Curriculum Vitae

THE AUSTRALIAN NATIONAL UNIVERSITY
Professor Vincent S. J. CRAIG
Department of Applied Mathematics
Research School of Physical Sciences and Engineering

Date of Birth: 6th January 1967

Academic Qualifications:

1993	BSc (First Class Honours)	ANU	(Department of Chemistry)
1997	PhD	ANU	(Department of Chemistry and Department of Applied Mathematics)

PhD thesis title: *"Application of the Light Lever Technique to the Direct Measurement of Colloidal Forces"*

Main Research Interests:
I am interested in static and dynamic events and processes at interfaces. I am most active in Bubble Growth, Dissolution and Coalescence (including nanobubbles), Specific ion effects, Surface Forces and Surfactant and Polymer Adsorption.

Present Appointment with the ANU

Professor	January 5th 2012-Current

Previous Appointments

Department Head	1st January 2009- 2nd February 2012
ARC Future Fellowship	26th November 2009-25th November 2013
Senior Fellow	15th February 2007-25th November 2009
ARC Research Fellow:	15th February 2002-14th February 2007
ARC Postdoctoral Fellow:	15th February 1999- 14th February 2002

Membership of Professional Associations
Australasian Colloid and Interface Society (Director 2013 – 2018) and Treasurer 2013-2017)
President of the International Nanobubbles Society (2014- present)
Member, International Association of Colloid and Interface Scientists
Fellow Royal Society of Chemistry (FRSC)
Committee member Standards Australia ME-090 Fine and Ultra Fine Bubbles

Academic Awards and Distinctions:

2018	Fellow of the Royal Society of Chemistry
2009	Australian Research Council Future Fellowship
2001	Australian Research Council Research Fellowship
1998	Australian Research Council Postdoctoral Fellowship
1993	The Channel Ten Young Achiever of the Year
1993	The Pacific Power Sci. and Tech. Young Achiever of the Year
1993	Australian Postgraduate Research Award (APRA)
1992	RACI Young Chemists Achievement Award

Current Research Interests

- Direct Measurement of Surface Forces
  - The long-range hydrophobic attraction
  - Interaction forces between surfaces bearing adsorbed surfactants and polymers
  - Adhesion
  - Cavitation between hydrophobic surfaces

- Nanobubbles
  - Characterisation of surface and bulk nanobubbles

- Adsorption Behaviour of Surfactant and Polymer Systems
  - Adsorption kinetics
  - Surface Conformation
  - Surface rearrangements, structure and kinetics

- Bubble Coalescence
  - Specific-ion effects in bubble coalescence
  - Bubble Coalescence in Sugar solutions
  - Bubble particle interactions
  - Thin film stability and rupture

- Surface Tension of Aqueous electrolyte solutions
  - Adsorption of ions at interfaces

- Wetting and Superhydrophobicity
  - Microfluidics and droplet control

- Specific Ion effects (including Hofmeister and Lyotropic effects)
  - Non aqueous solutions
  - Series Reversal
  - The charge at the air-water interface

Teaching Experience

A teacher affects eternity; he can never tell where his influence stops.

-Henry Adams, historian and teacher (1838-1918)

Courses Taught

Many of the courses have been delivered in collaboration with Tim Senden.

(Note the actual load varied from year to year. The number of lectures delivered would typically be 9 varying between 6 and 18 and the number of lab courses taught varied between delivering the whole course without any assistance down to running half the lab course with some assistance).

1995 C52 Third Year Surface Chemistry Course (Lectures, Tutorials and Labs)
1999 C52 Third Year Surface Chemistry Course (Lectures, Tutorials and Labs)
2000 C3102 Third Year Applied Physical Chemistry (Lectures, Tutorials and Labs)
2001 C3102 Third Year Applied Physical Chemistry (Lectures, Tutorials and Labs)
2002 C3102 Third Year Applied Physical Chemistry (Lectures, Tutorials and Labs)
2007 C3063 Third Year Applied Physical Chemistry (Labs)
2007 C3021 Third Year Applied Physical Chemistry (Lectures + Tutorials)
2008 C3063 Third Year Applied Physical Chemistry (Labs)
2008 C4001 Fourth Year Chemistry Honours Course (Lectures, Tutorials)
2010 Colour Chemistry Third Year Royal University of Phnom Penh (Lectures)
2012 C2209 Second Year Physical and Materials Chemistry (Lectures {thermodynamics}, Tutorials and Labs)
2013 C2209 Second Year Physical and Materials Chemistry (Lectures {thermodynamics}, Tutorials and Labs)
C3203 Third Year Applied Physical Chemistry (Lectures + Tutorials and Labs)
2014 C2209 Second Year Physical and Materials Chemistry (Lectures {thermodynamics}, Tutorials and Labs)
2015 C3202 Third Year Applied Physical Chemistry (Lectures + Tutorials and Labs)
2016 C3202 Third Year Applied Physical Chemistry (Lectures + Tutorials and Labs)
2017 C3202 Third Year Applied Physical Chemistry (Lectures + Tutorials and Labs)
2018 PHYS2204 Soft Condensed Matter (Lectures + Tutorials and Labs)

My focus in these courses has always been to promote understanding and deep learning rather than rote learning. Please note the courses I have taught do not have sufficient numbers to be assessed under the ANUSET or IELTS process –until this year so I look forward to the outcome of this process.

In addition to delivering the materials I have also been involved in course coordination and design. For example in 2007 I completely reworked the lab course, invented new labs, discarded old labs and prepared a new laboratory manual and placed all the materials on WEBCT. In 2001, with the assistance of an undergraduate winter scholar (Anthony Jones), Tim Senden and I developed a new third year laboratory experiment and published this in the Journal of Chemical Education (see

#18 in my Full refereed publications). This year I developed from scratch all the material for the thermodynamics component of CHEM2209, as the previous material was unsuitable due to the changing mathematical abilities of the student cohort and the reduction in the number of lectures devoted to this subject.

I have supervised 8 Honours students, 6 fourth year Engineering project students and 12 PhD students.

PhD students supervised or cosupervised

Dr Shannon Notley
Dr Rob Atkins
Dr Chiara Neto
Dr Christine Henry
Dr Drew Evans
Dr Shaun Howard
Dr Rick Walsh
Dr E-Jen Teh
Dr Wu Bo
Dr Virginia Mazzini
Dr Namsoon Eom
Muidh Alheshibri (current)
Shuhei Shinohara (Visitor from Fukuoka, Japan)
Zhu (Joe) Xiaolong (Visitor from China University of Mining and Technology, Xuzhou, China)

Honours Students
Ms Janey Wood
Mr Drew Evans
Mr Rick Walsh
Ms Jane Qian
Ms Devyani Gupta
Ms Xingshuo (Sharon) Huang

Masters
Casa Dalton

Citations

Web of Science (Researcher ID A-6607-2008)
http://orcid.org/0000-0002-8048-8397

5295 @ July 2018, H Index 36; Average of 45 citations/article

Publications

Book Chapters

Measurement of the Adhesion of a viscoelastic sphere to a soft compliant substrate
M. Reitsma, **V. S. J. Craig** and S. R Biggs in Particle Adhesion Applications and Advances, Ed D . J. Quesnel, D. S. Rimai & L. H. Sharpe; Taylor and Francis, New York (2001)

Specific Ion effects at the air-water interface – experimental studies
V. S. J Craig and C. L. Henry Chapter 7 in Specific Ion effects, Ed Werner Kunz; World Scientific Publishing (2010) ISBN 978-981-4271-57-8

Nanobubbles at Hydrophobic surfaces
*Vincent .S. J. Craig, Xuehua Zhang and Jun Hu i*n Drops and Bubbles in Contact with Solid Surfaces, CRC Press in the book series "Progress in Colloid and Interface Science" Edited by M. Ferrari, L. Liggieri. R Miller. (2012) ISBN 9781466575455

