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Australian Colloid and Interface Symposium Special Issue

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This issue of the *Australian Journal of Chemistry* features papers from the Australian Colloid and Interface Symposium (ACIS), held at Coogee Beach, Sydney, in February 2003. ACIS is the new biennial Australian conference of colloid and surface science. It provides a regular opportunity for Australian and international researchers to meet and exchange ideas far from the cold of the northern winter, and acts as a permanent venue for the A. E. Alexander Lecture of the Colloid and Surface Science Division of the Royal Australian Chemical Institute (RACI). ACIS2003 also incorporated the Australia–Japan Colloid Symposium, an event we hope will also continue as a regular part of the program.

The Alexander Lecture for 2003, reproduced in this issue,[1] was presented by Mats Almgren of Uppsala University and entitled *Cubosomes, Vesicles, and Perforated Bilayers in Aqueous Systems of Lipids, Polymers, and Surfactants*. The lecture commemorates the contributions of Albert 'Alex' Alexander FAA FRACI, who was Professor of Physical Chemistry at the University of Sydney from 1957 to 1970, and is presented by an eminent colloid and surface scientist who has contributed particularly to the discipline in Australia. Some of Mats Almgren's numerous outstanding contributions are discussed in his paper. These, together with his long connections with various Australian research groups, combined to make him a welcome addition to the distinguished list of Alexander lecturers, Table 1. Previous Alexander lecturers, Bob Hunter and Toyoki Kunitake, also both presented at ACIS2003 and have papers in this issue.

Table 1. A. E. Alexander Lecturers

1981	J. Theo G. Overbeek (Utrecht)
1982	Ron H. Ottewill (Bristol)
1984	Ralph K. Iler (E. I. DuPont–de Nemours)
1986	Dennis A. Haydon (Cambridge)
1987	Robert J. Hunter (Sydney)
1988	Barry W. Ninham (ANU)
1991	Thomas W. Healy (Melbourne)
1992	Jacob N. Israelachvili (UC Santa Barbara)
1994	Hans Lyklema (Wageningen)
1997	Geoff T. Barnes (Queensland)
1998	Richard Buscall (ICI Technology)
2001	Toyoki Kunitake (RIKEN)
2003	Mats Almgren (Uppsala)

ACIS2003 was structured around four themes that the organizing committee hoped would showcase the modern directions of the discipline as well as its traditional base in applied and fundamental science. Each theme was organized by one or two convenors, who all contributed to a stimulating scientific program with a strong international representation. Themes on *Nanotechnology* (convened by Paul Mulvaney, University of Melbourne, and Tim Senden, Australian National University) and *Biotechnology* (Matt Trau, University of Queensland) showed us emerging disciplines within colloid science. The *Formulations* theme (Patrick Hartley, CSIRO Molecular Science, and Peter Stewart, Victorial College of Pharmacy) brought a focus to many aspects of polymer and surfactant science, while *Mineral Processing* (Scott Buckingham, Rio Tinto) demonstrated how the application of fundamental understanding can benefit even mature industries. *General Papers and Posters*

Greg Warr is an Associate Professor in the School of Chemistry at the University of Sydney, where he has been since 1988. He was chair of the organizing committee for ACIS2003, and is a former chair of the Colloid and Surface Science Division of the RACI. His research centres around amphiphilic self-assembly in bulk and at interfaces, and complex fluid structure and dynamics, with particular interest in neutron beam techniques and AFM. He is currently on the Editorial Advisory Board for the Australian Journal of Chemistry.

Bob Hunter is an Honorary Associate of the School of Chemistry, University of Sydney, having retired in 1990 as Head of School. He has, until his recent second retirement, been associated with Colloidal Dynamics, a company he helped establish in the late 1980s to develop and market a new scientific instrument for characterizing colloidal dispersions. He is a former Editor of Colloids and Surfaces*, and a former Chairman of both the Electrochemistry and Colloid and Surface Divisions of RACI, the National Science and Industry Forum, and the International Association of Colloid and Interface Scientists. He is a Fellow of the Australian Academy of Science and is currently working on international standards for IUPAC and the ISO for particle size and zeta-potential determination. He is also the National President of Scientists for Global Responsibility and Assistant Director of the Centre for Human Aspects of Science and Technology in the University of Sydney.*

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(Ian McKinnon, Monash University) and the *Australia–Japan Symposium* (Kazue Kurihara, Tohoku University, and Greg Warr, University of Sydney) spanned many of these areas and more, highlighting some emerging areas and possible future ACIS themes such as neutron beam science and nanorheology.

The papers in this issue reflect the diversity and multidisciplinary nature of colloid and surface science, as did those presented at ACIS2003. Nanoparticle synthesis and characterization is a strong theme approached from a number of angles: Mulvaney et al.[2] discuss the transition in electronic properties as oxide particles grow from clusters into quantum dots; Johnson and Prud'homme[3] explain their new process of Flash Nanoprecipitation to form hydrophobic nanoparticles; Zemb and Dubois[4] review their groundbreaking work on catanionic self-assembled structures; Liz-Marzán et al.[5] describe the three-dimensional assembly of arrays of colloidal particles to form opals; Toshima et al. the preparation of inverted bimetallic nanoparticles;[6] and Kunitake and Fujikawa[7] describe nanofabrication of structures by Nanocopying.

Characterization of biological interfaces is discussed by Shapter et al.[8] using AFM, and by Gee and Smith[9] using optical probes. Gentle et al.[10] report the formation of an interdigitated bilayer of porphyrins in cast films; Vanderlick et al.[11] describes the use of peptides to control drug delivery by leakage from vesicles; and the preparation of cell membrane-mimetic polymer structures is reported by Stenzel and Davis.[12]

The remaining papers cover diverse aspects of surfactant science including liquid crystals (Cassidy and Warr),[13] emulsion structure (Beattie et al.),[14] sonochemistry (Grieser et al.),[15] and some unusual features of liquids and solutions confined near surfaces (Kaneko et al.[16] and Kurihara et al.).[17] You will find Stephen Hyde's essay[18] as thought-provoking as his conference presentation.

Finally, we would like to thank all those who contributed to the success of ACIS2003 and to this special issue; thanks to the organizing committee, the sponsors (CSIRO Molecular Science, Rio Tinto, Nomadics Inc., Dyno Nobel Asia Pacific, ANSTO Bragg Institute, Orica Australia, Group Scientific, The University of Sydney A. E. Alexander fund, and the RACI), the conference secretariat (Conference Focus), and all of the participants. Our thanks also go to Alison Green and Richard Hecker from the *Australian Journal of Chemistry* for their support and work in preparing this special issue.

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