (BLMs) modified with bioactive molecules.

ANO (Girkin group) Optical improvements to label free imaging.

Further information will be provided closer to the event. To register for the workshop, or if you would like further information please contact alex.probert@dur.ac.uk.



The Southampton Electrochemistry Summer School

Instrumental Methods in Electrochemistry

Sunday, June 26 – Friday, July 1, 2011

A one-week residential course presented regularly since 1969

by the Southampton Electrochemistry Group

The course comprises a combination of lectures and laboratory work. The objective is to teach the application of modern electrochemical techniques to problems in *Chemistry, Biology, Sensors, Materials Science and Industrial Processing*.

Understanding electrode reactions and electrochemical techniques

Theory, practice, applications, data presentation and analysis

Lectures with a textbook, lecture notes (hardcopy and .pdf) provided

Hands-on practicals with a choice of 5 out of 12 experiments

Experience a range of modern PC based instrumentation

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For Booking and enquiries, contact:

Derek PLETCHER

Tel.: +44 (0) 23 80 59 31 19

email: D.Pletcher@soton.ac.uk

or

Guy DENUAULT

Tel.: +44 (0) 23 80 59 21 54

email: gd@soton.ac.uk

Postal address:

School of Chemistry, University of Southampton, Highfield, Southampton, SO17 1BJ, UK

Fax: +44 (0) 23 80 59 37 81

Website URL

<http://www.soton.ac.uk/~gd/summerschool.html>

Bath
Electrochemical
Impedance
Spectroscopy
Summer School 2011



Theory and Practice
of Electrochemical
Impedance
Spectroscopy

19th—22nd July

<http://www.bath.ac.uk/chemistry/eissummerschool/>

Bath Electrochemistry Winter School
9th - 13th January 2012



Intensive Hands-on Training and Lectures
A five-day intensive course given
by Professor Laurie Peter and his colleagues
<http://www.bath.ac.uk/chemistry/summerschool>



Available Facilities

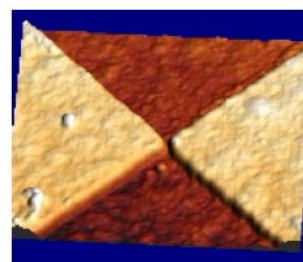


Free Access To Electron Beam Lithography at the University of Bath

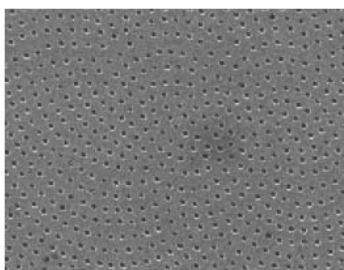
UK researchers at Higher Education Institutions are now able to get free access to Electron Beam Lithography and supporting processes in the David Bullett Nanofabrication Facility at the University of Bath. This is made possible under a 48 month grant (01/11/07 - 31/10/11), funded by the EPSRC "Access to Materials Research Equipment" programme, which has bought out 20% of the available time on these instruments and also pays all travel and subsistence costs incurred by visiting scientists. *Applications from researchers working in the biological or life sciences are particularly encouraged.*

Brief Summary of Services Offered

Access to our advanced electron-beam lithography system (Hitachi S-4300 Scanning Electron Microscope & Raith ElphyPlus Professional Lithography Attachment) and supporting processes including thin film deposition and wet/dry etching facilities. Expert assistance will be provided at all stages of the work including (i) expert support for process design, (ii) expert support for CAD pattern design and (iii) expert hands-on technical assistance with resist preparation, lithography and additional processes.



Pair of gold nanocontacts from a single molecule transistor.



A quasicrystalline photonic structure.

Accessing the Instrument

Access to the instrument via the EPSRC programme will be managed by the Nanofabrication Facility Advisory Group consisting of Prof. Simon Bending, Dr Steve Andrews, Dr Spartaco Landi and Mrs Wendy Lambson. Access proposals will be considered at any time and should be submitted via the on-line contact form (link at the bottom of the page). Potential users with preliminary enquires or those seeking clarification are encouraged to contact the members of the Advisory Group by e-mail or telephone (contact details below).

Criteria for Evaluating Access Requests

- (i) the scientific merit;
- (ii) the appropriateness;
- (iii) the feasibility of the proposed work.

Time frame

Applications can be made at any time using the on-line contact form (link below). All new jobs will be reviewed at a meeting of the Advisory Group within 48 hours of first contact. Subject to a positive evaluation we will attempt to schedule the job within two weeks of the first enquiry (subject to availability). We anticipate that most jobs will use blocks of 1-3 consecutive days, more if significant pattern development/evolution is required and/or access to supporting processes.

How to apply and frequently asked questions

Please complete and submit the on-line contact form at:-

<http://www.bath.ac.uk/physics/cleanroom/ebaccess/>

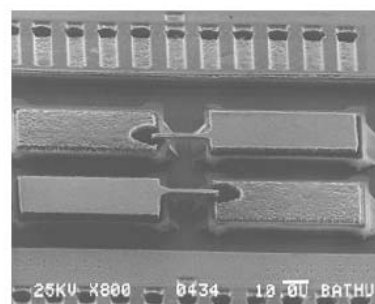
For further clarification read the programme's frequently asked questions at:-

<http://www.bath.ac.uk/physics/cleanroom/ebaccess/faqs.html>

Contact Details:-

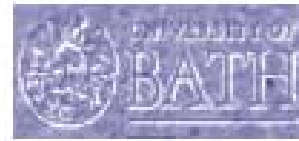
Prof. Simon Bending, Tel: (01225) 385173, Fax: (01225) 386110, e-mail: S.Bending@bath.ac.uk

Dr Spartaco Landi, Tel: (01225) 386956, e-mail: S.Landi@bath.ac.uk



Antiparallel pair of air-bridged Schottky diodes formed on a GaAs substrate.

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Services



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Laboratory is set up
as central University

Nanofabrication
Facility offering
access to all
University of Bath
researchers, and
managed by a
representative
Management
Committee.

Access is also
readily available to
outside companies
through consultancy
arrangements.



The David Bullett Nanofabrication Facility



EPSRC
Engineering and Physical Sciences
Research Council



The Editor is delighted to feature Dr. Bruno G. POLLET of The University of Birmingham within this interface.

Bruno is Head of the PEM Fuel Cell Research Group housed within the School of Chemical Engineering at Birmingham, where he is Associate Director of The Centre for Hydrogen and Fuel Cell Research. He is a Visiting Professor at the Fuel Cell Nanomaterials Centre at The University of Yamanashi in Japan, and the CEO of West Midlands Fuel Cells, Ltd.



Bruno recently joined Birmingham University from Industry. He is an expert in the area of PEMFC and Electrochemical Engineering. He is currently responsible for the £1.3M DECC HFCCAT Hydrogen Fuel Cell Vehicle project and PEMFC & MEA activities at the university. He is also one of the Directors of the £5.5M UKRC Doctoral Training Centre in Hydrogen, Fuel Cells and their Applications. He has successfully implemented a Hydrogen and Fuel Cell Supply Chain (EPSRC project) within the West Midlands with currently 60 SMEs involved in the development and manufacturing of hydrogen and fuel cell components (<http://www.hydrogen-wm-scratch.info/>). He has worked for Samuel Banner Ltd (Banner Chemicals Group) and Albion Chemicals Ltd (now Brenntag (UK) Ltd) in Sales and Marketing, Johnson Matthey Fuel Cells Ltd (Johnson Matthey Plc) as Test Facility Scientist, Senior Membrane Electrode Assembly (MEA) Design Scientist and Programme Leader, SmartWater Europe Ltd as Research Manager and Coventry University as Head of Sonochemistry, Project Development Manager and

Lecturer in Environmental & Physical Sciences. Bruno has been recently appointed member of the £6.5 Million Advantage West Midlands (AWM) Science City Hydrogen Energy Project Management Board. He has also worked as an EPSRC and EU Research Fellow in the field of Fuel Cells and Electrochemiluminescence at the Liverpool Electrochemistry Group headed by Professor David J. Schiffrin. Bruno was awarded an Engineering Diploma in Chemistry and Material Sciences from the Université Joseph Fourier (Grenoble, France), a BSc (Hons) in Applied Chemistry from Coventry University and an MSc in Analytical Chemistry from The University of Aberdeen. He also gained his PhD in Physical Chemistry in the field of Electrochemistry (Sonochemistry & Sonochemistry) under the supervision of Professor J. Phil Lorimer at Coventry University. Bruno has published several publications and chapters in the field of Fuel Cells, Sonochemistry and Sonochemistry.

