



June 2002

FROM THE EDITOR'S DESK

Giles Dillingham

This Newsletter recaps the **25th Annual Meeting of the Adhesion Society Inc.**, held in conjunction with **The 2nd World Congress on Adhesion and Related Phenomena** in Orlando, Florida, between February 10 and 14. Although some members had expressed concern that the recent slowdown in travel would result in reduced registrations, the Society enjoyed near-record attendance.

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The weather was excellent and the meeting was a great success. We'd like to extend special thanks to the Program co-chairs, John Dillard and Al Pocius; the outgoing President, Ray Dickie; and Esther Brann, the Home Office Secretary, for all their work. A meeting of this scope represents a major effort for everyone involved.

THE PRESIDENT'S COLUMN

Tony Kinloch

A very warm welcome to all continuing, returning and new members of the Adhesion Society from our new President, Tony Kinloch

As your President for the next two years, I am looking forward to working to ensure that we maintain and develop the Adhesion Society's traditions of technical excellence and service to the adhesion science community.

Part of this service has been our newsletter, and this is the first in its new format which may be viewed via our web-site. Many thanks to Giles Dillingham (Editor) and all contributors for their hard work in producing our newsletter. There are many reasons why we have changed from a paper to an electronic format, amongst them being the very high cost of producing and posting a paper copy and the clearly ever-increasing use of the web-site. If you have any comments, suggestions, etc., please do not hesitate to send them to me- by 'paper' or to: a.kinloch@ic.ac.uk.

Our 25th Annual Meeting, which also encompassed the 'Second World Congress on Adhesion and Related Phenomena' ('WCARP -II'), in Orlando was a

resounding success and thanks go to all those who all helped organise it. Special thanks are due to the Program Chairs, John Dillard and Al Pocius, and to Giles Dillingham, who dealt with the local arrangements. Also, thanks go to Ray Dickie, our immediate past President, who worked tirelessly behind the scenes and who, with some relief and with a knowing smile on his face, passed to me the Presidency at the end of the Meeting. And we would all wish to thank Esther Brann of the Home Office for her tremendously hard and very efficient work towards this meeting - and indeed for all her efforts on behalf of the Society!

Planning for the 26th Annual Meeting is well under way and the Call for Papers has just been issued. The meeting will be held at Myrtle Beach from February 23-26, 2003. The theme for the meeting is 'Adhesion Fundamentals: From Molecules to Mechanisms and Modeling'. The Adhesion Society's Short Course will be held preceding the technical meeting and is being chaired by Don Hunston (donald.hunston@nist.gov). The Program Chair for the 26th Annual Meeting is Jeff Koberstein of Columbia University (jk1191@columbia.edu) and the Vice-Program Chair is Greg Anderson of Thiokol (andergl@thiokol.com).

Our main means of communicating with our members is now clearly through the web-site, and many thanks go to Rachel Giunta of Sandia Laboratories (rgiunta@sandia.gov) for getting this into a great format and for keeping it updated. We plan to expand the use of the web-site, although for the present we will also keep to our traditional postal-paper format for the Call for Papers and The Annual Meeting Program and Registration Form. Also now to be found on the web-site are details of

books which you can order through the Society and of a personal subscription offer to the 'Journal of Adhesion' for just \$100 for our members. We plan to expand both of these areas to bring greater benefits to our members. Finally, on the web-site you will find full details of the various Awards, Fellowships and Prizes given by the Society, together with a list of previous winners.

If you have any views on the ever-expanding use of the web-site to stay in touch with our members, then please let me know (a.kinloch@ic.ac.uk). Indeed, please do not hesitate to contact me if you have any thoughts, observations or comments on any aspect of the Society- it is *your* Society after all and one good feature of being a relatively small Society is that communications should be easy !!

I look forward to seeing you in Myrtle Beach next February - please send your short abstracts into Esther (adhesoc@vt.edu) at the Home Office.



*A LETTER FROM OUTGOING
PRESIDENT RAY DICKIE*

As Immediate Past President, it gives me great pleasure to confirm what those who attended the 25th Annual Meeting already know: the meeting proved to be a technical, social, and financial success. Technical meetings only succeed because of the hard work and contributions of the speakers, session chairs and program organizers. Special thanks and congratulations go to the Program Chairs, Al Pocius and John Dillard, to the Local Arrangements Chair, Giles Dillingham, and to our hard-working Office Manager, Esther Brann, as well as to Henry

Schreiber, Chair of the WCARP International Organizing Committee.