On the Surface Tension of Electrolyte Solutions
Vincent S. J. Craig, Jian Cui, Thomas G. Brazier in Aqua Incognita Galileo 400 years on. Edited by Pierandrea Lo Nostro (2014) ISBN: 9781925138214

Refereed articles in International Journals
(# denotes corresponding author)

1 Effect of Electrolytes on Bubble Coalescence
V. S. J. Craig#, B. W. Ninham, R. M. Pashley
Nature, **364 (6435)**, 317-319 (1993)

2 The Effect of Electrolytes on Bubble Coalescence in Water
V. S. J. Craig, B. W. Ninham, R. M. Pashley#
The Journal of Physical Chemistry, **97(39)**, 10192-10197 (1993)

3 Effect of Dissolved Gas and Salt on the Hydrophobic Force between Polypropylene Surfaces
L. Meagher# and **V. S. J. Craig**
Langmuir, **10(8)**, 2736-2742 (1994)

4 Application of the Light-Lever Technique to the Study of Colloidal Forces
V. S. J. Craig#, A. M. Hyde, R. M. Pashley
Langmuir, **12(15)**, 3557-3562 (1996)

5 Formation of Micronuclei Responsible for Decompression Sickness
V. S. J. Craig#
Journal of Colloid and Interface Science, **183(1)**, 260-268 (1996)

6 An Historical Review of Surface Force Measurement Techniques

V. S. J. Craig#
Colloids and Surfaces A, **130**, 75-93 (1997)

7 The Effects of Electrolytes on Bubble Coalescence
R. M. Pashley# and **V. S. J. Craig**
Langmuir, **13**, 4772-4774 (1997)

8 Use of the Light-Lever Technique for the Measurement of Colloidal Forces
R. M. Pashley#, M. E. Karaman, **V. S. J. Craig** and M. M. Kohonen
Colloids and Surfaces A, **144 (1-3)**, 1-8, (1998)

9 Comment on "Deformation of fluid interfaces under double-layer forces stabilizes bubble dispersions"
V. S. J. Craig, B. W. Ninham, R. M. Pashley#
Physical Review A. **57(6)**, 7362-7363 (1998)

10 Study of the Long-Range Hydrophobic attraction in concentrated salt solutions and its implications for electrostatic models
V. S. J. Craig#, B. W. Ninham, R. M. Pashley
Langmuir, **14(12)**, 3326-3332 (1998)

11 Electrochemical principles for active control of liquids on submillimeter scales
B. S. Gallardo, V. K. Gupta, F. D. Eagerton, L.I. Jong **V. S. Craig**, R. R. Shah and N. L. Abbott#
Science **283 (5398)**, 57-60 (1999)

12 Direct Measurement of Hydrophobic Forces: A study of Dissolved Gas, Approach Rate and Neutron Irradiation
V. S. J. Craig#, B. W. Ninham, R. M. Pashley
Langmuir **15(4)**, 1562-1569 (1999)

13 Measurement of the Adhesion of a Viscoelastic Sphere to a Flat Non-Compliant Substrate
M. Reitsma, **V. S. J. Craig**, S. Biggs#
Journal of Adhesion **74(1-4)**, 125-142 (2000)

14 Modification of a commercial AFM for Nano-Rheological Experiments: Adsorbed Polymer Layers
S. M. Notley, **V. S. J. Craig**, S. Biggs#
Microscopy & Microanalysis **6(2)**, 121-128 (2000)

15 Ion-Beam-Induced porosity of GaN
S.O. Kucheyev#, J.S. Williams, C. Jagadish, J. Zou, **V. S. J. Craig**, G. Li
Applied Physics Letters **77(10)**, 1455-1457 (2000)

16 Adsorption kinetics and structural arrangements of cationic surfactants on silica surfaces
R. Atkin, **V.S. J Craig**, S. Biggs#
Langmuir **16(24)**, 9374-9380 (2000)

17 Elasto-plastic and visco-elastic deformations of a polymer sphere measured using colloid probe and scanning electron microscopy
M. Reitsma, **V. S. J. Craig**, S. Biggs#
International Journal of Adhesion & Adhesives **20(6)**, 445-448, (2000)

18 Contact Angles of Aqueous Solutions on Copper Surfaces Bearing Self-Assembled Monolayers
V. S. J. Craig#, A. C. Jones and T. J. Senden
Journal of Chemical Education **78(3),** 345-346, (2001)

19 Colloid Probe Characterisation: Radius and Roughness Determination
C. Neto and **V. S. J. Craig#**
Langmuir **17(7)**, 2097-2099 (2001)

20 Adsorption Kinetics and Structural arrangements of Cetylpyridinium Bromide at the Silica-aqueous Interface
R. Atkin, **V.S. J. Craig** S. Biggs#
Langmuir, **17(20)**, 6155-6163(2001)

21 In Situ Calibration of Colloid Probe Cantilevers in Force Microscopy: Hydrodynamic Drag on a Sphere Approaching a Wall
V. S. J. Craig# and C. Neto
Langmuir, **17**, 6018-6022 (2001)

22 Shear Dependent Boundary Slip in an Aqueous Newtonian Liquid
V. S. J. Craig#, C. Neto, D. R. M Williams
Physical Review Letters **87 (05)**, 054504 (2001)

23 Adsorption of 12-s-12 Gemini Surfactants at the Silica-Aqueous Interface
R. Atkin, **V. S. J. Craig**, E. J Wanless# and S. Biggs.
Journal of Physical Chemistry B, **107(13),** 2978-2985 (2003)

24 Surface Roughness and Hydrodynamic Boundary slip of a Newtonian Fluid in a completely wetting system
E. Bonaccurso, H.-J. Butt and **V. S. J. Craig#**
Physical Review Letters **90 (14),** 144501 (2003)

25 Mechanism of Cationic Surfactant Adsorption at the Solid-Aqueous Interface
R. Atkin, **V. S. J. Craig**, E. J Wanless# and S. Biggs.
Advances in Colloid and Interface Science **103**, 219-304 (2003)

26 Application of a Dynamic Atomic Force Microscope to the measurement of lubrication forces and hydrodynamic thickness between surfaces bearing adsorbed polyelectrolyte layers
S. M. Notley#, S. Biggs and **V. S. J. Craig**.
Macromolecules **36 (8)**, 2903-2906 (2003)

27 Determination of coupled solvent mass in Quartz Crystal microbalance measurements using deuterated solvents
V. S. J. Craig# and M. Plunkett
Journal of Colloid and Interface Science, **262**, 126-129 (2003)

28 Hofmeister Effects in pH Measurements: The Role of Added Salt and Co-Ions
M. Boström#, **V. S. J. Craig**, R. Albion, D. R. M. Williams and B. W. Ninham
Journal of Physical Chemistry B, **107(13),** 2875-2878 (2003)

29 Adsorption of Ionic Surfactants to a Novel Plasma Polymer Substrate
R. Atkin, **V. S. J. Craig**, P. G. Hartley, E. J Wanless# and S. Biggs.
Langmuir, **19**, 4222-4227 (2003)

30 The influence of chain length and electrolyte on the adsorption kinetics of cationic surfactants to the silica-aqueous solution interface
R. Atkin, **V. S. J. Craig**, E. J Wanless# and S. Biggs.
Journal of Colloid and Interface Science, **266**, 236-234 (2003)

31 Calibration of Colloid Probe Cantilevers using the dynamic viscous response of a confined liquid
S. M. Notley#, S. Biggs and **V. S. J. Craig**.
Review of Scientific Instruments, **74 (9),** 4026-4032 (2003)

32 Evidence of shear-dependent boundary slip in Newtonian liquids
C. Neto#, **V. S. J. Craig** and D. R. M. Williams
*European Physical Journal E **12***, S71-S74 (2003)
DOI: 10.1140/epjed/e2003-01-018-0

