RACI Electrochemistry Division

Newsletter

No.6 **April 1998**

Editorial

Welcome to the 6th issue of the EDRACI newsletter. I apologise for the time between editions (the last was in late November). In this issue, there are several requests again for you to suggest ideas for or offer to organise workshops/conferences etc. in the next few years.

The Division has a history of hosting conferences and symposia which are both professionally and socially stimulating; you are invited to help maintain that tradition by contacting your state committee representative (see the list below) or the Division Secretary with your ideas.

Proceedings of 10AEC: "Electrochemistry, Crossing the Boundaries"

"Electrochemistry, Crossing the Boundaries", the proceedings of 10AEC, are available at $20 each. The book contains 20 refereed papers which were presented at the conference; it is 228 pages long and is in soft bound A4 format. 100 copies have been printed; to get your copy, forward an order or cheque payable to "10AEC, Griffith University" to Greg Hope at:

A/Prof Greg Hope
School of Science
Griffith University, Nathan Campus
Queensland 4111 Australia Email: g.hope@sct.gu.edu.au

Many thanks to Greg and David Druskovich for producing this collection of papers from 10AEC.

Workshop on Electrochemically Based Microsensing Arrays

The Intelligent Polymer Research Institute (IPRI) hosted an ARC-funded Special Research Initiatives Workshop on the above topic in February 1998 at Wollongong. The workshop was attended by Australian scientists and engineers from diverse backgrounds and addressed all of the issues confronting implementation of these devices in practical applications. These include:

* device fabrication * electronic controllers
* microsurface modification * data treatment and pattern recognition

Potential areas of application were also reviewed. As well as Australian participation, the workshop received valuable contributions from Dr Paul McWhorter (Sandia National Labs, USA), Dr Mike Andrews (IRL, New Zealand), Prof Smyth and Dr Diamond (Dublin City Uni, Ireland), Prof Danilo DeRossi (Uni of Pisa, Italy) and Dr. Lisa Hall (Cambridge Uni , UK).

A book of abstracts or a hard copy of the workshop summary can be obtained from Prof Gordon Wallace at the IPRI (tel. 02-42213127, fax 02-42213114). The summary of the workshop can also be viewed on the IPRI web site http://www.uow.edu.au./science/research/ipri

A follow up industrial forum on this topic is planned for early June. Contact the IPRI for details.

11AEC

The next major Division conference is the 11th Australasian Electrochemistry Conference (11AEC). To date, no-one has volunteered to organise this conference. For your information, the locations of recent AECs have been:

6AEC	1984	Geelong
7AEC	1987	Sydney
8AEC	1992	Auckland
9AEC	1994	Wollongong
10AEC	1997	Gold Coast

If you and/or a group of colleagues is/are interested in organising 11AEC, please contact the Division Secretary in the near future. If there is no offer, the Division Committee will consider running 11AEC concurrently with the RACI 11th National Convention in Canberra in Feb. 2000.

Division Workshops

The Division is prepared to sponsor a workshop on an area of electrochemistry each year. Please send suggestions to the Division Secretary.

Localized Electrochemical Impedance Spectroscopy (LEIS) Facility

The University of Wollongong is establishing a Localized Electrochemical Impedance Spectroscopy (LEIS) facility and would like to receive comments regarding suitable applications for this emerging technique and determine the level of interest from industry for future consulting activities in this area.

EIS is a very sensitive, relatively non-destructive technique that can be repeated on the same sample to build up its degradation history. It has proved useful for studying the mechanisms of degradation of painted metals and for comparing the performance of different painted metals. However, it produces impedance information averaged over the whole exposed sample area. When a painted metal sample fails, it usually does so at small localized areas due to defects in the paint, non-uniformity of pre-treatments or inhibitors, delamination sites, etc., but EIS is unable to provide this localized impedance information.

LEIS, on the other hand, allows local measurements of impedance to be made in an electrolyte solution by scanning a twin probe over the sample surface to produce a single-frequency impedance map. Low impedance areas, corresponding to localized defects or weak areas of the film, can then be readily identified and the twin probe can be moved to such areas to obtain full frequency impedance plots, to obtain information about the defect site. Possible applications for LEIS include:

* assessing coating integrity – delamination, blistering, coating thickness uniformity
* sub-coating artefacts – bubbles, pores, holidays
* inhibitor studies – Cr-containing versus Cr-free
* edge undercutting of painted metallic coated steel sheet
* weathering of paint films
* flaw detection in lacquered tinplate cans
* surface contamination
* inorganic/organic coatings research, including conducting polymers
* localized corrosion – pitting, crevice corrosion
* galvanic corrosion on both sides of dissimilar metal junction

Please send any comments to:

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E-mail: geoff_walter@uow.edu.au

1998 ARC Large Research Grants

There were a total of 655 new large grants awarded in the following areas:

Molecular and Cell Biology 71	Plant and Animal Biology 78
Chemistry 53	Earth Sciences 40
Engineering - Electric and Computer 66	Physics and Mathematics 62
Engineering - Civil, Mechanical and Chemical 81	Humanities 83
Social Sciences - education and psychology 57	Social Sciences 64

The 53 Chemistry awards were distributed as:

Physical Chemistry 6	Theoretical Chemistry 5
Inorganic Chemistry 14	Analytical Chemistry 2
Environmental Chemistry 0	Industrial Chemistry 0
Organic Chemistry 7	Biological Chemistry 6
Chemical Sciences (Other) 2	Medicinal Chemistry 2
Natural Product Chemistry 0	Marine Chemistry 0
Supramolecular Chemistry 3	Spectroscopy 1
Polymer Chemistry 3	Electrochemistry 0
Catalysis 2	

Despite the apparent lack of new awards for "Electrochemistry", there were at least four projects with an electrochemical flavour:

- High Pressure Spectroelectrochemistry of Transition Metal Catalysts.
  Dr S. Best, The University of Melbourne.
- Structure and Mechanism of Dimethylsulfoxide Reductase from Rhodobacter Capsulatus.
  Dr G.R. Hanson and Dr A.G. McEwan, The University of Queensland.
- Novel Solid Electrolytes Based on Poly(Vinyl Alcohol) and Related Polymers.
  Dr M. Forsyth and Prof D. Macfarlane, Monash University.
- Synthesis and Characterisation of Novel Polythiophenes.
  Prof G.G. Wallace, University of Wollongong, Dr A.K. Burrell and Dr D.L. Officer.