It was an honor and privilege for the Adhesion Society to act as host at the meeting for the Second World Congress on Adhesion, WCARP-II. The joining of the Adhesion Society's 25th Annual Meeting with WCARP-II was the result of a decision reached in 1994 by the Adhesion Society Inc., The Adhesion Society of Japan, and EURADH (a consortium of British, French and German adhesion groups) to organize a global event in the field of adhesion science on a four year rotation basis to be held in conjunction with the host society's regular technical meeting. The adhesion societies of Korea and of China joined with the original group to sponsor WCARP-II. The strong international contributions to the meeting were clearly reflected in the meeting attendance – over a third of the attendees came from outside the United States.

It is hard to summarize in just a few sentences the long and diverse technical program. Highlights included a plenary session with speakers representing the American, European, and Asian sponsors of the meeting, special symposia on bioadhesion, adhesion in electronics, and ecologically-driven applications of adhesion science – to cite just a few. A special highlight was the granting of the Adhesion Society Award for Excellence in Adhesion Science sponsored by 3M Company to Dr. Kenneth L. Johnson (Cambridge University). It was a special pleasure to hear him and some of his friends and colleagues speak in the Award Symposium organized in his honor.

The Adhesion Society is grateful for the financial support for the 25th Annual Meeting received from its corporate sponsors. Their generous contributions

helped finance the meeting and provided support for student attendees and the Society's award programs. These sponsors included 3M Company, Chemical Week Associates, Ford Motor Company, H. B. Fuller, Heidelberg Digital, LLC, Henkel Loctite, L'Oreal, NexPress Solutions, Taylor and Francis, Inc., and Thiokol Propulsion.

At the close of the meeting, it was announced that the next World Congress will meet in Beijing in 2006. The next meeting of the Adhesion Society will be held in February 2003 in Myrtle Beach, SC. For information on these and other future meetings of the Adhesion Society, be sure to visit the Society's web page at <http://www.adhesionsociety.org>.

***ADHESION JOURNALS OFFERED TO
ADHESION SOCIETY MEMBERS AT A
REDUCED RATE***

The Journal of Adhesion

The Adhesion Society has enjoyed a long and beneficial relationship with The Journal of Adhesion. As of March, Taylor and Francis, publisher of the Journal of Adhesion, has made an official agreement with The Adhesion Society to provide subscriptions to our membership at a very attractive rate. The following is an excerpt from the letter of agreement:



Regular subscription prices for 2002 for the journal have been set at the following: US\$3,056 for institutions and US\$1,458 for individuals. For members of The Adhesion Society, individual subscription prices for

the 2002 volume year are set at US\$100. It is important to note that these prices are for individual subscriptions, payment from and delivery to an individual's home address.

Taylor & Francis will handle all paperwork and payments, and in order to receive the discount, members will be required to affirm that they are members of The Adhesion Society when ordering a subscription.

This agreement shall remain in effect for two volume years, 2002 and 2003, and shall continue in effect automatically thereafter on a year-to-year basis unless notice of termination or change is given by either party at least six months prior to the end of the prevailing volume year.

This represents an excellent opportunity for our members to obtain individual subscriptions to this Journal. A subscription form can be downloaded from the Adhesion Society website (http://www.adhesionsociety.org/pubs/jadh_offer.htm). Many thanks to Lou Sharpe and the staff of Taylor & Francis for helping to obtain this benefit for members!

International Journal of Adhesion and Adhesives

We just received news of a similar arrangement with Elsevier Science, who have agreed to offer a substantial discount to members of the Adhesion Society on subscriptions to the International Journal of Adhesion & Adhesives.

This journal normally costs the individual \$849 per year, but this offer allows an individual society member to take out a personal subscription for the vastly reduced price of only \$80. See our website for details.

Adhesion-related books now offered through website



As part of our ongoing efforts to increase the utility of the Adhesion Society website to our members, adhesion-related books can now be ordered directly through the website (<http://www.adhesionsociety.org/pubs/books/books.htm>). Detailed book descriptions, including the Table of Contents, can be viewed by clicking the book title.

