

NEWSLETTER



**Serving Electrochemical Science, Technology and Engineering within
the catchment of**

**The Royal Society of Chemistry
and
The Society of Chemical Industry**



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Editorial

Welcome to the second issue of the Electrochemistry Newsletter in 2018.

This second issue of the Newsletter of 2018 includes a number of reports from students and postgraduates who assisted or organised a conference. Students should be encouraged to apply for a contribution to the cost of presenting their work at a national or international conference or organise a postgraduate conference. The Electrochemistry Group of the RSC and the Energy Technology Group of the SCI provide the funds if the application is accepted.

Within coming events, the Electrochem 2018 meeting at Lancaster University should be highlighted as it celebrates the 25th anniversary of this important national conference. The topics of the conference are **Electroanalysis, Energy and blue-sky electrochemistry**. The invited speakers, who are leaders in these areas, are Professor Yang Shao-Horn from the Massachusetts Institute of Technology, Professor Frank Marken from the University of Bath, Professor Rolf Schuster from Karlsruhe Institute of Technology and Professor David Williams from the MacDiarmid Institute.

Prof Frank Walsh has recently retired from the University of Southampton but remains active as an emeritus professor and consultant. As usual, there is information on conferences and details of upcoming events. The electrochemical calendar and product information are also included.

I welcome any feedback and suggestions of contributions from readers for future issues. Many thanks to Oliver Rodriguez Martinez, who helped to put together the Newsletter.

Carlos Ponce-de-León

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-in-Chief (Carlos Ponce-de-León, Faculty of Engineering and the Environment University of Southampton) at:

capla@soton.ac.uk

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

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

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Obituary

Dr. Rodney J. Marshal (1950-2018)

Rod Marshall died at his home in Southampton, following a fall. Rod was important in Southampton Electrochemistry's early work on flow cells in the 80s. He helped design and realise many cells, in Bob Jansson's Electrochemical Engineering Laboratory, including pump cells, trickle towers and numerous filter-press designs. Rod obtained a BSc degree in Chemistry at Southampton, followed by a PhD during work as a skilled research technician. Postdoctoral research on reaction environment in cells at Southampton was followed by postdoctoral applied electrochemistry contract work with David Schiffrin at Southampton, a visit to Monsanto, St. Louis (when Bob Jansson headed up their research) and an R & D position at BP Solar, London. Rod disliked publicity and presentations, preferring to quietly but efficiently do things as a backroom guy, rather than present talks, publish papers or manage projects. We had worked together on electrosynthesis, metal-air flow batteries, dinitrogen pentoxide in anhydrous nitric acid synthesis, metal oxide powdered catalysts, a combined rotating disc-cylinder electrode and semiconductor solar cell materials.

We often made pop-up' cardboard models before manufacturing the real object. Rod shared a 'no-nonsense, let's do it without computers' approach. I would provide a thumbnail sketch then a cardboard model; he would disappear into his wooden shed at home - to make the polymer, composite or metal prototype. In later years, we routinely accessed and developed digital tools such as CAD/CAM, 3D imaging, 3D printing, large workshops and beyond in industry and academia – but these had lost the magic of early 'design, build, test and use' exercises, often done in a weekend. Rod believed in the superiority of 'ShedCo' compared to slow, expensive and limited university, industry or commercial workshops.

Rod was an individual but we shared a common background of using computers for scientific data analysis combined with a distrust of computers increasingly used to control large, complex systems and the dangers of advanced computers progressing from interactivity and indispensable positioning to self-awareness, control, manufacture and marketing. He would often challenge me by saying that I saw the World in black and white, he knew it was grey; I considered that most things could be modelled or at least rationalised quantitatively; Rod insisted that 'humans created mathematics in our own image'. I have lost a friend and colleague who shared a wish to use 'the Blue Peter approach', i.e., first make a model using sellotape, cardboard, sticky-back plastic, wood, glue and empty washing up liquid bottles!

Frank C. Walsh

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Retirement

Professor Frank C. Walsh retirement

After a prolific career in academia and industry, Professor Fran Walsh retired from the University of Southampton on 30 June 2018 and will continue in an active retirement as an Emeritus Professor in Electrochemical Engineering and consultant. Some of his current projects include:

- a) revising a text book on electrochemical engineering,
- b) writing new books on 'environmental remediation and recycling using electrochemistry' and 'redox flow batteries for energy storage',
- c) editing a series of electrochemical engineering development reviews for Current Opinions in Electrochemistry,
- d) completing critical reviews on 'plane parallel flow cells', 'redox flow batteries' and 'composite coatings by electrodeposition',
- e) writing a series of novel papers on 'the modelling, design, modelling and performance of electrochemical reactors for synthesis of nanomaterials, energy conversion and environmental treatment',
- f) scaling-up several industrial electrosynthesis and battery recycling processes plus
- g) crafting educational papers on 'electrochemical impedance spectroscopy of electrochemical coatings' and 'rotating electrode techniques for practical electrochemistry'.

At the celebration of Frank's retirement, he shared his 'FM01 – LC electrolyser cake', with members of the Faculty of Engineering and the Environment of the University of Southampton together with present and former PhD students. Prof Walsh helped to design this iconic electrochemical reactor for the former Imperial Chemical Industries (ICI) in the 80s, among more than 50 reactors for synthesis, environmental treatment and energy storage.



Cutting the “FM01-LC electrolyser cake” made of chocolate and vanilla instead of PTFE separators and metal electrodes.



Current PhD students and colleagues from the Electrochemical Engineering laboratory of the University of Southampton.



Derek Pletcher and Frank Walsh with former joint PhD students from the 80s: Maura Joliffe (Heron), Ian Whyte and John Graves.

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Regional Symposium Reports:

Regional Postgraduate Symposium Great Western Electrochemistry

University of Bath, Monday 16th July 2018

On Monday 16th July, the 2018 “GWEM 2018” meeting was held at the University of Bath. At this meeting, postgraduate presenters from Bristol, Oxford, Bath, Brighton, Loughborough, Exeter, Reading, and Cardiff participated with further invited guest speakers from the National Physical Laboratory (Dr. Edmund Dickinson) and from the Institute of Physical Chemistry at the Polish Academy of Sciences in Warsaw (Dr. Katarzyna Szot). The meeting attracted support from exhibitors (Alvatek, Blue Scientific, EC-Lab) with displays to complement the poster sessions. After four sessions with in total 21 talks chaired by postgraduate students, the event concluded with the award of prizes and a social wine and nibbles session.