He is a Fellow of The Royal Society of Chemistry (FRSC) and a Member of the Editorial Board for the International Journal of Hydrogen Energy. He is a Committee Member of The Society of Chemical Industry (SCI) - Electrochemistry Technology Group.

Bruno will chair the Biannual International Hydrogen and Fuel Cells Conference, Cancun, Mexico.

Find out more at the following URL.

<http://www.fuelcells.bham.ac.uk/Pollet.shtml>

freshEYES - bis



Dr Leigh ALDOUS is currently a post-doctoral research fellow at the University of Oxford.

Leigh graduated with 1st Class Honours from the University of Leeds in 2004. After becoming interested in ionic liquids while researching possible PhD projects, he moved to Queen's University Belfast to study under Professor Christopher Hardacre and Dr. M. Cristina Lagunas. This was in association with Queen's University Ionic Liquid Laboratory (QUILL) and Merck KGaA. Leigh worked upon various areas relating to electrochemistry and ionic liquids, and spent three months working at Merck KGaA's international headquarters in Darmstadt, Germany. After completing his PhD studies in 2007 he spent a further 2 years there as a Post-Doctoral Research Fellow under Prof. Hardacre on an industrial project in association with Petronas and Petronas University of Technology, Malaysia.

In 2009 Leigh moved to the University of Oxford as a Post-Doctoral Research Fellow to focus on electrochemical studies under Prof. Richard G.

Compton, where he has worked in a large number fields, ranging from fundamental electrochemistry to the electroanalytical quantification of the strength of garlic.

Leigh is the recipient of numerous awards for both presentations at student colloquia and for academic performance. He is author and co-author of more than 50 peer-reviewed publications, with more than 500 citations and an H-index of 15; a promising start at this stage of his career. In 2010 Leigh travelled to present his work in Las Vegas at the 218th Electrochemical Society (ECS) Meeting on a Young Researcher Travel Grant. This September he will travel to Japan to present more of his work at the 62nd Annual Meeting of the International Society of Electrochemistry (ISE), assisted by an ISE Travel Award for Young Electrochemists.

After the conference in Japan this September, Leigh will move to Australia to take up a Lectureship (Analytical/Physical/Nano-Chemistry) at the Department of Chemistry in the University of New South Wales, Australia. There he will focus upon various aspects of electrochemistry, ionic liquids and conversion of biomass to useful chemical feedstock molecules.

Find out more at the following URL.

<http://oxford.academia.edu/LeighAldous>

Meeting Reports

218th Electrochemistry Society Meeting

October 10-15, 2010, Las Vegas, Nevada, USA

I attended the 218th ECS Meeting which was taking place in the conference venue of the Riviera Casino & Hotel, in Las Vegas. In comparison to ISE and IUPAC conferences, there were much more industrial delegates and much less students in the ECS conference.

The organisation was mainly restricted to the technical aspect of conferences, *i.e.* the talks and poster sessions. The absence of social events such as welcoming gathering or official closure of the meeting reinforced the sensation of individuality among delegates.

My project involves a collaboration between the Chemistry Department and the School of Engineering of Durham University. It consists on developing a microdevice capable of inflow electroanalysis for targeted analytes. It is with great enthusiasm that I presented my latest results in a talk named "Microelectrode Array Supported by Microfluidic Channel for High-Throughput Sensing: Fabrication and Characterisation" in the symposium dedicated to MEMS-NEMS Microfluidics and Sensors. The heart of the presentation concerned the differences of properties of a gold electrode array depending on the metallisation technique used for its fabrication. E-beam and electroplating metallisation were compared to show that they resulted in different surface roughness, and therefore different detection sensitivity. The questions raised at the end of my presentations were constructive and I was very pleased with the presence of Prof. Compton in the assembly. He is known to be one of the most important contributors in recent microelectrodes studies and I refer to him more than once in my writings. It was great to have the opportunity to exchange with him about my work.

The diversity of the areas discussed between the seven symposia allowed to get information concerning all the aspects of my project, from micro device fabrication to electroanalyses and electrode surface modification. Among all the presentation I attended, I appreciate especially the talk of Prof. Thundat from Oak Ridge National Laboratory, about Nanomechanical Chemical Sensors. Both the quality of the presentation and its content were excellent and motivating. I was also very interested in a presentation from Prof. Tribollet's group about local electrochemical impedance spectroscopy investigation of a partially blocked electrode.

As I mentioned earlier, industrial researchers were well represented and exhibited impressive well finished devices supporting the latest technologies. Among others, a real-time biosensor platform as a fully integrated device for impedimetric assays was presented by the Sharp Laboratories of America.

My future work will involve functionalised Self Assembly Monolayer. Talks like the one given by Dr. Buck from St Andrews University, named "Molecular Self-Assembly and Electrochemistry: A Symbiosis for Nanoscale", gave me input about how to organise my future research.

This conference was a complete experience; presenting my results in front of a non familiar audience, attending presentations of quality and of course, having the opportunity to discover and enjoy La Vegas and its unique atmosphere !

Alice Delcote-Lancon
Durham University

Artificial Photosynthesis Workshop

November 12, 2010, Imperial College London

During the final year of my doctoral training, I became fascinated (fixated?) on the light-induced electron transfer processes that constitute photosynthesis. Day after day, I would spend most of my lunch break reading through the

books on the topic in the local bookstore, and then after almost three weeks of this, I finally made a purchase! Later that year, whilst visiting Frank Marken at Loughborough, we took afternoon tea *via* the on-campus bookstore – it transpired Frank too was fascinated by this topic, and he ended up purchasing the same book (Blankenship's Molecular Mechanisms) that day! So, it was with great pleasure that I attended this recent workshop, hosted by Imperial's Energy Futures Lab, with Frank (and some of his group), together with colleagues from the recently-established White Rose Solar CO₂ Consortium (Stephanie Haywood, Hull, and Robin Perutz, York) with which I am involved. The pleasure was compounded further by this day being Steph's birthday, and timely – this being the first opportunity for the three of us to meet, following Steph's brave and successful battle with cancer.

The meeting commenced with Professor Jim Barber from Imperial giving an overview of natural photosynthesis – that “engine of life”, treating it as though it is a “macroscopic reaction vessel”, rationalising the overall chemical processes with the interlinking of physical structural biochemistry, energetics and kinetics, concluding with the latest breakthroughs in the structure and operations of Photosystem II. This was followed with an interesting talk by Professor J. C. Fontecilla-Camps from Grenoble, who spoke about the structure-function relationships of hydrogen biocatalysis – an overview of the natural hydrogenases, detailing the elucidation of the X-ray structure of the FeS clusters in NiFe and FeFe hydrogenases.

After a coffee break, attention turned to artificial systems for water splitting, with a magnificent talk by Professor M. Graetzel (EPFL) discussing the potential of metal oxides for the photodriven splitting of water, noting the limitations of α -Fe₂O₃, the delightfulness of WO₃, his latest work on IrO₂, and with particular emphasis given to tandem systems using p-type semiconductors such as Cu₂O, overcoming stability issues using ALD to “build” protecting layers. Our host, Professor J. Durrant (Imperial) followed in quick pursuit, with an introduction to the Imperial Artificial Leaf Initiative, in his talk entitled *Charge photogeneration for solar to fuels*, in which he detailed his efforts in unravelling the timescales required for separating charges and coupling these to catalysis, stressing the importance of long-lived holes, so that these have sufficient lifetime to drive catalysis – a conclusion which resonates sonorously with most electrosynthetic researchers. The last talk of this session was delivered by Professor C. McKenzie (Odense, Denmark) who examined biomimetic manganese complexes for water and oxygen activation, where he detailed how the Mn^{II/III} redox potential can be changed by up to 1.0 V.