Congratulations to the successful applicants and better luck next year to everyone else. More ARC information can be obtained from: http://www.deetya.gov.au/divisions/hed/highered/research/
(from Paul Duckworth, ADInstruments)

Ph.D. Studentships Available [APA(I) Awards]

The Intelligent Polymer Research Institute currently has 2 APA(I) awards available:

- POLARTECHNICS

Electrochemical studies into the performance and enhancement of a new cancer probe.

- MEMTEC (FILTRITE)

Development of new polymer materials for use in advanced membrane separation technologies.

The projects will be based at Wollongong but will involve close collaboration with the Industry partners.

STIPEND $21,000 per annum.

For more information contact

Prof G. G. Wallace

Tel. 02-42213127 Fax. 02-42 213114.

Electrochemistry Discussion List

Remember that you can subscribe to the EDRACI electrochemistry discussion list by sending the message:

"SUBSCRIBE ELECTROCHEM-L"

with an empty subject line to:

"MAILSERV@LISTS.UNISA.EDU.AU"

Remember to turn your signature file off. You'll receive a welcome message telling you how to send messages to the list and how to unsubscribe.

Forthcoming Conferences

Electrochem '98
September 2-4, 1998
The University of Liverpool, Liverpool, UK
Contact: SCI Conference Secretariat
email: conferences@chemind.demon.co.uk

49th Annual Meeting of ISE (International Society of Electrochemistry)
September 13 - 18, 1998
Kitakyushu, Japan
Contact: Prof. Rika Hagiwara, Japan
Tel: +81-75-753-5822 Fax: +81-75-753-5906
E-mail: ISE@g-chem.nucleng.kyoto-u.ac.jp
http://g-chem.nucleng.kyoto-u.ac.jp/ or http://www.access.ch/ise/annmeet/annmeet98.html

Satellite meetings related to 49ISE:
New Trends in Electroanalytical Chemistry
September 10-12, 1998 Seoul, Korea
Contact: Professor Hasuck Kim, Korea
Tel: +82 2 880 6638 Fax: +82 2 889 1568
e-mail: hasuckim@plaza.snu.ac.kr
http://plaza.snu.ac.kr/~hasuckim/pre-ISE98/

2nd International Symposium on Electrochemical Microsystem Technologies
September 9-11, 1998 Tokyo, Japan
Contact: Dr. T. Osaka, Japan
Tel: +81 3 5286 3202 Fax: +81 3 3205 2074
e-mail: osakatet@mn.waseda.ac.jp
http://www.appchem.waseda.ac.jp/conf/ise98-2/ISE98-2.htm

International Symposium on Solid State Electrochemistry
September 11, 1998 Nagoya, Japan
Contact: Prof. H. Iwahara, Japan
Tel: +81 52 789 2750 Fax: +81 52 789 2121
e-mail: iwahara@cirse.nagoya-u.ac.jp

Electrochemistry of Ordered Surfaces
September 11-12, 1998 Sapporo, Japan
Topics: Single crystal electrodes, self-assembled monolayers, electrochem. atomic layers epitaxy.
Contact: Prof. Dr. K. Uosaki, Japan
Tel: +81 11 706 3812 Fax: +81 11 706 3440,
e-mail: uosaki@pcl.sci.hokudai.ac.jp
http://www2.cc.hokudai.ac.jp/~phys-chem/EOI/pre-symp.html

Biological Electron Transfer Systems and Their Use in Molecular Sensing
September 19-20, 1998 Kumamoto, Japan
Contact: Prof. Dr. I. Taniguchi, Japan
Tel: +81 96 342 3655 Fax: +81 96 342 3655
e-mail: taniguch@gpo.kumamoto-u.ac.jp

PEFCs for Portable and Transportation and Stationary Applications - 2nd International Fuel Cell

Workshop

September 19 - 21, 1998 Yamanashi, Japan

13 invited oral-presentations by leaders in this technical field and contributed posters.

Contact: Prof. Dr. M. Watanabe, Japan
Tel: +81 552 208 620
Fax: +81 552 540 371
e-mail: mwatanab@ab11.yamanashi.ac.jp
http://www.ab11.yamanashi.ac.jp/ifcw2/index.html

Symposium on Electrochemical Energy Conversion and Storage

September 20-22, 1998 Osaka, Japan

Contact: Dr. Z. Ogumi, Japan
Tel: +81 75 753 5522
Fax: +81 75 753 5889
e-mail: ogumi@scl.kyoto-u.ac.jp

(from Paul Duckworth, ADInstruments)

In the Next Issue (June, 1998)...

- EDRACI Archives
- Collation of Electrochemistry Education Information

Deadline for material: May 30, 1998.

EDRACI Committee

The contact details of the current Electrochemistry Division Committee are:

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Dr. Richard John	(07) 5594 8260	(07) 5594 8679	R.John@eas.gu.edu.au
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