The meeting started with a talk in the first session given by Xinxing Liang (Bath) who reported on novel perovskite nanomaterials, specifically on capped MAPI nanocrystals, their continuous flow synthesis, improved stability to moisture, and their properties in solar cells. Budi Riza Putra (Bath) reported on his work on “Ionic conduction and rectification in TiO₂ nanosheet assemblies”. TiO₂ nanosheets were shown to give semi-permeable ion conductors which, deposited on a microhole interface, result in ionic diode phenomena. Next, Dr. Yuanyang

Rong (Brighton) reported on investigations with hierarchical graphene assemblies and, in particular, the characterisation of graphene and graphene oxide assembled into spheres. Finally, Zheng Huang (Exeter) gave a talk on “Bifunctional W,Co sulfide-based carbon nano-composites for highly efficient hydrogen and oxygen evolution” explaining how synthetic transformation of metal-organic framework precursors can be used to make novel highly porous electrocatalysts.

After a coffee/poster break, the second session started with Dr. Katarzyna Szot from Warsaw explaining how bacteriophages can be produced and genetically engineered to give nano-materials with adhesion to carbon nanofibres for applications in electrochemistry. Applications from sensing to energy storage were discussed. Next, Korbua Chaisiwamongkhol (Oxford) reported on “Amperometric micro pH measurements in oxygenated saliva and explaining the origin of oxygen functionalities on the surface of carbon electrodes”. This talk was fascinating and Korbua was able to bridge from the topic “how to sense pH in saliva with a novel micro-probe” to the in-depth understanding of infrared-activated surface modification of nano-carbon. Lifu Chen (Oxford) followed with a talk entitled “Impact electrochemistry reveals that graphene nanoplatelets catalyse the oxidation of dopamine via adsorption”. Careful analysis of “impacts” under chrono-amperometry conditions revealed reactivity of dopamine at nano-carbon surfaces. The lunch break provided welcome opportunity for further discussion and networking.

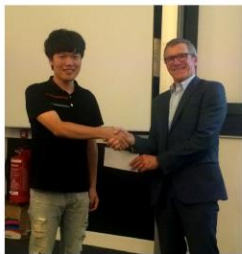
In the first afternoon session, Dr. Edmund Dickinson from NPL presented a talk on “Reading the primary literature: critical lessons from two foundational papers in battery and fuel cell simulation”. The emphasis of this talk was on highly cited publications with errors that get propagated through the literature. The issue of critical assessment of literature even at the level of apparently fully accepted work was discussed in terms of implications on models for fuel cell performance. Mark Buckingham (KCL) then presented “Thermoelectric power from electrochemical systems” and he explained how redox systems such as $\text{Fe}(\text{CN})_6^{4-}/3-$ can be used in thermoelectrochemical energy harvesting devices. Jifang Zhang (Bath) discussed his results on photo-electrochemical water splitting with “Hematite photo-electrochemistry”. The photo-voltaic performance of solar cells was discussed by Dr. Rodrigo Garcia Rodriguez (Bath) with the topic “Ion migration in perovskite solar cells”. Finally, Akash Ratnayaka (Loughborough) introduced novel nano-carbon materials in his talk “Capacitive properties of carbon nano-sphere electrodes”. His materials appeared to give almost “ideal” capacitor performance.

After a final break for posters, discussion, and refreshments, the second afternoon session started. First, Prof. Franti Hartl (Reading) reported on “Redox behaviour of diphenylamino-substituted osmanaphthalene complexes” and James Taylor (Reading) explained “Solvent and ligand substitution effects on electrocatalytic

reduction of CO₂ with [Mo(CO)₄(x,x'-dimethyl-2,2' -bi- pyridine)] (x = 4-6). These two talks brought a strong molecular catalysis flavour to the meeting with strong emphasis on spectro-electrochemical methods. A very different topic was covered by Dr. Christopher Hotchen (Cheltenham) who addressed aspects of "Taking research to patents: cases in electrochemistry". Chris highlighted the important points of patent development and he explained the reasons for publishing patents as well as papers. Emma Sackville (Bath) then described her "Iridium electrocatalysis with transient molecular species", where highly active but extremely elusive catalytic species are studied and compared. Vinicius Cruz San Martin (Bristol) reported on "Electrochemical design of plasmonic materials" based on reactivity of Ag-Au alloys. Finally, Gael Gobaille-Shaw (Bristol) completed the day with a very good talk on "CO₂ reduction at Pt_{1-x}Fe_x alloys: An experimental and a computational study". A very wide range of topics was covered and high quality research was presented with electrochemistry as the common underlying theme.

All-in-all, this was a successful day of electrochemistry and a difficult final task remained for the jury to award prizes. The "Alvatek" poster prize was awarded to Xin Sun (Bristol) for his poster "LaFeO₃/TiO₂/Pt assembly photocathode for efficient photoelectrochemical hydrogen evolution". The "Blue-Scientific" poster prize went to Alicja Szczepanska (Bristol) for her poster "Electrochemically self-assembled nanoalloys". The "EC-lab" poster award was given to Emma Freeman (Bath) for her poster "Perovskite films for photoelectrochemical water splitting". Finally, the RSC prize for the best presentation was awarded by Katarzyna Szot and Alan Bond to Mark Buckingham from King's College London.

19th July 2018, Bath Frank Marken



Alvatek Prize



Blue-Scientific Prize



EC-lab Prize



RSC Prize

Great Western Electrochemistry

University of Bath, Monday 16th July 2018

Location: Lecture Theatre 3WN2.1 (behind Physics, see below)

Programme

10.00		Coffee & Posters
10.30	Xinxing Liang (Bath)	Perovskite nanomaterials
10.45	Budi Riza Putra (Bath)	Ionic conduction and rectification in TiO ₂ nanosheet assemblies
11.00	Yuanyang Rong (Brighton)	Hierarchical graphene assemblies
11.15	Zheng Huang (Exeter)	Bifunctional W,Co sulfide-based carbon nanocomposite for highly efficient hydrogen and oxygen evolution
11.30		Break & Discussion & Posters
12.00	Katarzyna Szot (Warsaw)	Bacteriophages in electrochemistry
12.30	Korbua Chaisiwamongkhon (Oxford)	Amperometric micro pH measurements in oxygenated saliva and explaining the origin of oxygen functionalities on the surface of carbon electrodes
12.45	Lifu Chen (Oxford)	Impact electrochemistry reveals that graphene nanoplatelets catalyse the oxidation of dopamine via adsorption
13.00		Lunch (not provided), Coffee (provided) & Posters
14.00	Edmund Dickinson (NPL)	Reading the primary literature: critical lessons from two foundational papers in battery and fuel cell simulation
14.30	Mark Buckingham (KCL)	Thermoelectric power from electrochemical systems
14.45	Jifang Zhang (Bath)	Hematite photo-electrochemistry
15.00	Rodrigo Garcia Rodriguez (Bath)	Ion migration in perovskite solar cells
15.15	Akash Ratnayaka (Loughborough)	Capacitive properties of carbon nano-sphere electrodes