CALL FOR PAPERS

The 26th Annual Meeting of the Adhesion Society will be held February 23-26, 2003 at the Embassy Suites Kingston Plantation Resort in Myrtle Beach, South Carolina.

Important meeting dates:

8/2/02: 200 word abstracts must be received. Electronic submission is preferred (adhesoc@vt.edu) in Microsoft compatible format. However, fax or regular mail submissions to the home office will also be accepted.

TBD: 3-page extended abstracts due

2/21-2/22/03:
Short Course: *Adhesion: Theory and Practice*

2/21-2/22/03:
26th Annual Meeting of the Adhesion Society

Contributed papers will be accepted in all areas of adhesion and related phenomena. Papers will be presented as oral and as poster papers. The program chairs, in consultation with the principal authors, will determine the manner of presentation. Four parallel sessions will be organized for the oral presentations, and two poster sessions will be arranged to accommodate the poster paper presentations.

The following information should be included in the 200 word abstracts:

1. Title
2. Author(s) and affiliation(s)
3. Principal author's mailing address, telephone, fax, e-mail
4. Research objective(s)
5. Approach
6. Relevance to adhesion
7. Results

2002 MEETING HIGHLIGHTS

On the occasion of the **25th Annual Meeting of the Adhesion Society Inc.** in conjunction with **The 2nd World Congress on Adhesion and Related Phenomena**, our membership was treated to a banquet that included an after-dinner presentation by NASA astronaut Dr. Bonnie Dunbar. Dr. Dunbar holds B.S. and M.S. degrees in ceramic engineering from the University of Washington and a Ph.D. in Mechanical/Biomedical Engineering from the University of Houston. Her multi-disciplinary dissertation (materials science



and physiology) involved evaluating the effects of simulated space flight on bone strength and fracture toughness. These results were correlated to alterations

in hormonal and metabolic activity. Dr. Dunbar has served as an adjunct assistant professor in Mechanical Engineering at the University of Houston, and has spent time as a visiting scientist at Harwell Laboratories in Oxford, England, where her work involved the wetting behavior of liquids on solid substrates. Dr. Dunbar became a NASA astronaut in August 1981.

A veteran of five space flights, Dr. Dunbar has logged more than 1,208 hours (50 days) in space. She served as a mission specialist on STS 61-A in 1985, STS-32 in 1990, and STS-71 in 1995, and was the Payload Commander on STS-50 in 1992, and STS-89 in 1998.

2002 Awards Given by The Adhesion Society

The Society takes great pride in the accomplishments and contributions of its membership to the advancement of adhesion science, and we are proud to be able to recognize outstanding achievements through the vehicle of several different categories of awards. These awards are typically sponsored by an industrial benefactor. The various categories of awards and their winners for 2002 are listed below:

I. The Adhesion Society Award for Excellence in Adhesion Science, Sponsored by 3M:

Kenneth L. Johnson
Cambridge University
Cambridge, UK

For his seminal work in the science of contact mechanics and the influence of adhesion between solid surfaces.

II. The Robert L. Patrick Fellowship Award:

Kenneth M. Liechti
U. Texas at Austin
Austin, TX

For outstanding contributions to the
fracture mechanics of adhesive bonds

**III. *The Robert L. Patrick Fellowship
Award:***

David Quesnel
U. Rochester
Rochester, NY

For contributions to the fundamentals of
particle adhesion

**IV. *The Rolf Schubert Award for
Distinguished Paper, Sponsored by H.
B. Fuller:***

Wulff Possart
The Saarland U.
Saarbruecken
Germany

“Thermodynamic Data of Adhesion
Phenomena Calculated with Molecular
Modeling Methods”

**V. *The Alan Gent Best Student Paper
Award, Sponsored by Henkel Loctite:***

Animangsu Ghatak
Lehigh University
Bethlehem, PA

“Adhesion Induced Instability in Thin
Solid Film”

**VI. *The Pebbles Awards, Sponsored by
Henkel Loctite:***

Katherine Vorvolakos
Lehigh University
Bethlehem, PA

“The Effects of Molecular Weight and
Temperature on the Kinetic Friction of
Silicone Rubbers”

