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This book was compiled by E. Wanless, secretary of the Colloid and Surface Science Division of the Royal Australian Chemical Institute. Many thanks to T. Healy, R. Hunter, R. Horn, R. Crawford, K. Prohaska & L. Mu.

## Introduction

In 1968, several important events took place that changed the world as we know it; Apollo 6, 7 and 8 spacecrafts were launched, Martin Luther King Jr. was assassinated, the Boeing 747 made its maiden flight, Pope Paul VI denounced the use of birth control and Tom Healy and Bob Hunter commenced the Australian Colloid and Surface Science Student Conference (ACSSSC) series.

Arriving to the 40th anniversary of any happy event is cause for celebration, and the 40th anniversary of the ACSSSC is no exception. It is a truly remarkable achievement, since over 1100 different students, academics or industry representatives have attended the ACSSSC at some stage in the 40 years. For me, attending the ACSSSC was the equivalent of receiving a scientific 'vitamin shot'. I returned from each conference with a renewed enthusiasm for my research, and re-focussed on completing my PhD studies! I have no doubt that hundreds of other students would have felt the same way.

Attempts have been made across the world to emulate the success enjoyed by this conference, and very few conferences have enjoyed the longevity of the ACSSSC - so why is it such a successful conference series?

It is my belief that people will continue to attend, support and look forward to a conference series if it contains an almost perfect mix of scientific content, venue, social activity and camaraderie. The ACSSSC has achieved this consistently over the years, as there has never been any problem in having good numbers attending, and more importantly, we have had no trouble passing the baton on to the next group of enthusiastic conference organisers, usually from different states of Australia, to ensure the ACSSSC remains a truly national conference.

For a conference series to last 40 years (and show no sign of waning), however, another special ingredient must be present. Tom and Bob have injected so much more than their immense knowledge of colloid and surface science into the ACSSSC. They have enthusiastically adopted the role of mentors for generations of students and staff, and as a result, enjoy the respect and (dare I say it) adoration of the whole of the Australian colloid and surface science community.

We all have our fond student conference memories, whether it be the after dinner drink you had with the supervisor that made you understand him or her that little bit better, the idea inspired by an academic from another university that assisted you to make a breakthrough in your research, the exceptionally funny act on the Wednesday talent night that made you laugh with you colleagues, or the opportunity to renew old friendships and discover new ones-... All contribute to the rich tapestry of student conference memories.

Sincere thanks go to the 40th Anniversary Symposium organisers Erica Wanless, Paul Mulvaney, Gayle Morris and Pat Hartley who, apart from doing all of the usual organizational tasks associated with a symposium, were also able to find the time to sort through large quantities of old letters, records and photographs. Thanks also go to Tom and Bob for patiently answering our questions, and giving us information about, and contact details for many of the students from the past 40 years, and to Roger Horn for collating much of the relevant information prior to the Hahndorf conference in 1998.

Finally - hearty congratulations to Tom and Bob on the occasion of the 40th Anniversary of the ACSSSC. You are National Treasures, and after 40 years, have matured like fine wines; rich and bold with a strong flavour and full of character!

Russell Crawford  
Chair, Colloid and Surface Science Division  
Royal Australian Chemical Institute  
June, 2007

## Colloid Science: Past, Present and Future

### *A Celebration of 40 Years of Australian Colloid and Surface Science Student Conferences*

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9.00-9.10 Welcome by the Chair of the RACI Colloid and Surface Science Division

9.10- 9.20 Tom Healy: “**The First Conference:** Where? When? Which? What? Who?”

#### **“Teething Years” 68-77**

9.30-9.50 Franz Grieser - From Blackwood to Today

9.50-10.10 Bruce Firth – Impact of Surface Chemistry on a Researcher

10.10-10.30 Discussion led by RC.  
Panel - Bob, Tom, Lyn, Bruce, David, David, Harley, Franz

10.30-10.50 David Yates – Interfaces, Conferences & Industry

10.50-11.10 *Morning Tea*

#### **“The Good Ol’ Days” 78-87**

11.10-11.30 Dave Dunstan – Balls to Rubber Elasticity

11.30-11.50 Peter Scales - Why Hard is Sometimes Easier than Soft - Getting to the Bottom of Dewatering

11.50-12.10 Roger Horn - I learnt SFA from the Great Australian Colloid Community

12.10-12.30 Bruce Johnson – Where Have all the Toxins Gone? Long Time Passing

12.30-2.00pm *Lunch*

#### **“The Degenerate Years” 88-97**

2.00-2.30 Lee White - Crack Cocaine or What I Don’t Know About Compressional Rheology

2.30-3.0 Robert Lamb - Keeping In Sync with Surface Science

3.00-3.30 Stephen Hyde - The Unreasonable Effectiveness of Colloid Science in Geometry

3.30-3.50 *Afternoon Tea & Siesta for the Over 55s*

**“The Conference Legacy” 98-07**

3.50-4.10 Calum Drummond – The ACSSSC Spirit

4.10-4.30 Paul Mulvaney – There is Nothing Small about Nano

4.30-4.50 William Ducker – Interfacial Nanofluids

4.50-5.1 Frank Caruso – Click go the Colloids, Click, Click, Click

5.10-5.20 The Right of Reply from Bob Hunter

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**5.20-7.00 *Rest, Recuperation, Rehabilitation and Restoratives***

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**The Re-past**

7.00-8.0 **Jurassic Gallery** – Drinks and entrees in the Dinosaurium Gallery

8.00-8.15 Move to the Science Gallery for Photographs

8.15-8.50 Main Course in Science & Life Gallery

8.50-9.05 Russell Crawford MC, Chair of the RACI Colloid and Surface Science Division

9.05-9.30 Dessert

9.30-9.45 Forewarning: Warrnambool 2008 – “Business as Usual” with Dr. Ian Larson & Dr Ben Boyd

9.45-10.15 Coffee

10.15-11.30 End of Formalities/Music

The Melbourne Museum @ Night, with music, caffeine and miscellaneous drugs of choice (see LRW if yours isn’t available).

## Conference Statistics

No.	Date	Place	Host University	Conference Organisers	Special Guests	Delegates (students + staff + industry + CSIRO & ANSTO+ guests)	Presentations (student talks + guest/postdoc talks + posters)
26	Feb 2008	Warrnambool	Monash University	Ben Boyd & Ian Larson			
25	Feb 2006	Beechworth	La Trobe/ Melbourne	Kate Drummond, Mike Angove, Devi Sunartio, Muthupandian Ashokkumar, Tabitha Cesnak, Francoise Gelb	Prof. Stan Sandler	$83 + 38 + 2 + 7 + 1 = 131$	$40 + 1 + 38 = 79$
24	Feb 2004	Sunset Cove	IWRI	Gayle Morris, Kathryn Prohaska David Beattie, Nate Stevens, Gary Hanly, Gillian Kaggwa, Lucy Wang	Prof. Terence Cosgrove Prof. Paul Luckman	$78 + 32 + 4 + 2 = 116$	$46 + 1 + 27 = 74$
23	Sept 2002	Lake Hume	Melbourne	Franz Grieser, Scott McLean Kerry Hambridge, Peter Scales, Muthupandian Ashokkumar	Dr Ray Dagastine Dr Fiona Scholes Prof. Stephan Herminghaus	$63 + 48 + 3 = 114$	$31 + 3 + 32 = 66$
22	Feb 2001	Bendigo	Swinburne	Marylou Molphy, Ian Harding, Russell Crawford, Lyndal Roberts, Danni Tilmanis, Choon Jek Ang, Lidia Konkol, My Linh Ly, Peter Sanciole	Dr Justin Cooper-White Dr David Beattie	$62 + 1 + 47 = 110$	$39 + 2 + 23 = 64$
21	Sept/Oct 1999	Morpeth	Newcastle	Barry Fleming, Shannon Notley Erica Wanless, Simon Biggs	Dr Laurent Michot, Dr Michael Bevan	$86 + 40 + 13 + 4 = 143$	$47 + 2 + 29 = 78$
20	Feb 1998	Hahndorf	IWRI	Ben Francis, Paul Jenkins, Roger Horn	Dr Jim Baygents Dr Jordan Petrov Dr Thomas Zemb	$79 + 44 + 8 + 3 = 141$	$49 + 3 + 32 = 84$
19	Sept 1996	Murramarang	ANU	David Williams, Edie Sevick	<i>unable to attend</i>	$79 + 37 + 2 + 0 = 118$	$43 + 0 + 31 + 74$
18	Feb 1995	Fairy Meadow	Sydney	Greg Warr	Prof. Henk Lekkerkerker	$98 + 71 + 15 + 1 = 185$	$76 + 0 + 10 = 86$
17	Feb 1993	Geelong	Melbourne	Robert Hall, Stephanie Faulkner Peter Scales	Prof. David Beaglehole, Prof. Mats Almgren	$82 + 48 + 12 + 2 = 144$	$70 + 2 + 0 = 72$
16	Sept 1991	Roseworthy	South Australia	Belinda Braggs, Marianne Montalti	Dr Avi Marmur Dr Ian Pitman	$70 + 33 + 13 + 2 = 118$	$62 + 2 + 0 = 66$

15	Jan/Feb 1990	Camden	Sydney	Alice Lamb, Bob Hunter	Prof. Theo van der Ven	$45 + 29 + 13 = 87$	$45 + 0 + 0 = 45$
14	Aug 1988	Albury	Melbourne	Greg Allan, Ewen Silvester, Franz Grieser	Dr Bob James Prof. Pierre Bothorel	$48 + 42 + 15 + 2 = 107$	$48 + 0 + 0 = 48$
13	Feb 1987	Kioloa	ANU	Mark Rutland, Ric Pashley	Dr Dave Deamer	$35 + 14 + 5 + 1 = 55$	$33 + 3 + 0 = 36$
12	Feb 1985	Roseworthy	SAIT	Robert Hayes	Dr Luuk Koopal	$28 + 13 + 7 + 1 = 49$	$27 + 1 + 0 = 28$
11	May 1983	Yarrowood	Sydney	Matt Ballard, Don Napper	Dr Dick Buscall	$32 + 13 + 5 + 1 = 51$	$29 + 1 + 0 = 30$
10	Feb 1982	Mt. Eliza	Melbourne	Robert Lamb	Prof. David Tabor	$32 + 28 + 10 = 70$	$29 + 3 + 0 = 32$
9	May 1980	Kioloa	ANU	Steve Carnie	Prof. Joe Henry Prof. Brian Vincent	$26 + 14 + 5 = 45$	$25 + 0 + 0 = 25$
8	Nov 1978	Yarrowood	Sydney	Col Bensley	Prof. Ron Ottewill	$24 + 21 + 8 = 53$	$26 + 1 + 0 = 27$
7	Sept 1977	Melbourne & Blackwood	Melbourne	John Lyons	Dr Tony Parentich	$14 + 10 + 9 + 1 = 34$	$14 + 4 + 0 = 18$
6	May 1976	Canberra	ANU	Joe Wolfe	Prof. Bob Street	$17 + 13 + 2 + 1 = 33$	$16 + 4 + 0 = 20$
5	Nov 1974	Sydney & Woy Woy	Sydney	Bruce Firth	Dr Harley Wright, Dr A. Homola	$22 + 8 + 8 + 1 = 39$	$19 + 2 + 0 = 21$
4	May 1973	Melbourne & Blackwood	Melbourne	David Yates	<i>none</i>	$19 + 5 + 6 + 0 = 30$	<i>unknown</i>
3	Feb 1972	Sydney	Sydney	Harley Wright	Prof. Jim Quirk Dr Sam Levine	<i>unknown</i>	$10 + 0 + 0 = 10$
2	Aug 1970	Melbourne	Melbourne	Bob James	Prof. Jim Quirk Dr Stuart Nichol	$10 + 2 + 0 + 2 = 14$	$10 + 2 + 0 = 12$
1	May 1968	Sydney	Sydney	John Hayter, Bob Hunter	Dr Murdoch MacKenzie	<i>unknown</i>	<i>unknown</i>

## The Beginning

*Dr Healy writes to Dr Hunter mootng establishment of a Colloid and Surface Chemistry Division of the Royal Australian Chemical Institute to be separate from the existing Electrochemical Division.*

TELEPHONE  
34 0484  
TELEGRAMS  
UNIVERSITY OF MELBOURNE  
PARKVILLE



### University of Melbourne

Parkville, N.2, Victoria

Chemistry Department.  
June 28th, 1966.

Dr. Hunter,  
Chemistry Department,  
University of Sydney,  
Sydney, N.S.W.

Dear Dr. Hunter,  
During an earlier visit to Sydney to see Professor. Alexander I missed seeing you. I am planning to be in Sydney next August 17th and if it is convenient I would very much like to see you. Professor. Alexander I understand will be away.

My particular purpose in seeing the Sydney people is to discuss mutual interests in Colloid and Surface Chemistry, particularly with the view to establishing a Division of Colloid & Surface Chemistry within R.A.C.I.

I trust we can get together.

Respectfully,

A handwritten signature in cursive script that reads 'Thomas W. Healy'.

Dr. Thomas W. Healy.

*Replied  
30/6/66.  
Suggest Canberra*

*First  
contact!*

## **1966-1967 - Conception**

*On several occasions between May 1966 and December 1967 Dr Healy (University of Melbourne) and Dr Hunter (University of Sydney) spoke of ways to link their research groups, discussions which culminated with the Student Conference idea. They both realised that being isolated in Australia from the big Colloid centres in Europe, the UK and North America was going to limit their work. United they stood a better chance of keeping their research at the frontiers. The first informal meeting between these two research groups was held in 1967.*

## The 1<sup>st</sup> - Sydney 1968

### *The start of things to come*

TW Healy

Dept of Physical  
Chemistry  
11-4-69

Dear Tom,

We're all looking forward to your proposed visit in May and I'm sure we can accommodate as many of your students as are prepared to make the trip. It would, I think be a good opportunity to conduct a sort of student symposium with each of them talking about his work to the group. Murdoch Mackenzie will be in it too - as well as his student so it should be a useful exercise. Can you let me know when you propose to come and for how long? Our vacation is from May 19<sup>th</sup> to June 6<sup>th</sup>.