15.30		Coffee & Posters
16.00	Franti Hartl	Redox behaviour of diphenylamino-substituted osmanaphthalene complexes
16.15	James (Reading)	Solvent and Ligand Substitution Effects on Electrocatalytic Reduction of CO ₂ with [Mo(CO) ₄ (x,x'-dimethyl-2,2'-bipyridine)] (x = 4-6)
16.30	Christopher Hotchen (Cheltenham)	Taking research to patents: cases in electrochemistry
16.45	Emma Sackville (Bath)	Iridium electrocatalysis with transient molecular species
17.00	Vinicius Cruz San Martin (Bristol)	Electrochemical design of plasmonic materials
17.15	Gael Gobaille-Shaw (Bristol)	CO ₂ reduction at Pt _{1-x} Fe _x alloys: An experimental and a computational study
17.30		Wine and Nibbles in 1 South (Department of Chemistry)

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Meetings Reports (International):

ECS meeting Seattle, Washington, USA

May 13-17, 2018

By Sofya Danilova

The 233rd ECS meeting was held in Seattle, Washington, USA. The symposium covered a range of electrochemistry-related topics from batteries, fuel cells and sensors to carbon nanostructures and corrosion. The conference was arranged in parallel sessions so it was not a problem to find interesting sessions for every researcher and I felt thoroughly engaged during the whole of the conference. Due to the nature of my present research, the talks on catalyst development for fuel cells and other applications were a matter of high interest to me. This was covered in a number of sessions, at talks given by researchers in the field of Energy Technology, Physical and Analytic Electrochemistry and Electrochemistry and Electrochemical Engineering. Some of the challenges mentioned in the talks are familiar from my own research, so the discussion on how the researchers overcome them was essential for me. Some of these discussion we continued after the talks and we also discussed possible future collaborations.

Another point of interest for me was the area of nanoparticle synthesis, which was also widely covered at the conference. Particularly useful was the talk by Catherine J. Murphy from Illinois University. She gave a keynote on silver particle synthesis in which the principles of manipulation of the size and morphology of nanoparticles was widely discussed. She stated the importance of the research methods. It is common among researchers to use the step by step approach of parameter optimisation - where only one parameter is changed in the system while others are kept constant. The lecturer mentioned the importance of varying several parameters simultaneously because sometimes the desired result can be achieved only via a combination of changes. I often use the traditional approach in my own research and it was refreshing to hear different viewpoints regarding experimental planning.

I was accepted to give a presentation about my PhD work "Selective Metalization of Non-Conductive Materials By Macropatterning of Catalytic Particles and the Application of a Gradient Magnetic Field". I would like to thank the Royal Society of Chemistry: Electrochemical Group, the Armourers and Brasiers' Company and Coventry University, who made this presentation possible by sponsoring my trip and also COST e-MINDs actions who sponsored my collaboration with

Autonomous University of Barcelona. In my research I am trying to create the technology which will allow deposition of metal selectively without the use of the photolithography process, which aims to make the procedure cheaper and will allow for a decrease in the amount of toxic waste produced. I was pleasantly surprised to get an interest from the public at this conference. I was especially grateful for the questions and informal discussion held after the presentation. Overall, I left with many good ideas for further work in my research.

I would like to notice the social part of the event. I was attending the ECS conference for the first time and I also was the only one from Coventry University presented at this Meeting. However, I met a lot of people during the conference itself and also the social events like the reception held on the evening of first day of the conference and the Student Mixer session on the second day. It was great experience to spend time with researchers from all over the world and share the experience of the working and studying at different countries and Universities. We explored the Seattle city and enjoyed the main attraction spaces as Space Needle, Fairy wheel, Fish Market and local beach. Also we experienced some nightlife at the local bars near local attraction - the gum wall! Overall the attendance of 233rd ECS Meeting was unforgettable experience. I feel inspired by the talks and amazing researchers I met and it gave me a huge amount of ideas for my current research.



During the networking event



Views of downtown Seattle

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ElecNano8: 8th International Conference on Electrochemistry in Nanoscience, 29th-31st May, 2018

Conference Report (International): Ugne Mitrikeviciute
PhD student, The University of Edinburgh

RSC Electrochemistry Group student travel bursary allowed me to participate in the 8th International Conference on Electrochemistry in Nanoscience (ElecNano8) on 29th-31st May, 2018 in Nancy, France. The conference was greatly relevant to my PhD topic in electrochemistry – Scanning Electrochemical Microscopy (SECM), which was the focus of a significant number of the talks. I presented a poster with a title of ‘Robust Micro and Nanoband Electrode Substrates for Quantitative SECM Analysis’, which presented in-house fabricated Pt electrodes suitable for SECM imaging and an insight into imaging related artefacts. Other researchers showed interest in my poster and contributed to some thoughts about my project.

From both the talks and posters I got a great insight into the areas where the SECM technique has been used most recently and what is the latest focus in the field. One of the invited speakers was Prof Michael V. Mirkin, a senior figure in electrochemistry and SECM fields. In his talk, SECM was discussed as a tool to better understand and characterize nanoparticles. Some of the most appealing talks to me were introduction of the new optical technique – Backside Absorbing Layer Microscopy (BALM) and its coupling with electrochemistry, discussion of an intelligent interface through modifying an electrode surface with a thin hydrogel layer, fitting of impedance data using a new model rather than standard circuits, and the introduction of carbene bioadhesives activated at relatively low voltages to be used for various biosensors.

The conference was not only about the latest research, but also about networking. Participants came from many different countries and groups, and there was a fair representation from both young researchers and more established academics. Thanks to the travel bursary I met many great people and expanded my network in France, Singapore, Warsaw, US, UK, Germany, and Sweden. The conference was also a great success from a cultural perspective. Guided tours in the old town of Nancy were organized to learn about the history of the city and to get a general introduction to French language, culture and society. Thanks are due to the organizing and scientific committees for a fantastic conference and taking such a good care of the participants, and to the RSC for providing the funding for the opportunity to be part of this conference.



Figure 1. Left: one of the entrances to the Place Stanislas in Nancy. Right: me in the Place Stanislas during the tour

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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 (see <http://www.rsc.org/ScienceAndTechnology/Funding/TravelGrants/InterestGroups.asp>),
- (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.

Candidates should submit their applications directly to the RSC Electrochemistry Group Secretary:

Dr. Upul Wijayantha (email: U.Wijayantha@lboro.ac.uk).

Related: also see RSC travel bursaries

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

Echem.NET

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More Meetings:

Event from the Society and Chemical Industry (SCI)

From the Brain to the Bank: The journey of creating value from science

SCI, London, UK

Wednesday 12 September 2018

Organised by SCI's [Science and Enterprise Group](#)

Synopsis

This is the launch event of the 'Taking Laboratory Discoveries to the Market' meeting series planned by SCI's Science and Enterprise Group. It aims to gather people with experience and resources together with emerging businesses and budding entrepreneurs to generate a creative environment to accelerate innovations along their journey to the marketplace. Delegates will get to meet, learn from and connect with venture capitalists, IP experts, experienced consultants and entrepreneurs who have successfully created their business from scientific ideas.