Animangsu Ghatak
Lehigh University
Bethlehem, PA

“Adhesion Induced Instability in Thin
Solid Film”

Ioannis Georgiou
Imp. Coll. of Science
London, UK

“Modelling of Peel Tests for Automotive
Applications”

Peter Drzal
Northwestern U.
Evanston, IL

“Investigations of the Adhesive
Properties of Filled Pressure Sensitive
Adhesives”

VII. *The Best Poster Award:*

Adam Feinberg
University of Florida
Gainesville, FL

“Quantifying Inter-Cellular Forces in
Bio Adhesion: Examination of Sialyl
Lewis X and Selectin Interactions with
Atomic Force Microscopy”

Best Poster Award: Thanks to the efforts of
Stephanie Nesbitt, Michelin have agreed to
sponsor our 'Best Poster Award' for next
year. They will provide \$1000 for this
award, to be used for award plaques and
cash prize.

PARTICLE DIVISION NEWS

David Schaefer

On behalf of the Particle Division, I would
like to thank all the organizers, speakers,
and participants for making the 2002
Adhesion Society conference a great
success. This year's meeting produced

many excellent presentations, including five sessions organized by the Particle Division. Topics included the study of the role of humidity, roughness, and surface charge on particle adhesion, viscoelasticity, and the interaction of fine particles with polymers. Additionally, several novel areas of particle adhesion were presented, including a discussion of adhesion and cohesion of lunar dust particles. Two of the sessions were devoted to the area of adhesion of bioparticles. These sessions were very well attended and a great deal of thanks goes to Bob Baier for his efforts in organizing the sessions. Finally, one session featured an ad-hoc roundtable discussion on "The Role of Particle Adhesion: Transition from Micro to Nanotechnology". This discussion generated so much interest that the organizers are planning to include another one in next years meeting.

The Particle Division continues to be strong, both in membership and leadership. With approximately 220 members, the division comprises about half of the total membership of the Adhesion Society. One of the Particle Division members, David Quesnel, was honored as a Patrick Fellow at the 2002 meeting. Congratulations David!

The new division officers are:

David M. Schaefer (Chairman)

Brian Love (Vice Chairman)

Anne Mayer (Secretary/Treasurer)

New web page... The Particle Division will soon have its own web page up and running, accessible from the Adhesion Society's main web page using the Particle Division link. We welcome any comments or questions regarding organization of next years meeting, web page content, etc. We look forward to seeing you at the meeting in 2003.

PRESSURE SENSITIVE ADHESIVES (PSA) DIVISION NEWS

Singa D. Tobing

This year, the PSA division ran three full sessions. The sessions were well received as demonstrated by an average attendance of 50 people, including for the Tuesday evening presentations. A total of 20 papers were presented with topics ranging from synthesis to tackifier chemistry and compatibility, from applications to fundamental studies. Four of the accepted papers had to be presented at the poster sessions. Our sessions also struck a good balance between international and US presenters with 8 of the oral papers coming from outside the US. Finally, 12 of the oral papers came from academia with the rest from industrial presenters.

The interest in PSA topics seems to be increasing yearly. When we first formed this division 2 years ago, we did not have any special sessions. Last year (our first year of official existence) we ran four full sessions. This year, we received many paper submissions from both industry and academics. Due to the high response, we had to ask for an extra session in addition to the allotted two sessions in the original meeting schedule. The PSA division today has 123 members compared to 85 last year, making it an active contributor to the Adhesion Society, which has a total of 498 members.

We also want to acknowledge what made the 2002 sessions a success; particularly the presenters of the oral papers and the posters, their contributors, and the great audience participation. We would also like to thank the program chairs, Dr. Al Pocius and Prof. John Dillard for granting us the extra session. Finally, we want to express our appreciation to the former chairman and the founder of this division, Dr. Krishan Sehgal who has devoted his time to get this division

formed and who was key in organizing the sessions in 2001 and 2002.

To conclude, we would like to remind you that we are a volunteer based organization. Our success depends on your involvement. Please let us know how we can grow the division stronger and how we can add more value into the program. We would also appreciate your thoughts on the following:

- How do we bring in more exhibits next year from various vendors to the PSA industry?
- How we can improve our web site?
- How can we reach out to more speakers and participants?