Discussion of the talks, followed by a lunchtime networking session (which included a delicious and generous free lunch), was followed by the first afternoon session on hydrogen generation using artificial systems. Professor C. Pickett (UEA) kicked it off with a fascinating talk on artificial active sites of artificial FeFe hydrogenases, elucidating the observed voltammetry with structural information, supporting DFT calculations and stopped-flow FTIR experiments. Professor M. Fontecave (Grenoble) then examined the use of both molecular catalysts (such as methylviologen, rose bengal, eosin Y, *etc.*) and photocathodes for hydrogen production, lamenting that the nanostructuring of NiO has not been extensively undertaken. The last talk of this session was for me, particularly thrilling – it is not often I have had the opportunity to listen to my own undergraduate Inorganic Chemistry tutor (Fraser Armstrong) talk about his research, but on both occasions, it has been a real delight, with Fraser starting with insight, concluding with breathtaking enlightenment. Fraser spoke about his latest work in trying to understand how and why enzymes work so well for solar driven hydrogen production and carbon dioxide reduction, noting the efficacy of concerted proton-electron transfers in reaction efficiency. Magnanimously, Fraser gave up part of his talk for his young protégée, Dr. Erwin Reisner, who had just started his EPSRC Fellowship at Cambridge, to delight the audience with his nanoparticle-enzyme systems.

The last session of the day commenced after coffee, dealing with artificial systems for carbon dioxide reduction. Robin Perutz energised the audience with his work in collaboration with the SolarCAP programme in coupling the photooxidation of alkanes with the photoreduction of carbon dioxide. Alas, the zincTTP/picoline-Re(CO)₃ dyads his group so carefully synthesised proved to be less efficient than the individual components mixed together. Professor P. P. Edwards followed Robin's talk by asking whether we should turn CO₂ into fuels, and stressed the importance of undertaking complete life-cycle analyses, whilst, much to his acknowledged chagrin, observed that the prefix “nano” featured once in his slides. And, after the last talk of the day, by Professor H. Dobbek (Humboldt, Germany) on *CO₂ reduction at the NiFe-site of carbon monoxide dehydrogenase*, the day-long symposium concluded, with better-informed delegates heading homewards (after a quick dinner).

jw
Kingston-upon-Hull

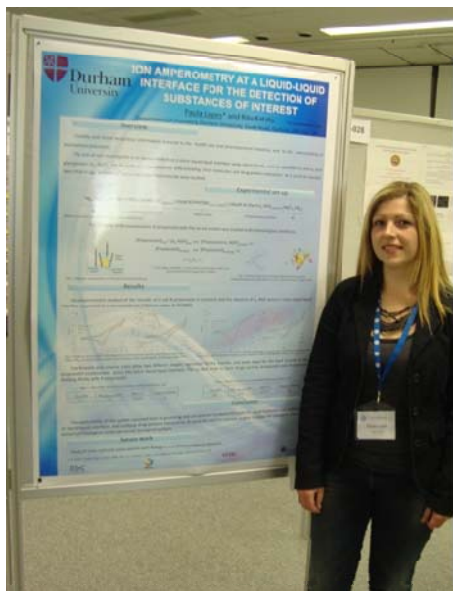


9th Spring Meeting of The International Society of Electrochemistry Electrochemical Sensors: From Nanoscale Engineering to Industrial Applications

May 8 – 11, 2011, Turku-Åbo, Finland

The 9th spring meeting of ISE was held in Turku, Finland and attracted around 500 participants all over the world.

This report regards an overview of the meeting, where the main theme was “Electrochemical Sensors: from nanoscale to engineering to industrial applications” to represent the recent advances related to the design and applications of electrochemical sensors. Other topics of discussion included: solid-state potentiometric sensors, amperometric sensors, conductimetric sensors, nanoscale engineering of electrochemical sensors, miniaturized electrochemical sensors and applications of electrochemical sensors in process analysis. The meeting started with a special session highlighting the success of electrochemistry in order to celebrate the international year of chemistry with two lectures, Professor Christopher Brett (Why Electrochemistry and What Can It Do For Us? The Achievements of Electrochemistry and the Future), and Professor Christian Amatore (Finding Out Egyptian Gods’ Secret with MicroElectrochemical Sensors: Biomedical Properties of Egyptian Black Makeup Revealed by Microamperometry at Single Cells).



The author of this report, Paula Lopes presenting her poster at 9th Spring ISE 2011.

The scientific contributions from the participants were extensive and excellent in quality. The four keynotes were presented by Justin Gooding (Australia) which presented a talk in “Nanoparticle Architectures for Improving Selectivity and Sensitivity of Electrochemical Affinity Biosensors”, Jiri Janata, (USA) that spoke about “Work Function Potentiometric Sensors”, Ritu Katakya (UK) which highlighted the “Chiral Sensing and its significance”, and Michael Mirkin (USA) who give a lecture in “Nanoscale Electrochemical Sensors Prepared by Electrodeposition”.

Illuminating talks were also presented by the invited speakers with special relevance to Professor Richard Compton (Why ‘Nano’? Is There Changed Electrochemistry at the Nanoscale?), where a critical and elucidating overview about the changes in behavior between the macro- and microscale was presented. Dr Robert Gyurcsanyi (Ionophore- Modified Nanopores as Solid-State Ion-Channels for Potentiometric Sensing) where presented novel ion-selective electrodes which be able to analyse complex samples such as blood.

The poster presentations were separated into two sessions, for each of them a reception was organized. The poster sessions are always excellent opportunities for informal discussions and to meet people. My poster was presented on Monday (poster session 1) and garnered considerable interest from the attendees.

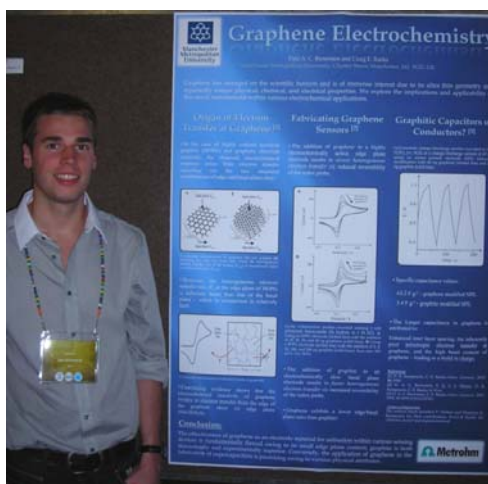
The 9th Spring Meeting of ISE gave me an excellent opportunity to interact with senior scientists, and fellow-researchers, not just in my area of work, but in a range of related and interdisciplinary topics.

I would like to express my gratitude to the Electrochemistry Group of Royal Society of Chemistry (RSC) for the financial support which was crucial for attending the conference.

Paula Lopes
Durham University



11th International Conference on Frontiers of Polymers and Advanced Materials
(Incorporating Biomaterials Africa)
May 22-27, 2011, Pretoria, South Africa



Dale A. C. Brownson with his poster at the 11th ICFPAM in Pretoria.

This is a report regarding the wonderful '11th ICFPAM' of which the author was fortunate enough to attend as a delegate; the conference took place in the beautiful city of Pretoria, South Africa.

The conference provides a unique scope involving a blend of science, technology and business. It brings together leading international scientists, engineers, and top-level industrial management and business executives for discussions on the status of advanced materials, new technologies and industrial and business opportunities. The conference is truly multidisciplinary and global which allowed for a wide and interesting insight into all aspects of advancing science, however, there was also an extensive array of electrochemical presentations incorporating both sensing and energy applications of which I found highly informative and stimulating.

and a particularly nice welcome by the secretary for industry and commerce (Zimbabwe). A curious welcome was given by one unnamed Professor who claimed that when reading the programme he did not understand French symbols (the Editor of this Newsletter would, of course, be shocked!) and had to explore the internet for an explanation; this truly unfunny welcome seemed to clearly lack a punch line. Following the welcome addresses we were treated to two plenary lectures. The first was from a representative of Samsung and started with a video clip exploring the future possibilities of scientific innovation which I found very informative however this was clearly padding out his talk. Last was an overview of nanomaterials in healthcare and the environment was given, which lacked real data, none the less, was very informative and enjoyable to watch. Following these lectures a cocktail party ensued with a laser show to close the welcome event.