UNSW has the first two weeks and the rest go back on June 2<sup>nd</sup>. Can you make it in the latter half of May?

Regards,



*The students take control...*

UNIVERSITY OF CALIFORNIA, BERKELEY

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO



SANTA BARBARA • SANTA CRUZ

DEPARTMENT OF MATERIALS  
SCIENCE AND ENGINEERING

HEARST MINING BUILDING  
BERKELEY, CALIFORNIA 94720  
(415) 642-3801

May 27, 1970

Dr. R. J. Hunter  
Department of Chemistry  
University of Sydney  
Sydney, N.S.W. Australia

Dear Robert:

My sabbatical leave ends with our leaving here on June 4. We spend a week on the East coast, a week or so in the U.K. and a week in Europe and then a month homeward bound on a boat.

Matters Australian: Geoff Parfitt was here last week announcing that he had an invitation to go to the Electrochem conference in Australia 1972 (or is it 1971, I can't remember). As Ottewill and Fuerstenau are, I gather, not yet invited, this was an embarrassing scene for me.

As I recall our discussions, Ron Ottewill, Doug Fuerstenau, Hans Lyklema, Kitchener (who won't come, I feel sure) and Phil deBruyn were high on the list of proposed people. Does the committee plan to invite them?

How is Alex? Doug, Ron and I are needless to say saddened to hear he is ill. I imagine people in Europe and U.K. will want to know how he is. If you get a chance can you write me

c/o Mrs. R. H. Ottewill  
17 St. Oswald's Rd.  
Redland, Bristol, BS67HU, England

Bristol is my first U.K. stop; I will be there on Monday, June 15.

Have my students sent papers for the Canberra Electrochem meeting in August this year? I bloody well hope they have.

|| They seem to have organised the Hunter-Healy student conference and may or may not have given you the details!

As you no doubt gather from the tone of this letter I am in a state of mild panic as our departure date tumbles in on me. I guess we will make it.

See you soon,

Thomas W. Healy  
Visiting Associate Professor  
of Materials Science

TWH:mb

*Replied  
1/7/6*

The 2<sup>nd</sup> - Melbourne 1970

*Melbourne reciprocates*

TELEPHONE  
34 0484  
TELEGRAMS  
UNIMELB PARKVILLE



No 2.

## University of Melbourne

DEPARTMENT OF CHEMISTRY

Parkville, Victoria 3052

8th September, 1970.

### "Colloid & Surface Chemistry - Student Meeting"

The second meeting of colloid and surface chemistry research groups of Dr. R. J. Hunter (University of Sydney) and Dr. T. W. Healy (University of Melbourne) was held from 16th August to 18th August, 1970 at the School of Chemistry of the University of Melbourne.

Ten research papers were presented by the post-graduate students as well as general review papers by Drs. Hunter and Healy. Professor J. P. Quirk (University of W.A.) and Dr. S. Nicol (BHP Shortland) were guests at the meeting. Contributions to travel and accommodation expenses from the University of Sydney and the School of Chemistry (University of Melbourne) helped to defray costs.

The first meeting of this kind was held in Sydney in May, 1968 and the third meeting is scheduled for February, 1972 at the University of Sydney.

Dr. R. J. Hunter.

Dr. T. W. Healy.

*Student attendance is paramount...*

Department of Physical Chemistry

8 November, 1971

Dr. T.W.Healy,  
Department of Chemistry,  
University of Melbourne,  
PARKVILLE VICTORIA 3052

Dear Tom:

Thanks for your note re Friday. If you do not happen to catch me my phone will be answered by Miss Hunt and she can take details of when you will be in the Department. I guess you can make your own way across from the University Motel. I have arranged to have your tab sent over to the department and we will fix that up.

We would be very much interested in hearing about the Oxide conference. Jim Quirk dropped in briefly on Friday but I was busy trying to pick up the loose ends after my few days in Canberra and had Emmett (B.E.T.) here so we did not have much opportunity to talk.

I don't know quite what to make of your suggestion about the Colloid Chemistry Student's Conference but we can talk about that on Friday. I have already arranged some accommodation for you and your team in International House and have received a grant from Mr. Alec Boden of Hardman Chemicals to cover the costs of your accommodation and our other incidental expenses (nosh and grog) so the situation is not critical for this coming conference. I had certainly intended that Don and his people would come and likewise Murdoch McKenzie who will doubtless be full of tales from South Africa. The problem with the other people is that it is unlikely that they could bring their students with them (especially Quirk) and to have the heavies here without the students somewhat defeats the purpose of the exercise. Perhaps for the next one in Melbourne if we can drum up the necessary support that situation could be rectified.

All the best. See you soon.

Yours sincerely,

R.J.Hunter

The 3<sup>rd</sup> - Sydney 1972

*Welcome to University of New South Wales students*

TELEPHONE  
34 0484  
TELEGRAMS  
UNIMELB PARKVILLE



**University of Melbourne**

DEPARTMENT OF CHEMISTRY

Parkville, Victoria 3052

28th February, 1972

Colloid and Surface Chemistry - Student Meeting

The third meeting of colloid and surface chemistry post graduate students was held in the University of Sydney from February 11th to 13th 1972 inclusive. This group which held its first meeting in Sydney in May 1968 and its second meeting in Melbourne in August 1970 was originally formed from students in the research groups of Associate Professor R.J. Hunter (University of Sydney) and D.R. T.W. Healy (University of Melbourne). The third meeting again included students from these two groups together with students from the groups of Dr. D. Napper, Dr. E. MacFarlane (University of Sydney) and Dr. J.M.W. MacKensie (University of N.S.W.).

Some 10 research papers were present by students covering areas of colloid stability, surfactant adsorption, metal ion adsorption, anion adsorption, crystal nucleation and growth, electrical double layer theory of oxide minerals and calcium mineral flotation chemistry.

Professor J.P. Quirk of the University of West Australia] and ? were guests at the meeting.

.../2  
Sam Levine ?

Contributions to travel and accommodation expenses from the Schools of Chemistry of Universities of Melbourne and Sydney and from are gratefully acknowledged.

The fourth meeting is planned for Melbourne in June 1974.

Dr R.J. Hunter  
Dr T.W. Healy

## The 4<sup>th</sup> - Melbourne & Blackwood 1973

### *Keeping it regular*

#### COLLOID AND SURFACE CHEMISTRY - STUDENT CONFERENCE 1973

The Colloid and Surface Chemistry Student Conference will be held at the University of Melbourne, May 23rd-26th, 1973.

These student conferences began in 1968, as gatherings of the colloid and surface chemistry groups of Associate Professor R. J. Hunter, University of Sydney and Dr. T. W. Healy, University of Melbourne. Subsequently Dr. Napper's group, University of Sydney, and Dr. J. M. W. McKenzie's group, University of N.S.W. also joined. We have always welcomed guests from Universities, C.S.I.R.O., and Industry to attend and work with the post-graduate students at these conferences.

The papers are presented by post-graduate students only and the laboratory visits and discussions associated with the conference are also conducted by students.

It is our intention to continue this Colloid and Surface Chemistry Student Conference on an annual basis at either Sydney or Melbourne and to associate it whenever possible with meetings of the Royal Australian Chemical Institute or kindred societies.

This year the Student Conference is built around a one day (May 25th) meeting of the Electrochemistry Division of R.A.C.I. on "Modern Electrochemical Techniques" to be held at Clunies Ross House Melbourne. The complete provisional programme of the 1973 Colloid and Surface Chemistry Conference is attached. We welcome visitors as participants and hope that they will enter into the spirit of this educational exercise.

.....  
Dr. T. W. Healy,  
University of Melbourne.

.....  
Associate Professor R. J. Hunter,  
University of Sydney.

*Welcome on board A.N.U., Monash & Flinders Universities...*

"Colloid and Surface Chemistry"  
Student Conference, 1973.

The fourth Student Conference in Colloid and Surface Chemistry, was held in Melbourne from May 23 to 26, 1973. Some 19 post-graduate students from the Universities of Melbourne and Sydney, The Australian National University, Monash University and the Flinders University of South Australia, 5 University staff members and 6 visitors from CSIRO and Industrial Research laboratories attended. As in previous years, the conference was organized around an Institute function; this year it was the one-day RACI Electrochemistry Division meeting (May, 25) on Modern Electrochemical Techniques. The Conference secretary was Mr. D.E. Yates of the University of Melbourne.

Technical papers were presented by post-graduate students on topics ranging from experimental studies of oxide colloids, surfactant adsorption, mineral flotation, steric stabilization, Biocolloids and electrokinetic potentials to theoretical studies on dispersion forces, the rheology of coagulated dispersions, structure in liquid crystal systems, and ion binding at oxide surfaces.

Financial support from Universities, industry and CSIRO made the conference possible and this support is gratefully acknowledged.

The Fifth conference is planned for November, 1974 at the University of Sydney.

.....  
Dr. T.W. Healy,  
Senior Lecturer in Physical Chemistry  
University of Melbourne,  
PARKVILLE, 3052. Vic

.....  
Dr. R.J. Hunter,  
Associate Professor in  
Physical Chemistry,  
University of Sydney,  
SYDNEY. N.S.W. 2006

1973 Student Conference on Colloid & Surface Chemistry

List of Participants.

I. Students (19 total)

1. From the Department of Physical Chemistry, University of Sydney.

B. Firth  
D. Gershwin  
I. Kummerow  
P. Neville  
L. Smith

2. From the Department of Chemical Engineering, University of Sydney.

W. Davies.

3. From Department of Physical Chemistry University of Melbourne.

M. Donnan  
R. Flynn  
F. Grieser,  
R. Jung  
M. Moignard  
G. Neale  
P. Stiglich

David Yates (Conference Secretary).

4. From Department of Chemical Engineering Monash University

L. Smith.

5. From the Department of Applied Maths A.N.U. Canberra

D. Chan  
L. White

6. From the School of Physical Sciences, Flinders University S.A.

H. Habib  
A. Khan.

## II

University Staff (5 total)

Dr. T.W. Healy, Department of Physical  
Chemistry, Uni. of Melbourne.

Associate Professor R.J. Hunter, Dept. of  
Physical Chemistry, Uni. of Sydney.

Dr. R.O. James, Department of Physical  
Chemistry, University of Melbourne.

Dr. A. Parentich, Department of Chemistry,  
West Australian Institute of Technology.

Dr. J. Perram, Department of Applied Maths  
A.N.U. Canberra.

## III

Visiting Scientist (6 total)

Dr. R. Bouette            Repco Research, Melb.

Mr. S.G. Dick            A.C.I. Melbourne

Dr. R. Dunhill            Albright & Wilson Ltd. Melb.

Mr. J.N. Elliston        Peko Wallsend P/Ltd. Sydney

Mr. D. Rundle            Tioxide Aust. Pty.Ltd. Tas.

Dr. L. Warren.            C.S.I.R.O. Division of  
Mineral Chemistry. Melb.

COLLOID AND SURFACE CHEMISTRY - STUDENT CONFERENCE 1973

SUGGESTED PROGRAMME

<u>Wednesday, May 23rd (p.m.)</u>	Arrival of Sydney Students Social Gathering
<u>Thursday, May 24th</u>	Department of Chemistry, University of Melbourne
8.45 a.m.	Opening of Meeting
9.00 - 10.00 a.m.	"A Site Binding Model of the Oxide-Water Interface" by David Yates
10.00-10.30	Morning Tea
10.30-11.30	"The Goethite-Water Interface" by Dianne Gershwin
11.30-12.30	"Specific Adsorption at the Goethite-Water Interface" by R. Jung
12.30-2.00	Lunch
2.00-3.00	Laboratory Visit, School of Chemistry
3.00-4.00	"Adsorption at the dropping Hg Electrode" by Lynne Smith
4.00-4.30	Afternoon tea
4.30-5.30	"Surfactant Adsorption at the $TiO_2-H_2O$ Interface" by S. Dick
EVENING:	Free and/or a social gathering
<u>Friday, May, 25th.</u>	Clunies Ross House Melbourne.
9.00 a.m. - 5.00 p.m.	Electrochemistry Division Meeting <b>A.A.C.I.</b> "Modern Electrochemical Techniques."
5.30 p.m.	Depart for University Lodge at Blackwood, Victoria.
<u>Saturday, May 26th.</u>	University Lodge, Blackwood, Victoria.
9.00-10.00 a.m.	"Adsorption at the Sulphide-Water Interface" by R.O. James
10.00-11.00 a.m.	"Rheology of Unstable Dispersions" by B. Firth
11.00-11.30 a.m.	Morning Tea
11.30-12.30	"Van-der Waals Forces & Liquid Crystal Structure" by Lee White.
12.30-1.30	Lunch
1.30-3.00	Excursion - Weather permitting
3.00-4.00	"Ageing of $SiO_2$ and Glass in Water" by F. Grieser
4.00-5.00	"Rheology of Sterically Stabilized Dispersions" by P. Neville
5.00-6.00	Theory of Metal/dielectric interface by D. Chan

Contact on  
Random  
Aggregates

.2.

Evening

7 for  
730

Formal Dinner - Guest Speaker Associate  
Professor R.J. Hunter

Sunday May 26th, 1973.

9.30-11.30 Short Presentations  
11.30-1.00 "Open Forum" - Chairman D.E. Yates.  
Afternoon R Return to Melbourne

ACCOMODATION:

Wed. & Thursday nights - Newman College,  
University of Melbourne.

Friday & Sat. nights - University Lodge, Blackwood, Vic.

The lodge is situated 50 miles from Melbourne at the old gold mining town of Blackwood. This attractive bush setting boasts a bracing climate and although three blankets per bed are provided you will need to bring a sleeping bag or equivalent.

Transport to and from Melbourne will be provided if needed.

Warm clothing and sturdy footwear are recommended if you plan to walk about the countryside.

NOTE: FOR CONTRIBUTORS:

1. Formal papers are listed for 1 hour for presentation & discussion. Please keep the formal presentation to 30-35 mins. if possible.
2. Speakers are encouraged to provide hand-outs which may contain summaries of salient features, tortuous derivations, detailed tables and the like. We expect an average audience of 30 at the meeting.
3. 35 mm slide and overhead projectors are available.
4. The audience spans several disciplines and care should be taken to educate the non-experts as well as to present controversial material.