One of our main goals is to be an organization that champions the sharing of new knowledge on PSAs and its applications. Your contributions will make this possible!

Thank you again for your attendance and participation! See you next year!

2002 ANNUAL MEETING POSTER SESSIONS

David R. Speth

The Poster Session program for WCARP-II was expanded to two sessions to accommodate the 58 posters on the program. The posters were spaced around the edges of the exhibition space which doubled as the Society break room. Judging from the decibel level of the discussions, and the tendency of the audience to stay past the end time of the session, both of the sessions were quite successful. The quality of the poster presentations continues to be high. With advances in computer printing technology, the level of the graphics in the presentations continues to escalate. Combined with the excellent preparation of

the presenters, this makes for a first class discussion session for the Society. Our thanks to all the presenters for their efforts in preparation for the sessions.

2002 Best Poster Award

The Poster Session Committee of the Adhesion Society is pleased to announce that the winner of the Adhesion Society Best Poster Award for 2002 is **Adam Feinberg** who is a student of Tony Brennan at the University of Florida. Adam's poster was "Quantifying Inter Cellular Forces in Bioadhesion: Examination of Sialyl Lewis X and Selectin Interactions with Atomic Force Microscopy." The committee was impressed by Adam's adaptive use of atomic force microscopy to measure the forces involved in cellular interactions. By derivatizing the AFM tip with Sialyl Lewis X, Adam was able to examine the adhesion to living porcine vascular endothelial cells. The AFM permitted him to examine the strength, density and distance of the specific bonding that occurs between P-selectin on the cell membrane surface and the bound Sialyl Lewis on the AFM tip. Both specific and nonspecific interactions were observed. When this adhesion is better understood, it will them be

possible to understand the interaction between leukocytes and vascular



cell walls as the leukocytes roll along blood vessels and bind at inflammation sites. It may even be possible to map the location of cytoplasmic organelles on the cell surface using the specific binding techniques. Adam and Tony's work is an excellent example of adapting research techniques from one

discipline (materials science) to another (biology). This interdisciplinary cross-fertilization is one of the cornerstones on which the Adhesion Society was founded. Our congratulations to both Adam and Tony for a great job!

*SOCIETY'S ADHESION SHORT COURSE
FILLS A UNIQUE ROLE*

Donald Hunston

Each year the Society sponsors a Short Course on Adhesion that is held the weekend before the Annual Meeting. It has been given for many years and has always been popular with attendees, but one might ask how it differs from the other short courses given by various educational institutions and other organizations. Most of those courses seek to provide a comprehensive overview of adhesion. Although the Society's course covers a broad range of critically important topics, the goal is not to achieve a comprehensive coverage of the field. Rather, the course takes advantage of the connection with the Adhesion Society Annual Meeting to assemble an outstanding group of instructors that would not otherwise be available in a single course. Each subject is presented by a scientist

who is a world leader in that area. Their experience and expertise



enables them to give the attendees a unique view into the history, science, and importance of the topic. In this way, the Society's course compliments other offerings that are available elsewhere. The subjects covered ranging from fundamentals like mechanics and interface science to the

more practical aspects of adhesion such as adhesive and joint design.

The course agenda change slightly from year to year with the finalized schedule published on the Society website in late Fall. Prior to that, a good idea of the topics and presenters can be obtained from previous year's offering. The agenda for the 2002 course was: Interfacial Energies and their Role in Adhesion (Prof. F. James Boerio), Thermoset Adhesives (Dr. Donald Hunston), Polymer Parameters for Adhesion (Prof. Tomas E. Ward), Introduction to Pressure Sensitive Adhesives, (Dr. Albert I. Everaerts), Deformation and fracture of Adhesive Bonds (Dr. Alan Gent), An Introduction to the Mechanics of Adhesively Bonded Joints (Prof. David A. Dillard), and Practical Applications of the Principles of Adhesion Science (Dr. Alphonsus C. Pocius). For further information, check the Society's web page or contact Donald Hunston (donald.hunston@nist.gov, 301-975-6837).