33 The effect of surfactant adsorption on liquid boundary slippage
C.L. Henry, C. Neto, D.R. Evans, S. Biggs, **V. S. J. Craig#**
Physica A **339(1-2),** 60-65 (2004)

34 The Hydrophobic Force: Nanobubbles or Polymeric Contaminant
D.R. Evans, **V. S. J. Craig**, T. J. Senden#
Physica A **339(1-2),** 101-105 (2004)

35 Adsorption patterns of mixtures of trimethylammonium modified hydroxyethylcellulose and sodium dodecyl sulfate at solid-liquid interfaces
D. Zimin, **V. S. J. Craig** and W. Kunz#
Langmuir **20(6),** 2282-2291 (2004)

36 Adsorbed Layer Structure of a weak polyelectrolyte studied by colloidal probe microscopy and QCM-D as a function of pH and Ionic Strength
S. M. Notley#, S. Biggs, **V. S. J. Craig** and L. Wågberg
Physical Chemistry Chemical Physics, **6(9),** 2379-2386 (2004)

37 A Scanning Electron Microscope study of the Surface Structure of Paper Coating Compositions on Mylar
C. Kugge, **V. S. J. Craig** and J. Daicic#
Colloids and Surfaces A **238(1-3)** 1-11 (2004)

38 Floc Strength Characterisation Technique- An insight into Silica flocculation
M. Hermawan, G. C. Bushell#, **V. S. J. Craig**, W. Y. Teoh and R. Amal
Langmuir **20(15)** 6450-6457 (2004)

39 Adsorption and desorption of polymer surfactant mixtures at solid liquid interfaces: substitution experiments
D. Zimin, **V. S. J. Craig** and W. Kunz#
Langmuir **20(6)** 2282-2291 (2004)

40 Atomic force microscopy study of the interaction between adsorbed poly(ethylene oxide) layers: Effects of surface modification and approach velocity
S. C. McClean, H. Lioe, L. Meagher, **V. S. J. Craig** and M. L. Gee#
Langmuir **21(6)** 2199-2208 (2005)

41 Boundary Slip in Newtonian Liquids
C. Neto, D. R. Evans, H-J. Butt, E. Bonaccurso and **V. S. J. Craig#**
Reports on Progress in Physics **68** 2859-2897 (2005)

42 Sensing Cantilever Beam Bending by the Optical Lever Technique and it's Application to Surface Stress
D. R. Evans and **V. S. J. Craig#**
Journal of Physical Chemistry B **110 (11)** 5450-5461 (2006)

43 Physical Properties of Nanobubbles on hydrophobic Surfaces in Water and Aqueous Solutions
X. Zhang, N. Maeda and **V. S. J. Craig#**
Langmuir **22** 5025-5035 (2006)

44 A forecast of developments in Scanned Probe Microscopy
V. S. J. Craig# and T. J. Senden
Australian Journal of Chemistry **59** 355-358 (2006)

45 Experimental studies of the dynamic mechanical response of a single polymer chain
Esben Thormann#, Drew R. Evans and **V. S. J. Craig**
Macromolecules **39** 6180-6185 (2006), DOI:10.1021/ma060689d

46 Acoustic Investigation of cavitation noise from offset ink film splitting
J. Voltaire#, A. Fogden, **V. S. J. Craig**, D. Jansson and N. Jacobsson,
Nordic Pulp and Paper **21(3)** 314-322 (2006)

47 The origin of Surface Stress induced by the adsorption of Iodine on Gold
D. R. Evans and **V. S. J. Craig#**
Journal of Physical Chemistry B **110 (39)** 19507-19514 (2006)

48 Physical Properties of Phase Change Emulsions
D. R. Evans, Drew F. Parsons and **V. S. J. Craig#**
Langmuir **22** 9538-9545 (2006)

49 Ion-Specific Coalescence of Bubbles in Mixed Electrolyte Solutions
Christine L. Henry, Casuarina N. Dalton, Lehoa Scruton and **V. S. J. Craig#**
Journal of Physical Chemistry C. **111** 1015-1023 (2007)

50 Focussed Ion- Beam milling as a New Template Technique for Patterned Growth of Carbon Nanotubes
Ying Chen#, Hua Chen, Jun Yu. **Vince Craig** and James S Williams
Applied Physics Letters **90(9)** Art. No. 093126 (2007)

51 Reply to "Comment on 'The Origin of surface stress induced adsorption of iodine on gold'"
V.S. J. Craig# and D. R. Evans
Journal of Physical Chemistry C **111 (22)** 8136-8136 (2007)

52 Roughness of Microspheres for Force Measurements
P.J. van Zwol, G Palasantzas#, M. van de Schootbrugge, J. Th. M. de Hosson and **V. S. J. Craig**
Langmuir **24** 7528-7531 (2008)

53 Ion specific influence of electrolytes on bubble coalescence in non-aqueous solvents
C. L. Henry and **V. S. J. Craig#**
Langmuir **24** 7979-7985 (2008)

54 Cleaning using Nanobubbles: Defouling by electrochemical generation of nanobubbles
Z. H. Wu#, Y. M. Dong, J. L. Sun, H. L. Mao, S. F Chen, **V. S. J. Craig#** and J. Hu
Journal of Colloid and Interface Science. **328(1)** 10-14 (2008)

55 A mobile gas-water interface in electrolyte Solutions
C. L. Henry, L.Parkinson, J. R. Ralston and **V. S. J. Craig#**
Journal of Physical Chemistry. C. **112 (39)** 15094-15097 (2008)

56 Cleaning of Protein Coated Surfaces Using Nanobubbles: An Investigation Using Quartz Crystal Microbalance
G. M. Liu, Z. H. Wu, **V. S. J. Craig#**
Journal of Physical Chemistry. C. **112 (43)** 16748-16753 (2008)

57 Improved Cleaning of Hydrophilic Protein Coated Surfaces using the Combination of Nanobubbles and SDS
G. M. Liu and **V. S. J. Craig#**
ACS Applied Materials and Interfaces **1(2)** 481-487 (2009)

58 Effect of Electrolyte Species on the Adsorption of a Cationic Surfactant to Silica: The Common Intersection Point
S. C. Howard, R. Atkin, **V. S. J. Craig#**
Colloids and Surfaces A **347** 109-113 (2009)

59 Ion Specific Electrolyte Effects on Thin Film Drainage in Nonaqueous Solvents Propylene Carbonate and Formamide
Christine L Henry, Stoyan I Karakashev, Phong T Nguyen, Anh V. Nguyen and **V. S. J. Craig#**
Langmuir **25(17)** 9931–9937 (2009)

60 Very Slow Surfactant Adsorption at the Solid-Liquid Interface due to Long Lived Surface Aggregates
Shaun C. Howard and **V. S. J. Craig#**
Soft Matter **5(16)** 3061-3069 (2009) DOI: 10.1039/B903768C

61 Inhibition of Bubble Coalescence by Electrolytes in Binary Mixtures of Dimethyl Sulfoxide and Propylene Carbonate
Guangming Liu, Yi Hou, Guangzhao Zhang and **V. S. J. Craig#**
Langmuir **25(18)** 10495-10500 (2009) DOI:10.1021/la901199h

62 Inhibition of Bubble Coalescence by Osmolytes: Sucrose, Other Sugars and Urea
Christine L Henry and **V. S. J. Craig#**
Langmuir **25(19),** 11406–11412 (2009) DOI: 10.1021/la9015355

63 Adsorption of the Cationic Surfactant Cetyltrimethylammonium Bromide to Silica in the presence of Sodium Salicylate; Surface Excess and Kinetics
Shaun C. Howard and **Vincent S. J. Craig#**
Langmuir **25(22)** 13015-13024 (2009) DOI:10.1021/la901889m