Attendees

This event is aimed at mid-career and budding scientific entrepreneurs from academia and industry looking to start a new business or develop business start-ups. It will also appeal to technical SMEs, spin-outs and start-ups striving to build sustainable organisations.

See <http://bit.ly/2LvvyPC> for details.

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Electrochem 2018

[Home](#) [About Programme](#)

[Abstracts](#)

[Registration](#) [Contact and Travel](#)

16-18 September 2018, Lancaster University
Electrochem 2018 - 25th Annual Conference

Join us at Lancaster University to celebrate 25 years of research excellence in electrochemistry.



Themes



**Electroanalysis
Biosensors and new
sensory platforms.**



Energy
Electrochemistry is at the heart of our energy networks as we transition further towards renewables and smart grids. Symposia will explore the diversity of electrochemical energy conversion and storage.



Blue Skies
Electrochemistry
New concepts, techniques, and challenging ideas!

Electrochem 1994-2018

This year will be the 25th Annual Electrochem Conference! Join us in Lancaster to celebrate 25 years of electrochemistry in the UK and beyond.

Chemistry

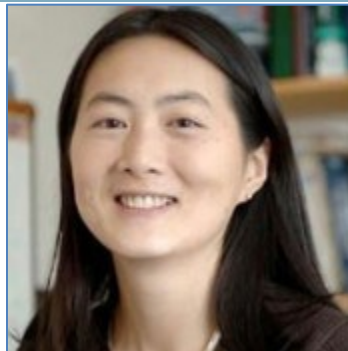
Lancaster
University



Plenary Speakers

Faraday Medal

Professor Yang Shao-Horn
W.M. Keck Professor of Energy
Massachusetts Institute of
Technology (MIT)
PERSONAL WEBSITE



Geoffrey Barker Medal

Professor Frank Marken
University of Bath, UK
PERSONAL WEBSITE



John Albery Memorial Lecture

Professor Rolf Schuster
Karlsruher Institute of Technology
PERSONAL WEBSITE



25th Conference Lecture

Professor David Williams
MacDiarmid Institute
Auckland University, NZ
PERSONAL WEBSITE



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69th Annual Meeting of the International Society of Electrochemistry



2 – 7 September, 2018
Bologna, Italy
Electrochemistry: from Knowledge to Innovation

Forthcoming Annual and ISE Topical Meetings:

2018

- 2 – 7 September, Bologna, **Italy**. [*69th Annual Meeting*](#). Electrochemistry from Knowledge to Innovation.

2019

- 7 – 10 April, Merida, **Mexico**. *24th ISE Topical Meeting*.
- 12 – 15 May, Toledo, **Spain**. *25th ISE Topical Meeting*.
- 4 – 9 August, Durban, **South Africa**. *70th Annual Meeting*.

2020

- 30 August – 4 September, Belgrade, **Serbia**. *71st Annual Meeting*.

*Meetings Sponsored by
The International Society of Electrochemistry:*

Summer Meeting on Bio-Electrochemistry 2018

22-24 August 2018, Antwerp, **Belgium**

Sponsored by: Division 2

Contact: [Karolien De Wael](#)

Advanced Batteries, Accumulators and Fuel Cells

26-28 August 2018, Brno, **Czech Republic**

Sponsored by: Division 3

Contact: [Jiří Vondrak](#)

Symposium of the French Group of Bioelectrochemistry

24-27 September 2018, Sète, **France**

Sponsored by: Division 2

Contact: [Christophe Innocent](#)

7th Baltic Electrochemistry Conference: Finding New Inspiration

4-7 November 2018, Tartu, **Estonia**

Sponsored by: EC

Contact: [Enn Lust](#)

**5th Ertl Symposium on Catalytic and Adsorption Reactions in
chemical ProcessEs**

25-28 November 2018, Gwangju, **Korea**

Contact: [Jaeyoung Lee](#)

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Biannual Meetings

- [AiMES](#), 30 September – 4 October, 2018, Cancun, **Mexico**
- **235th ECS Spring Meeting**, 26 – 31 May, 2019, Dallas, **USA**
- **236th ECS Fall Meeting**, 13 – 17 October, 2019, Atlanta, **USA**
- **237th ECS Meeting with the 18th International Meeting on Chemical Sensors (IMCS 2020)**, 10 – 15 May, Montreal, **Canada**
- **PRiME 2020**, 4 – 9 October, 2020, Honolulu, **USA**
- **239th ECS Spring Meeting**, 30 May – 3 June, 2021, Chicago, **USA**
- **PRiME 2024**, 6 – 11 October, 2024, Honolulu, **USA**

Sponsored Meetings

- **First International Conference on 4D Materials and Systems**, Yamagata University, 26 – 30 August, 2018, Yonezawa, **Japan**
- [International Conference on Solid State Devices and Materials \(SSDM\)](#), 9 – 13 September, 2018, Tokyo, **Japan**
- [III Colombian Congress of Electrochemistry](#), 2 – 5 October, 2018, Cali, **Colombia**
- [7th Baltic Electrochemistry Conference: Finding New Inspiration \(BEChem 2018\)](#), 4 – 7 November, 2018, Tartu, **Estonia**

2019 Satellite Meetings

- **Electrochemical Conference on Energy and the Environment: Bioelectrochemistry and Energy Storage (ECEE 2019)**, 21 – 26 July, Glasgow, **Scotland**



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**. 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.

Find out more:

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

Product Information



ALVATEK

Electrochemistry Product News

EmStat³ *blue*



- 8 hours of battery life
- USB or Bluetooth communication
- potential range of $\pm 4V$
- current ranges from 1 nA to 100 mA
- ideal for sensor applications

Optional:

- 8 or 16 channel multiplexer
- stirrer control
- Pt1000 temperature sensor
- differential electrometer amplifier

software for Windows  and Android 



PalmSens
Compact Electrochemical Interfaces

BaSyTec
Battery Test Systems

BASYTEC Battery cyclers and capacity testing systems



We are delighted to announce that we have signed an exclusive UK distribution agreement with BaSyTec GmbH.

BaSyTec is a leading supplier of high quality battery test systems with installations worldwide. BaSyTec systems have proven, superior capabilities – such as 3-electrode measurements as standard – excellent accuracy, powerful software, and all at lower cost.

(Shown here, the 32 Channel Test System 32 x 5A channels. Parallel operation capability)

The BaSyTec range extends to high channel counts (to 480 channels) and also to high power systems to 1000V and 1000A in both stand-alone and networked configurations.

Finally, BaSyTec offers the portable, low cost Battery Capacity Test instruments (BCT) range which extends to 32A and 600W. These provide an in-situ measurement of battery capacity and internal resistance using a defined discharge test. Please contact us for more information or to arrange a demonstration.