All Enquiries:

Mr. D.E. Yates,  
Colloid and Surface Chemistry  
Student  
Conference Secretary,  
Dept. Phys. Chemistry,  
University of Melbourne.  
PARKVILLE. 3052 Vic.

The organization gets more complex...

TELEPHONE  
34 0484  
TELEGRAMS  
UNIMELD PARKVILLE



University of Melbourne  
DEPARTMENT OF CHEMISTRY

Parkville, Victoria 3052

JOB ROSTER

Preparationist - everyone help

MEALS

Fri night - barbeque - FG, RT + DEY

Sat breakfast ~ 7.30  
Hillside TWH  
Woodside Grail

On to Bwood

Morning Tea (11.0 → 11.30) FG

Lunch (12.30 → 1.30) RGT

Afternoon tea (4.00 → 4.30) ~~RJ~~ R.J.

Sun breakfast  
Hillside M.M  
Woodside Pauline

Morning Tea (11.0 → 11.30) Margaret

Lunch (12.30 → ) R.F.

CLEANING UP - everyone

Keeping fires going, cutting wood

Co-ordination DEY

RGT  
R.J.

**But 4 course dinners only cost \$3.50 per head or \$3.75 with biscuits & cheese!**

Blackwood Hotel  
Blackwood

M<sup>r</sup> Jals

Dear Sir

I'm writing this  
note to confirm your booking  
for a 4 course dinner on  
the 26<sup>th</sup> day at \$3.50  
per head.

Hoping to hear from  
you on the 26<sup>th</sup> day

I Remain  
Yours Sincerely  
M<sup>r</sup> M. Lathton

They changed to  
\$3.75 & biscuits & cheese.

VICTORIA BITTER ABBOTS LAGER  
FOSTER'S LAGER VICTORIA BITTER VICTORIA BITTER VICTORIA BITTER ABBOTS LAGER  
MELBOURNE

Menu  
BEER BLENDS WITH ANY MEAL

Soup.  
Vegetable

Entrée  
Curry & Rice - Fish Fingers.  
Main course.

Roast Beef with Vegetables  
— Chicken —

Sweets  
Fruit Salad & Icecream.  
Wine Trifle — cream

Biscuits & Cheese.  
Tea or Coffee

AUSTRALIA'S NATIONAL BEERS



*And a bed in Melbourne cost \$7 a night...*



TELEPHONE  
347 5577

Neuman College  
University of Melbourne  
Parkville  
Victoria  
Australia 3052

16th May, 1973

Mr. David Yates,  
Dept. of Chemistry,  
UNIVERSITY OF MELBOURNE.

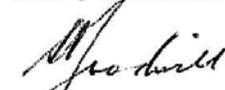
Dear Mr. Yates,

Thank you for your letter and list of names of those staying here on nights of 23rd and 24th May.

It is confirmed that the charge will be \$7.00 per head for the period.

I will await your further advice on 21st May regarding the balance of up to five extra people. ✓

Yours faithfully,

  
F.H. GOODWILL,  
MANAGER.

*Sponsorship has always been important...*

COLLOID AND SURFACE CHEMISTRY - STUDENT CONFERENCE 1973

Attached is an announcement and a Programme concerning the fourth Student Conference in Colloid and Surface Chemistry. This Conference, at one time called the Hunter-Healy or Healy-Hunter Conference has continued to prove of considerable value in the post-graduate education of students in Colloid Science in Australia. It has been and still is a formal gathering at which students are expected to present professional papers on their work, defend their work amongst their peers and amongst staff and visitors, exchange ideas and research techniques and generally expand their involvement in the discipline of Colloid Science.

In this spirit we welcome visitors and from past experience we are sure they will enjoy participating and that they will learn first hand of the work that is going on in Australia. Due to the need to keep numbers at a reasonable level we can invite only one participant, either yourself or someone you nominate, to attend.

The cost of transporting students to or from Sydney and Melbourne, providing accommodation and meals, and catering for the expenses of visitors has in the past been provided in part by University funds and part by donations from centres and industries having an interest in Colloid Science.

Our purpose in this present letter is to ask your organization through you for any financial contribution you may wish to make to the 1973 Colloid and Surface Chemistry Student Conference. Further, we wish to invite you or someone you nominate to attend all or part of the Conference.

Yours sincerely,

.....  
Dr. T. W. Healy,  
Senior Lecturer in Physical Chemistry,  
University of Melbourne,  
PARKVILLE. 3052. Vic.

.....  
Dr. R. J. Hunter,  
Associate Professor in Physical Chemistry,  
University of Sydney,  
SYDNEY. 2006. N.S.W..

*And the morning after the dinner, always challenging...*

TELEPHONE: BURNIE 31 3133  
TELEX NUMBER: AA 58525  
CABLES: AUSTITAN LAUNCESTON  
INCORPORATED IN VICTORIA



## Tioxide Australia Pty. Ltd.

P.O. BOX 184, BURNIE, TASMANIA 7320

TITANIUM PIGMENT MANUFACTURERS

REF.:

June 7 1973

Dear Tom,

This is just a word of personal thanks for the opportunity to attend the post-grad. students conference at Blackwood.

I learnt a lot, was stimulated into looking into many other things and certainly had a good time socially. From my point of view as a non-expert the topics discussed were very interesting, even if some of the Canberra people were a little too soon after Friday night.

Please give my thanks to everyone who had anything to do with the organization of the weekend - especially Dave Yates.

regards,

David Rundle.

*A successful formula is embedded...*

**CSIRO**

MINERALS

RESEARCH LABORATORIES — DIVISION OF MINERAL CHEMISTRY

P.O. BOX 124, PORT MELBOURNE, VIC. 3207. TELEPHONE 644041. TELEGRAMS MINCHEM MELBOURNE

LW/et

28th May, 1973.

Dr. T.W. Healy,  
Department of Physical Chemistry,  
University of Melbourne,  
PARKVILLE, 3052.

Dear Tom, and associated organizers,

The Colloid and Surface Chemistry Student Conference was such a resounding success that I must pass on my thanks both as an individual and on behalf of CSIRO. Needless to say I enjoyed myself (particularly at Blackwood!) and learnt much at the same time.

You did, I remember, ask for comments at one stage so here goes: (1) The blend of chemists, chemical engineers, mathematicians and geologists was very successful and worth retaining, (2) restricting the papers in general to students makes for more open, probing discussion than you get at most conferences, (3) the living-in at Blackwood was ideal for getting to know people, (4) through the conference I made contact not only with academics, but also with industrial chemists, and this two-way exchange is important for CSIRO scientists.

Sincerely,



Len Warren.

*And even Chan and White learned something...What a success!*

**THE INSTITUTE OF ADVANCED STUDIES**  
**DEPARTMENT OF APPLIED MATHEMATICS**

RESEARCH SCHOOL OF PHYSICAL SCIENCES  
THE AUSTRALIAN NATIONAL UNIVERSITY  
CANBERRA, A.C.T., 2600 AUSTRALIA

TELEPHONE: CANBERRA 49 5111

TELEGRAMS: NATUNIV, CANBERRA

29 May 1973

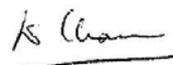
Mr D.E. Yates,  
Department of Physical Chemistry,  
University of Melbourne,  
PARKVILLE 3052 VICTORIA

Dear Dave,

Just a short note to say thank you for having us at the Conference. We appreciate the efforts of you and the rest of the gang in making our stay convivial and interesting. We must say that this is the first Conference that we have been where we have learned something and have come away enthused.

Thanks again to everyone concerned - hope to see you at the next H-H conference.

Yours sincerely,



(Lee White & Derek Chan)

# The 5<sup>th</sup> - Sydney & Woy Woy 1974

## *Expanded industry involvement & welcome to Western Australian students*

FIFTH

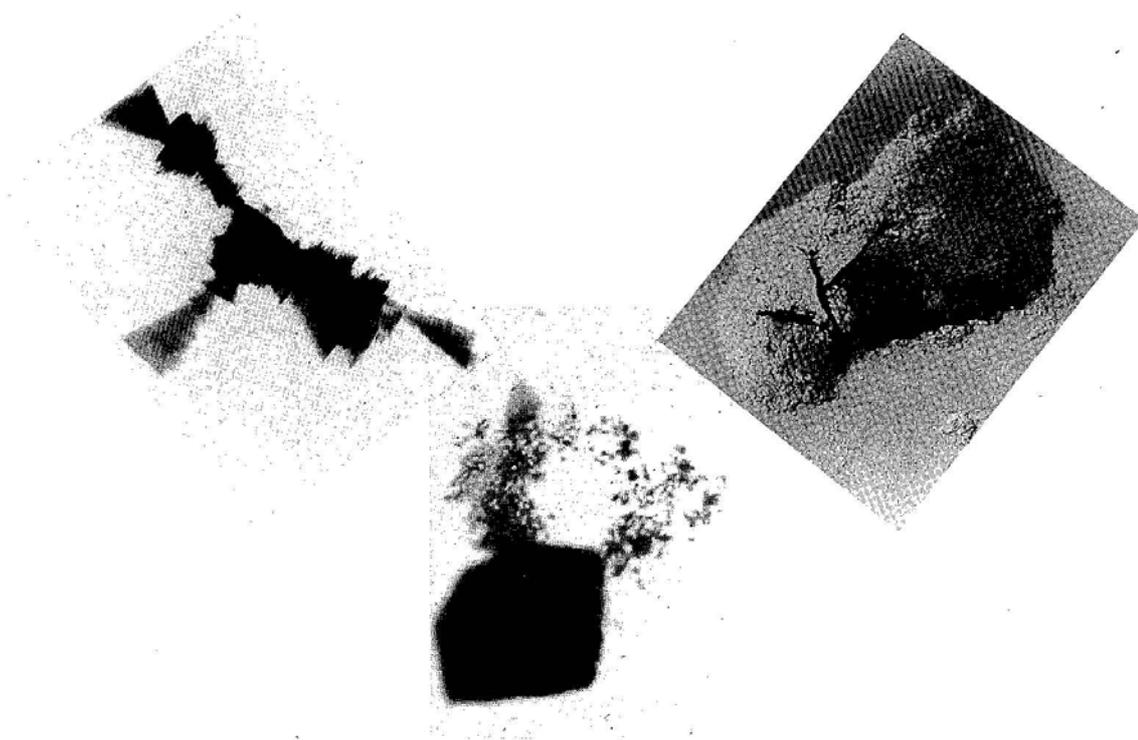
AUSTRALIAN

COLLOID AND SURFACE CHEMISTRY

STUDENT CONFERENCE

UNIVERSITY OF SYDNEY

1974



Proceedings and Abstracts

### **Cover Photographs**

- Top Left** Electron micrograph of hydrated aluminium oxide (Bayerite) particles prepared by ageing alkaline Al(III) aqueous solutions; magnification  $1 \times 10^5$ . (Elizabeth Bate, University of Melbourne)
- Top Right** Pre-shadowed carbon replica of a freeze-dried Ca-illite assemblage. Regular packing of individual Ca-illite crystals is clearly visible on the surface of the assemblage; magnification 32,000X. (Richard Greene, University of W.A.)
- Lower Centre** Optical micrograph of a large  $20\mu$  PbS (galena) particle of zeta potential -25 mV with adherent colloidal iron oxide (goethite) flocs of zeta potential +10 mV; magnification 4000. (Bruce Firth and Paul Neville, University of Sydney)

## PREFACE

Colloid and Surface Science is concerned with processes and systems in which the surface of the material exerts a controlling influence on the properties of the system. *Aerosols* - small droplets of liquid dispersed in air, *clays* - small solid particles dispersed in liquids, *emulsions* - small droplets of one liquid dispersed in another, *blood* - small biocolloid platelets dispersed in a fluid, *photographic film* - small silver halide particles dispersed in a gel matrix; these examples illustrate the wide range of material, biological and technological processes of concern to the colloid chemist.

Because of the diversity of disciplines involved in colloid and surface science, education and research training in the subject exposes the student to theoretical and experimental skills not only in chemistry but also in physics, biology and engineering. In order to foster these interdisciplinary aspects of colloid science, the Australian Colloid and Surface Chemistry Student Conference was begun in 1969 and the present volume outlines the programme and contents of the fifth such conference.

The conference is designed to allow students and their supervisors from Australian Universities and Colleges to exchange research ideas, to give students an opportunity to present technical papers on their research work to a critical audience, to learn new experimental and theoretical skills and to meet with and learn from visiting industrial and government scientists.

The fifth student conference was held at the School of Chemistry, University of Sydney and at Warrah House, Woy Woy, from November 7 - November 10, 1974 by students from the Universities of Sydney, Melbourne, West Australia, The Flinders University of South Australia and the Australian National University, Canberra. Two invited papers by Dr H. J. L. Wright of Imperial College, London and Dr A. Homola, University of Melbourne, were included in the programme. Also participating in the discussion were a number of University, industry and government research scientists.