EXHIBITORS AT THE 25TH ANNUAL MEETING

4th State (650-596-1600) offers the plasma advantage through process development, consulting, contract services, equipment design, sales and rentals supported by staff with over 20 years experience. Plasma processing allows precise control and repeatability in altering surfaces for atomic-level cleaning, surface functionalization, adhesion enhancement and biocompatibility without affecting bulk properties of treated materials. Gas plasma-the fourth state of matter-provides companies with an environmentally clean and workplace safe method.

Our equipment line and laboratory equipment includes:

🌈 Batch systems ranging from 3 to 5 cubic feet for treatment of molded or machined plastics, elastomer, ceramic or metal parts.

🌈 A tumbler system for treating large volumes of small components.

🌈 Air-to-air equipment for treatment of fiber, ribbon, small diameter wire and tubing in a continuous manner.

🌈 Roll-to-roll systems for fabrics, foils and films up to 60" wide.

🌈 "Large Batch Treatment" equipment with a chamber volume of 125 cubic feet, ideal for treating a variety of composite structures, and

🌈 4th State has added to its laboratory capabilities a "plasma pen" system (atmospheric "plasma type" discharge).

Adhesives Age is the premier industry monthly publication for the adhesives and sealant suppliers, formulators, and end users, offering the most comprehensive coverage of hot topics, issues, and trends impacting the industry. Our parent company, Chemical Week Associates is the world's largest and fastest-growing communications company dedicated to the global chemical industry. Chemical Week's dominance in conferences, trade shows, newsletters, websites and electronic products makes us an international industry powerhouse.

Adhesives & Sealants Industry magazine reaches more than 18,000 manufacturers, formulators, and end users of adhesives and sealants, plus an additional 2000 qualified international readers with our March and Oct./Nov. issues. Features include adhesives testing, medical applications, hot melt applications, electronics/fiber optics applications, rheological developments, waterbornes, pressure sensitives, and much more. In July, we have expanded our editorial coverage with an entire issue devoted to adhesives raw materials. Visit our web site at www.adhesivesmag.com for more

information and to subscribe to our e-mail newsletter.

ChemInstruments manufactures and sells testing and development equipment for the adhesives, sealant, ink and converting industries. The necessity of these instruments grew based on the emergence of several needs that have been recognized over the years. Our equipment is designed to meet various PSTC, ASTM, TLMI and FINAT standards. ChemInstruments manufactures and sells directly to you, offering the highest quality products at reasonable prices. Any problems or suggestions are used to improve the equipment as soon as possible. In the event questions arise regarding test equipment or procedures, an experienced serve technician is available to you for prompt answers.

EXAKT Technologies, Inc. (405-848-5800) Three Roll Mills simultaneously achieve dispersion, homogeneity and uniform particle fineness in adhesives and other products ranging from thick fluids to highly viscous pastes.

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Gelest

Eugene Ward
(215) 547-1015

Imass, Inc. (781-982-8096) and its manufacturing affiliate **Instrumentors, Inc.** have led the way in developing peel and

friction testing instrumentation for pressure sensitive adhesives, release liners, paper, plastics films, labels, packaging and packaging materials for over 20 years.

Kruss USA demonstrated instrumentation for automatic contact angle, surface energy, and surface tension measurement. The scope of the laboratory services offered was also shown. The contact angle meter DSA10 with the dosing system G140 was also shown. It allows for quick contact angle measurements of multiple liquids for easy surface energy determinations. The instrument can be outfitted with a high temperature syringe and chamber assembly for contact angle and surface tension analyses for hot melts and related materials. The new tensiometer K100 was also shown. The K100 is able to determine surface/interfacial tension, automatic CMC, contact angle, powder contact angle, and more at a very fast data collection rate.

Texture Technologies Corp. presented the TA.XT2i Texture analyzer, Texture Expert for Windows software and fixtures for measuring all adhesive properties of adhesives, sealants, and PSA tapes. The TA.XT2i provides extremely repeatable, computerized results for quantifying adhesiveness, tackiness, work of adhesion, peel strength, stringiness, wet tack, extensibility, cohesiveness and many other physical properties. The instrument system also quantifies the physical properties of hot melts, glues, resins, waxes, caulking, and mucoadhesives.

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