JT Nanjing Jartul Electronics Co., Ltd

Jartul Electronic Loads



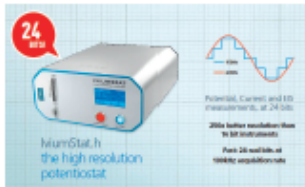
Alvatek is now the exclusive distributor for Nanjing Jartul Electronics. Jartul offers a broad range of electronic loads from low power laboratory loads up to a powerful 500V/240A/6kW unit. These are surprising low-cost and range from around £500 for 30A/150V to around £6,000 for the most powerful unit. Please contact us for more information or to arrange a demonstration.



IviumStat.h - 256x Resolution Improvement

Ivium's new models with 24-bit measurement and 20-bit output resolution delivers:

- Ability to measure small signals on top of large background signals
- Faster speed (less switching and internal adjustments)
- Reduced discontinuities / noise due to switched ranges
- Better linearity
- 20 bits output – 20uV resolution over a full 10V sweep.



Ivium "DataSecure" Module

Network and protect your vital data in the event of a PC crash. Used with any Ivium potentiostat, this is a USB-connected data store with WiFi and LAN connection to the outside world. IviumSoft then runs on a PC networked to the instrument by WiFi or LAN. Should the pc connection be lost, or the PC crash, data will continue to be recorded onto the integral SD and, when the connection resumes, the data will be recovered and the system resynchronised.

Tel: 01666 500991 Email: info@alvatek.co.uk

www.alvatek.co.uk

New Product Information



Distributed in the UK by

ALVATEK

T. 01666 500991

E. info@alvatek.co.uk

Electrochemistry? There's an app for that



Use your PalmSens and EmStat
with a tablet or smartphone



PalmSens
Compact Electrochemical Interfaces

New Product Information



PalmSens³



Potentiostat / Galvanostat / Impedance
Analyser

EmStat³ and 3+



Potentiostat

EmStat³ MUX8



EmStat3 with integrated
8 channel multiplexer (MUX8)

EmStat³ MUX16



EmStat3 with integrated
16 channel multiplexer (MUX16)

MultiEmStat³



4 channel multipotentiostat
with EmStat3 modules

MultiEmStat³ and 3+



4, 8 or 12 channel multipotentiostat
with EmStat3 or EmStat3+ modules

EmStat³ 4WE



Polypotentiostat for use with up to 4
working electrodes.



Distributed in the UK by

Tel: 01666 500991

Email: info@alvatek.co.uk

www.alvatek.co.uk

New Product Information



Tel: 01666 500991

Electrochemistry, Fuel Cell & Battery Research & Test Solutions

April 2013:

ALVATEK and BASi sign UK distribution contract

**A Selection from the BASi range of electrochemistry accessories.
These can be found at www.basinc.com/products/ec.html**

Electrochemical Cell Packages

- C-3 Cell Stand for Voltammetry
- Controlled Growth Mercury Electrode (CGME) for Polarography
- RDE-2 Rotating Disk Electrode
- Bulk Electrolysis Cell
- Thin-Layer Cross-Flow Cell
- Spectroelectrochemical Cell
- Glucose Sensor Interface

Electrodes

- Working Electrodes for Voltammetry
- Working Electrodes for Bulk Electrolysis
- Microelectrodes
- Reference Electrodes
- Auxiliary Electrodes
- Wired Enzyme Electrode
- Polishing Kit and Supplies

Cells

- Cell Vials
- Cell Tops
- Gas Sparging & Magnetic Stirring
- VC-2 Voltammetry Cell
- Low Volume Cell



For more information on any of the above products please contact Steve Fryatt at Alvatek



Tel: 01666 500991

Email: info@alvatek.co.uk

www.alvatek.co.uk

New Product Information

WHISTONBROOK TECHNOLOGIES LIMITED

'experts in electrochemical equipment'

Tel: 01582 434252

www.whistonbrook.com



Whistonbrook Technologies design, manufacture and supply a full range of standard and custom potentiostats and other electrochemical instrumentation to meet all your needs.



Analogue Potentiostats

- Low noise analogue potentiostats
- Single channel and dual channel units
- Current ranges from 1nA to 10mA

Prices from £1990

Point of Care (POC) and Medical Diagnostic Instrumentation

- Instruments and software developed for medical diagnostic sensors



Electrochemical Instruments for Student Experiments

- Potentiostats
- Amplifiers for Neuroscience
- Galvanostats
- High impedance buffer amplifiers
- Loads for fuel cells
- Analogue and Digital

Prices from £325*

*cost of 20off

Digital Instrumentation with PC software packages

- EzeScan 4 – entry level potentiostat
- EzePG – potentiostat/galvanostat
- Quad potentiostat – four channel potentiostat
- EzeTouch – portable touch screen potentiostat

Prices from £2470



Website	www.whistonbrook.com
Telephone	01582 434252
Email	info@whistonbrook.com

Whistonbrook Technologies Limited, Unit C24, 110 Butterfield, Great Marlings, Luton, Beds, LU2 8DL

New Product Information



EC-Lab Ltd
www.ec-lab.co.uk

Tel: 01753 822522
Email sales@ec-lab.co.uk

MTZ-35

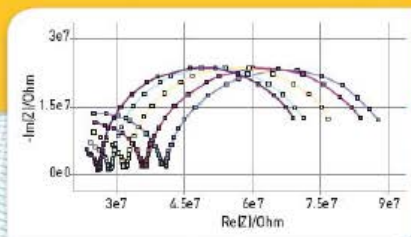
The new benchmark of impedance analyzers



Exploring new frontiers of impedance testing
with a wide frequency range impedance analyzer
and a full range of ancillary equipment.

MEASUREMENT RANGES

- Frequency range 10 μ Hz to 35 MHz
- Inductance 10 nH to 10 kH
- Capacitance 1 pF to 1000 μ F
- Resistance 1 m Ω to 100 M Ω



New Product Information

HIGH END MULTICHANNEL POTENTIOSTAT/GALVANOSTAT

VSP-300

The ultimate versatile multipotentiostat



APPLICATIONS

- Batteries/supercapacitors
- Fuel cells/photovoltaic cells
- Fundamental electrochemistry
- Corrosion
- Sensors
- Materials



ec-lab

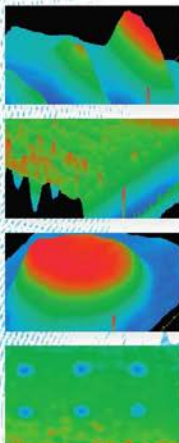
EC-Lab Ltd
www.ec-lab.co.uk

Tel: 01753 822522
Email sales@ec-lab.co.uk

New Product Information



Application areas:
bio-sensors,
biochemistry,
corrosion,
coatings,
catalysts...