### *Special Note*

Information on the Australian Colloid and Surface Chemistry Student Conferences may be obtained from

Associate Professor R. J. Hunter,  
Department of Physical Chemistry,  
University of Sydney,  
Sydney, N.S.W. 2006,  
Australia

Dr T. W. Healy  
Reader in Physical Chemistry,  
University of Melbourne,  
Parkville, Vic. 3052,  
Australia

*PARTICIPANTS - 1974*

From the University of Sydney, Department of Physical Chemistry -

Dr R. J. Hunter, Associate Professor of Physical Chemistry  
Dr D. H. Napper, Senior Lecturer in Physical Chemistry  
Robert Evans, Ph.D. Candidate  
Bruce Firth, Ph.D. Candidate  
Brian Hawkett, B.Sc.(Hons.) Candidate  
Jean V. Leyendekkers, Research Fellow  
Paul Neville, M.Sc. Candidate  
Jim Smitham, Ph.D. Candidate

From the University of Melbourne, Department of Physical Chemistry -

Dr T. W. Healy, Senior Lecturer in Physical Chemistry  
Dr R. O. James, A.R.G.C. Postdoctoral Fellow  
Dr A. Homola, A.P.M. Postdoctoral Fellow  
Elizabeth Bate, B.Sc.(Hons.) Candidate  
Margaret Donnan, M.Sc. Candidate  
Alan Durbridge, B.Sc.(Hons.) Candidate  
Robert Jung, M.Sc. Candidate  
Michael Moignard, M.Sc. Candidate  
John Ralston, Ph.D. Candidate and Lecturer in Chemistry,  
Swinburne Institute of Technology, Melbourne  
Pauline Stiglich, M.Sc. Candidate  
David Yates, Ph.D. Candidate

From the Australian National University, School of Applied Mathematics -

Dr John Perram, Research Fellow  
Derek Chan, Ph.D. Candidate  
Lee White, Ph.D. Candidate  
Chris Barnes, Ph.D. Candidate  
Cliff White, Ph.D. Candidate  
Jacek Duniec, Ph.D. Candidate

From The Flinders University of South Australia, School of Physical  
Sciences -

M. A. Habib, Ph.D. Candidate

From The University of West Australia, Department of Soil Science -

Michael Boland, Ph.D. Candidate

Richard Green, Ph.D. Candidate

Brian Kavanagh, Ph.D. Candidate

From The West Australian Institute of Technology -

Dr A. Parentich, Senior Lecturer in Chemistry

From Imperial College, London -

Dr Harley J. L. Wright (now at C.S.R. Research)

From CSIRO Division of Mineral Chemistry -

Dr Len Warren

From Industrial Research Groups -

Lynne C. Barnett, Albright and Wilson (Australia)  
(former M.Sc. Candidate at Sydney)

Dr Stuart Nicol, B.H.P.

Dr Alan Dun, Research Director, Monsanto

Dr John Friend, Davis Gelatine

Dr David Lloyd, Chief Research Chemist, N. B. Love

Mark Wilson, C.S.R. Research

Kevin Monfort, Union Carbide

AUSTRALIAN COLLOID AND SURFACE CHEMISTRY

STUDENT CONFERENCE 1974

PROGRAMME

<u>Thursday, November 7th - School of Chemistry, University of Sydney</u>		
5.00 p.m.	"Rheology of Suspensions"	B. A. Firth (Sydney)
5.45 p.m.	"Charge Regulation at Amphoteric Surfaces"	Derek Chan (A.N.U.)
<u>Friday, November 8th School of Chemistry, University of Sydney</u>		
10.00 a.m.	"Dewatering of Slurries"	Dr Harley J. L. Wright (London)
10.30 a.m.	"Titration and Exchange Studies on Oxides"	David Yates (Melbourne)
	11.00 a.m. Morning tea/coffee	
11.30 a.m.	"Adsorbed Polymer Layers on Oxides"	Brian Kavanagh (W.A.)
12.00 noon	"Analytic Theories of Steric Stabilisation"	Jim Smitham (Sydney)
12.30 p.m.	"Kinetics of Emulsion Polymerisation"	Brian Hawkett (Sydney)
	1.00 p.m. Lunch	
2.30 p.m.	"Adsorption of Polymers at Interfaces"	Lee White (A.N.U.)
3.00 p.m.	"Adsorption of Oleic Acid on Iron Oxide"	Robert Jung (Melbourne)
	3.30 p.m. Afternoon tea/coffee	
4.00 p.m.	"Coagulation of Polymer Latices"	Dr Andrew Homola (Melbourne)
	Evening Conference Dinner (at Ettalong)	
<u>Saturday, November 9th Warra House, Woy Woy</u>		
9.00 a.m.	"Coagulation of Colloidal Cellulose"	Margaret Donnan (Melbourne)

9.40 a.m.	"Water Molecule Orientation in the Electrical Double Layer"	M. A. Habib (S.A.)
10.15 a.m.	"Adsorption of Quaternary Ammonium Ions at the DME"	Lynne C. Barnett (Sydney)
	11.00 a.m.	Morning tea/coffee
11.30 a.m.	"Zeta Potential of Zinc Sulphide"	Michael Moignard (Melbourne)
12.15 p.m.	"Slime Coating of Sulphides"	Paul C. Neville (Sydney)
	1.00 p.m.	Lunch
2.30 p.m.	"Adsorption of Cd(II) on Oxides"	Pauline Stiglich (Melbourne)
3.10 p.m.	"Charge Behaviour of Kaolinite"	Michael Boland (W.A.)
	3.50 p.m.	Afternoon tea/coffee
4.15 p.m.	"General Discussion"	
		Evening Barbecue, Woy Woy

Sunday, November 10th

Warra House, Woy Woy

9.15 a.m.	"Electron Microscopic Techniques in the Study of Colloidal Dispersions"	Richard Green (W.A.)
10.00 a.m.	"Precipitation of Colloidal Dispersions"	Elizabeth Bate (Melbourne)
10.30 a.m.	"Photochemical Surface Reactions"	Alan Durbridge (Melbourne)
	11.00 a.m.	Morning tea/coffee
11.30 a.m.	"Surface Properties of Asbestos Minerals"	John Ralston (Melbourne)

The 6<sup>th</sup> - Canberra 1976

Welcome to Queensland students and new hosts, the ANU

SIXTH  
AUSTRALIAN  
COLLOID AND SURFACE CHEMISTRY  
STUDENT CONFERENCE  
AUSTRALIAN NATIONAL UNIVERSITY  
1976



Proceedings and Abstracts

Cover

A schematic representation of the history of the development of theoretical colloid science from "Intermolecular Forces – the Long and Short of It", J. N. Israelachvili and B. W. Ninham, *J. Colloid and Interface Science*, 58, (1) 14, 1977.

## PREFACE

Colloid and Surface Science is concerned with processes and systems in which the surface of the material exerts a controlling influence on the properties of the system. *Aerosols* - small droplets of liquid dispersed in air, *clays* - small solid particles dispersed in liquids, *emulsions* - small droplets of one liquid dispersed in another, *blood* - small biocolloid platelets dispersed in a fluid, *photographic film* - small silver halide particles dispersed in a gel matrix; these examples illustrate the wide range of material, biological and technological processes of concern to the colloid chemist.

Because of the diversity of disciplines involved in colloid and surface science, education and research training in the subject exposes the student to theoretical and experimental skills not only in chemistry, but also in physics, biology and engineering. In order to foster these interdisciplinary aspects of colloid science, the Australian Colloid and Surface Chemistry Student Conference was begun in 1969 and the present volume outlines the programme and contents of the sixth such conference.

The conference is designed to allow students and their supervisors from Australian Universities and Colleges to exchange research ideas, to give students an opportunity to present technical papers on their research work to a critical audience, to learn new experimental and theoretical skills and to meet and learn from visiting industrial and government scientists.

The sixth student conference was hosted by the Department of Applied Mathematics, Research School of Physical Sciences, Australian National University from May 21-23, 1976. Students and staff participating came from the Universities of Queensland, Sydney and Melbourne, and the Australian National University. Some 17 student papers and three invited papers by research fellows were presented, as well as a lecture and demonstration by Dr Israelachvili (ANU) of the new force-distance measurement apparatus.

These conferences began in the late sixties as very informal gatherings (usually over a weekend) of the research students of Drs Healy (Melbourne) and Hunter (Sydney) respectively. Only student papers were permitted but in successive meetings the number of observers from other universities, the CSIRO, and industry gradually increased and the organisation became a little more formal.

The format usually consists of a one-day meeting with fairly wide attendance followed by a more secluded, residential arrangement for the weekend, during which the conference programme continues in an informal atmosphere with plenty of opportunity for small group discussion and social intercourse.

The 3rd Conference was in February 1972 in Sydney just before the 3rd Australian Electrochemistry Conference in Terrigal; most students also attended the latter meeting and some presented papers. The 4th meeting was in Melbourne, in May 1973 at the time of a one-day meeting of the Electrochemistry Division of the RACI, and was continued over the weekend at the University's field station at Blackwood near Ballarat, Victoria. The 5th meeting was held at Sydney in November 1974 at the University and then over the weekend at the University's field station, Warrah House, Woy Woy, on the central coast.

These last three meetings have involved a significant number of observers (especially in the preliminary session) and have also involved participation by some additional, very active research groups, in particular the Applied Mathematicians from ANU, Dr D. Napper's polymer colloids group (Sydney), some from Flinders University (Professor Bockris), and from the University of Western Australia (formerly Professor Quirk), as well as from RMIT and Swinbourne State College in Melbourne. This year for the first time we welcome someone from Dr G. Barnes' group in the University of Queensland.

*PARTICIPANTS - 1976*

From the University of Sydney, Department of Physical Chemistry -

Dr R. J. Hunter, Associate Professor of Physical Chemistry

Dr R.G. Gilbert, Lecturer in Theoretical Chemistry

Dr Teo G.M. van de Ven, Tutor-Research Fellow

Jean V. Leyendekkers, Research Fellow

Robert Feigen, PhD Candidate

Brian Hawkett, PhD Candidate

G. Lichti, BSc Honours Candidate

Greg March, MSc Candidate

Paul Neville, MSc Candidate

Jim Smitham, PhD Candidate

From the University of Queensland, Department of Physical Chemistry -

Marylyn McGregor, PhD Candidate

Maureen Quinn, MSc Candidate

From the University of Melbourne, Department of Physical Chemistry -

Dr T. W. Healy, Reader in Physical Chemistry

Dr A. Homola, Research Fellow

Dr L. R. White, Research Fellow

Frank Grieser, PhD Candidate

John Lyons, BSc Honours Candidate

Michael Moignard, MSc Candidate

John Ralston, PhD Candidate

Pauline Stiglich, PhD Candidate

From the Royal Melbourne Institute of Technology, Department of Applied Physics -

Dr W. van Megan, Lecturer

Ron Hurst, BSc (Applied Science) Candidate

From the Australian National University, Research School of Physical Sciences -

Dr R. Street, Professor and Director

From the Australian National University, Research School of Physical Sciences,

Department of Applied Mathematics -

Dr B.W. Ninham, Professor and Chairman

Dr Janek Duniec, Research Fellow

Dr J. Israelachvili, Research Fellow

Dr S. Marcelja, Research Fellow

Dr J. Mitchell, Research Fellow

Peter Forsyth, MSc Candidate

Michael Sculley, MSc Candidate

Joe Wolfe, MSc Candidate

From BHP, Shortland -

Mr Col Bensley

From CSIRO Division of Mineral Chemistry -

Dr Len Warren (Melbourne)

AUSTRALIAN COLLOID AND SURFACE CHEMISTRY

STUDENT CONFERENCE 1976

PROGRAMME

Friday, May 21st - Department of Applied Mathematics, Australian National Univ.

9.00 am	Official Opening	Professor R. Street (ANU)
9.15 am	"Electro-Kinetics of Mineral Sulphides"	Michael Moignard (Melbourne)
10.00 am	"Metal-Ion Exchange at the Sulfide-Water Interface"	John Ralston (Melbourne)
	10.45 am Morning tea/coffee	
11.15 am	"Steric Stabilization in Systems involving More than One Stabilizer"	Robert Feigin (Sydney)
12.00 noon	"Steric Stabilization of Emulsions and of Non-Aqueous Systems"	Greg March (Sydney)
	12.45 pm Lunch	
2.00 pm	"Measurements of the Thickness of Adsorbed Polymer Layers"	Jim Smitham (Sydney)
2.45 pm	"Adsorption at the Drops in Mercury Electrodes"	C. Bensley (Sydney)
	3.15 pm Afternoon tea/coffee	
3.30 pm	"A Structural Model for Water"	Michael Sculley (ANU)
4.15 pm	"Photon Correlation Spectroscopy and its Application to Colloids"	Ron Hurst (RMIT)
	Evening - Conference Dinner (at Ross's Farm, Queanbeyan)	

Saturday, May 22nd - Australian National University

9.00 am	"Kinetics of Emulsion Polymerization"	Brian Hawsett (Sydney)
9.45 am	"The Growth of Polymer Colloids"	G. Lichti (Sydney)

10.30 am	"The Equilibrium Penetration of Monolayers by Surfactants"	Marylyn McGregor (Queensland)
	11.15 am Morning tea/coffee	
11.30 am	"Monodisperse Chromium Hydroxide Sols"	John Lyons (Melbourne)
12.15 pm	"Cadmium Adsorption at Oxide Interfaces"	Pauline Stiglich (Melbourne)
	1.00 pm Lunch	
2.00 pm		
2.45 pm	"Rheology of Colloidal Dispersions"	Dr T.G.M. van de Ven (Sydney)
	3.15 pm Afternoon tea/coffee	
3.30 pm	"Measurement of Long-Range Forces between Two Mica Surfaces in Aqueous Electrolytes" (including a demonstration of the equipment)	Dr J. Israelachvili (ANU)
	5.30 pm Barbecue	

Sunday, May 23rd - Australian National University

9.00 am	"The Slime Coating Problem"	Paul Neville (Sydney)
9.45 am	"The Physical Properties of Lipid Bilayers"	Joe Wolfe (ANU)
10.30 am	"Phase Separation in Biological Membranes"	Peter Forsyth (ANU)
	11.15 am Morning tea/coffee	
11.30 am	"Monolayer Adsorption on Spatially Dispersive Substrates"	Dr Jacek Duniec (ANU)
12.15 pm	"Theoretical Colloid Chemistry - the Latest News"	Dr Lee White (Melbourne)

The 7<sup>th</sup> - Melbourne & Blackwood 1977

Welcome to Victorian College of Pharmacy & Swinburne students

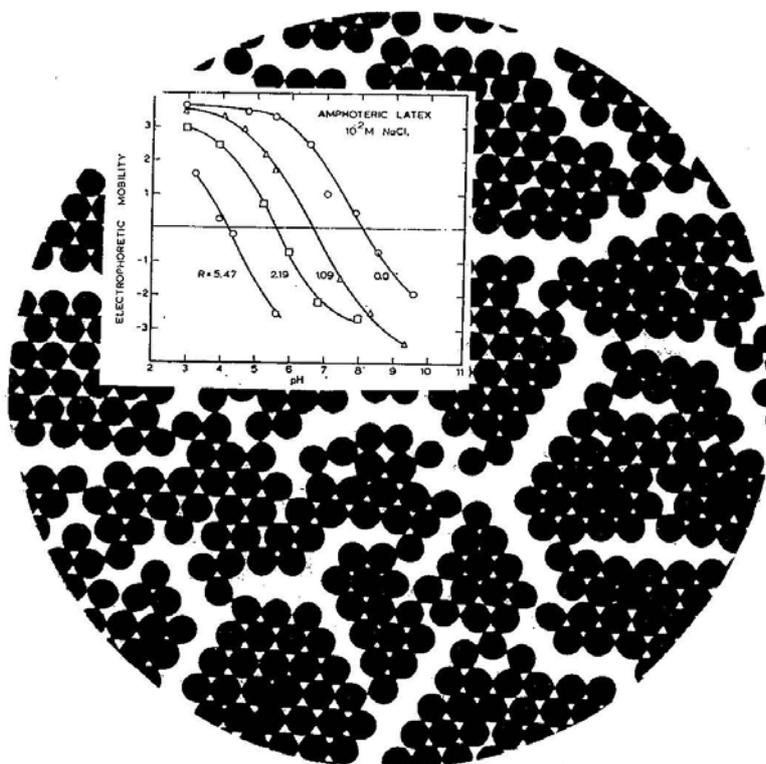
SEVENTH

AUSTRALIAN COLLOID AND SURFACE CHEMISTRY

STUDENT CONFERENCE

UNIVERSITY OF MELBOURNE

1977



PROCEEDINGS AND ABSTRACTS

### Cover

An electron micrograph of 1850 Å diameter latex particles that contain both carboxylate and amine surface groups. The insert shows the electrophoretic mobility-pH curves for lattices containing different ratios (R) of amine to carboxyl groups.

