

International Frontiers of Science and Technology:
2003 Sir Mark Oliphant Conferences
Scaling Down to a Nano-Materials World
Challenges for 21st Century Scientists and Engineers
 Monday 1 December and Thursday 4 December 2003

Program

	Monday (1 st)	Tuesday (2 nd)	Wednesday (3 rd)	Thursday (4 th)
8.00	Registration	Registration	Registration	Registration
8.30				Peter Dobson Department of Engineering Oxford University UNITED KINGDOM
9.00	Opening session	Toyoki Kunitake Spatio-Temporal Function Materials Research Group The Institute of Physical and Chemical Research JAPAN	Ryong Ryoo Department of Chemistry Korea Advanced Institute of Science and Technology KOREA	Matt Trau University of Queensland AUSTRALIA
9.30				
0.00	Morning Tea	Morning Tea	Morning Tea	
10.30	Michael Graetzel EPFL, Lausanne SWITZERLAND	William Ducker Virginia Polytechnic Institute and State University USA	Terry Turney Novel Materials and Processes CSIRO Manufacturing and Infrastructure Technology Melbourne AUSTRALIA	Morning Tea
11.00				Peter Hudson CSIRO Health Sciences and Nutrition Melbourne AUSTRALIA
11.30	Max Lu University of Queensland AUSTRALIA	Steven Praver Department of Physics The University of Melbourne AUSTRALIA	Paul Mulvaney Department of Chemistry The University of Melbourne AUSTRALIA	Frank Caruso Department of Chemical & Biomolecular Engineering University of Melbourne AUSTRALIA
12.00				
2.30	Lunch	Lunch	Lunch	
1.00				Lunch
2.00	Calum Drummond cap-XX Ltd NSW AUSTRALIA	Louis Brus Columbia University New York USA	Stephan Haubold CEO Nanosolutions GERMANY	
3.00	Afternoon Tea	Afternoon Tea	Afternoon Tea	
3.30	Helmuth Moehwald Max-Planck Institute of Colloids and Interfaces GERMANY	Paul McCormick Advanced Nano Technologies Pty Ltd Western Australia AUSTRALIA	Peter Cummings Department of Chemical Engineering Vanderbilt University USA	
4.30	Tom Healy Dept of Chemical & Biomolecular Engineering The University of Melbourne AUSTRALIA	Chris Warris Nanotechnology Benchmarking Project Australian Academy of Science Canberra AUSTRALIA	Barry Muddle Director of NanoVic Melbourne AUSTRALIA	
6.00	Mixer Professor Geoff Stevens Department of Chemical and Biomolecular Engineering The University of Melbourne Peter Binks Chief Executive Nanotechnology Victoria Ian Potter <i>Museum of Art</i> opposite 800 Swanston Street Dress: Lounge Suit			
7.00			Dinner Professor David Boger Laureate Professor & Director Particulate Fluids Processing Centre Department of Chemical and Biomolecular Engineering The University of Melbourne Dr Robin Batterham Australia's Chief Scientist Professor Jannie van Deventer Dean of Engineering The University of Melbourne University House Professors Walk Dress: Lounge Suit	

Venue: New lecture theatre, ground floor of new wing,

Monday 1st December

- 8.00 Registration
- 9.00 Opening session
Welcome to Country
Joy Murphy Wandin, Wurundjeri Elder
- 9.05 Welcome
Associate Professor Peter J Scales
Head of Department
Chemical and Biomolecular Engineering
The University of Melbourne
- 9.10 Welcome
Dr John Zillman
President
Australian Academy of Technological Sciences and Engineering
- 9.15 Official Opening
Michael Reardon
State Manager
Department of Education Science and Training
Victoria

Chair: Professor Frank Larkins,
Deputy Vice-Chancellor – Research & Innovation
The University of Melbourne
- 10.00 Morning Tea

Session 1
Chair: Franz Grieser
School of Chemistry, University of Melbourne
- 10.30 **Professor Michael Graetzel**
EPFL, Lausanne
SWITZERLAND
The Fascinating World of Nanocrystals: From High Power Lithium Batteries to Sensors, Fast Displays and Efficient Solar Cells
- 11.30 **Professor Max Lu**
University of Queensland
AUSTRALIA
Templated Synthesis of Nanocrystalline and Mesoporous Metal Oxides
- 12.30 Lunch
- 14.00 Session 2
Dr Calum Drummond
cap-XX Ltd
NSW
AUSTRALIA
Electrical Double Layer (Super) Capacitors: Nano-scale Processes and Nano-structured Materials
- 15.00 Afternoon Tea
- 15.30 **Professor Helmuth Moehwald**
Max-Planck Institute of
Colloids and Interfaces
GERMANY
Polyelectrolyte Capsules as Microcontainers with Switchable Permeability and Mechanical Properties

16.30 **Professor Tom Healy**
Department of Chemical & Biomolecular Engineering
University of Melbourne
AUSTRALIA
Colloid Science – The Pointy end of Nanotechnology

18.00 Mixer – Ian Potter Museum of Art
Building 136, between Gate 2 and 3, Swanston Street

Chair: Professor Geoff Stevens
Department of Chemical and Biomolecular Engineering
The University of Melbourne

6.30 Welcome
Peter Binks
Chief Executive
Nanotechnology Victoria

Tuesday 2nd December

Session 3

Chair: Neil Furlong
Pro-Vice Chancellor, Research & Innovation
RMIT University

9.00 **Professor Toyoki Kunitake**
Spatio-Temporal Function Materials Research Group
The Institute of Physical and Chemical Research
JAPAN
A Future of Ceramic NanoFilms

10.00 Morning Tea

10.30 **Professor William Ducker**
Virginia Polytechnic Institute
and State University
USA
Patterning of Surfaces on the Nanometer-Scale: Film formation with Proteins and Surfactants

11.30 **Professor Steven Praver**
Department of Physics
The University of Melbourne
AUSTRALIA
Diamond Quantum Dots: Fabrication and Applications.