64 Measurement of no slip and slip boundary conditions in confined Newtonian fluids using Atomic Force Microscopy
Christine L. Henry and **V. S. J. Craig#**
Physical Chemistry Chemical Physics **11** 9514 - 9521 (2009)

65 High Yield Stress Associated with Capillary Attraction between Alumina Surfaces in the Presence of Low Molecular Weight Dicarboxylic Acids
E-Jen Teh, Yee-Kwong Leong, Yinong Liu, **Vincent S. J. Craig#**, Rick B Walsh, Shaun Howard, Thomas Becker
Langmuir **26 (5)** 3067–3076 (2010) DOI: 10.1021/la902976n

66 The link between ion specific bubble coalescence and Hofmeister effects
Christine L. Henry and **V. S. J. Craig#**
Langmuir **26 (9)** 6478–6483 (2010) DOI: 10.1021/la9039495

67 Macroscopically Flat and Smooth Superhydrophobic Surfaces: Heating Induced Wetting Transitions up to the Leidenfrost Temperature
Guangming Liu and **Vincent S. J. Craig#**
Faraday Discussions **146** 141-151 (2010)
DOI: 10.1039/B924965F

68 Swelling and Collapse of an Adsorbed pH-Responsive Film-Forming Microgel Measured by Optical Reflectometry and QCM
Shaun C. Howard, **V. S. J. Craig#**, Paul A. FitzGerald and Erica J. Wanless
Langmuir **26(18)** 14615–14623 (2010)

69 Very small bubbles at surfaces – The nanobubble puzzle
Vincent S. J. Craig#
Soft Matter **7 (1)** 40-48 (2011)
DOI: 10.1039/c0sm00558d

70 Adsorption of dispersants at a polyester resin-alkane interface
Shannon M. Notley#, **Vincent S. J. Craig**, Andrew Fogden, Drew R Evans
Colloids and Surfaces A **377** 318-324 (2011)
DOI: 10.1016/j.colsurfa.2011.01.022

71 Water Droplet Motion Control on Superhydrophobic Surfaces: Exploiting the Wenzel to Cassie Transition
Guangming Liu, Lan Fu, Andrei V. Rode, **Vincent S. J. Craig#**
Langmuir **27(6)** 2595-2600 (2011)
DOI: 10.1021/la104669k

72 Reply to Comment on Water Droplet Motion Control on Superhydrophobic Surfaces: Exploiting the Wenzel to Cassie Transition
Guangming Liu, Lan Fu, Andrei V. Rode, **Vincent S. J. Craig#**
Langmuir **27(22)** 13962-13963 (2011)

73 Do hydration forces play a role in thin film drainage and rupture observed in electrolyte solutions?
Current Opinion in Colloid and Interface Science **16** 597-600 (2011)
Vincent S. J. Craig#
DOI:10.1016/j.cocis.2011.04.003

74 Insights into Ion Specificity in Water-Methanol Mixtures via Reentrant Behavior of Polymer
Tao Wang, Guangming Liu#, Guangzhou Zhang#, **Vincent S. J. Craig**
Langmuir **28(3)** 1893-1899 (2012)
DOI:10.1021/la203979d

75 Direct Measurement of van der Waals and Diffuse Double Layer Forces between Titanium Dioxide Surfaces Produced by atomic Layer Deposition
Rick B Walsh, Andrew Nelson, William M Skinner, **Vincent S. J. Craig#**
Journal of Physical Chemistry C **116(14)** 7838-7847 (2012)
DOI:10.1021/jp300533m

76 A Deliberation on Nanobubbles at Surfaces and in Bulk
James R. T.Seddon#, Detlef Lohse, William A. Ducker, **Vincent S. J. Craig**

Chem Phys Chem **13(8)** 2179-2187 (2012)
DOI:10.1002/cphc.201100900

77 Model Surfaces Produced by Atomic Layer Deposition
Rick B. Walsh, Andrew Nelson, William M. Skinner, Guangming Liu, **Vincent S. J. Craig#**
Chemistry Letters **41(10)** 1247-1249 (2012)
DOI: 10.1246/cl.2012.1247

78 Adsorption isotherms and structure of cationic surfactants adsorbed on mineral oxide surfaces prepared by Atomic Layer Deposition
Thipvaree Wangchareansak#, **Vincent S. J. Craig**, Shannon Notley
Langmuir **29(48)** 14748-14755 (2013)
DOI 10.1021/la403439r

79 Surface Force Measurements between Titanium Dioxide Surfaces Prepared by Atomic Layer Deposition in Electrolyte Solutions Reveal Non-DLVO Interactions: Influence of Water and Argon Plasma
Rick B Walsh, Drew Evans and **Vincent S. J. Craig#**
Langmuir (2014) DOI 10.1021/la5000205

80 Surface Forces between titanium dioxide surfaces in the presence of cationic surfactant as a function of surfactant concentration, electrolyte concentration and pH
Rick B Walsh, Bo Wu, Shaun C. Howard and **Vincent S. J. Craig#**
Langmuir (2014) DOI 10.1021/la500298u

81 Superhydrophobic and Superoleophilic Boron Nitride Nanotube-Coated Stainless Steel Meshes for Oil and Water Separation.
Yuanlie Yu , Hua Chen#, Yun Liu , **Vincent Craig** , Lu Hua Li , and Ying Chen
Advanced Materials Interfaces (2014), 1, 1300002

82 Stiff Chains Inhibit Protein and Flexible Chains Promote Protein Adsorption to Polyelectrolyte Multilayers
Bo Wu, Guangming Liu#, Guangzhao Zhang and **Vincent S. J. Craig#**
Soft Matter DOI: 10.1039/c4sm00413b (2014)

83 Surface Forces: Surface Roughness in Theory and Experiment
Drew F. Parson#, Rick B Walsh and **Vincent S. J. Craig**
J. Chem. Phys. 140, 164701 (2014); doi: 10.1063/1.4871412

84 Coadsorption of low molecular weight aromatic and aliphatic alcohols and acids with the cationic surfactant, CTAB, on silica surfaces
Thipvaree Wangchareansak, Max A. Keniry, Guangming Liu, **Vincent S. J. Craig#**
Langmuir, (2014) DOI: 10.1021/la501197m

85 Interfacial Nanobubbles Are Leaky: Permeability of the Gas/Water Interface
Sean R German, Xi Wu, Hongjie An, **Vincent S. J. Craig**, Tony L Mega, Xuehua Zhang[#]
ACS Nano (2014) DOI 10.1021/nn5016049

86 Laser Actuation of Cantilevers for Picometre Amplitude Dynamic Force Microscopy

Drew R. Evans, Ponlawat Tayati, Hongjie An, Ping Koy Lam, **Vincent S. J. Craig#,** Tim J. Senden#
Scientific Reports **4,** 5567, (2014)
DOI: 10.1038/srep05567

87 Porous Carbon Nanotube/Polyvinylidene Fluoride Composite Material: Superhydrophobicity/Superoleophilicity and Tunability of Electrical Conductivity
Yuanlie Yu, Hua Chen#, Yun Liu, **Vincent S.J. Craig**, Lu Hua Li, Ying Chen and Antonio Tricoli
Polymer **55(22)** 5616-5622 (2014)

88 Cation-Specific Conformational Behavior of Polyelectrolyte Brushes: From Aqueous to Nonaqueous Solvent
Wang, Tao; Long, Yunchao; Liu, Lvdan; Wang, Xiaowen; **Craig, Vincent**; Zhang, Guangz hao; Liu, Guangming#
Langmuir **30(43)** 12850-12859 (2014)