From "Preparation and characterization of amphoteric latex colloids", A. Homola and R. O. James, *J. Colloid and Interface Science*, 59, 123 (1977).

## PREFACE

Colloid and Surface Science is concerned with processes and systems in which the surface of the material exerts a controlling influence on the properties of the system. *Aerosols* - small droplets of liquid dispersed in air, *clays* - small solid particles dispersed in liquids, *emulsions* - small droplets of one liquid dispersed in another, *blood* - small biocolloid platelets dispersed in a fluid, *photographic film* - small silver halide particles dispersed in a gel matrix; these examples illustrate the wide range of material, biological and technological processes of concern to the colloid chemist.

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The conference is designed to allow students and their supervisors from Australian Universities and Colleges to exchange research ideas, to give students an opportunity to present technical papers on their research work to a critical audience, to learn new experimental and theoretical skills and to meet and learn from visiting industrial and government scientists.

The seventh student conference was hosted by the Department of Physical Chemistry, University of Melbourne, from September 2-4, 1977. Students and staff participating came from the Australian National University, the University of Sydney and from the Western Australian Institute of Technology. Some 14 student papers and three invited papers by research fellows were presented.

PARTICIPANTS - 1977

From The Australian National University, Department of Applied Mathematics

Bernard Pailthorpe, Research Fellow  
Jos Beunen, PhD Candidate  
Barry Hughes, PhD Candidate  
Eric Perez, PhD Candidate  
Joe Wolfe, PhD Candidate

From the University of Melbourne, Department of Physical Chemistry

Dr T.W. Healy, Professor of Physical Chemistry  
Ian Harding, BSc Honours Candidate  
Ron Hurst, MSc Preliminary Candidate  
John Lyons, MSc Candidate  
Debra Payne, BSc Honours Candidate

From ICI Australia Ltd, Central Research Laboratory

Dr D.E. Yates

From the University of Sydney, Department of Physical Chemistry

Dr R.J. Hunter, Associate Professor of Physical Chemistry  
Dr F. Haekal, Research Fellow  
Dr T. van de Ven, Research Fellow  
Col Bensley, PhD Candidate  
Robert Feigin, PhD Candidate  
Max Keniry, PhD Candidate

Department of Mechanical Engineering

Nhan Phan-Thien, PhD Candidate

From Swinburne College of Technology, Department of Applied Chemistry

John Ralston, PhD Candidate

From the Victorian College of Pharmacy

Chris Boag, MSc Candidate

From the Western Australian Institute of Technology

Dr T. Parentich

VISITORS

From CSIRO Division of Mineral Chemistry

Dr L.J. Warren

Dr G. Sparrow

From CSIRO Division of Chemical Technology

Dr D.R. Dixon

Dr R. Eldridge

Luis Kolarik

From CSIRO Division of Food Research, Meat Research Laboratory

Dr B. Kavanagh

From the Department of Agriculture, Tatura Research Station

Richard Green

From Nicholas Research Laboratories

Brendan Lovelock

From Tioxide (Australia) Pty Ltd

David Rundle

From The Australian National University, Department of Applied Mathematics

Dr D. Chan, Research Fellow

Dr J. Duniec, Research Fellow

Dr J. Mitchell, Research Fellow

Dr R. O'Brien, Research Fellow

Dr L.R. White, Research Fellow

AUSTRALIAN COLLOID AND SURFACE CHEMISTRY

STUDENT CONFERENCE 1977

PROGRAMME

Friday, September 2 - Department of Physical Chemistry,  
University of Melbourne.

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11.00 AM	Opening Remarks	Professor T.W. Healy (Melbourne)
11.05	"Polymer Latices as Ideal Colloids"	Dr D.E. Yates (ICI)
11.50	"Properties of Polymers attached to Interfaces"	Robert Feigin (Sydney)
12.35 PM	Lunch	
2.15	"The Detection of Elemental Sulphur on Sphalerite Surfaces activated by Heavy Metal Ions"	John Ralston (Melbourne)
3.00	"Structural Forces in Colloidal Sciences"	Dr B. Pailthorpe (ANU)
3.45	Afternoon tea	
4.15	"Viscoelastic Properties of Colloidal Sols"	Dr T. van de Ven (Sydney)
7.00	Barbecue, 'Hillside', Blackwood.	

Saturday, September 3 - Blackwood

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9.00 AM	"Measurement of Surface Forces - the use, misuse and abuse of linear elasticity theory"	Barry Hughes (ANU)
9.35	"Light Scattering Studies of the Free Diffusion of an Amphoteric Polystyrene Latex"	Ron Hurst (Melbourne)
10.10	"Flukes and Colloidal Drug Delivery Systems"	Chris Boag (Victorian College of Pharmacy)
10.45	Morning tea	
11.00	"Surface Tension Minima in Sparingly Soluble Surfactant Systems"	Jos Beunen (ANU)
11.35	"Studies of Amphoteric Latex Colloids"	Ian Harding (Melbourne)
12.15 PM	Lunch	

2.00 PM	"The Effect of Particle Volume Fraction on Sol Coagulation by Electrolytes"	Col Bensley (Sydney)
2.35	"Surface Chemistry of Chromium Hydroxide"	John Lyons (Melbourne)
3.10	"The Langevin Approach to the Dumb-Bell Kinetic Problem"	Nan Phan-Thien (Sydney);
3.45	Free time for walk to Blackwood Springs	
7.00	Conference Dinner Guest Speaker - Dr Tony Parentich, W.A.I.T. "Footballs and Colloid Balls"	

*Sunday, September 4 - Blackwood*

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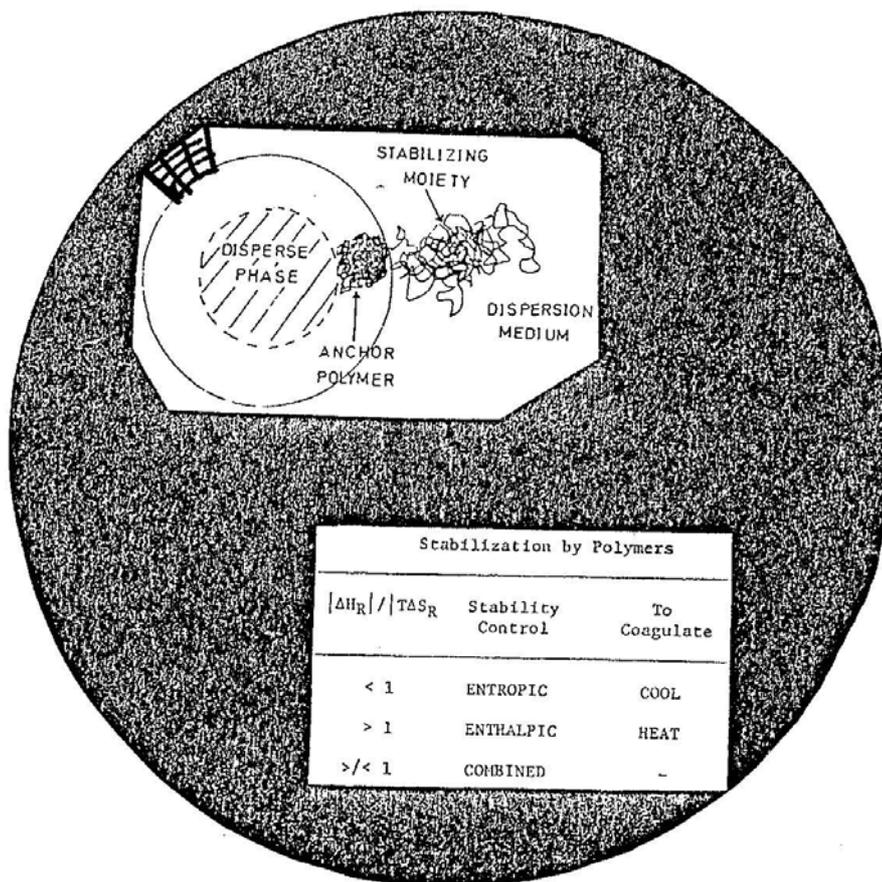
9.00	"Phase Transitions in Membranes and Chilling Sensitivity in Plants"	Joe Wolfe (ANU)
9.35	"Hydrophobic Probes and Poly-electrolyte Structure"	Debra Payne (Melbourne)
10.10	"Protein-Lipid Interactions - binding data and NMR relaxation time studies"	Max Keniry (Sydney)
10.45	Morning tea	
11.15	"Adsorption at the Dropping Mercury Electrode"	Dr F. El-Taib Haekal (Sydney)
11.50	"Thin Film Studies with Liquid Crystals"	Eric Perez (ANU)
12.30 PM	Lunch	
2.00	General discussion and closing remarks	Professor R.J. Hunter Chairman (Sydney)

# The 8<sup>th</sup> - Yarrawood 1978

*Welcome to RMIT, SAIT, Newcastle & Bendigo students*

*Delegate numbers exceed 50 for the first time*

EIGHTH  
AUSTRALIAN COLLOID AND SURFACE CHEMISTRY  
STUDENT CONFERENCE  
UNIVERSITY OF SYDNEY  
1978



## PROCEEDINGS AND ABSTRACTS

### Cover

Schematic representation of the interaction of colloidal particles coated with adsorbed polymer which, as indicated in the table, leads to general criteria of stability.

After Napper, University of Sydney.

## PREFACE

Colloid and surface science is concerned with processes and systems in which the surface of the material exerts a controlling influence on the properties of the system. *Aerosols* - small droplets of liquid dispersed in air, *clays* - small solid particles dispersed in liquids, *emulsions* - small droplets of one liquid dispersed in another, *blood* - small biocolloid platelets dispersed in a fluid, *photographic film* - small silver halide particles dispersed in a gel matrix; these examples illustrate the wide range of material, biological and technological processes of concern to the colloid chemist.

Because of the diversity of disciplines involved in colloid and surface science, education and research training in the subject expose the student to theoretical and experimental skills, not only in chemistry but also in physics, biology and engineering. In order to foster these interdisciplinary aspects of colloid science, the Australian Colloid and Surface Chemistry Student Conference was begun in 1969; the present volume outlines the programme and contents of the eighth such conference.

The Conference is designed to allow students and their supervisors from Australian universities and colleges to exchange research ideas, to give students an opportunity to present technical papers on their research work to a critical audience, to learn new experimental and theoretical skills, and to meet and learn from visiting industrial and government scientists.

The eighth Student Conference was hosted by the Department of Physical Chemistry, University of Sydney, from November 11-14, 1978. Students and staff participating came from the Australian National University, the University of Sydney, the University of Melbourne, the University of New South Wales, the Royal Melbourne Institute of Technology, the South Australian Institute of Technology, and Bendigo College of Advanced Education. Some 25 student papers and two invited papers by research fellows were presented.