M470

Introducing the 4th generation of scanning probe electrochemical workstations

- **9 available techniques:**
SECM, LEIS, SVP, SDS, SKP, OSP, ic-SECM, ac-SECM, ac-SDS
- High performance scanning stage:
0.09 nm ultimate z-resolution,
20 nm resolution on all axes,
100 mm scan range on all axes,
10 mm/s max scan speed
- New innovative techniques:
ic-SECM offering true simultaneous imaging of topography and reactivity,
ac-SECM offering measurement of surface conductivity without a mediator.
- Fully integrated potentiostat/galvanostat/FRA:
±10 V potential range, current ranges from **1 A to 1 nA**,
1 MHz to 1μHz EIS capability



Product designed and manufactured by Uniscan Instruments Ltd,
a Bio-Logic SAS company

www.bio-logic.info



ec-lab

EC-Lab Ltd. Tel: 01753 822522
www.ec-lab.co.uk E-mail: sales@ec-lab.co.uk

New Product Information

VMP-300



POTENTIOSTAT/GALVANOSTAT



The ultimate multichannel electrochemical workstation



Modularity

- Multi-users
- Up to 16 independent channels
- EIS capability (10 μ Hz to 7 MHz)
- Ultra Low Current (100 nA to 1 pA)
- Current boosters: 1A/48V, 2A/30V, 4A/14V, 10A/5V
- Current boosters in parallel
- Linear Scan Generator (1 MV/s)

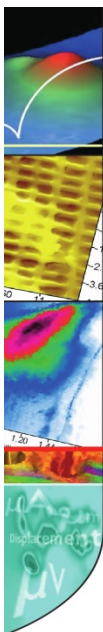


Unique features

- Up to 48 V control
- Up to 150 A (amplifiers in parallel)
- 1 pA min. current range
- 1 μ s min. acquisition time

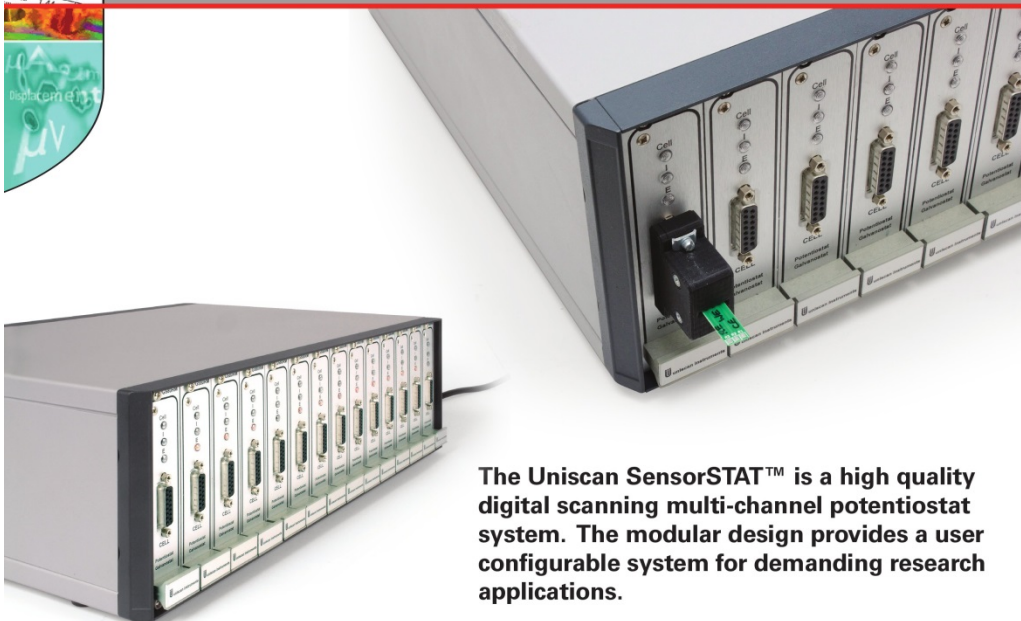


New Product Information



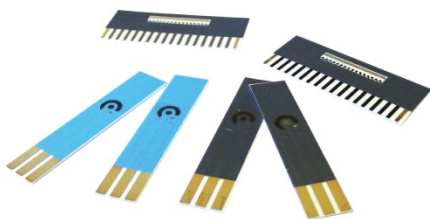
SensorSTAT

uniscan instruments



The Uniscan SensorSTAT™ is a high quality digital scanning multi-channel potentiostat system. The modular design provides a user configurable system for demanding research applications.

- Configurable for 8 to 14 channels
- Single USB connection controls all channels
- Ultra low noise current performance
- UiEChem™ software supplied with system
- Analogue triggering
- 5-WE multiplexing on each channel
- Interfaces to commercial electrochemical sensors
- User programmable techniques via macro programming
- ActiveX software for LabView™ applications



Represented by:



ec-lab

Web: www.ec-lab.co.uk
e-mail: sales@ec-lab.co.uk

Tel: +44(0)1753 822522
Fax: +44(0)1753 822002

Metrohm Autolab



Metrohm Autolab has been a member of the Metrohm Group since 1999. Metrohm Autolab customers can look expect excellent sales and service support from a dedicated team of Electrochemists based at Metrohm's prestigious laboratories at Daresbury near Runcorn.

Metrohm Autolab produces four different potentiostat/galvanostat lines for a wide range of electrochemical applications, as well as modular extensions, software and accessories.



Metrohm
Autolab U.K.

www.metrohm-autolab.co.uk

Tel: 01928 579 600

Email: autolab@metrohm.co.uk

New Product Information

DROPSSENS

Metrohm
U.K. Ltd.

μ Stat 8000P Multi Potentiostat

Ref. STAT8000P



DropSens is proud to announce the launch of the NEW portable Multi Potentiostat μ Stat 8000P.

Our brand new instrument, of only 22x20x7 cm, includes 8 channels that can act at the same time as 8 independent potentiostats; it also includes one multichannel that can act as a potentiostat where up to 8 working electrodes share an auxiliary and a reference electrode.

With μ Stat 8000P users can perform up to 8 different electrochemical techniques at the same time; or carry out the study of one technique's parameter in just one step by applying the same electrochemical technique in several channels but selecting different values for the parameter under study. These are just examples of the enormous capabilities that our new instrument offers.

μ Stat 8000P can be applied for Voltammetric or Amperometric measurements, including 11 electroanalytical techniques. In addition, μ Stat 8000P owners can later upgrade their instrument to a μ Stat 8000 by just purchasing an extension. This self-upgrade does not require any hardware modification, but it is implemented by means of a Galvanostat software update kit.

The NEW portable Multi Potentiostat is Li-ion Battery powered (DC charger adaptor also compatible), and can be easily connected to a PC via USB or Bluetooth®.

μ Stat 8000P is controlled by the powerful software "DropView 8400" which allows plotting of the measurements and performing the analysis of results. DropView software provides powerful functions such as experimental control, graphs or file handling, among others.