89 Surface Forces in Particle Technology: Wet Systems
Namsoon Eom, Rick B. Walsh, Guangming Liu, Drew F. Parsons and **Vincent S. J. Craig#**
Procedia Engineering **102** 24-34 (2015)
10.1016/j.proeng.2015.01.103

90 Flexible Transparent Hierarchical Nano-Mesh for Rose Petal-Like Droplet Manipulation and Lossless Transfer
William S. Y. Wong, Noushin Nasiri, Guanyu Liu, Nicholas Rumsey-Hill, **Vincent S. J. Craig**, David R. Nisbet and Antonio Tricoli#
Advanced Materials Interfaces (2015) DOI:10.1002/admi.201500071

91 Interfacial and Bulk Nanostructure of Liquid Polymer Nanocomposites (l-PNCs)
Samila McDonald, Jared Wood, Paul Fitzgerald, **Vincent Craig**, Gregory G. Warr, Rob Atkin#
Langmuir **31** 3763-3770 (2015)
DOI: 10.1021/acs.langmuir.5b00255

92 Superhydrophobic and Superoleophilic Porous Boron Nitride Nanosheet/Polyvinylidene Fluoride Composite Material for Oil Polluted Water Cleanup
Yunalie Liu, Hua Chen#, Yun Liu, **Vincent S. J. Craig**, Chunming Wang, Luhua Li and Ying Chen, Luhua Li
Advanced Materials Interfaces 2 1400267 (2015)
DOI:10.1002/admi.201400267

93 Surface Nanobubbles in Non-Aqueous media. Looking for nanobubbles in DMSO, Formamide, Propylene Carbonate, Ethylammonium Nitrate and Propylammonium Nitrate
Hongjie An, Guangming Liu, Rob Atkin, **Vincent S. J Craig#**
ACS Nano 10.1021/acsnano.5b02915, (2015)

94 Synthesis and chemical modifications of in-situ grown anatase TiO_2 microspheres with isotropically exposed {001} facets for superhydrophobic and self-cleaning properties

Wanbiao Hu, Yun Liu* Yuanlie Yu, Hua Chen, Kenny Lau, **Vincent S. J. Craig**, Frank Brink and Ray L. Withers
Applied Surface Science **357B,** 2022-2027 (2015)
doi:10.1016/j.apsusc.2015.09.179

95 Wetting of nanophases: Nanobubbles, nanodroplets and micropancakes on hydrophobic surfaces
Hongjie An, Guangming Liu, **Vincent S. J Craig**#
Advances in Colloid and Interface Science **222**, 9-17 (2015)
DOI:10.1016/j.cis.2014.07.008

96 Mimicking Enzymatic Systems: modulation of the performance of polymeric organocatalysts by ion specific effects.
Yun Xu, Zan Hua, Jian Zhang, Jun Yang, Zhongjin Cao, Dongyang Zhang, Lingxin He, **V. S. J Craig,** Guangzhou Zhang, Guangming Liu#.
Chemical Communications **52 (16),** 3392-3395 (2016).
DOI: 10.1039/C5CC09959E

97 Forward Osmosis Desalination with Poly(ionic liquid) Hydrogels as Smart Draw Agents
Xuelin Fan, Huili Liu, Yating Gao, Zu Zhou, **Vincent S. J. Craig**, Guangzhao Zhang#, and Guangming Liu#
Advanced Materials (2016)
DOI: 10.1002/adma.201600205

98 Cleaning with Bulk Nanobubbles
Jie Zhu, Hongjie An, Muidh Alheshibri, Lvdan Liu, Paul M. J. Terpstra, Guangming Liu# and **Vincent S. J. Craig**#
Langmuir 32(43) 11203-11211 (2016)
DOI: 10.1021/acs.langmuir.6b01004

99 Selective separation of oil and water with mesh membranes by capillarity
Yuanlie Yu, Hua Chen, Yun Liu, **Vincent S. J. Craig#**, Zhiping Lai#
*Advances in Colloid and Interface Science **235*** 46-55 (2016)

100 Mimosa Origami: A nanostructure-enabled directional self-organization regime of materials
William S. Y. Wong, Minfei Li, David R. Nisbet, **V. S. J. Craig**, Zuankai Wang#, Antonio Tricoli#
*Science Advances **2(6)*** e1600417 (2016)

101 Specific-ion effects in Non-Aqueous systems
Virginia Mazzini and **Vincent S. J. Craig**#
*Currrent Opinion in Colloid and Interface Science **23*** 82-93 (2016)

102 Reorganization of Hydrogen Bond Network Makes Strong Polyelectrolyte brushes pH Responsive
Bo Wu, Xiaowen Wang, Jun Yang, Zan Hua, Kangzhen Tian, Ran Kou, Jian Zhang, Shuji Ye#, Yi Luo#, **Vincent S. J. Craig**, Guangzhao Zhang# and Guangming Liu#
Science Advances **2(6)** e1600579 (2016)
DOI: 10.1126/sciadv.1600579

103 A History of Nanobubbles
Muidh Alheshibri, Jing Qian, Marie Jehannin and **Vincent S. J. Craig#**
Langmuir **32(43)** 11086-11100 (2016)

104 Surface Forces and Rheology of Titanium Dioxide in the Presence of Dicarboxylic Acids: From Molecular Interactions to Yield Stress
E-Jen Teh#, Yee-Kwong Leong and **Vincent S. J. Craig#**
Langmuir **33(6)**, 1496–1506 (2017)
DOI: 10.1021/acs.langmuir.6b04314

105 Roughness in Surface Force Measurements: Extension of DLVO theory to describe the forces between Hafnia surfaces
Namsoon Eom, Drew F. Parsons and **Vincent S. J. Craig#**
Journal of Physical Chemistry B, **121(26),** 6442-6453 (2017)
DOI: 10.1021/acs.jpcb.7b03131

106 What is the fundamental ion-specific series for anions and cations? Ion specificity in standard partial molar volumes of electrolytes and electrostriction in water and non-aqueous solvents
Virginia Mazzini & **Vincent S. J. Craig#**
Chemical Science, **8(10)**, 7052-7065 (2017)
DOI: 10.1039/C7SC02691A

107 Measurement of long-range attractive forces between hydrophobic surfaces produced by vapor phase adsorption of palmitic acid
Namsoon Eom, Drew Parsons, **Vincent S. J. Craig#**
Soft Matter, **13(47)**, 8910-8921, (2017)
DOI: 10.1039/C7SM01563A

108 Dynamically Gas-Phase Switchable Super(de)Wetting States by Reversible Amphiphilic Functionalization: A Powerful Approach for Smart Fluid Gating Membranes
William S. Y. Wong, Thomas Gegenbach, Hieu T. Nguyen, Xiang Gao, **Vincent S. J. Craig** and Antonio Tricoli#
Advanced Functional Materials **28(2***)* (2018)
DOI: 10.1002/adfm.201704423

109 Structured Near-Infrared Magnetic Circular Dichroism spectra of the Mn4CaO5 cluster of PS II in T. Vulcanus are dominated by Mn(IV) d-d 'spin-flip' transitions
Jennifer Morton, Maria Crysina, **Vincent S J. Craig**, Fusamichi Akita, Yoshiki Nakajima; Wolfgang Lubitz, PhD; Nicholas Cox, Jian-Ren Shen, Elmars Kraus#
Biochimica et Biophysica Acta (BBA) – Bioenergetics, **1859(2)** 88-98 (2017)
DOI: 10.1016/j.bbabio.2017.10.004

110 PEO-PPO-PEO surfactant exfoliated graphene cyclodextrin drug carriers for photoresponsive release
Matthew D. J. Quinn, Tao Wang, Mohammad Al Kobaisi, **Vincent S. J. Craig** and Shannon M. Notley#
Materials Chemistry and Physics (2017)
DOI: 10.1016/j.matchemphys.2017.11.012

