



THE UNIVERSITY OF
SYDNEY

A.E. Alexander Lecture 2024

Professor Calum J. Drummond



Friday 22nd November 2024

Chemistry Lecture Theatre 4

About the A.E Alexander Lectureship

The Alexander Lectureship was jointly established in 1978 by the University of Sydney and the then Royal Australian Chemical Institute Division of Colloid Chemistry to honour the legacy of Albert Ernest Alexander.

The Alexander Lecturer is delivered by an eminent scientist who has contributed particularly to Colloid and Surface Science in Australia, and is presented at a national meeting of the Australasian Colloid and Interface Society and at the University of Sydney.



Albert Ernest "Alex" Alexander, FAA

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Albert Ernest Alexander began his career in colloid science with a Ramsay Fellowship at Cambridge University in 1935 to study reaction kinetics at the air/water interface. A Rockefeller Foundation Fellowship enabled him to extend this to oil/water interfaces, contributing to the understanding of emulsion formation and phase inversion which yielded insights into the importance of surface complexes in a range of biological processes, and into the germicidal power of detergents.

Alex left Cambridge, where he was Deputy Director of the School of Colloid Science, and moved to Sydney as Foundation Professor of Applied Chemistry at The University of NSW from 1949-1956, and then as a Professor of Physical Chemistry at the University of Sydney from 1956 until his death in 1970.

A recurring theme of Alexander's work was the relationship between macroscopic interfaces and colloidal systems. His book with Paley Johnson, "Colloid Science" became the definitive textbook in the field for over forty years. Colloid and Interface Science are now so inextricably linked conceptually that it's hard to imagine thinking about them any other way, and today the same ideas inform thinking on nanoscience.

Throughout his career, Alex undertook applied and fundamental research side-by-side, understanding the importance of basic research in solving practical problems ranging from vegetable tanning, flow of suspensions through porous media, cattle dipping to insecticide application. He also established many strong collaborative links with industry. Alex was the grandfather of the strong and enduring school of colloid and surface science in Australia, establishing the tradition of colloid, surface, and polymer science at the University of Sydney, and training students who took up positions and established groups at Sydney, Queensland, Monash universities, and in the CSIRO.

Previous Lecturers

- 2022** Stephen Hyde (University of Sydney)
- 2019** Regine Von Klitzing (Technische Universität Darmstadt)
- 2017** Greg Warr (University of Sydney)
- 2015** Paul Mulvaney (University of Melbourne)
- 2013** Roger Horn (Deakin University)
- 2011** Kazue Kurihara (Tohoku University)
- 2009** Franz Grieser (University of Melbourne)
- 2007** Brian Vincent (University of Bristol)
- 2005** John Ralston (University of South Australia)
- 2003** Mats Almgren (Uppsala University)
- 2001** Toyoki Kunitake (RIKEN)
- 1998** Richard Buscall (ICI Technology)
- 1997** Geoff Barnes (University of Queensland)
- 1994** Johannes Lyklema (Wageningen University)
- 1992** Jacob Israelachvili (University of California Santa Barbara)
- 1991** Tom Healy (University of Melbourne)
- 1988** Barry Ninham (ANU)
- 1987** Robert Hunter (University of Sydney)
- 1986** Derek Haydon (Cambridge University)
- 1984** Ralph Iler (E.I. DuPont de Nemours)
- 1982** Ron Ottewill (University of Bristol)
- 1981** J.T.G. "Theo" Overbeek (Utrecht University)

Professor Calum J. Drummond

RMIT Deputy Vice-Chancellor Research and Innovation
RMIT Vice President

Professor Calum J. Drummond AO is an active research professor with over 300 publications in colloid and interface science. He holds a PhD and DSc from The University of Melbourne.

Professor Drummond joined RMIT in 2014 from CSIRO, where he was Group Executive for Manufacturing, Materials and Minerals, and earlier, Chief of CSIRO Materials Science and Engineering. He is a Fellow of the National (USA) Academy of Inventors (FNAI), Australian Academy of Technological Sciences and Engineering (FTSE), Royal Australian Chemical Institute (FRACI), Royal Society of Chemistry (UK; FRSC), and the Australian Institute of Company Directors (FAICD). He has been an Australian Research Council Federation Fellow and Queen Elizabeth II Fellow, and inaugural Vice President Research at CAP-XX.

He is an Officer of the Order of Australia (AO) awarded for his distinguished contributions to chemistry and materials science research, commercialisation, and mentoring. His work has received recognition through the award of the Victoria Prize for Science and Innovation in Physical Sciences; the Ian Wark Medal and Lecture, and the inaugural R.J.W. Le Fèvre Memorial Prize in Chemistry from the Australian Academy of Science; 7 national awards from the Royal Australian Chemical Institute (RACI), namely, the Weickhardt Medal, H.G. Smith Memorial Medal, Physical Chemistry Division Medal, R.K. Murphy Industrial Chemistry Division Medal, Applied Research Award, Green Chemistry Challenge Award, and Rennie Medal; CSIRO's 3 highest awards, namely, CSIRO Fellow, CSIRO Medal for Outstanding Research Achievement, and CSIRO Medal for Business Excellence; and Lifetime Achievement Award and Honorary Lifetime Alumni Membership for Contribution to Industry-Research Collaboration from Cooperative Research Australia. When he was CAP-XX Vice President Research, the company was named a Global Technology Pioneer by the World Economic Forum.

Calum's Road – traversing colloid and surface science landscapes full of discovery, intrigue and value.



Professor Calum J. Drummond
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This presentation will describe Calum's contributions to advancing the fundamental understanding of the key factors governing molecular assembly, and particle and surface interactions in liquids.

This fundamental research in chemistry has enabled the development and commercialisation of advanced high-performance materials for economic and societal benefit.