Available techniques:

POTENTIOSTAT

Voltammetry

LSV	Linear Sweep Voltammetry
CV	Cyclic Voltammetry
SWV	Square Wave Voltammetry
DPV	Differential Pulse Voltammetry
NPV	Normal Pulse Voltammetry
NDP	Differential Normal Pulse Voltammetry
ACV	AC Voltammetry

Amperometry

AD	Amperometric Detection
FA	Fast Amperometry ($t_{int} < 0.1$ s)
PAD	Pulsed Amperometric Detection
ZRA	Zero Resistance Amperometry

Contact us:

email: dropsens@metrohm.co.uk | website: dropsens.co.uk | Tel: 01928 579 600

New Product Information



µStat 8000P Multi Potentiostat

Ref. STAT8000P

Instrument Specifications	
● Power	Li-Ion Battery (3500 mAh) USB DC charger adaptor compatible (5 V, 15 W)
● PC interface	Bluetooth® USB
● Operating modes	8x 1 Channel Potentiostat 1x 8 Channel Potentiostat
● DC-Potential range	±4.096 V
● Current ranges (potentiostat)	±1 nA to ±100 mA (9 ranges)
● Maximum measurable current	±80 mA
● Rise time	20 µs
● Applied Potential Resolution:	1 mV
● Measured Current Resolution	0.025 % of current range (1 pA on lowest current range)
● Potential Accuracy	±0.2 %
● Current Accuracy	≤0.5 % (current range dependent)
● External inputs/outputs	- 5 Digital Input/Output pins (PIO 1, PIO 2, PIO 3, PIO 4, PIO 5) - 3 Analog Inputs multiplexing PIO 1, PIO 2, PIO 3 - 2 Analog Outputs (configurable I-out or E-out)
● Indicators	LCD display in front panel
● Dimensions	22.2 cm x 20.5 cm x 7.5 cm (L x W x H)
● Weight	1.6 kg

Control Specifications			
General Pretreatment	Conditioning stage duration:	0 – 1300 s	
	Deposition stage duration:	0 – 1300 s	
	Equilibration stage duration:	0 – 1300 s	
General Parameters	Begin, End, Base, Vertex potentials:	-4.096 V to +4.096 V	
	Step potential:	1 mV to 500 mV	
	Pulse potential:	1 mV to 250 mV	
	Scan rate:	1 ms up to 1.3 s per step	
Specific Parameters	SWV	Frequency:	1 Hz to 400 Hz
		Amplitude:	1 mV to 250 mV
	DPV, NPV, NDP	Modulation time:	1 ms to 1300 ms
		Pulse time:	1 ms to 1300 ms
	ACV	Frequency:	2 Hz to 250 Hz
		Amplitude:	5 mV to 250 mV (RMS)
	Chrono. Methods (AD, ZRA)	Interval time:	0.1 s to 1300 s
		Run time:	Hours (65000 points)
	Fast Chrono. Methods (FA)	Interval time:	1 ms to 1300 ms
		Run time:	Hours (65000 points)
PAD	Pulse time:	1 ms to 1300 ms	
	Interval time:	10 ms to 1300 ms	
	Run time:	Hours (65000 points)	

Specifications are subject to change without previous notice

Related products



CABSTAT1



CABSTATMULTI



CAST



CAST8X



8X110

Contact us:

email: dropsens@metrohm.co.uk | website: dropsens.co.uk | Tel: 01928 579 600

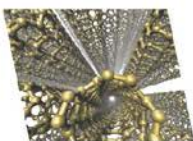
PARSTAT™ MC

multichannel potentiostat/galvanostat

Protect Your Experiment From
the Unexpected



Designed to protect your experiment from the unexpected, the PARSTAT™ MC is the most modular and robust multi-channel electrochemical testing platform on the market. It builds on our industry-leading 50+ years of experience in potentiostat development and software user-interface design.



- The *ultimate* in modular design
- Widest dynamic current range of 2 Amps to 4 nA (120 fA resolution) as standard - No need for expensive hardware options
- Hot-swappable channels allow potentiostats to be added or removed without interruption of experiments on other channels
- Fast data acquisition at 500 kS/sec allows for a wide range of high speed applications
- Features the most popular electrochemical acquisition and analysis software solution, VersaStudio
- Floating ground allows testing of multiple samples in the same cell



www.princetonappliedresearch.com
pari.info@ametech.com
P: 865.425.1289 F: 865.481.2410



New Product Information



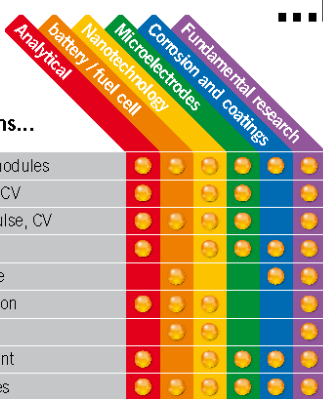
Not so much an instrument...



...more an orchestra.

The definitive modular system for electrochemical research, ModuLab delivers sublime performance for a vast repertoire of applications...

High performance 'Plug & Play' modules	●	●	●	●	●
64 MS/s smooth scan - LSV, LSP, CV	●	●	●	●	●
Up to 1 MS/s data acquisition - pulse, CV	●	●	●	●	●
100 nA current resolution	●	●	●	●	●
Up to ±25 A current - scan / pulse	●	●	●	●	●
±100 V compliance and polarization	●	●	●	●	●
10 μΩ impedance measurement	●	●	●	●	●
>100 TΩ impedance measurement	●	●	●	●	●
Multiple high-speed EIS techniques	●	●	●	●	●



US: Tel: 1-865-425-1360
 Fax: 1-865-481-2410
 UK: Tel: +44 (0)1252 556800
 Fax: +44 (0)1252 556899
 Email: solartron.info@ametek.com
 www.solartronanalytical.com



ModuLab the new gold standard for electrochemical instrumentation
 To compose an electrochemical test system that's totally in tune with your research requirements, contact Solartron today.

New Product Information

New Solartron EnergyLab XM for Energy Research

The Solartron EnergyLab XM is an electrochemical impedance workstation designed specifically for energy storage research:

- Batteries
- Supercapacitors
- Fuel cells

New Application-Focussed Product Line

The EnergyLab XM is the first of a new application-specific range of potentiostats from Solartron Analytical (Ametek), with small footprints and affordable pricing. There will be four systems in the range, which will be launched over the coming months.

Follow Blue Scientific on Linked In to receive details of the new instruments as they are announced.

EnergyLab XM

The first product in the series to launch is EnergyLab XM, for impedance testing of a variety of energy storage devices, including the testing of batteries, supercapacitors and fuel cells. The system includes all components required for this area of research, eliminating the need for costly hardware add-ons. The system includes:

- A reference grade potentiostat
- Frequency response analyser (FRA)
- 2A booster

The unit may be operated in boosted or unboosted mode (with automatic switching), providing optimum test conditions and accuracy for a wide range of devices.

EnergyLab XM's extreme sensitivity is ideal for complete characterisation of prototype low current or low impedance new generation cells. If high current is needed, external boosters can be connected and automatically controlled, allowing fully integrated high current tests at up to 100A.