Throughout the week all of the days started with a wide variety of interesting and informative plenary lectures, following which I divided my time between different symposiums, however, I dedicated the majority of my time to symposium four (advanced materials & nano-structures in electrochemistry). One lecture that really interested me was

The conference was opened on the Sunday with many welcome addresses



View from the hotel, symbolising Nelson



Studying diffusion in action.

given by Dr. Frank Marken (Bath, UK) and also a presentation from Patrick Simon (Toulouse, France) on double layer capacitors was also inspiring.

Following the enthralling yet heavy days of presentations the author and supervisor located a suitable drinking establishment for light refreshments (see picture) via the consumption of the local hooch 'jungle juice' which allowed diffusion to be readily observed.

The two poster sessions, Tuesday and Thursday, were excellent opportunities for informal discussions regarding my work, where my poster gained considerable interest

from the attendees, allowing me to discuss my work in detail and gain vital feedback from fellow scientists working within this field.

Following the conference the last day was dedicated to culture visits allowing attendees to visit a gold mine, see the 'cradle of humankind', undertake a game viewing or a Soweto. I attended the 'cradle of humankind' where I was treated to an insightful 'journey' back to the origins of mankind, it was truly a place that allowed reflection; on who we are, where we come from and where we are going.

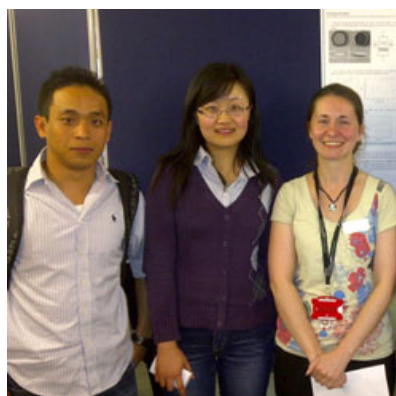
I gratefully acknowledge the financial support from the Electrochemistry Group of the Royal Society of Chemistry via the 'Metrohm Award' of which made my trip possible. I feel that I have gained an invaluable experience through my attendance at this conference where I have been given the opportunity disseminate my work within the scientific community and which has allowed me to interact and engage in discussions with fellow scientists, expanding my scientific knowledge and understanding within many electrochemical aspects.

Dale A. C. Brownson
Manchester Metropolitan University

2011 London/South-East Region Post-graduate Electrochemistry Symposium

May 17, 2011, University College London

The Editor notes that the long-awaited re-established post-graduate meeting covering the London/South-East geographical region took place earlier this year, efficiently and kindly organised by Dr. Katherine Holt. This meeting, generously sponsored by the RSC was held as an ISE Satellite Student Regional Symposium. The first prize for the students' talks was awarded to Yige Zhou, working in Professor Richard Compton's group in Oxford (Physical and Theoretical Chemistry Laboratory), who spoke about *The electrochemistry of single silver nanoparticles via nanoparticle-electrode collision processes*. One of the joint runners-up was Zulkifli Idris, working in the Dr. Kylie Vincent's group, also in Oxford (Inorganic Chemistry Laboratory), who spoke about *NAD⁺/NADH-cycling by a catalytic moiety [sic.] of the soluble hydrogenase from Ralstonia eutropha studied by protein-film voltammetry*.



From left-to-right: Zulkifli Idris, Yige Zhou, Dr. Katherine Holt.

2011 Great Western Electrochemistry Meeting

June 6, 2011, The University of Bath, Bath

If the Pennines constitute the backbone of England, then the chalk lines may correspond to her "arteries". And all four pathways (Purbeck Downs, North/South Downs, Chilterns, Lincolnshire/Yorkshire Wolds) converge on the Salisbury Plain – on which one of the four copies of the original 1215 *Magna Carta* – the charter essentially empowering some liberty, is housed. Fittingly, this year's celebration of post-graduate research achievement in Electrochemistry, within what is supposed to be a liberal and supportive environment, the tenth meeting in this series, was held close to this historic site, and encompassed researchers essentially from (with a bit of imagination) all four chalk lines. The meeting, efficiently organised by Dr. Frank Marken and his group at Bath University, received the generous sponsorship from the RSC, EC-LAB, AUTOLAB, ALVATEK and Solartron Analytical to host the 80 or so delegates.

The student presentations commenced with three from Professor Richard Compton's Oxford Physical Electrochemistry Group. Rahmat Wibowo spoke enthusiastically about his research on the electrodeposition of alkali metals from ionic liquids, extracting useful parameters from a relevant numerical model that had been developed by Dr. Sarah Ward-Jones (also present), exploring further insight into the deposition of potassium through an *in loco* X-ray photoelectron spectroscopic study. This was followed by a confident, well-presented and interesting talk on quinone reduction in buffered aqueous media highlighting the occurrence of current dips in the presence of oxygenated solutions by Chris Batchelor-McAuley, utilising DIGSIM modelling to comment on his mechanistic nuance. Alas, discussion of Chris's work was hijacked by an unruly chair. Nevertheless, the seemingly-unperturbed student wowed the audience with his impressive top-of-the-head literature references. The third talk of the event was by Ian Cutress who beautifully-presented his efforts in GPU simulations of stochastic phenomena to try to answer his question *How many molecules are required to measure a cyclic voltammogram?* For me, this talk was a rare pleasure. Ian would later be awarded with a Metrohm-sponsored runner-up talk prize. The last talk of the first session was from Professor Gary Attard's group in Cardiff. Mujib Ahmed spoke with clarity about his research on *Nafion adsorption on Pt{hkl} electrodes*.

The coffee break provided a welcomed opportunity to exercise networking skills, whilst perusing through the various posters on display. Unfortunately, the local artist-in-residence at Bath had decided to extend their exhibition (illegally), requiring some of the posters to be moved. The second session, chaired by the ever-sensible Frank Marken, commenced with a talk by Matt Carnie from Swansea, who spoke about the *Electrochemical characterisation of the UV-photodegradation of dye-sensitised solar cells*, and allowed for an introduction to this important topic. This was followed by Kathryn Wills from Petra Cameron's group at Bath, who spoke with enthusiasm about *Dye synthesis and characterisation for dye-sensitised solar cells*, employing cyclic voltammetry to estimate HOMO energies. The talk was followed by what I consider to be the best talk of the event – a stunningly-insightful presentation and performance by Tom Risbridger also from Petra's detailing his efforts in employing water as an electrolyte in dye-sensitised solar cells. The eighth talk of the event was by Kevin Wright from Hull University, where he will commence his post-graduate research studies in September, 2011 with Professor Gillian Greenway. Kevin spoke about his efforts in endeavouring to exploit soft-matter systems for energy-conversion devices, and concluded with his zinc/thallium galvanic cell, based on anti-dandruff shampoo, employing electrodes with differential kinetics.

After lunch, Professor Edman Tsang from the Inorganic Chemistry Laboratory in Oxford presented a fascinating guest lecture, *Rational screening of catalysts for chemical and electrochemical reactions*, and was followed by two enjoyable talks from Professor John Hart's group: Adrian Crew on *Amperometric biosensors for organophosphate pesticides in food and environmental samples*, and Roy Pemberton on *Glucose biosensors employing solvent free [sic.] printing inks*. The twelfth talk of the day was to receive the RSC award for the best talk; Henry Burch, from the group of Dr. Upal Wijayuntha in Loughborough, presented his work on zinc ferrite for photoelectrochemical water splitting, imaginatively entitled *Burning water for next generation [sic.] energy*.