PARTICIPANTS - 1978

From the University of Melbourne, Department of Physical Chemistry

Dr T W Healy, Professor of Physical Chemistry  
Dr D N Furlong, Research Fellow  
Luis Kolarik, PhD Candidate  
Ian Harding, MSc Candidate  
Ron Hurst, MSc Candidate  
Brendan Lovelock, MSc Candidate  
John Lyons, MSc Candidate  
Fedir Woskoboenko, BSc (Honours) Candidate  
Pam Freeman, Technical Assistant

From The Australian National University, Department of Applied Mathematics

Dr B W Ninham, Professor of Applied Mathematics  
Dr D Chan, Research Fellow  
Dr R G Horn, Research Fellow  
Dr J Israelachvili, Research Fellow  
Dr D J Marcelja, Research Fellow  
Dr D J Mitchell, Research Fellow  
Dr B A Pailthorpe, Research Fellow  
Dr R M Pashley, Research Fellow  
Dr L R White, Research Fellow  
Jos Beunen, PhD Candidate  
Steven Carnie, PhD Candidate  
Barry Hughes, PhD Candidate  
Michael Sculley, PhD Candidate  
Joe Wolfe, PhD Candidate

From the University of Sydney, Department of Physical Chemistry

Dr R J Hunter, Associate Professor of Physical Chemistry  
Dr D H Napper, Associate Professor of Physical Chemistry  
Col Bensley, PhD Candidate  
Robert Feigin, PhD Candidate  
Brian Hawsett, PhD Candidate  
Max Keniry, PhD Candidate  
Gottfried Lichti, PhD Candidate  
John Prayne, Research Assistant  
Hashim Durrani, Professional Officer

From the University of Sydney, Department of Theoretical Chemistry

Dr R G Gilbert, Senior Lecturer in Theoretical Chemistry  
Dr K S J Nordholm, Lecturer in Theoretical Chemistry  
Mark Johnson, BSc (Honours) Candidate  
Steve Lansdowne, BSc (Honours) Candidate

From the University of Sydney, Department of Pharmacy

Dr K Brown, Lecturer in Pharmacy

From the University of Bristol, Department of Physical Chemistry

Dr R H Ottewill, Professor of Colloid Science

From the University of Newcastle, Department of Chemical Engineering

Dr G J Jameson, Professor of Chemical Engineering  
Peter Cooper, ME Candidate

From the University of New South Wales, Department of Microbiology

Steve Lupton, MSc Candidate

From the University of New South Wales, Department of Mechanics

Dr R W O'Brien, Lecturer in Mechanics

From the Royal Melbourne Institute of Technology, Department of Applied Physics

Dr I Snook, Lecturer  
Kevin Gaylor, MAppSc Candidate  
Tony Hughes, MAppSc Candidate

From the South Australian Institute of Technology

Keith Quast, MSc Candidate

From Bendigo College of Advanced Education

John McClelland, MSc Candidate

From BHP Co. Ltd, Central Research Laboratories

Dr J Day

From Tioxide (Australia) Pty Ltd

David Rundle

From CSIRO Division of Textile Physics

Dr R O James

From CSIRO Division of Food Research

Mr J Algie  
Dr L Fisher  
Dr N Parker

AUSTRALIAN COLLOID AND SURFACE CHEMISTRY

STUDENT CONFERENCE - 1978

PROGRAMME

*Saturday, November 11 - School of Chemistry, University of Sydney*

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2.30-3.00 PM Assembly and Registration  
 3.00 By bus to Yarrawood Conference Centre  
 7.00 Evening barbecue

*Sunday, November 12 - Yarrawood*

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9.00 AM	Opening Remarks - Professor R J Hunter (Sydney)	
9.15	Photon Correlation Studies of Polystyrene Latex Colloids	Ron Hurst (Melbourne)
9.45	Photon Correlation - A method of colloidal analysis	Tony Hughes (MIT)
10.15	*Adsorption of Cd(II) at the Latex-Water Interface	Ian Harding (Melbourne)
10.45	Morning tea	
11.15	Oil Agglomeration of flue dusts in the Lead-Zinc Industry	Peter Cooper (Newcastle)
11.45	*Flow Behaviour of Coagulated Sols	John Frayne (Sydney)
12.15 PM	*Adsorption of Transition Metal Cations on Hydrous Metal Oxides	John McLelland (Bendigo)
12.45	Lunch	
2.00	*Low Temperature Adsorption Micro-calorimetry	Neil Furlong (Melbourne)
2.30	*Colloid Science in Biology - an overview	Joe Wolfe (ANU)
3.00	*Surfactant-Microbe Interactions in Microbial Oil Degradation	Steve Lupton (NSW)
3.30	Afternoon tea	
4.00	*The Effect of Free, Non-interacting Polymer on Colloidal Stability	Robert Feigin (Sydney)
4.30	*Anomalous Forces in Colloid Science - fact or artifact?	Barry Hughes (ANU)
5.00	*Coagulation of Concentrated Sols	Col Bensley (Sydney)

Monday, November 13 - Yarrawood

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9.15 AM	*The Effect of Monovalent and Divalent Cations on Lipid Membrane Interactions	Michael Sculley (ANU)
9.45	*Changes in the Internal Fluidity of Lipid Bilayers caused by the Introduction of Proteins, as measured by Nuclear Magnetic Relaxation Times	Max Keniry (Sydney)
10.15	*Trans-Bilayer Distributions in Mixed Lipid Vesicles	Steven Carnie (ANU)
10.45	Morning tea	
11.15	The Generalised Van der Waals Equation and its Application to Interfaces and Adsorption	Mark Johnson (Sydney)
11.45	Dynamic Simulation of Colloidal Systems	Kevin Gaylor (RMIT)
12.15 PM	*Osmotic Pressure in Dense Colloidal Systems	Jos Beunen (ANU)
12.45	Lunch	
2.00	Zeta-Potentials at the Mica-Electrolyte Interface	John Lyons (Melbourne)
2.30	*Studies on the Surface Chemistry of Hematite	Keith Quast (SAIT)
3.00	Colloidal Magnetic Iron Oxide	Luis Kolarik (Melbourne)
3.30	Afternoon tea	
4.00	*Evidence for Exit in the Seeded Emulsion Polymerisation of Styrene	Brian Hawkett (Sydney)
4.30	*Rate Decay in Emulsion Polymerisation	Steve Lansdowne (Sydney)
5.00	The Growth of Polymer Colloids	Gottfried Lichti (Sydney)
7.00	CONFERENCE DINNER - Guest Speaker : Prof. R H Ottewill	(Bristol)

Tuesday, November 14 - Yarrawood

9.15 AM	Wettability of Hydrophobic Glass induced by Non-ionic Surfactants	Fedir Woskoboenko (Melbourne)
9.45	*Surface Forces in Adsorbed Multi-layers of Water on Quartz	Richard Pashley (ANU)
10.15	The Synthetic Fibre-Water Interface	Brendan Lovelock (Melbourne)
10.45	Closing Remarks - Professor T W Healy	(Melbourne)

## The 9<sup>th</sup> - Kioloa 1980

### *Our important periodic cluster goes beachside*

#### **Preface**

“Of the making of books there is no end, and in too much study there is much weariness of the spirit.” So we are admonished by the Preacher in the Book of Ecclesiastes in his peroration (*Ecc.* 12; 12, 13). It is a favourite quote and contains much wisdom. The views of the old goat on publications of conference proceedings are not recorded, but it seems unlikely that he would have been excessively enthusiastic. Couple this with, and contemplate the circumstance that this is the ninth Australian Colloid and Surface Chemistry Student Conference. Nine precedes ten, and a decade deserves celebration. But although as remarked by Ramanujan, the cube of 9 plus 1000 is the first number expressible as the sum of two cubes in two different ways [ $9^3 + 1000 = 1729 = 12^3 + 1^3 = 9^3 + 10^3$ ]. It is generally conceded that 9 is a singularly uninteresting number.

In other words the writer of this preface has an uphill job.

But there is some merit in recapitulating the history of the matter and in a reaffirmation of what this by how historic event is all about. The conference began in 1969, with R.J. Hunter, T.W. Healy and their students.

Despite a long and honourable tradition, and much good work, modern Australian Colloid and Surface Science was still in its infancy. The subject itself had not quite begun those astonishing revolutionary developments and expansion of its horizons which has taken it to centre stage of the physical, chemical and biological sciences, and indeed of engineering. There is probably no other discipline which underlies so much of technology – in paper, paint, pollution, photographic processes, soil science, minerals beneficiation, separation science, oil recovery, matters biomedical, detergents, cosmetics, water purification, food and beer, surface coatings – to name a few.

The conference was designed to allow students and their supervisors from Australian Universities and Colleges to exchange research ideas, to give students an opportunity to present technical papers to a critical audience; to learn new experimental and theoretical skills; and to meet and learn from visiting industry and government scientists from this country and overseas. In this it has been eminently successful.

Australian research in the subject is now acknowledged to lead the world, and by some way. It is important that students going to industry and applied research be *au fait* with recent developments, and get to know the entire colloid and surface science community.

The last few years have seen a dramatic growth in activity in the subject and awareness on the part of industry of its increasing need for colloid and surface scientists. The formation of the RACI Division of Surface and Colloid Chemistry, its annual conferences, special meetings, new short courses to industry, grew out of the ASCSS Conference experience. IUTAM and IUPAC representing the senior international scientific unions in chemical engineering, fluid mechanics and pure and applied chemistry sponsored a major international meeting at Canberra, March 1981. The allied disciplines of electrochemistry and polymer science continue to expand.

Ultimately, however, despite this intense professional activity the (informal) Student Conferences remain, and will remain, as the benchmark and most important periodic cluster point for the community.

Steve Carnie

## **The 10<sup>th</sup> - Mt Eliza 1982**

### ***The student conference turns 10!***

#### **Preface**

The 10<sup>th</sup> Australian Colloid and Surface Chemistry Student Conference was held in Melbourne, February 1982. The Abstracts that follow were prepared by the postgraduate students from the Universities of Melbourne Sydney, ANU, NSW, Monash together with Bendigo and Pharmacy Colleges of Victoria and the Royal Melbourne, Swinburne and S.A. Institutes, who presented papers at the conference.

The first two conferences in Sydney and Melbourne established the atmosphere and motivation for all subsequent gatherings. Students presented papers on their own research to an audience of their peers, their immediate supervisors, other local and overseas academics and visitors from Australian Government and Industrial Research Centres. Bob Hunter and I, as originators of these conferences, perceive a general increase in excellence and in the standard of presentation, due no doubt in part to our advancing age! It is also a manifestation of success of the teaching role of each conference as well as an acknowledgement of the steady rise to international leadership of the Australian Colloid Science Community.

It is proper then to celebrate this 10<sup>th</sup> Anniversary and to acknowledge the achievements of the current group of students and of all alumni of these unique gatherings. We also celebrate the achievements of the several groups around the country; from outside the nation, we are seen as a single group. Such coherence is fostered by our student conferences where inter and intra group teaching, debate and competition are sensibly balanced.

It is also a time to reflect on the prospects of the next 10 conferences as Australian science in Universities, Government research labs and industrial centres feels the cuts made to our activities. It is relatively easy for Colloid Scientists to justify their existence in terms of relevance and short term research. Colloid science is important in enhanced oil recovery, it is central to fine mineral processing; it is making contributions to our understanding of nutrient availability in soils or in the control of heavy metal pollution of our waterways. But short term success is illusory each of us knows that our answers to such immediate problems are at best qualitative. I suggest that we, of all scientists, have a duty to argue with our sponsors for support of long term research on the fundamentals of particle-particle interaction in colloidal systems, or for support for studies of the molecular processes at electrodes or of the structure of water at interfaces and on and on. Without such basic work, applied science will work in a vacuum.

Our Australian Colloid and Surface Chemistry Student Conference owe their success to the energy and enthusiasm of the participants, and to the sponsors- Universities, CAE's, CSIRO and Industrial groups – who each time give to keep this unique conference alive. We also need to acknowledge the ten secretaries, all students, who have organised the detailed programmed and provisions. From one to ten the secretaries were John Hayter (Sydney), Bob James (Melbourne), Harley Wright (Sydney), David Yates (Melbourne), Bruce Firth (Sydney), Joe Wolfe (ANU), John Lyons (Melbourne), Col Bensley (Sydney), Steve Carnie (ANU) and Rob Lamb (Melbourne). To all of them from all of us – thank you.

Tom Healy  
Melbourne 1982

## The 11<sup>th</sup> - Yarrawood 1983

### *Including workshopping of “Colloid-Oz”*

#### **Preface**

The Eleventh Australian Colloid and Surface Chemistry Student Conference was held at the Yarrawood Conference Centre just outside Sydney in May 1983. The abstracts which follow were prepared by the postgraduate students from the Universities of Melbourne, Sydney, ANU, NSW, Monash and from RMIT and the Swinburne Institute of Technology.

As at previous student conferences, all papers were presented by the postgraduate students to an audience of their peers, their immediate supervisors and other local scientists from Australian Government and industrial research centres. We also were pleased to have with us Dr Richard Buscall of ICI (Runcorn, U.K.) who took an active part in the proceedings. The papers continued the general high standard of content and presentation which we have come to expect.

The Conference served also to bring together the participants in the production of a major treatise on Colloid Science which is presently in preparation. This book, affectionately known as “Colloid Oz”, is in many respects an outgrowth of the Student Conferences because they have served to generate and maintain the cohesive character of Australian colloid science and to assist us all to a more global view of our chosen area of professional expertise. If we can capture in that text even a fraction of the spirit of active scientific enquiry and creative teaching which epitomises the Student Conferences then the effort involved will no doubt be regarded as worthwhile by all those involved.

Because of an unusual combination of circumstances we departed from our usual procedure of calling on one of our senior graduate students to act as Conference Secretary. It is a pleasure to record our debt of gratitude to Don Napper for taking on that task and carrying it through with such skill and apparent ease, despite his many other commitments (including Headship of the School of Chemistry). With such enthusiastic support available it is obvious that the Colloid Student Conference has a bright future whatever befalls old timers like me.

Bob Hunter  
Sydney 1983

*Science and music often go hand in hand....*

**1983 Conference Song by Warr & Dunstan**

*Sung to the tune "Augathella Station"*

Farewell and adieu to your health and to sanity  
Hello to Smith-Ewart, Hello to Lee White  
There's theory and experiment which lead to disparity  
So we worry all day, and we drink through the night.

**Chorus**        We'll rant and we'll rave like true colloid chemists  
                     We'll rant and we'll rave like Tom, Bob and Don  
                     Until we return to the next student conference  
                     It's bloody hard going when experiments go wrong.

So fill up your test tubes and fill up your beakers  
We've drunk all the beer and we've drunk all the wine  
We're making more sense now than when we were speakers  
We'll see you tomorrow; all up before 9.

***Chorus***

My body is shaking, my voice it is quaking  
My eyes are all red and my brain isn't on  
I love playing cricket, I love picture-taking  
I love falling over and my name is Tom.

***Chorus***

At the end of this conference our bosses will claim us  
We'll get in the bus or we'll get in our cars  
Then it's back to the labs – and one day we'll be famous  
But it won't be through science; we'll be video stars.

**Last Chorus**    We'll rant and we'll roar like true colloid chemists  
                     We'll fart and we'll snore like the well-known Lee White  
                     And we return to the next Student Conference  
                     The rest of the company will all sleep outside.

## **The 12<sup>th</sup> - Roseworthy 1985**

### ***Welcome Chisholm Institute of Technology & new hosts, S.A.I.T.***

#### **Preface**

The 12<sup>th</sup> Australian Colloid and Surface Chemistry Student Conference was held in Adelaide in February 1985. The abstracts appearing in this booklet were prepared by postgraduate students from the Australian National University, Melbourne, Monash and Sydney Universities, Chisholm Institute of Technology and the South Australian Institute of Technology. These students all delivered papers at the Conference.