For more information and quotes, please contact Blue Scientific, exclusive distributor for Solartron Analytical in the UK and Ireland, on 01223 422 269 or info@blue-scientific.com

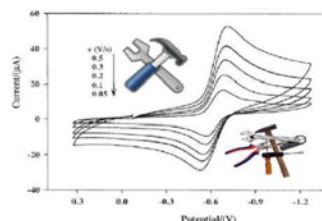
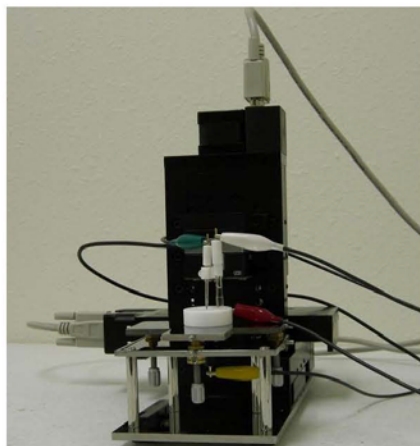


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www.blue-scientific.com

Tools for Electrochemists!!!

CH Instruments at IJ Cambria Scientific



CHI920D SECM

The latest closed loop scanning electrochemical microscope

Products and accessories

- Wide range of electrochemical instrumentation; as well as potentiostats (and bipotentiostat) we have multiplexers, multichannel potentiostats, EQCM, and electrochemical detectors (ECDs) for LC and sensor use.
- Modules for very low current (pA range), compliance boost and rotating ring disk electrodes (RRDE)
- All instruments are very well developed and available at a very cost effective price; software included!
- In addition, we distribute the excellent ALS Ltd range of electrochemical accessories. We always keep a large stock of reference electrodes, working electrodes (including microelectrodes), and counter electrodes.
- We will almost always have the accessory parts that you require in stock for rapid delivery

IJ CAMBRIA
SCIENTIFIC

Contact:

IJ Cambria Scientific Ltd ♦ 39 Clos Bryn Haul ♦ Llwynhendy ♦
Llanelli ♦ Carmarthen ♦ SA14 9DZ . UK
Phone: 01554 835050 ♦ Fax: 01554 835060 ♦ E-mail: info@ijcambria.com
(Mobile: 07957 287343)
IJ Cambria Scientific: www.ijcambria.com
(Reg. No. 4737857)

New Product Information



Thin-film microelectrodes

» POTENTIAL IN
ELECTROCHEMISTRY

Thin-film technologies enable the manufacture of standard and customized (micro)electrodes with a low-cost, high precision and resolution. Micrux can adapt the electrochemical system to the requirements of the customers applications.

Thin-film accessories: flow cell and universal connector have been developed to use in combination with these electrodes.



Flow cell

» PROFICIENCY IN
MICROFLUIDICS

Micrux has experience in developing capillary Electrophoresis microchips with electrochemical detection and the small and totally portable instrumentation to use them: Holder, iHVStat, miniPump, etc.



www.micruxfluidic.com

sales@micruxfluidic.com

Innovative Solutions for Multiple Applications



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Biosensors Impedance study

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Flow analysis

Electroanalysis

Education

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Unión Europea

Fondo Europeo de Desarrollo Regional





Where science meets business

Electrochemical Technology

The Electrochemical Technology Technical Interest Group is involved in all aspects of the application of electrochemical science and engineering. The Group's aim is to promote research and development of electrochemistry which leads to the production of appropriate technologies and industrial and consumer products. The Group provides an interface between academia and industry and is a forum for promoting research and collaboration between a range of scientific and engineering disciplines.



Industrial sectors

Electrochemical activities cut across all industrial sectors, including chemical, pharmaceutical, electrical, electronic and micro-electronic, information technology, mining and metallurgical, biotechnology, transportation, medical, water and wastewater. As such, the Group's interests include applications of electrochemistry in:

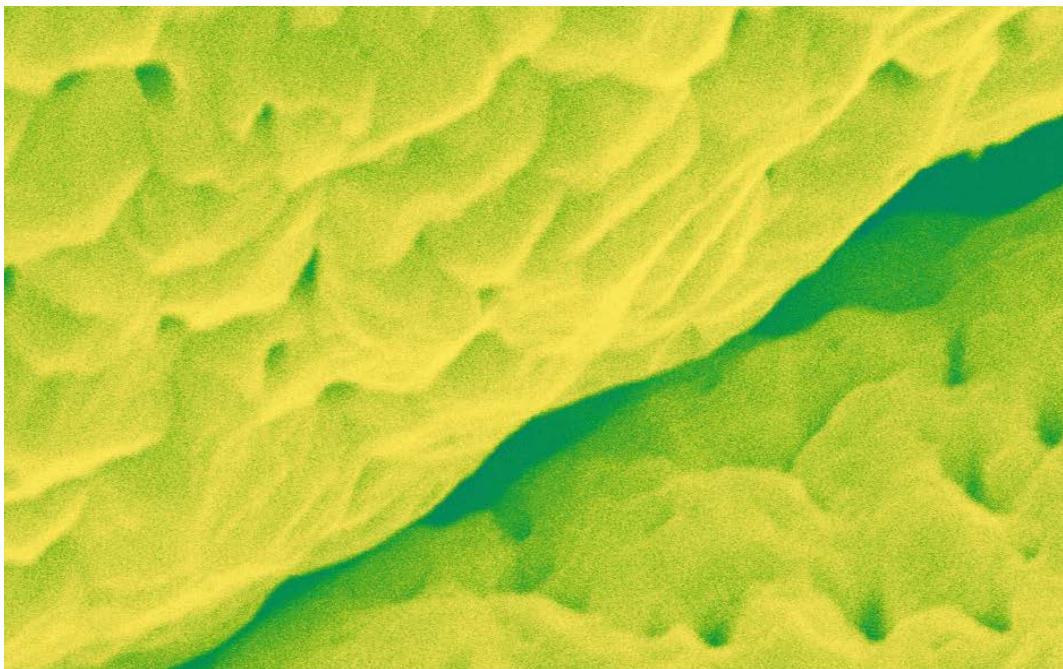
- ▶ sensors and monitors
- ▶ energy conversion and storage
- ▶ synthesis of chemicals, pharmaceuticals, biochemicals, polymers and electronic materials
- ▶ materials protection, processing and fabrication
- ▶ environmental protection and control

Join at:

<http://www.soci.org/membership-and-networks/technical-groups/electrochemical-technology-group>

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RSC Electrochemistry Group



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.

RSC | Advancing the
Chemical Sciences

www.rsc.org/electrochemistry

Registered Charity Number 207290

Join at:

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

The Electroanalytical Sensing Systems Group

The Electroanalytical Sensing Systems Group is one of the RSC's many Interest Groups. The Interest Groups are member driven groups which exist to benefit RSC members, and the wider chemical science community, in line with the RSC's strategy and charter.

Join at:

<http://www.rsc.org/Membership/Networking/InterestGroups/Electroanalytical/>

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