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Interact 2002 Conference Special Issue

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Single molecule chromatography, fluorescence spectroscopy, and time-lapse photography of DNA moving across a silica surface were all covered in Professor Ed Yeung's exciting opening plenary lecture (Fig. 1) at the 2002 Interact conference, and this strong interdisciplinary flavour was carried through the whole conference. Interact 2002 was held at the University of Technology, Sydney, in July 2002, and incorporated the 16th Royal Australian Chemical Institute (RACI) Analytical Chemistry Conference, the 7th RACI Environmental Chemistry Conference, the 7th Annual Meeting of The Australasian Society for Ecotoxicology, and the 1st Australasian International Chemometrics Society Conference. Scientific endeavours are becoming increasingly interdisciplinary, and the borders between traditional subject areas are fast disappearing. By bringing together several regular Australian scientific conferences, delegates were offered the usual in-depth treatment of their disciplines along with access to allied areas and beyond. Interact was a collaboration between the Royal Australian Chemical Institute, the Australasian Society for Ecotoxicology, the International Chemometrics Society, and the Norwegian Chemometrics Society.

A significant challenge for the organising committee was to integrate the various disciplines in keeping with the overall aims of the conference. With this in mind, the plenary and invited speakers were specially selected for their multidisciplinary relevance (e.g. Chris Wood covering the aquatic toxicology of trace metals or Olav Kvalheim describing the industrial and research applications of chemometrics). In the main part of the conference, we retained the discipline-based

Fig. 1. Professor Ed Yeung (Iowa State University) delivering his opening plenary lecture on single molecule detection.

themes of analytical chemistry, ecotoxicology, environmental chemistry, pharmaceutical chemistry, and chemometrics and metrology in chemistry. The result was a four-day conference with a packed and exciting program comprising eight parallel streams, with 40 plenary and invited talks and 180 contributed talks. The conference also included poster sessions, special interest symposia, workshops, short courses, and a full equipment exhibition (Fig. 2). The multidisciplinary approach was vindicated by the high number of conference attendance (618 delegates) and the interest shown in the applied streams, particularly in the areas of chemometrics, pharmaceutical

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Paul Haddad is Professor of Chemistry at the University of Tasmania and Director of the Australian Centre for Research on Separation Science. His research interests lie in the general area of separation science, with particular emphasis on the separation and analysis of inorganic species by liquid chromatography and electroseparation techniques. He holds PhD and DSc degrees in analytical chemistry from the University of New South Wales, is editor of the international journal Analytica Chimica Acta, and is a member of the editorial board of a further nine journals, including the Australian Journal of Chemistry. Paul Haddad was the recipient of the 2002 A. J. P. Martin Gold Medal, awarded by the UK Chromatographic Society for outstanding contributions to separation science. He an active member of the RACI and has held the positions of Chair of the Analytical Division and President of the Tasmanian Branch.

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Fig. 2. Interact 2002 scientific exhibition.

Fig. 3. 'Students meet the Plenaries' session.

chemistry, and metrology in chemistry (standing room only in some sessions). It was noticeable that the interest in these areas was sometimes at the cost of the sessions on mainstream analytical chemistry.

The organizers attempted a few novel organizational experiments within the theme of 'interactions'. 'Students meet the Plenaries' sessions were held at each afternoon tea break and these sessions gave students the opportunity to spend some quality time with the some of the world's leading scientists (Fig. 3) and find out more about their research, their career paths, and even canvass potential employment opportunities. Given the size of the conference, colour coding was used as much as possible to distinguish the eight parallel streams and even the organizing committee (bright yellow jackets) and conference staff (blue jackets). Conference delegates noted for their networking skills were appointed as 'Interactors' (distinguished by their red jackets) and acted as points of contact for delegates seeking information or wanting to make contact with scientists from other areas.

This special issue contains 22 invited contributions from the environmental chemistry and analytical chemistry streams of the Interact 2002 conference. They represent a cross-section of the plenary lectures, invited lectures, and contributed lectures, and collectively they illustrate the richness and diversity of the conference and its theme of interactions. We are delighted to present contributions from six plenary speakers (Denton, Heineman, Parkes, Pawliszyn, McLaughlin, and Yeung) and six keynote speakers (Batley, Jones, Maher, Orr, Separovic, and Trout). In addition, Phil Marriott, recipient of the RACI 2001 Analytical Chemistry medal award (see Fig. 4), contributes a paper covering

Fig. 4. Professor Philip Marriott (right) receiving the 2001 RACI analytical medal from Professor Brynn Hibbert, Chair of the Analytical Division.

aspects of his award-winning research on multidimensional gas chromatography.

A number of contributions report the development of new analytical methodologies. Ed Yeung describes novel methods for the detection of single DNA molecules in solution. Bill Heineman deals with the development of spectroelectrochemical sensors and their application to real world problems. Other papers describe leading-edge developments in the areas of gas and liquid chromatography (Paul Haddad, Phil Marriott, Bill Maher), cavity ring-down spectroscopy (Brian Orr), solid-state NMR (Frances Separovic), and the application of array detectors in spectroscopy (Bonner Denton). Reflecting the current trends in analytical science for the development of robust biomedical sensors and measurements at small spatial scales, the development of new sensors for cholesterol and nitrous oxide are reported by Danny Wong.

Research on the frontier of instrumental development is tempered by contributions on more applied areas such as the latest developments in sports drug testing (Graham Trout), sample preparation using solid-phase microextraction (Janusz Pawliszyn), and the extraction of polycyclic aromatic hydrocarbons from sediments (Michael Ahrens). Helen Parke's essay outlines the significant quality assurance challenges facing the rapidly growing area of bioanalysis.

In the environmental chemistry area, Graeme Batley reviews the regulation of toxicants in the environment with particular focus on the new Australian water-quality guidelines which represent a significant step forward in the regulation of toxicants in the environment. From the other side of the regulatory fence, David Jones presents his views on best practice environmental management in the global mining industry. The importance of chemical speciation in environmental analysis is widely acknowledged and the latest issues surrounding the speciation and bioavailability of metals in soils are covered by Annette Nolan and Mike McLaughlin. Bill Maher and co-workers review the application of ICP-MS to the determination of trace metals and trace-metal species in environmental samples, while Justin Gooding and co-workers cover the development of electrochemical sensors for monitoring trace metal speciation. Additional papers examine applications of lead isotope ratio measurements for monitoring of mining impacts (David Parry and Niels Munksgaard) and the fundamental chemistry of Antarctic

saline lakes (Scott Stark), while Barry Hart and co-workers report the development and testing of active barrier remediation technologies to impede the diffusion of nutrients from contaminated sediments.

Our sincere thanks go to the conference sponsors, conference participants, the members of the Interact 2002 organizing committee: Brynn Hibbert, Michael Warne (Co-chairs), Maree Stuart (Secretary), Laurie Besley (Treasurer), Roy Day, David Edmonds, Lindsey Mackay, Gemma Thompson, Steven Westwood, and Danny Wong, along with Jane Yeaman and her excellent team at Tulips Meeting Management for making the conference such a success. Finally, we would like to thank the contributors to this issue, and Alison Green and the team at the *Australian Journal of Chemistry* for their enthusiastic support of this special edition.

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