The first formal student conference was held in Sydney in 1968, growing out of earlier, informal discussions between the research groups at the Universities of Melbourne and Sydney, led by those two stalwarts of Australian Colloid Science, Tom Healy and Bob Hunter. Much is expected of a student who presents a paper at these conferences – the standard is expected to be high and the student must anticipate receiving extensive criticism of his or her work. Since Australia is arguably the world leader in Colloid Science in the majority of theoretical and experimental areas, the postgraduate students really have an impressive yardstick with which to measure their efforts. The intense scientific milieu, which is characteristic of these Student Conferences, is maintained over a three to four day period, not infrequently at the bar!

The school of Chemical Technology, South Australian Institute of Technology hosted this 12<sup>th</sup> conference. Registration, lunch and several talks were held at the Levels Campus after which the participants traveled northwards to spend three days at Roseworthy Agricultural College. Here, in a splendid environment, the participants relaxed and engaged one another in that frank and open scientific debate which is a hallmark of Australian Colloid Science.

Once again we were fortunate to have an overseas guest of honour to give the Conference Address. On this occasion it was Dr. Luuk Koopal, Reader in Colloid and Surface Chemistry from the Agricultural University in Wageningen, the Netherlands. Luuk spent twelve months sabbatical leave (July 84 – July 85) in the school of Chemical Technology at S.A.I.T. We thank him warmly for his speech, for his good humour and for his scientific efforts whilst in our country.

Suffice it to say that the standard of papers at this 12<sup>th</sup> Student Conference was high – in fact the level has increased in depth and breadth over the years, for groups have sprung up all over the continent.

Each conference owes its success in a large part to the efforts of a key student at the host institution. On this occasion the mantle fell on the shoulders of Robert Hayes at S.A.I.T. Thank you, Rob, from all of us.

John Ralston

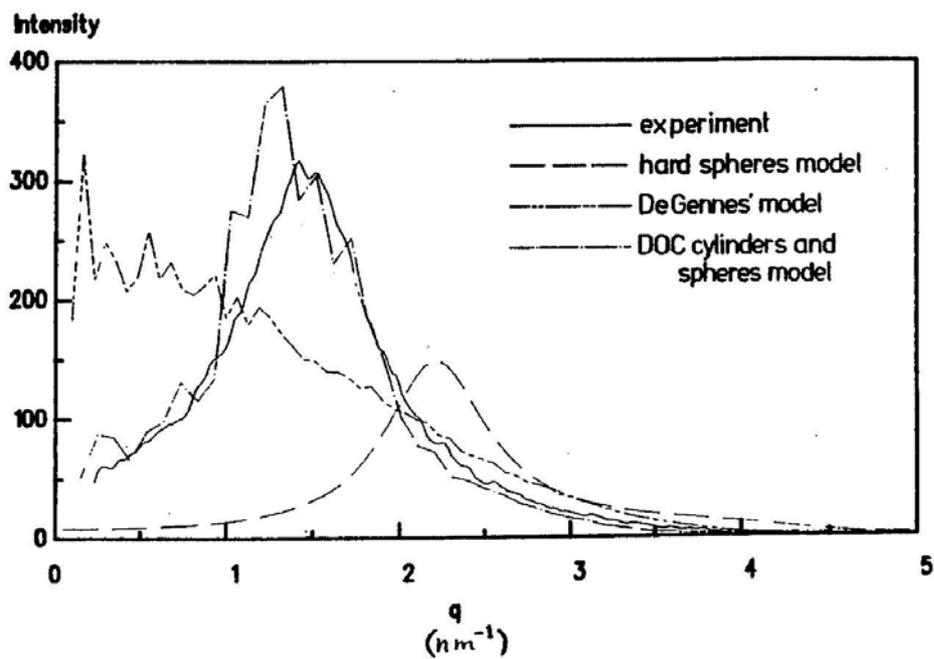
The 13<sup>th</sup> - Kioloa 1987

*Back to the beach*

PROCEEDINGS AND ABSTRACTS  
OF THE  
THIRTEENTH AUSTRALIAN COLLOID  
AND  
SURFACE CHEMISTRY

STUDENT CONFERENCE  
KIOLOA, NSW, 1987

DDAB/water/cyclohexane microemulsion



## The 14<sup>th</sup> - Albury 1988

### *The student conference celebrates its 21<sup>st</sup> birthday & delegate numbers exceed 100 for the first time*

#### **Preface**

This meeting marked the twenty first anniversary of the student conference so it was, in many respects, a very special occasion. Our Melbourne University hosts, under the guidance of Franz Grieser went to enormous pains to make the Conference a truly memorable experience for us all.

Franz encouraged us to remember something of our roots and produced a potted history of our endeavours for the brochure announcing this, the Fourteenth Student Conference. It seems a pity to run the risk of losing such valuable archival material so I reproduce it here, almost in its entirety. After referring to the first two very informal meetings he goes on to say:

“The 3<sup>rd</sup> (Sydney, Feb 1972) and 4<sup>th</sup> (Melbourne-Blackwood, May 1973) conferences helped to crystallize the format and preferred localities for the meetings. Namely, only students and ‘recently-arrived’ postdoctoral fellows’ present papers, in a rustic, sylvan wilderness setting. In keeping with this formula, the 5<sup>th</sup> meeting, November 1974, was held at Warrah House, the Sydney Uni’s Biology Field Station, near Pretty Beach in NSW Apart from the Melbourne and Sydney groups, the conferences had by this time contributors from Flinders University (Bockris’ group), the Uni. Of W.A. (Jim Quirk’s group), R.M.I.T., Swinburne and the burgeoning ANU mob who generously undertook the job of hosting the next conference.

The 6<sup>th</sup> meeting, in May 1976, was held in the more formal surrounds of the ANU with participants from the Uni. of Queensland and a very strong input from ANU Applied Maths. It was also the inauguration of the idea of inviting a distinguished scientist to participate, and Professor Robert Street gave the opening address. It was back to the hills and forests of Blackwood in September 1977 for the 7<sup>th</sup> conference. For the 8<sup>th</sup> meeting, in November 1978, the Yarrawood Convention Centre, outside Sydney was used, and attracted, for the first time, representatives from the University of NSW, Bendigo CAE and SAIT. Professor Ron Ottewill was the special guest.

The ANU took responsibility for the 9<sup>th</sup> meeting (Feb. 1980) but this time held it at their field station at Kioloa on the south coast of NSW, inviting Joe Henry from the Uni. of West Virginia and Brian Vincent as special guests.

Mt Eliza, on Port Phillip Bay, was the site of the 10<sup>th</sup> meeting, Feb. 1982. Those who survived have a hard time remembering what happened. David Tabor of Cambridge was said to have been there.

Dick Buscall of ICI, Runcorn, was special guest for the 11<sup>th</sup> meeting at Yarrawood in May 1983; Luuk Koopal of Wageningen addressed the 12<sup>th</sup> conference, held at Roseworthy Agricultural. College, SA in Feb. 1985, and Dave Deamer juggled his balls for all at Kioloa, for the 13<sup>th</sup> meeting in Feb. 1987.”

What more can I say, except “Thanks a lot, Franz, for a great conference!”

Bob Hunter

## **The 15th - Camden 1990**

### *Welcome to the Tasmanian & Kiwi students*

#### **Preface**

This is the 15<sup>th</sup> of the series of meetings which began in a very informal way in the Departments of Physical chemistry of the Universities of Melbourne and Sydney.

Apart from the Melbourne and Sydney groups (including some of the Napper polymer people) we have had, over the years, contributors from Flinders University (Bockris' group) from the University of W.A. (Jim Quirk's group) as well as from RMIT and Swinburne (John Ralston's group) and, of course, the burgeoning A.N.U. mob who generously agreed to host the sixth conference.

That meeting, in May 1976, saw us in the more formal surroundings of the A.N.U. with participants from Geoff Barnes's Queensland group for the first time, and a very strong input from A.N.U. Applied Maths. It also marked the inauguration of the idea of inviting a distinguished scientist to participate, and Professor Robert Street gave the opening address. In September 1977 it was back to Blackwood for the 7<sup>th</sup> meeting and confirmation, if such were needed that, although conditions were spartan and cramped in the hills there were some real advantages accruing from 'getting away from it all'.

For the 8<sup>th</sup> meeting, in November 1978, at Yarrawood Convention Centre outside Sydney, Prof. Ron Ottewill, from Bristol University, was our guest. The University of N.S.W, Bendigo C.A.E. and S.A.I.T. were all represented for the first time.

The A.N.U. again took responsibility for the Ninth meeting and this time held it at their field station at Kioloa on the South Coast of N.S.W. our special guests were Joe Henry from the Uni of West Virginia and Brian Vincent from Bristol. The Tenth meeting returned to Victoria to the delightful Conference Centre at Mt Eliza, on Port Phillip. Prof. David Tabor of Cambridge was our distinguished guest, along with a group of talent scouts from the Rockwell Corporation.

Dick Buscall of I.C.I. (Runcorn) was our special guest at the Eleventh Meeting which was again at Yarrawood, near Sydney in May 1983. For the Twelfth, in February 1985, we had Luuk Koopal of Wageningen as guest at Roseworthy Agricultural College, courtesy of John Ralston and his S.A.I.T. colleagues.

For our Thirteenth meeting we returned to the A.N.U.'s Kioloa field station and for the spectacular Fourteenth (our twenty-first birthday) we were guests of the Melbourne group at Albury on the NSW/Victorian border.

The meeting reported here introduced us to the University of Sydney's renovated facilities at Camden, which are being actively developed for just the sort of conference which we like to run. All agreed that it was an excellent site for our meeting and we will certainly return there before too long.

It remains only for me to thank all the participants and especially my colleagues Greg Warr and Alice Lamb who helped so much with the organisation, both before and during the meeting.

Bob Hunter

## **The 16<sup>th</sup> - Roseworthy 1991**

*Number of talks exceeds 50 for the first time*

### **Preface**

This is the sixteenth of a series of informal meetings originally initiated by the daunting duo of Bob Hunter and Tom Healy some twenty years ago. From these early times when only a handful of people were involved, the meetings have grown to accommodate one hundred or more participants.

The foundation philosophy of these meetings is that postgraduate students and the occasional new “Post-Doc” should be able to present their work to an audience of their peers, academic supervisors and a few CSIRO and industry scientists.

Informality is the key and students are expected to withstand considerable constructive criticism of their work both during their presentation and afterwards over drinks. Another feature of these meetings is that the organisers invite one or more distinguished scientists to talk about their work and, perhaps more importantly, the philosophy behind it.

At the 16<sup>th</sup> meeting it is a pleasure to welcome Dr Ian Pitman, Research Director of Fauldings, as well as Professor Abraham (“Avi”) Marmur from Technion in Israel. This balance of industrial and academic research views is of importance to all colloid and interface scientists.

Meetings have been hosted by research groups in Melbourne, Sydney, the A.N.U., Bendigo and S.A.I.T. The Sixteenth Meeting is being held at Roseworthy, as was the Twelfth, but on this occasion S.A.I.T. has metamorphosed into the University of South Australia.

I should like to extend my thanks to all participants at the meeting and, particularly, to Belinda Braggs and Marianne Montalti for their sterling efforts in organising the affair.

John Ralston  
September 1991

## **The 17<sup>th</sup> - Geelong 1993**

*When student talks were even scheduled in the evening*

### **Preface**

Welcome to the seventeenth of a series of informal meetings, initiated by Tom Healy and Bob Hunter. The meetings have, over the past twenty five years, grown in size and scope but it is hoped that the underlying philosophy has remained untouched. This philosophy has always been to provide a forum for post-graduate students and the occasional new 'post-doc' to present their work to an audience of their peers, academic supervisors and a few industry and CSIRO scientists.

This year, we expect to accommodate over 140 participants and although the original laid-back nature of the gathering is severely tested by size of the conference, in-formality is still the key. It is hoped that the constructive criticism all speakers are expected to withstand both during and after their presentations is carried through to the informal mixer/drinks sessions and into longer term collaborations.

This year the meeting is being hosted by the University of Melbourne group and is being held at Deakin University. We welcome as guests Professor Mats Almgren from Uppsala University in Sweden and Professor David Beaglehole from Victoria University of Wellington. We also welcome students and other participants from a large number of research groups from both within Australia and overseas.

Special thanks go to Robert Hall and Stephanie Faulkner for their efforts in organising the conference program and getting the 'show on the road.'

Enjoy the science, enjoy the conference.

Peter Scales  
February 1993

## **The 18<sup>th</sup> - Fairy Meadow 1995**

*The biggest ever: 185 delegates & 76 talks plus the first poster session*

### **Preface**

Who knows what Tom Healy and Bob Hunter had in mind when they got their postgraduate students together in Sydney for an informal meeting in 1967? Surely not this? Looking back on those meager (but never humble) beginnings, one might say that these conferences have blossomed. One might also say that they have ballooned, expanded, exploded, even prolapsed. Conference organisers are now blessed, or cursed, with nearly 200 participants and 100 presentations. The introduction of a poster session at this meeting is an attempt to reclaim some time and informality, and to balance the aims of these meetings: to give students the opportunity to present their work to an expert and critical audience and to permit vigorous discussion of current research. We hope that the program leaves sufficient time for the latter without eroding the former.

It has become a tradition at student conferences that an eminent international scientist be invited as our Guests of Honour. At this meeting that role will be amply filled by Professor Henk Lekkerkerker from the Van't Hoff Laboratory at the University of Utrecht. Also attending this meeting is Dr Geoff Barnes, retired but still of University of Queensland. After so many years of contribution to the Australian colloid and surface chemistry community and to these conferences, we welcome you as a special guest of the conference.

These meetings have become increasingly international of late, and in addition to Professor Lekkerkerker's presence, we have several Dutch, English, and American participants presenting papers and posters.

The conference organisers would like to acknowledge the financial support provided by the Australian Centre for Water Quality Research, British Nuclear Fuels, Colloidal Dynamics, Fauldings, Comalco, ICI and ICI Dulux through the registration and attendance of their representatives at this meeting, and also the donation made by Tioxide Australia. The continuing support of the RACI Colloids Division is also gratefully acknowledged. Finally, thanks to Dr Peter Pieruschka of the ANU for providing the graphic on the cover of this booklet and the t-shirts.