12.30 Lunch

Session 4

Chair: George Franks
Dept of Chemical Engineering
University of Newcastle

14.00 **Professor Louis Brus**
Columbia University
New York
USA
Chemistry and Physics of Semiconductor Nanocrystals

15.00 Afternoon Tea

15.30 **Professor Paul McCormick**
Advanced Nano Technologies Pty Ltd
Western Australia
AUSTRALIA
Mechanochemical Synthesis of Nanoparticles

16.30 **Mr Chris Warris**
Nanotechnology Benchmarking Project
Australian Academy of Science
Canberra
AUSTRALIA
Australian Academy of Science: Australian Nanotechnology Benchmarking Project

Wednesday 3rd December

Session 5

Chair: Peter Majewski
Bio Innovation SA Bioscience Fellow
Ian Wark Research Institute
University of South Australia

9.00 **Professor Ryong Ryoo**
Department of Chemistry
Korea Advanced Institute of Science and Technology
KOREA
Ordered Mesoporous Silica, Carbon and Their Polymer Composites: Synthesis and Perspectives for Applications

10.00 Morning Tea

10.30 **Dr Terry Turney**
Novel Materials and Processes
CSIRO Manufacturing and Infrastructure Technology Melbourne
AUSTRALIA
Nanotechnology and the Disruption of Manufacturing Industry

11.30 **Associate Professor Paul Mulvaney**
Department of Chemistry
The University of Melbourne
AUSTRALIA
Metal Nanorods: Formation, Optical Properties and Response to Heating

12.30 Lunch

Session 6

14.00 **Dr Stephan Haubold**
CEO
Nanosolutions
GERMANY
Building a Nanobusiness

15.00 Afternoon Tea

15.30 **Professor Peter Cummings**
Department of Chemical Engineering
Vanderbilt University
USA
Computational and Theoretical Nanoscience: Essential Enabling Tools for Nanotechnology

16.30 **Professor Barry Muddle**
Director of NanoVic
Melbourne
AUSTRALIA
States of Aggregation – Clustering, Nucleation and Nanostructure

19.00 Conference Dinner
University House
Building 112, between Tin Alley & Professors Walk

Chair: Professor David Boger
Laureate Professor & Director
Particulate Fluids Processing Centre
Department of Chemical and Biomolecular Engineering
The University of Melbourne

19.00 Introductory Remarks
Dr Robin Batterham
Australia's Chief Scientist

20.30 Special Address
Professor Jannie van Deventer
Dean of Engineering
The University of Melbourne

Thursday 4th December

Session 7
Chair: Patrick Hartley
CSIRO Molecular Science

8.30 **Professor Peter Dobson**
Department of Engineering
Oxford University
UNITED KINGDOM
Nano-Science to Nano-Technology, a Tale of Two Cultures?

9.30 Morning Tea

10.00 **Professor Matt Trau**
University of Queensland
AUSTRALIA
Drug & Gene Balls: Nanostructured Colloidal Devices for Drug & Gene Discovery

11.00 **Professor Peter Hudson**
CSIRO Health Sciences and Nutrition
Melbourne
AUSTRALIA
Novel biological reagents that dictate both the specificity and sensitivity of Nano-devices

12.00 **Professor Frank Caruso**
Dept of Chemical & Biomolecular Engineering
The University of Melbourne
AUSTRALIA

13.00 Lunch

Chair: Associate Professor Peter J Scales
Head of Department, Chemical and Biomolecular Engineering
The University of Melbourne

14.00 Closing Remarks
Professor Thomas Healy
Conference Convenor

Posters

Scanning Tunneling Microscopy Investigation of
Nonanuclear [3x3]Mn^{II} Supramolecular Grids
Laura Weeks
School of Chemistry, Physics and Earth Sciences
Flinders University of South Australia

Looking Down into a Nano-Materials World: A
Silicate Under Stress
Kayleen Campbell
Division of Chemical Engineering
The University of Queensland

Nanoscale force measurements on synthetic and
industrial gibbsite at low and high pH
Felicia Lee
Curtin University, Perth, W.A
CSIRO (Minerals), Perth, W.A

Effect of Core-Shell Nanostructured Electrodes in
Dye-Sensitised Solar Cells
David Menzies
School of Physics and Materials Engineering
Monash University

Phthalocyanine-Siloxane Copolymers: New
Developments via Interfacial Methods
Chris J. Embery
Nanotechnology Research Group
School of Chemistry, Physics and Earth Sciences
Flinders University

Field Effect Sensing for PCR Applications
Meng Taing
Griffith University and CRC for MicroTechnology

Mesophases Evolution of the Mesostructured
Hybrid Titania Thin Films
Indriana Kartini
Dept. of Chemical Engineering
The University of Queensland

Surface Physico-Chemical Studies of
Immobilised Oligonucleotides
Phuong-Cac Nguyen
University of South Australia
Ian Wark Research Institute

Flame Synthesis of Single-Walled Carbon
Nanotubes
Murray Height
Department of Chemical Engineering
Massachusetts Institute of Technology

Synthesis Strategies for Ordered Mesoporous
Polymers Using Silica and Carbon Supports
Minkee Choi
Department of Chemistry
Korea Advanced Institute of Science and
Technology

Mechanochemically Synthesized Nanopowers for
High Performance Solid Oxide Fuel Cell Materials
James Hos
School of Mechanical Engineering
University of Western Australia