The last session commenced with an excellent talk by Qiang Zeng from Professor Frantisek Hartl's group in Reading on *Spectroelectrochemical studies of rhenium imidazole complexes*, with electrochemical deprotection of the weakly-acidic C-2 imidazole proton. Qiang was later awarded the Johnson Matthey runner-up talk prize. Diego Colombara from Professor Peter's group at Bath next spoke insightfully about *Electrochemical routes to alternative chalcogenides for thin-film solar cells*, expounding on the usefulness of CuSbS_2 , Cu_3BiS_3 and Cu_3BiS_3 materials. Dr. Greg Wildgoose (UEA) next presented his work on immobilising supraparamagnetic carbon nanotubes onto an electrode surface so as to exploit the lengths of the nanotubes for surface modification, using redox-tagged diazine species to modify the

surfaces. In an exciting talk, Jeerapat Nutaruya from Bristol spoke about the growth of platinum films through an elegant surface-limited redox replacement technique. This was followed by a talk from Dr. David Férmín's group at Bristol, with Maria Montes de Oca presenting her extensive characterisations of Au-Pd core-shell nanostructures. The final talk of the day was delivered by Sara Dale, a post-doc in Frank's group at Bath. An excellent talk in which she spoke (quickly so that the colloquium could end sooner!) lucidly about the electro-deposition of core-shell superconducting-ferromagnetic meso-crystals – her work with Professor Simon Bending at Bath.

In winding-up the meeting, Frank announced the poster-prize winners- - the EC-Lab prize was awarded to Dr. Sarah Ward-Jones (Bristol), with the Alvatek prize going to T. PRIORITY (Loughborough). The meeting concluded with a wine reception, an enjoyable end to an interesting day. Many, MANY thanks and congratulations to Frank and his group for ensuring a smooth running of a wonderful event.

jw
Kingston-upon-Hull

The Editor thanks Sarah Ward-Jones, the author of one of the winning posters for generously allowing its reproduction on the following page.

Computer simulation of the electrodeposition of magnetic alloys and multilayer films



S. E. Ward Jones and W. Schwarzacher

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Abstract

Numerical simulations are used to help understand the electrodeposition of magnetic alloys and multilayers by pulse deposition.

The Cu-Ni and Ni-Fe systems are considered. The Cu-Ni system undergoes normal codeposition whereas the Ni-Fe system shows anomalous codeposition.

Introduction

Mathematical modelling and numerical simulations are useful for both explaining and predicting experimental results.

The Cu-Ni system undergoes normal codeposition. Copper, the more noble metal, deposits at low negative potentials, whilst Nickel deposits only at more negative potentials. Using a solution rich in Ni²⁺, Cu-Ni multilayer films can be deposited by pulsing between a less negative potential where only Cu deposits (under diffusion control) and a more negative potential where a Ni-rich alloy is deposited (due to Cu still depositing under diffusion control).

By reducing the thickness of the layers deposited to sub-monolayer quantities, a heterogeneous alloy can be produced as shown in Figure 1. Alloys with different compositions can be deposited from the same solution by changing the relative length of the pulses.

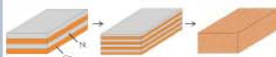
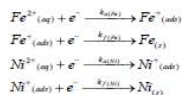


Figure 1 - Scheme showing the transition from multilayer to heterogeneous alloy.

Control over the electrodeposition of Ni-Fe alloys and multilayer films is more complex as the codeposition of Ni and Fe is anomalous. Ni is the more noble metal, however, Fe is preferentially deposited at low negative potentials. Matlozsz¹ proposed a mechanism to explain this anomalous codeposition involving the competitive adsorption of monovalent intermediates ions.



This mechanism is used as the basis for computer simulations to help predict the composition of films formed at different potentials.

Simulation Program

The simulation program was written in MATLAB. The model includes diffusion of each 2+ metal ion in solution, competition for free space on the electrode surface for the formation of the surface 1+ oxidation state intermediate for each species and the conversion of each 1+ intermediate to bulk solid metal. For this poster only deposition is considered. The diffusion of each ion in solution is modelled using Fick's Law in one-dimension.

$$\frac{\partial[C]}{\partial t} = D_c \frac{\partial^2[C]}{\partial x^2}$$

The boundary conditions for the reduction at the electrode surface for each ion are given below where k represents the Butler-Volmer rate constants, θ_i and θ_j represent the fraction of the surface covered by the 1+ intermediate of interest and the total from both intermediates respectively, and Γ represents the amount of solid metal deposited.

$$D_c \frac{\partial[C]}{\partial x} = k_{\text{red}}[C](1 - \theta_i)$$

$$\frac{\partial\theta_i}{\partial t} = k_{\text{red}}[C](1 - \theta_i) - k_{\text{ox}}\theta_i$$

$$\frac{\partial\Gamma}{\partial t} = k_{\text{red}}\theta_i$$

Ni-Fe Deposition

The presence of Fe species inhibits the deposition of Ni as Fe¹⁺ and Ni¹⁺ compete for space on the electrode surface. Fe¹⁺ is more readily formed and as a result blocks the surface for Ni deposition. Ni is therefore only deposited at potentials where Fe can also deposit, freeing space on the surface for the intermediate. The relative rate of deposition is a balance between diffusion limited behaviour, kinetics and competition for the surface.

With only one species, Fe²⁺ or Ni²⁺, present in solution the metal deposits at the potential expected. Figure 2 shows the results for simulated CVs between 0 and -1.5 V vs. SCE, scan rate of 10 mV/s, from solutions with either 0.05 M Fe²⁺ or 0.05 M Ni²⁺.

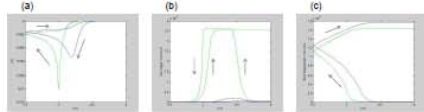


Figure 2 - (a) CV (b) surface coverage of the intermediate and (c) amount of metal deposited for Fe (green) and Ni (blue) deposited separately from solutions containing only Fe²⁺ or Ni²⁺ ions.

For Fe deposition the intermediate covers the whole electrode surface before being reduced further where as the Ni intermediate is reduced at a faster rate so the surface is never completely covered. Ni deposits at less negative potentials than Fe when only Ni²⁺ ions are present in solution as expected from their relative standard potentials.

Figure 3 shows the simulated results for a CV between 0 and -1.5 V vs. SCE, scan rate of 10 mV/s from a solution containing both 0.05 M Fe²⁺ and 0.05 M Ni²⁺.

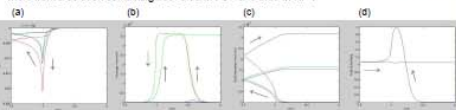


Figure 3 - (a) CV (b) surface coverage of the intermediates, (c) amount of metal deposited and (d) Fe/Ni ratio for Fe (green) and Ni (blue) and the combined total (Red) when deposited together from a solution containing both 0.05 M Fe²⁺ and 0.05 M Ni²⁺.

When both Fe²⁺ and Ni²⁺ ions are present a more negative potential is needed for Ni to deposit. This is because the +1 oxidation state Fe intermediate blocks the surface. As the deposition of Ni is delayed, similar amounts of Fe and Ni are deposited. The ratio of Fe/Ni deposited has a peak at the potential where Fe blocks the surface but the deposition process is not limited by diffusion in the solution. In time, the process becomes diffusion limited and the composition of the alloy reflects that of the solution.

Deposition can also be modelled at fixed potentials. Figure 4 shows the currents recorded and the surface coverage of the intermediates at -0.9 V and -1.5 V for deposition from a solution containing both 0.05 M Fe²⁺ and 0.05 M Ni²⁺.



Figure 4 - (a) current at -0.9 V, (b) current at -1.5 V, (c) surface coverage of the intermediates at -0.9 V and (d) surface coverage of intermediates at -1.5 V. Fe - green, Ni - blue and Total - red.

At -0.9 V the deposition is under kinetic control and Fe deposition can dominate once the Fe¹⁺ intermediate has built up on the surface whereas at -1.5 V the deposition is under diffusion control and the deposit reflects the composition of the solution combined with the relative diffusion coefficients. At -0.9 V the surface is completely covered by the Fe intermediate whereas at -1.5 V the surface coverage is very low as the kinetics for the second electron transfer are faster and the supply of new ions to the electrode surface is limited by diffusion.

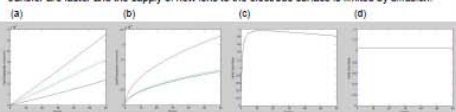


Figure 5 - (a) metal deposited at -0.9 V, (b) metal deposited at -1.5 V, (c) Fe/Ni ratio at -0.9 V and (d) Fe/Ni ratio at -1.5 V.

As shown in Figure 5, at -0.9 V Fe deposition exceeds Ni deposition after an initial period, however, the overall deposition rate is low. At -1.5 V Fe and Ni deposit at diffusion controlled rates and more metal is deposited. The ratio of Fe/Ni is higher at -0.9 V where deposition is under kinetic control with competition for space on the electrode surface.