111 Polyelectrolyte Multilayers under Compression: Concurrent Osmotic Stress and Colloidal Probe Atomic Force Microscopy
Bo Wu, Guangming Liu#, Guangzhao Zhang and **Vincent S. J. Craig#**
Soft Matter, 14(6) 961-968 (2018)
DOI: 10.1039/C7SM02177A

112 Probing the Hofmeister series beyond water. Specific-ion effects in non-aqueous solvents
Virginia Mazzini, Guangming Liu, and **Vincent S. J Craig#**.
Journal of Chemical Physics 148(22) (2018)
DOI: 10.1063/1.5017278

113 The role of citric acid in the stabilisation of nanoparticles and colloidal particles in the environment: Measurement of surface forces between Hafnium Oxide surfaces in the presence of citric acid
Shuhei Shinohara, Namsoon Eom, E-Jen Teh, Kaoru Tamada, Drew Parsons, **Vincent S. J Craig#**.
Langmuir, **34 (8)** 2595-2605 (2018)
DOI: 10.1021/acs.langmuir.7b03116

114 Hydrophobic Attraction Measured between Asymmetric Hydrophobic Surfaces
Naoyuki Ishida#, Kohei Matsuo, Koreyoshi Imamura, **Vincent S. J Craig**.
Langmuir, **34(12)** 3588-3596 (2018)
DOI: 10.1021/acs.langmuir.7b04246

115 Dynamically Gas-Phase Switchable Super(de) wetting States by Reversible Amphiphilic Functionalization: A powerful Approach for Smart Fluid Gating Membranes
William Wong, Thomas Gengenbach, Hieu Nguyen, Xiang Gao, **Vincent S. J Craig**
Antonio Tricoli#
Advanced Functional Materials, **28(2)** 1704423 (2018)
DOI: 10.1002/adfm.201704423

116 Direct Measurement of Interaction Forces between Surfaces in Liquids Using Atomic Force Microscopy
Naoyuki Ishida# and **Vincent S. J Craig**
KONA Powder and Particle Journal, (2018) Published online June 30th
DOI: 10.14356/kona.2019000

117 Volcano Plots Emerge form a Sea of Nonaqueous Sovents: The Law of Matching Water Affinities Extends to All Solvents
Virginia Mazzini and **Vincent S. J Craig#**
ACS Central Science (2018) (accepted, in press)
DOI: 10.1021/acscentsci.8b00348

Full refereed Conference Papers

1 Direct Measurement of The Hydrodynamic Drag Force on a Sphere Approaching Rigid Plane Interface using an Atomic Force Microscope
V.S.J. Craig, S. Notley
Proceedings of the 27th Australasian Chemical Engineering Conference (CHEMECA 99), Newcastle, NSW, Australia, September 26-29, 1999

2 Adhesion and Deformation of Polymers Measured Using Atomic Force Microscopy
S. Biggs, M. Reitsma, **V. S. J. Craig**
Proceedings of the 27th Australasian Chemical Engineering Conference (CHEMECA 99), Newcastle, NSW, Australia, September 26-29, 1999

3 A Reflectometry Study of the Adsorption Kinetics of Cetyltrimethylammonium Bromide to the Silica-Water Interface
V.S.J. Craig, R. Atkin, S. Biggs
Proceedings of the 27th Australasian Chemical Engineering Conference (CHEMECA 99), Newcastle, NSW, Australia, September 26-29, 1999

4 Characterising bond strength of aggregates in suspension
C. Selomulya, M. Hermawan, G.C. Bushell, **V. S. J. Craig** and R. Amal
Paper 273 Proceedings of the Australasian Chemical Engineering Conference (CHEMECA 2004), Sydney, NSW, Australia, September 26-29, 2004

5 The complex Infuence of electrolytes on Bubble Coalescence
Chemical Congress (2008)
C. Selomulya, M. Hermawan, G.C. Bushell, **V. Craig** and R. Amal

6 Effect of low molecular weight charged molecules on the interactions between spherical alumina particles
E-Jen Teh, Yee-Kwong Leong, Yinong Liu, Vincent S. J. Craig, Rick B Walsh, Shaun C. Howard, Thomas Becker
CHEMECA 2009 CD proceedings, Perth, September 2009, ISBN: 978-0858259225, published by Engineer Australia, paper 527.A.pdf .

7 Additional Attractive Force Between Alumina Particles due to Low Solubility of Dicarboxylic Acids
E-J Teh, Y-K Leong, Y Liu, V S J Craig, R B Walsh, S C Howard and T Becker
Proceedings of the XXV International Mineral Processing Congress (IMPC). Brisbane, Australia, 6-10 September 2010, pp 395-405

8 Inhibition of Bubble Coalescence by Salts and Sugars
V. S. J. Craig and C. L. Henry
Proceedings of the XXV International Mineral Processing Congress (IMPC). Brisbane, Australia, 6-10 September 2010, pp 1815-1826

9 Application of Magnetic Circular Dichroism spectroscopy to the study of the OEC in Photosystem II from cyanobacteria and higher plants. Photosystem II and MCD

Jennifer Morton, Elmars Krausz, Vincent Craig, Nicholas Cox, Paul Smith and Jian-Ren Shen
The 17th International Congress on Photosynthesis Research, At 7-12 August, 2016, Maastricht, The Netherlands, August, 2016

Other Publications (non-refereed)

A Avoiding Bends
V. Craig
Nature, **368 (6471)**, 490 (1994) April 7

B# Bubble Coalescence and Specific Ion Effects
V. S. J. Craig
Current Opinion in Colloid and Interface Science, **9**, 178-184 (2004)

Invited Lectures (only those that were financially supported are listed)
*International Conferences

1 Nanoscopic Material Properties in Small Molecular Assemblies
Master Classes in Molecular Biophysics
University of Western Australia, Thursday 27th April 2000

2* Adsorption kinetics and structural arrangements of cationic surfactants at the silica-aqueous interface
International Symposium on amphiphiles in solution and at interfaces
Aso, Kumamoto, Japan, November 9th-10th 2000

3 Dynamic measurements with the Atomic Force Microscope
The Institute of Physical and Chemical Research
Spatio-Temporal Function Materials Research Group
RIKEN Frontier Research System
2-1 Horosawa, Wako, Saitama, Japan November 13th 2000

4 Shear dependent Boundary Slip in an Aqueous Newtonian Liquid
Department of Physics and Astronomy, The University of Leeds
Leeds, United Kingdom, September 24th 2001

5 Surfactant Adsorption at a silica surface: Kinetics
Dipartimetno di Chimica, Universita' di Firenze
50121 Florence, Italy, September 27th 2001

6 Hydrodynamic Boundary Slip in Newtonian Systems: New Approaches
Chemie Department, Universitat Siegen
Siegen, Germany, August 4th 2002

7 Bubble Coalescence in Electrolyte Solutions
Lehrstuhl fuer Technische Thermodynamik
Fachbereich Maschinenbau und Verfahrenstechnik, Universitaet Kaiserslautern
Kaiserslautern, Germany, August 9th 2002

8 Introduction to Atomic Force Microscopy
Ytkemiska Institute
Stockholm , Sweden, September 23rd 2002

9 Ionic Surfactant Adsorption at the silica-aqueous interface
Ytkemiska Institute
Stockholm , Sweden, October 17th 2002

10 Hydrodynamic Boundary Slip in Newtonian Systems
Ytkemiska Institute
Stockholm, Sweden, November 14th 2002

11 Nanorheology Measurements with a Commercial Atomic Force Microscope
Veeco User Meeting
Stockholm, Sweden, December 6th 2002

12 Hydrodynamic Boundary Slip in Newtonian Solutions
Max Planck Institute for Polymer Research
Mainz, Germany, February 24th 2004

13* Specific Ion Effects in Bubble Coalescence
Short-Ranged Interactions in Soft Condensed Matter
Regensburg, Germany, February 26th 2004