Greg Warr  
Sydney, February 1995

## **The 19<sup>th</sup> - Murramarang 1996**

### ***Prizes for the best talk and poster introduced***

#### **Preface**

The conference has expanded greatly from what it was in 1967, as has the colloid community in Australia. This has implied a need to go places with larger accommodation capacity. There has been some concern that the ambience that has made this conference so different from others be maintained.

A few small changes have been made to assist with keeping this atmosphere. Poster sessions have been very successful at past conferences and can provide new and more senior students with a chance to present their work and gather useful comments. The ratio of posters to talks at this conference has been increased. This hopefully will allow each student to present their work without burdening the audience with an unmanageable number of talks. It is anticipated that students will attend 2-3 student conferences within the duration of their studies. Thus each student can hope to present a talk to the community at least once. To assist those students speaking, appendices have been included in this program to briefly introduce the major techniques or methods used by students. It is hoped that this will free the students to talk in more detail about their work. These appendices are not comprehensive and if successful will be augmented for future conferences.

One other change at this conference is the introduction of prizes for the best talk and the best poster. In each case the prize will be an engraved pewter mug, presented at the conference dinner.

The conference venue was chosen in keeping with the relaxed venues of past conferences. Thanks goes to the owners of the Murramarang resort and to Sue Brearley for helping with the necessary organisation.

Special thanks, as always go to Diana Wallace for her efforts.

David Williams, Tim Senden and Edie Sevick

## **The 20<sup>th</sup> - Hahndorf 1998**

### ***Awarding of the inaugural Hunter-Healy award***

#### **Preface**

Welcome and wow! Is it really that many? Could Tom Healy and Bob Hunter have imagined when they held a small and informal meeting with their handful of research students back in 1967, that their brainchild - this conference - would be being held for the twentieth time some thirty years later? That almost 150 people would be attending, but the atmosphere will still be informal? That the success and popularity of the Australian student conference would be spoken of around the world? That it would be copied in other countries? That countless research scientists would look back on the student conferences they attended, with fond memories and a genuine appreciation of the contribution these conferences made to their development, and to the lifelong friendships they formed? The history of the ACSCSC is summarized below. A little bit of past confusion about exactly when the conferences began is resolved by recognizing that the 1967 meeting was not actually a conference, but at that meeting it was decided to initiate “student conferences,” the first of which was held in 1968.

The University of South Australia has the honour of hosting this one. We hope that a feature of the 20<sup>th</sup> conference will be lots of questions and discussion from students. To encourage this, we have prepared this book and distributed it a few weeks before the conference, to enable you to read and think about the abstracts. Our thanks to everyone for submitting your abstracts on time (more or less) so that we could do it. We have also copied the excellent idea introduced by David Williams at the 19<sup>th</sup> conference, and included a section at the end of the book giving brief descriptions of relevant experimental techniques.

There will be 50 student talks, 32 poster presentations and 3 talks given by overseas visitors. The student talks are deliberately not grouped by subject. Instead, the organisers have followed the highly imaginative plan of timetabling them in alphabetical order of presenter, so that each session will be a smorgasbord of topics. Should also make it easy to find the abstracts...

We particularly welcome five students from overseas: Tadashi Awatani and Jens Degenhardt from Otago (NZ), Jean-Francois Boily from Umea (Sweden), Jo-Anne Michael from Keele (UK), and Marck Norret from the Danish Technical University. We also welcome our overseas conference guests - Jim Baygents from Arizona, Jordan Petrov from the Bulgarian Academy of Sciences and Thomas Zemb from Saclay in France. To show what kind and thoughtful hosts we are, we have invited them to present talks on the morning after the dinner. To show what kind and thoughtful guests they are, they have agreed.

May you find the venue pleasant, the accommodation comfortable, the meals tasty, the wine agreeable, the talks informative, the discussions illuminating, the social events fun, and your companions, well, amusing. Join in, have fun, discuss, learn. Be informal. Be in form. Be informed.

Ben Francis

Paul Jenkins

Roger Horn

## The 21<sup>st</sup> - Morpeth 1999

### *Welcome to new hosts, Newcastle*

#### **Preamble**

*With hope in Hunter, the Colloid community is constituted as a democracy with a unique system of conferences to serve the common good with colloid and surface chemistry.*

*We the members of the Australian colloid and surface chemistry community commit ourselves to the 18-monthly student conference, proud that our national unity has been forged by a tradition that began with a handful of students back in 1967;*

*Never forgetting the sacrifices of those at each conference that make it to the first talk every morning despite the events of the preceding evening;*

*Upholding freedom, tolerance and individual dignity when it comes to questioning the speakers.*

*Honouring the conference founders, Bob Hunter and Tom Healy through the Hunter-Healy award for the best talk, first presented at the 20<sup>th</sup> conference held in Hahndorf in February 1998 under the auspices of the University of South Australia. Our nation's first colloid scientists are honoured for their ancient and continuing research culture, which enriches the life of our country;*

*Recognising the community-building contribution of generations of international visitors;*

*Mindful of our responsibility to nurture our unique research environment;*

*Supportive of achievement as well as equality for all growing researchers;*

*And valuing informality as clearly as the national colloid spirit which binds us together in both adversity and success.*

Welcome to Morpeth and the 21<sup>st</sup> Australian Colloid and Surface Chemistry Student Conference hosted by the University of Newcastle. This year we have nearly 150 delegates, but we hope to maintain the traditional informal nature of the conference. There will be 47 student talks from senior research students and 30 poster presentations from junior research students. A particular welcome to the visiting international students: John Enlow from Otago (NZ), Nicola Woodward & Lisa Benee from Greenwich (UK), Valeria Tohver from Illinois (USA) and Natalia Panova from Waikato (NZ). We also welcome our plenary speakers, Laurent Michot from the CNRS Laboratory "Environnement et Mineralurgie" (France), and Mike Bevan lately from Carnegie Mellon University in USA. Both speakers are currently researching at the AMPC in Melbourne.

The sessions are deliberately not grouped by subject, university of origin, gender or any other obvious category. The committee used a creative algorithm to timetable the talks and their decision is final. The abstracts are listed in chronological order. The organising committee encourages students to promote discussion and will therefore call for the speakers to be questioned initially by other students.

The conference has many strong traditions, not all of which are academic. In keeping with this we have timetabled a free afternoon on Wednesday. The staff vs. student cricket match will be held on the St John's oval during this time. Others may choose to sample the local wineries or potter around the delights of Morpeth village. On Wednesday night the talent quest will be held. The conference dinner will be held on Thursday night after all the student presentations. We thank our plenary speakers for speaking on the final morning following the dinner.

We hope that you find everything to your satisfaction from the science to the location. If it is your first student conference, take heart from the confirmed addicts around you and we hope to see you all at the next conference in the next millennium.

Have fun.

Barry Fleming

Shannon Notley

Erica Wanless

Simon Biggs

## **The 22<sup>nd</sup> - Bendigo 2001**

### ***The ACSCSC becomes the ACSSSC, Welcome to new hosts, Swinburne***

#### **Preface**

From humble beginnings in 1967, and with just a handful of students, Bob Hunter and Tom Healy have created a juggernaut of Australian Colloid Science. This student conference has now become an integral part of the Australian Scientific calendar.

This year the conference is hosted for the first time by Swinburne University of Technology and is located, also for the first time, at the La Trobe University Bendigo Campus. The Swinburne organisers would particularly like to thank their La Trobe counterparts – John Wells, Bruce Johnson and Rod Harris – for their help with the organisation at this site.

In keeping with tradition, speakers and posters are not grouped into sessions of similar subject, university, gender or age. As always, it is hoped that students and staff alike will enjoy the informal atmosphere of the conference and actively partake of the social activities. As has been the case at previous student conferences, whatever the activities of the night before, all students are expected to meet the challenge of being present at the first talk the next morning! Also in keeping with tradition, students are encouraged to ask questions of the presenters. Chairpersons are asked to encourage this activity, and to give preference to students when accepting questions from the audience.

The number of awards available has increased this year thanks to some generous sponsorship. The Healy Hunter Award honours the conference founders, Tom Healy and Bob Hunter, and will be presented for the third time at this conference. This year we have also introduced an award for the Most Outstanding Communicator (donated by the Centre for Applied Colloid and Biocolloid Science, Swinburne). The CSIRO Division of Molecular Science and Dulux Australia have generously donated prizes for the best posters presented at their sponsored poster sessions. In addition, Nalco Australia has donated an award for the best presentation reporting the use of solid-liquid phase extraction processes.

Many traditions have developed at the conference over the years, which although are not strictly academic, foster collegiality amongst the colloid fraternity. Time has been made available on Wednesday afternoon for the “staff versus student” cricket match, although this time may also be used to explore Bendigo and its surrounds. Other activities will take place in the evenings, with a Karaoke night (Tuesday), our traditional Talent Quest (Wednesday) and the Conference Dinner (Thursday).

We trust that you will find the conference both stimulating and enjoyable!

Marylou Molphy

Ian Harding

Russell Crawford

Lyndal Roberts

Danni Tilmanis

Choon Jek Ang

Lidia Konkol

My Linh Ly

Peter Sanciolo

## The 23<sup>rd</sup> - Lake Hume 2002

*A single institution contingent exceeds 40 delegates for the first time  
(University of Melbourne)*

### Preface

The Australian Colloid and Surface Science Student Conference had their rather inauspicious beginnings some 35 years ago in the form of informal meetings between Tom Healy and Bob Hunter's research groups. Those early meeting, rumour has it, were lively, with full and frank discussions. Research presentations were delivered using chalk and blackboards – also the occasional refreshing beverage to help the discussions along. As multi—media technology developed so too did the standard of the presentations, and it is now common that presentations are delivered using power point. Perhaps in another 35 years, presentations using 3 D holographs and surround – sound will be considered normal.

About 20 years ago, in the Preface to the 10<sup>th</sup> ACSSSC Tom reflected on what would happen to Science in the future. He commented on the relevance of Colloid Science in a number of areas and importantly noted that without basic research, applied science would work in a vacuum. Much of what he wrote in that Preface is true today, basic science underpins innovation and it is there to support the development of new technology, such as the current “hot” areas of Nanotechnology and Biotechnology. It is vital that the education of new generations of students' remains strong in fundamental science and that there is always the basis there to provide the foundation for future developments in emerging areas. The ACSSSC plays an important role in this education.

Tradition has it that student speakers are not grouped in any particular theme, and this practice remains in place this year. However, there has been one amendment to this tradition. Any pregnant woman who may give birth during the conference will be the first speaker on the list (they may need to leave urgently)!

Welcome to the 23<sup>rd</sup> ACSSSC. May you all enjoy your time here, and remember your experiences fondly in the years to come.

Franz Grieser

Scott McLean

Kerry Hambridge

Muthupandian Ashokkumar

Peter Scales

## The 24<sup>th</sup> - Sunset Cove 2004

### *Record sponsorship levels*

#### **Preface**

The inaugural Australian Colloid and Surface Chemistry Conference student conference was held in Melbourne in 1967, under the watchful eyes of our Australian colloid science founding-fathers, Bob Hunter and Tom Healy. The aim of the conference was to allow students to present their research in an informal environment, and to expose them to robust questioning and constructive criticism. The spirit of the first conference has been retained throughout each of the subsequent conferences. The numbers attending the conference have grown dramatically over the intervening years, and now as many as one hundred and twenty participants take part in each meeting, with representation from as many as fifteen Australian universities and half a dozen Australian industrial companies.

The Ian Wark Research Institute at the University of South Australia has the honour of hosting the 24<sup>th</sup> Australian Colloid and Surface Science Student Conference (24ACSSSC). This conference has 47 student talks, 28 poster presentations and 1 plenary lecture given by an overseas visitor. We would particularly like to welcome our overseas contingent, including 7 students and 3 conference guests. We are also delighted by the level of interest and support in the conference by our range of sponsors.

Welcome to the 24<sup>th</sup> ACSSSC. We hope you enjoy all the facilities available to you, particularly some of the fine South Australia products.

Gayle Morris

Nate Stevens

David Beattie

Kathy Prohaska

Gillian Kaggwa

Lucy Wang

Gary Hanly

## The 25<sup>th</sup> - Beechworth 2006

*Held at the former Beechworth Lunatic Asylum – the future is assured*

### Preface

Welcome to the 25<sup>th</sup> Australian Colloid and Surface Science Student Conference.

The Australian Colloid and Surface Science Student Conferences have, since 1967, provided postgraduate students of colloid and surface science with the opportunity to present and discuss their research in an informal, supportive and friendly atmosphere. The conferences have grown from rather humble beginnings when Bob Hunter and Tom Healy, the founding fathers of Australian colloid science, would meet informally with their research groups to discuss and debate (rather animatedly folklore has it!) their research findings. Today, postgraduate students, academics and research staff from Universities, nationally funded research organisations such as CSIRO and ANSTO as well as industry across Australia and increasingly the UK and Europe attend the Australian student conference series. Despite the increase in the number of conference participants, in excess of 130 for this current conference, the spirit of these early conferences remains today.

The Particulate Fluids Processing Centre at the University of Melbourne and La Trobe University, Bendigo have the honour of co-hosting the 25<sup>th</sup> Australian Colloid and Surface Science Student Conference (25ACSSSC).

We thank you for your participation in this conference. We are also grateful for the level of interest and support shown for this conference by our range of sponsors.

We hope you enjoy your time here at La Trobe at Beechworth and that you take away with you many fond memories.

Kate Drummond

Michael Angove

Muthupandian Ashokkumar

Devi Sunartio

Tabitha Cesnak

Francoise Gelb

**The 26<sup>th</sup> - Warrnambool 2008**

*Planning well underway by new hosts, Victorian College of Pharmacy  
(Monash)*

"What's the first thing an actor  
learns? 'The show must go on!' Come  
rain, come shine, come snow, come  
sleet, the show **MUST** go on!"

Cosmo Brown

Singing in the Rain, 1952