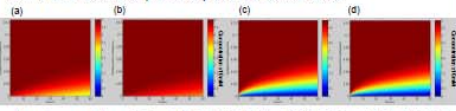


Figure 6 - concentration profiles for (a) Fe²⁺ at -0.9 V, (b) Ni²⁺ at -0.9 V, (c) Fe²⁺ at -1.5 V and (d) Ni²⁺ at -1.5 V.

As seen from concentration profiles in Figure 6, at -0.9 V the deposition is not limited by diffusion whereas at -1.5 V the deposition of both Fe and Ni is diffusion limited. When Ni²⁺ is the only ion present in the solution Ni deposition is already under diffusion control at -0.9 V. This highlights the ability of Fe to deposit in preference to Ni at -0.9 V.

Cu-Ni Pulse Deposition

Cu-Ni multilayers and alloys can be deposited by pulsing between -0.4 V and -1.9 V in a solution containing 2.3 M Ni²⁺ and 0.05 M Cu²⁺.

Figures 7 (a) and (b) show typical concentration profiles for Cu²⁺ and Ni²⁺ ions in solution during the pulse deposition of a Cu-Ni film. Cu²⁺ is under diffusion control at both potentials. Ni²⁺ is only deposited at -1.9 V and therefore the solution concentration partially recovers between the -1.9 V pulses. This leads to a film with clearly defined layers with different compositions.

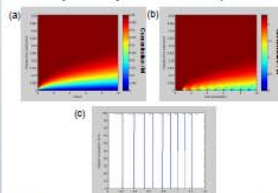


Figure 7 - concentration profiles for (a) Cu²⁺ and (b) Ni²⁺ for 0.9 s pulses at -0.4 V alternated with 0.1 s pulses at -1.9 V. (c) Ni % in the film as a function of film thickness.

Ni-Fe Pulse Deposition

When the same form of pulse deposition is tried with the Ni-Fe system the result is not the same. Figure 8 shows the concentration profiles for Fe²⁺ and Ni²⁺.

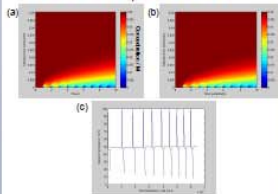


Figure 8 - concentration profiles for (a) Fe²⁺ and (b) Ni²⁺ for 0.9 s pulses at -0.9 V alternated with 0.1 s pulses at -1.5 V. (c) Ni % in the film as a function of film thickness.

As Fe and Ni deposit at both potentials the deposition of both metals is diffusion controlled at -1.5 V. At -0.9 V the deposition is under a mixture of kinetic control, competition control due to re-establishing the adsorbed intermediate layer and at long times, diffusion control as the solution concentration at the electrode surface is significantly reduced due to each -1.5 V pulse. This leads to very uneven deposit composition during the -0.9 V pulse as shown in Figure 8(c) as Ni is initially deposited faster due to kinetics until Fe¹⁺ blocks the electrode surface. After this point an Fe-rich alloy is deposited.

Conclusions

Competition for the space on the electrode surface to form the adsorbed intermediate is one of the major factors that determines the nature of the codeposition and therefore the composition of the film deposited.

At less negative potentials, Fe-rich alloys are predicted after an initial Ni-rich phase, whereas when under diffusion control the composition of the deposit is expected to more reflect the solution composition.

The simulations on this poster show that multilayer films of Ni-Fe with clear changes in composition cannot be deposited using the same pulse deposition method used for Cu-Ni films.

Nanoscale patterned magnetic materials (magnetic meta-materials) are of interest for the study of magnonics.

References

1. Matlozsz, M. Journal of the Electrochemical Society (1993), 140(8), 2272-9.

Acknowledgments

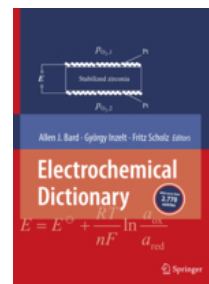
EU 7th Framework Program Grant CP-PP 228673-2



MAGNONICS

EbookREV

Electrochemical Dictionary
A. J. Bard, G. Inzelt, F. Scholz (eds.)
Springer, Berlin, 2009
ISBN: 9783540745976 (hbk)
Cost: £180.00
724 pages



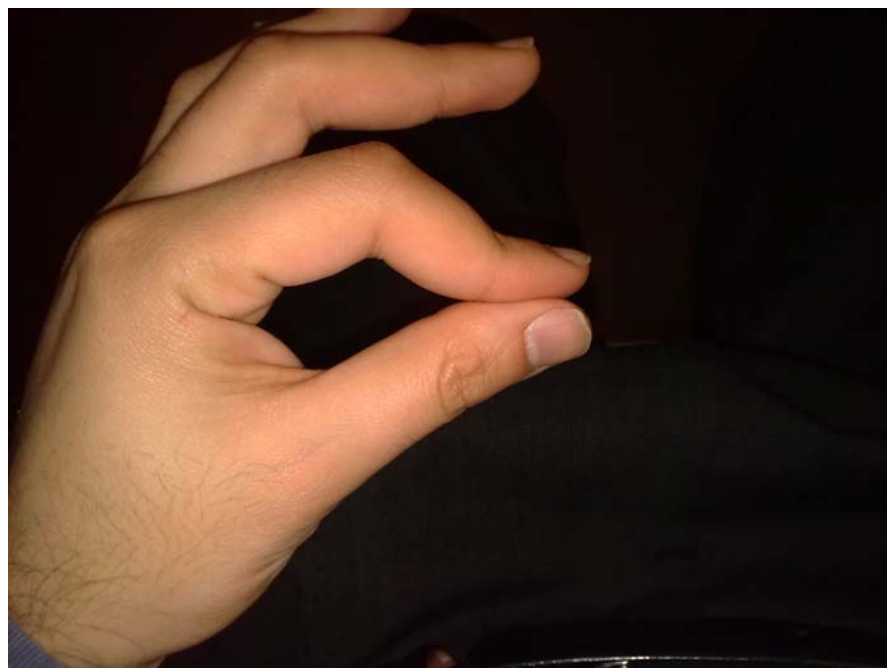
The *Electrochemical Dictionary* is a useful reference tool for any scientific researcher. It consists of over 2,770 entries, which include definitions ranging from common and obscure electrochemical terms to concise biographies of scientists who have had an important influence on the field. All of the entries have been written by well-established electrochemists in sufficient detail to satisfy readers' needs (well mine at least), and avoid being overly long and confusing. This balance is helped by having important references at the end of each entry, providing the reader with an option to delve deeper, if desired. I can envisage that the book would be useful to both industry and academia (from undergraduate up to professor). My only qualm is the price. That isn't to say I don't think the book is worth it, just that it has priced itself out of the student market.

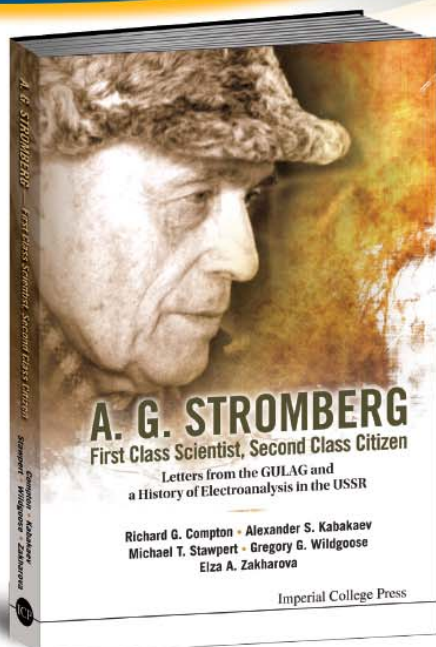
The usefulness of this book is a testament to its editors who must have been consumed for quite some time by the mammoth task of creating this electrochemical dictionary. The pioneer of the English dictionary Dr. Johnson said that lexicographers were "slaves of science" but also "pioneer's of literature". Whilst I don't think this book will hit the Amazon top ten, its construction is definitely innovative, and it will undoubtedly have a positive impact on the electrochemical reference literature.