14* Measurements of Boundary Slip in Newtonian Fluids
13th International Conference on the Discrete Simulation of Fluid Dynamics
Cambridge, Massachusetts, USA, August 16th-20th 2004

15* Measurements of Boundary Slip in Newtonian Fluids
Japan-Australia Colloid and Interface Science Symposium
Yamaguchi, Japan, September 9th-11th 2004

16* Boundary Slip in Newtonian Fluids: Implications for Microfluidics
2nd International Conference on Advanced Materials and Nanotechnology
Queenstown, New Zealand, February 6th-11th 2005

17* Inferring the structural arrangement of absorbed polymer films using QCM
Acoustic Wave Based Senors: Fundamentals, Concepts, New Applications
Physikzentrum Bad Honnef, Germany, April 11th-13th 2005

18* Explanation for the widely varying time scales observed for the adsorption of simple ionic surfactants
Pacifichem : Interfacial Phenomena at different length and time scales
Honolulu, Hawaii, USA, December 15th-20th 2005

19* Bubble Coalescence in Mixed Electrolyte Systems
Keynote Presentation
Surfactants in Solution 2006
Seoul, South Korea, June 4th-9th 2006

20 Determination of Interactions between Mineral Surfaces at High Ionic Strength
International Fine Particle Research Institute Annual General Meeting
Santa Barbara, USA, June 26th-29th 2006

21* The complex influence of mixed electrolyte solutions on bubble coalescence

Keynote Presentation
Bubble and Drop Interfaces
Granada, Spain, April 26th-28th 2007

22* Measurement of Boundary Slip in highly confined flows of Newtonian Liquids
Microfluidic: Experiments and Numerics
Villa Mondragone, in Monte Porzio, Rome, Italy 28th-30th Sept 2007

23* Bubble Coalescence in Aqueous Electrolyte Solutions
Second annual conference on the Physics, Chemistry and Biology of Water
Vermont, USA, October 18th-21st 2007

24 Determination of Interactions between Mineral Surfaces at High Ionic Strength
International Fine Particle Research Institute Annual General Meeting
Perth, Australia, July 8th-12th 2007

25* Hydrodynamic measurements using AFM
Keynote Presentation
ESF PESC Exploratory Workshop:Physics of micro- and nano-flows
Leiden, Netherlands, 8-12 June 2008

26* The complex influence of electrolytes on bubble coalescence
Nepalese Chemical Congress
Kathmandu, Nepal, 23-25 May 2008

27 Determination of Interactions between Mineral Surfaces at High Ionic Strength
International Fine Particle Research Institute, Annual General Meeting
Crete, Greece, June 14th-19th 2008

28 Novel Measurement Techniques using AFM
Scanning Probe Microscopy workshop
Wollongong, Australia, August 28th-30th 2008

29* The complex influence of electrolytes in bubble coalescence
Ion Specific Phenomena in Physics Chemistry and Biology
Garching, Germany, September 15th-17th 2008

29 Japan Society of the Promotion of Science, Core to Core Meeting
Bubble Coalescence in Salt solutions
Kyoto Japan, February 28th, 2009

30 Japan Society of the Promotion of Science, Core to Core Meeting
Bubble Coalescence in Salt solutions
Kyoto Japan, February 28th, 2009

31 RIEC meeting (Biology)
Electochemical Generation of Nanobubbles for Protein Removal
Tohoku University,
Sendai, Japan, June 19th 2009

32 Japan Society of the Promotion of Science, Core to Core Meeting
Demonstration of and explanation for very slow surfactant adsorption at the solid liquid interface
Kyoto, Japan, July 11th 2009

33 Lecture Series on Surface Forces 6

Multidisciplinary Research for Advanced Materials (IMRAM)
Surface Force Measurements between ALD Surfaces
Tohoku University, CREST JST,
Sendai, Japan, August 6th, 2009

34 Slow surfactant adsorption
University of Science and Technology of China
Hefei, China, March 25th 2010

35 Optical reflectometry for studying surfactant and polymer adsorption and swelling at interfaces
Chinese University of Hong Kong
Hong Kong, China, April 21st 2011

36 Surfactant and Polymer Adsorption at Interfaces
Chemical Sciences Department
Sun Yat Sen University
Guangzhou, China April 27th 2011

37 Nanobubbles – What we know about them and how we might use them
University of Science and Technology of China
Hefei, China, April 29th 2011

38* **Opening Keynote Presentation**
The Nature and Properties of Nanobubbles: Historical Perspectives to the Present
Nanobubbles in Biology Symposium
Abingdon, UK May10th 2011

39 Optical Reflectometry for studying surfactant and polymer adsorption and swelling at interfaces
Technische Universitat Berlin
Berlin May 17th 2011

40 Cleaning with Nanobubbles
Max Planck Institute of Colloids and Interfaces
Potsdam May 18th 2011

41 Microcantilever Sensors- Using a light lever to characterize beam bending
NMI workshop on dimensional nanometrology with Atomic Force Microscopy
National Measurement Institute
Lindfield, Australia, June 16th 2011

42 Determination of interaction forces between mineral surfaces at high ionic strength
International Fine Particle Research Institute – AGM
Chapel Hill, North Carolina, USA June 27th 2011

43 The Professor Robert Pfeffer Seminar
Surfactant Adsorption from Solutions ;Surface Excess & Kinetics
International Fine Particle Research Institute – AGM
Chapel Hill, North Carolina, USA June 29th 2011

44* **Keynote**
Nanobubbles at Surfaces and in Bulk Solution
Nanobubbles and Micropancakes
Les Houches, France, February 13th 2012

45 Wetting Transtions and the Leidenfrost Effect

Institute for Nanotechnology
University of Twente, The Netherlands, February 20th 2012

46* Do Hydration forces play a role in bubble coalescence in electrolyte solutions?
Meeting:Discussion on Hydration Forces, Sofia University,
Sofia, Bulgaria, April 3rd 2012

47* Plenary
Bubble Coalescence in Electrolyte Solutions- Implications for electrolytes at the air-water interface
Bubbles and Drop Interfaces 2012
Krakow, Poland 21st May 2012

48 Particle Interactions in Solution: Surface Forces between Titania Surfaces formed by Atomic Layer Deposition
Institute of Particle Technology, University of Erlangen
Erlangen, Germany July 8th 2013

49 Nanobubble Heresy
Aqua Incognita
Florence, Italy, July 16th 2013

50 Ions and Interfaces: What we can learn from Bubble Coalescence
Gordon Conference: Chemistry and Physics of Liquids
Holderness New Hampshire, USA, August 6th 2013

51 Bubble Coalescence in Electrolyte Systems: Implications for electrolytes at the air-water interface
1st Nanoscale Fluid Mechanics and Interfacial Water Workshop
National University of Singapore, Singapore, November 13th 2013

52 A new theory of Bubble ~~Stability~~ Dynamics:Implications for Nanobubbles
Nanobbules Mini-Symposium
66th Annual Meeting, Division of Fluid Dynamics, American Physical Society
Pittsburg, USA, November 24th 2013

53 A new theory for bubble growth and dissolution: Implications for nanobubble stability
ACIS Symposium on Nanobubbles
Department of Chemistry, University of Sydney
Sydney, Australia, December 4th, 2013

54 Nanobubbles: Obscure physical chemistry or an important technology for the future?
Department of Chemistry,
South China University of Technology,
Guangzhou, China April 3rd 2014

55 Optical reflectometry for studying surfactant and polymer adsorption and swelling at interfaces
Department of Chemistry,
Chinese University of Hong Kong
Hong Kong, China, April 4th 2014

56* Keynote
Measuring Particle Interaction Forces
7th World Congress on Particle Technology
Beijing, China, 21st May, 2014