Thomas S. Varley
Kingston-upon-Hull

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Voltammetry at one's fingertips.....





Armin G. Stromberg was arguably one of the founding fathers of the technique of stripping voltammetry frequently used in chemical analysis, yet he is virtually unheard of in Western scientific circles. He was a brilliant scientist, but due to his German ancestry he was interred in one of the NKVD GULAG camps at the outbreak of the Second World War.

This semi-biographical history presents the complete set of 74 surviving letters written by Stromberg to his wife during this period. The letters provide both historians and the interested public with a rare and unique glimpse into the everyday living conditions of inmates in one of the GULAG labour camps. The book also traces Stromberg's life following his release. More importantly, it relates how he founded the thriving Tomsk school to the wider historical context of electroanalysis in the USSR, drawing conclusions about the rate of scientific development as compared to the West and showing how 'wet analysis' remained of vital importance to industry long after equivalent measurements were made elsewhere.

Readers will also appreciate how Stromberg's invaluable contributions in the Tomsk School of Electroanalysis laid the foundations for the extensive metallurgical extraction and nuclear industries that dominated the entire Siberian region for many years. This book is a must-read for anyone interested in the life and times of an important, yet often overlooked scientist of the Second World War.

A. G. STROMBERG FIRST CLASS SCIENTIST, SECOND CLASS CITIZEN

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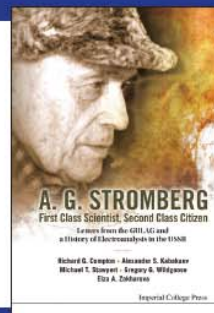
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Metrohm Autolab Announcement

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What isn't?? 2010 saw new and enhanced instruments and new modules from Ivium; new software from Palm, and Alvatek added some new manufacturers to its portfolio, namely:

Pragma Industries: for fuel cell teaching kits and its fuel cell compression unit (CCU);

Scribner Associates: for its range of electrochemistry research systems and fuel cell test systems (see article).

BASi and Radiometer: for electrodes and cells.

The Scribner range is particularly exciting because of Scribner's excellent established reputation plus the fact that their fuel cell test systems are already used and well-liked in the UK. Scribner have also developed some intriguing solutions for parallel measurements on segmented electrodes and fuel cell membranes (see article).



SCRIBNER 850e

And finally, more and more UK Electrochemists have cottoned-on to the sheer value and quality of Palm Instruments' tiny Emstat (see article). It offers picoamp sensitivity and comes with high quality software at under £1200. Don't let the low cost and tiny size mislead you - this is a quality instrument.

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19-23 June 2011
9th European Symposium on Electrochemical Engineering (9th ESEE)
Chania, Crete, Greece
Co-Chairs: Symeon Bebelis, Niki Kouloumbi
info@9thesee.gr
<http://www.9thesee.gr>

22-24 June 2011
5th Gerischer Symposium
Photoelectrochemistry: From Fundamentals to Solar Applications
Organizers: D.M. Kolb, H.J. Lewerenz
dieter.kolb@uni-ulm.de
lewerens@helmholtz-berlin.de
<http://uni-ulm.de/ge-symp>

28 June – 1 July 2011
European Fuel Cell Forum 2011
Lucerne, Switzerland
Chair: K. Andreas Friedrich
forum@efcf.com
<http://www.efcf.com>

3-8 July 2011
18th International Conference on Solid State Ionics (SSI-18)
Warsaw, Poland
Co-Chairs: F. Krok, M.S. Whittingham
info@ssi-18.net
<http://www.ssi-18.net>

4-8 July 2011
Journées d'Electrochimie 2011
Grenoble, France
<http://www.je2011.fr/>

10-14 July 2011
Conducting polymers - Formation, structure, properties, and applications (75th PPM)
Prague, Czech Republic
Co-Chairs: Jaroslav Stejskal, Miroslava Trchová
Secretariat: sympo@imc.cas.cz
<http://www.imc.cas.cz/sympo/75pmm/program.html>

17-20 July 2011
10th Symposium on Electrokinetic Remediation (10th EREM)
Utrecht, The Netherlands
Chair: J.P. Guus Loch
erem2011@geo.uu.nl
<http://www.geo.uu.nl/erem2011>

28-30 July 2011
International Conference on Solar Energy Materials, Solar Cells and Solar Energy Applications (Solar Asia - 2011)
Kandy, Sri Lanka
solarasia2011@ifs.ac.lk
<http://www.solarasia2011.ifs.ac.lk>

30 July-7 August 2011 ** (Sponsored by Division 2)
43rd IUPAC World Chemistry Congress 2011
Puerto Rico, San Juan
Contact: Paulino Tuñón-Blanco
ptb@unovi.es
<http://www.iupac2011.org>

19-22 August 2011
13th International Symposium on Electroanalytical Chemistry (13th ISEAC)
Changchun, P.R. China
Chair: E.K. Wang
Secretariat: B.L. Zhang
blzhang@ciac.jl.cn
<http://iseac.ciac.jl.cn/>

26 August - 2 September 2011
Summer School in Spectroelectrochemistry
Dresden, Germany
Co-Chairs: L. Dunsch, K. Haubner
summerschool@ifw-dresden.de
<http://www.ifw-dresden.de/institutes/iff/events/events/summer-school/summer-schoolin-spectroelectrochemistry/>

28 August – 2 September 2011
European Conference of Surface Science (ECOSS28)
Wrocław, Poland
Chair: A. Ciszewski
<http://www.ecoss28.eu>

4-8 September 2011
EUROCORR 2011
Stockholm, Sweden
Chair: Ingegerd Annergren
eurocorr2011@swerea.se
eurocorr@dechema.de
<http://www.eurocorr.org>

5-6 September 2011 Electrochem 2011 Bath, UK

Chair: F. Marken

f.marken@bath.ac.uk
http://www.regonline.co.uk/electrochem_2011

7-9 September 2011
XXXII Reunion del Grupo de Electroquímica de la RSEQ
Murcia, Spain
Chair: Angela Molina
amolina@um.es
<http://www.32electroquimicamurcia.com>

11-15 September 2011
Challenges in Modern Analytical Chemistry
(EUROanalysis 16)
Belgrade, Serbia
Co-Chairs: Slavica Ražić, Ivanka Popović
<http://www.euroanalysis2011.rs/>

11-16 September 2011
62nd Annual Meeting of the International Society
of Electrochemistry
Electrochemical Frontier in Global Environment
and Energy
Niigata, Japan
Chair: Tetsuya Osaka
events@ise-online.org
<http://event11.ise-online.org/>

18-19 September 2011
Renewable Energy and Materials Tailoring
Kyoto, Japan
Contact: Yasuhiro Fukunaka
hirofukunaka@gmail.com

19-23 September 2011
European Materials Research Society 2011 Fall
Meeting
Warsaw, Poland
Contact: Luis Pereira
lmnp@fct.unl.pt
<http://www.emrs-strasbourg.com/index>

20-23 September 2011
6th Ukrainian Congress on Electrochemistry
Dnepropetrovsk, Ukraine
Chair: Felix Danilov
elchem_congr@ukr.net
conf@dicht.dp.ua
<http://udhtu.com.ua/conference/index.php?p=8>

25-29 September 2011
9th Electrochemistry Meeting in Turkey
Izmir (Cesme), Turkey
electrochem2011@gmail.com
<http://www.electrochemistry9.ege.edu.tr>

28-30 September 2011
4th International Workshop on Impedance
Spectroscopy
Chemnitz, Germany
Chair: Olfa Kanoun
mst@tu-chemnitz.de
<http://www.tu-chemnitz.de/is>

9-14 October 2011
220th Meeting of The Electrochemical Society
(ECS)
Boston, MA, USA
<http://www.electrochem.org/meetings/biannual/220/220.htm>

10-12 October 2011
2nd International Conference on Bio-Sensing
Technology 2011
Amsterdam, The Netherlands
Contact: Kay Russell
K.Russell@elsevier.com
<http://www.biosensingconference.com/index.html>