57* **Keynote**
Introduction to Force Measurement with AFM
JPK Opening Ceremony and User Exchange
Shanghai, China, June 16th 2014

58* **Plenary**
The Curious Stability of Nanobubbles
2015 International Conference of Colloids and Interface Science
Taipei, Taiwan, July 23rd 2015

59 Surface Force Measurements between ALD surface – real surfaces don't follow DLVO theory
Department of Chemical Engineering
National Cheng Kung University
Taipei, Taiwan, July 24th 2015

Summary of Research Grants

2017 $70,000 ANU Major Equipment committee MEC: *An Archimedes instrument for measuring nanobubbles*
2014 $205,454 Tennant Company: *Cleaning using Nanobubbles*
2014 $276,433 ARC Linkage Grant LP140100594: *Characterisation of Nanobubbles*
2014 $27,540 Bragg institute (ID 4125): *Swelling of ALD Titania Films*
2014 $27,720 Bragg Institute (ID 3823): *Nanobubbles in bulk*
2014 $565,000 ARC Discovery Grant DP1401102371: *Surface forces between novel surfaces*
2014 $200,000 ARC linkage Grant LE14010090: *Surface and Colloid Characterisation Facility*
2014 $100,000 ANU Major Equipment committee MEC: *Surface and Colloid Characterisation Facility*
2014 $82,484 Revalesio Corporation: *Tolman Bubbles*
2013 $190,000 ANU Major Equipment committee 13MEC21: *Multimode Atomic Force Microscope*
2012 $65,000 Revalesio Corporation: *Are nanobubbles leaky?*
2012 $44,800 Australia China Group Missions: *Smart Interfaces*
2012 $3,200 AINSE : *Determining crystal structure of hafnia and zirconia thin films prepared using ALD*
2011 $4,860 AINSE : *Determining crystal structure of surfaces prepared using ALD*
2010 $365,000 ARC Discovery Grant DP110101936: *Using light to move molecules- a novel approach to exploring intermolecular forces*
2010 $38,305 International Science Linkages Australia China Special Fund: *New Polymeric Antifouling Materials*
2009 $788,800 Australian Research Council Future Fellowship FT0991933: *Specific-ion effects in non-aqueous solvents. A test for Hofmeister*
2009 $50,000 International Fine Particle Research Institute: *Forces at High Ionic Strength*
2009 $60,000 Research Laboratories of Australia : *Forces in non-aqueous solvents*
2009 $2500 Smartprint CRC: *Study Grant*
2008 $45,000 International Fine Particle Research Institute: *Forces in non-aqueous solvents*

2008 $385,000 ARC Linkage Grant LP0883890: *Innovative platforms for further enhancing security and durability of the Australian Polymer Banknote and other security documents*
2007 $500,000 ARC LIEF Grant LE0882816: *Micro and Nanostructure Optical Characterisation Facility*
2007 $45,000 International Fine Particle Research Institute: *Forces at High Ionic Strength*
2006 $245,000 ARC Discovery Grant DP0774260: *Salt, Bubbles and Life; A study of ion specificity in colloid science*
2006 $1,000,000 ARC Linkage Infrastructure Grants (with 35 others) LE0667994 *Approved National Nanolithography Facility*
2006 $6,200 Australian Academy of Science: *Scientific visits to Europe*
2004 $187,000 ARC Linkage Infrastructure Grants LE0560758: *Dynamics at Interfaces*
2004 $89,254 ANU Major Equipment Fund MEC: *Dynamics at Interfaces*
2004 $6,000 ANU Teaching Infrastructure Grant: *Micromanipulator*
2002 $291,000 ARC Discovery Grant DP0343788: *Hydrodynamic Slip in Newtonian Fluid*
2002 $10,000 Edith and Joy London Foundation: *Soft Matter workshop*
2001-2006 $730,000 Cooperative Research Centre for Functional Communication Surfaces: *Smart Print*
2001 $10,400 Australian-German Joint Cooperation Scheme DAAD: *Flow in confined spaces*
2001 $573,782 ARC Australian Research Fellowship and ARC Discovery Grant DP0209181: *Surface adsorption, repulsion and attraction: A new experimental approach to surface forces*
2001 $170,000 ARC Linkage Infrastructure Grants LE0237527: *Bioscope IV : Advanced Scanned Probe Microscopy*
2001 $100,000 ANU Major Equipment Fund MEC: *Bioscope IV: Advanced Scanned Probe Microscopy*
2001 $267,000 ANU Major Equipment Fund MEC: *A Spectroscopic Imaging Ellipsometer for the characterisation of thin films*
1999 $177,000 ARC Australian Postdoctoral Fellowship F29918108: *Hydrophobic attractions and electrostatic repulsions: transitional effects*

Summary of Industrial Research

- Tennant Company 2014 – 2018
- Revalesio 2012- 2017
- Reserve Bank of Australia 2008-2012
  Enhanced security of polymer banknotes
- Research Laboratories of Australia 2009-2011
- International Fine Particle Research Institute 2007- continuing
- Cooperative Research Centre for Functional Communication Surfaces 2001-2008.
  Program Leader Program 1.4 Strategic Applications of Physical Sciences to Functional Surfaces
- Baldwin Shelston Waters
  Provision of expert opinion in a patent opposition manner. 2000
- CSR Australia

Evaluation and control of foaming properties of sugar liquors. 1994-1996

Other Service

ANU Academic Board 2012-2014

2013 -2017 Director and Treasurer Australasian Colloid and Interface Society

2017-ongoing Co-Chair RSPE Equity and Access committee

AFM facility

For 16 years Tim Senden and I provided an **open access Atomic Force Microscopy facility** as a free resource for the whole University. This facility has operated without any financial support beyond donations from regular users and our grant monies. I estimate I have personally trained over 100 users during this period and supervised many hundreds of experiments. I do not obtain publications from these activities. In recent years we have participated in the National Measurement Institutes intercomparison for SPM calibration and nanoparticle measurement. Studies determining the accuracy and precision of nanomeasurements across a range of laboratories in Australia

From 2006 until 2011 I **Chaired the RSPE School Space Committee**. The position is onerous and politically sensitive. It requires ensuring that suitable office and laboratory space is available to everyone in the School as well as participating in the planning and funding of new built/refurbished infrastructure. As such it requires aspects of long term planning, short term management and crisis handling as well as a grasp of the needs of all the members of the School and careful and extended negotiation between groups with conflicting interests. This job has been particularly onerous as there is a severe shortage of high quality lab space and office space within the School.

My reputation for fairness and my ability to negotiate politically sensitive areas has also been employed in cases of **conflict resolution** and as part of a committee appointed by the previous VC investigating academic misconduct.

For a number of years I have acted as an **internal adviser and reviewer for ARC grant applications**. In 2011 I took charge of this role for the School. This year this involved reading and checking approximately 70 ARC grant applications, giving detailed feedback and assisting in the preparation of rejoinders as well as evaluating School performance in grants.

My service to the wider community includes being an **assistant editor** for the journal *Water* (recently resigned) and a member of the **international advisory board** for the premier Journal in my field *Soft Matter* as well as reviewing numerous international grant applications (U.K., Sweden, The Netherlands, Germany, France) and for numerous journals. For *Soft Matter* I regular act as an adjudicating reviewer.

I'm active within the Australasian Colloid community having organized the 8th Japan-Australia Colloid a in 2005, as well as being an organizer of ACIS 2013, ACIS 2015 and ACIS 2017 and Co-chair and organiser of Western Pacific Colloids in 2015

Other Honours and community service activities

- Life Member Weston Creek Athletics Club
- ACT Athletics Management Committee and Athletes Representative 2002-2007
- Race Manager and Organiser of the Weston Creek Half Marathon 2007-2016
  (A fundraiser for local athletes and local and international charities)
- Former ACT representative athlete and team manager