4-8 November 2011
5th International Workshop on Surface
Modification for Chemical and
Biochemical Sensing (SMCBS 2011)
Lochow near Warsaw, Poland
Contact: Włodzimierz Kutner
wkutner@ichf.edu.pl
14-17 November 2011

Electrocatalysis: Present and Future (ELCAT
Meeting)
Alicante, Spain
Contact: Enrique Herrero
herrero@ua.es
<http://web.csidiomas.ua.es/congresos/electrocatalisis/index.html>

27 November - 1 December 2011
Fray International Symposium on Metals and
Materials Processing in a Clean
Environment
Cancun, Mexico
Chair: Florian Kongoli
fkongoli@flogen.com
<http://www.flogen.com/FraySymposium>

6-8 December 2011
3rd International Congress on Green Process
Engineering (GPE2011)
Kuala Lumpur, Malaysia
Co-Chairs: N.M. Nik Sulaiman, M.K. Aroua
gpe2011@inp-toulouse.fr
<http://www.gpe2011.com/>

7-10 December 2011
Indian Society for Electroanalytical Chemistry
(ISEAC)
Workshop on Electrochemistry (ISEAC-WS-2011)
Goa, India
Contact: Suresh K. Aggarwal
skaggr2002@rediffmail.com
<http://www.iseac.org/events.aspx?eventID=23>

28-30 December 2011
Advanced Electrochemical Energy Symposium
Hong Kong, China
Co-Chairs: Guohua Chen, Kwong-Yu Chan
aees11@ust.hk
<http://aees.ust.hk>

9-13 January 2012
International Battery Association and Pacific
Power Source Symposium
Hilton Waikoloa Village, Hawaii
Contact: Bor Yann Liaw
bliaw@hawaii.edu

2-4 April 2012
9th Symposium on Fuel Cell and Battery Modeling
and Experimental Validation
Sursee, Switzerland
modval9@psi.ch
<http://modval9.psi.ch>

16-19 April 2012
10th Spring Meeting of the International Society of
Electrochemistry
Electrochemical science and technology in the
solution of real life problems - New
approaches to nanostructuring electrodes for
electroanalysis and energy storage
Perth, Australia
6-11 May 2012

221st Meeting of The Electrochemical Society
(ECS)
Seattle, WA, USA

23-25 May 2012
11th Spring Meeting of the International Society of
Electrochemistry
Theoretical and Computational Electrochemistry,
combined with
ISE Training School on Theoretical and
Computational Electrochemistry
Washington DC, USA
Contact: YuYe Tong
yyt@georgetown.edu

27-31 May 2012
6th Aluminium Surface Science & Technology (VI
ASST) Symposium
Sorrento, Italy
Chair: Francesco Bellucci
info@asst2012.org
www.asst2012.org

29 July – 3 August 2012
Gordon Research Conference on
Electrodeposition
Biddeford, ME, USA
Contact: Andrew Gewirth
agewirth@illinois.edu
<http://www.grc.org/programs.aspx?year=2012&program=elecdep>

19-24 August 2012
63rd Annual Meeting of the International Society
of Electrochemistry
Electrochemistry for Advanced Materials,
Technologies and Instrumentation
Prague, Czech Republic
Contact: Zdenek Samec
zdenek.samec@jh-inst.cas.cz
events@ise-online.org

26-29 August 2012
Electromembrane processes and Materials
Český Krumlovo, Czech Republic
Contact: Karel Bouzek
karel.bouzek@vscht.cz
<http://www.elmempro.com/En/>

16-21 September 2012
6th European Summer School on Electrochemical
Engineering (ESSEE6)
Red Island, Rovinj, Croatia
essee6@fkit.hr
www.fkit.hr/essee6

7-12 October 2012
222nd Meeting of The Electrochemical Society
(ECS)
Honolulu, HI, USA

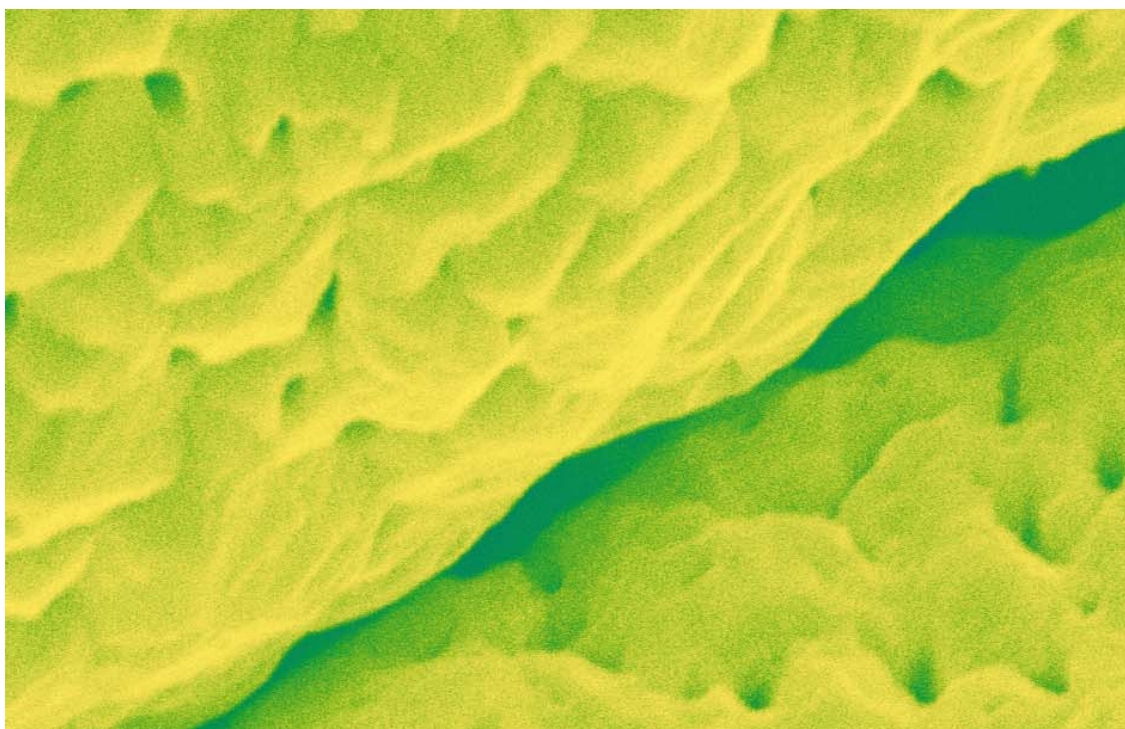
12-17 May 2013
223rd Meeting of The Electrochemical Society
(ECS)
Toronto, ON, Canada

8-13 September 2013
64th Annual Meeting of the International Society of
Electrochemistry
Santiago de Querétaro, Mexico
Contact: Ignacio Gonzalez
igm@xanum.uam.mx
events@ise-online.org

27 October – 1 November 2013
224th Meeting of The Electrochemical Society
(ECS)
San Francisco, CA, USA

11-16 May 2014
225th Meeting of The Electrochemical Society
(ECS)
Orlando, FL, USA

1-6 September 2014
65th Annual Meeting of the International Society of
Electrochemistry
Lausanne, Switzerland
Contact: Hubert Girault
hubert.girault@epfl.ch
events@ise-online.org



RSC Electrochemistry Group

This RSC Group is part of the Faraday Division, involved in all aspects of electrochemical processes (fuel cells, energy sources, analytical devices and sensors, electrochemical planting and synthesis, fundamental research etc).

Activities:

- The Group organises the annual 'Electrochem' meetings (Faraday Medal) to reward outstanding international scientists. For up-to-date information, go to the RSC's web pages for the Electrochemistry Group.
- The Electrochemistry newsletter: available quarterly, in pdf, from our RSC web pages, it highlights events' reports and general sector's news and insights.
- Student bursaries: to support/encourage graduate students giving lectures on their PhD work at national and/or international conferences.
- Outreach: activities involving the public and schools to raise awareness of the fundamental importance of electrochemical processes today.

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www.rsc.org/electrochemistry

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If you are not a member of the RSC, but are a member of a society affiliated to EuCheMS, you may still join the RSC Electrochemistry Group (membership costs *ca.* £10) and serve on the Group's Executive Committee (provided you do not become Treasurer, Secretary or President).