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The Adhesion Society Preliminary Program of the 15th Annual Meeting

Hilton Head, South Carolina

F. JAMES BOERIO
Program Chairman

R. GILES DILLINGHAM
Local Arrangements Chairman

SUNDAY, FEBRUARY 16, 1992

2:00–7:00 PM REGISTRATION
6:00–7:30 PM PRESIDENT'S RECEPTION

MONDAY, FEBRUARY 17, 1992

8:15 Opening Remarks

SESSION I: EVALUATION OF ADHESIVE JOINTS AND COMPOSITES I
Chairman: Donald L. Hunston, NIST

8:30 *A. N. Gent* and *S. M. Lai*
The University of Akron
“Effect of Interfacial Bonds on the Strength of Adhesion”

8:55 *S. Matsukawa*, *W. McDonough* and *D. L. Hunston*
NIST
“Mechanical Properties of Toughened Epoxies”

9:20 *K. M. Liechti* and *C-Y Liu*
University of Texas at Austin
“Viscoelastic Crack Growth in Adhesively Bonded Joints”

9:45 *P. Commerçon* and *J. P. Wightman*
Virginia Polytechnic Institute
“Polyethersulfone/IM7 Carbon Fibers Adhesion Measurements via Micro-
bond Pull-Out Test”

10:10 Coffee

10:30 *F. J. Boerio* and *N. G. Cave*
University of Cincinnati
“The Effect of the Interphase on the Performance of Epoxy/Polyamide
Adhesive Joints”

- 10:55 *D. A. Dillard* and *J. Z. Wang*
Virginia Polytechnic Institute
“Analysis and Design of an Experimental Setup to Obtain Constant G_I for Double Cantilever Beam Specimens”
- 11:20 PRESENTATION OF ADHESION SOCIETY AWARD FOR EXCELLENCE IN ADHESION SCIENCE, SPONSORED BY 3M, TO A. J. KINLOCH
- 11:30 *A. J. Kinloch*
Imperial College
“Application of Fracture Mechanics to the Failure of Structural Adhesive Joints”
- 12:10 Lunch

SESSION II: ANALYTICAL TECHNIQUES FOR SURFACES AND INTERFACES

Chairman: Nigel G. Cave, Motorola Inc.

- 1:45 *F. Fondeur* and *J. L. Koenig* INVITED
Case Western Reserve University
“Application of Modern Spectroscopic Techniques to Adhesive-Metal Interfaces”
- 2:25 *M. Kinzler* and *M. Grunze*
University of Heidelberg
“X-Ray Photoelectron Microscopy Applied to Metal/Polymer Laminates”
- 2:50 *M. Lupkowski* and *J. F. Maguire*
Southwest Research Institute
“Molecular Dynamics and Atomic Microscopy of Adhesives at Interfaces”
- 3:15 Coffee
- 3:35 *B. D. Ratner* INVITED
University of Washington
“Advances in Our Ability to Characterize Subtle Features of Surfaces Important to Adhesion”
- 4:15 *A. Sabata*, *R. J. Koch* and *W. J. van Ooij*
Armco Research and Technology
“EIS and Time-of-Flight SIMS Study of Phenomena at Normal and Silane-Modified Metal-Paint Interfaces in Painted Automotive Steels During Exposure to a Corrosive Environment”
- 4:40 *F. J. Boerio*, *W. H. Tsai*, *P. P. Hong* and *J. T. Young*
University of Cincinnati
“Characterization of Polymer Surfaces and Interfaces Using Surface-Enhanced Raman Scattering”
- 5:05 Adjourn
- 6:00–7:30 **POSTER SESSION**

TUESDAY, FEBRUARY 18, 1992**SESSION III: POLYMER SURFACES AND INTERFACES**

Chairman: Howard M. Clearfield, IBM

- 8:30 T. J. McCarthy INVITED
University of Massachusetts
"Organic Chemistry at Polymer Interfaces"
- 9:10 T. Buffeteau, B. Desbat, H. Arribart and P. Chartier
Saint-Gobain Recherche
"Glass/Polyurethane Adhesion: Characterization of the Interphase"
- 9:35 G. Garnier and W. G. Glasser
Virginia Polytechnic Institute
"Understanding the Cellulose-Thermoplastic Interface"
- 10:00 Coffee
- 10:20 J. W. Chin
Virginia Polytechnic Institute
"Surface Characterization and Adhesion of Plasma-Modified LaRC-TPI"
- 10:45 H. P. Schreiber
Ecole Polytechnique
"Specific Interactions and Contact Angle Measurements on
Polymer Solids"
- 11:10 L. T. Drzal, M. Madhukar and M. C. Waterbury
Michigan State University
"Surface Chemical and Surface Energetic Alteration of the IM6 Carbon
Fiber Surface and Its Effect on Composite Properties"
- 11:35 H. M. Clearfield, B. K. Furman, N. Sheth, F. Bailey and S. Purushothaman
IBM Research
"Water Transport Across Modified Polyimide Surfaces"
- 12:00 Lunch

SESSION IV: POLYMERS FOR ADHESIVES AND MATRIX RESINS

Chairman: Paul J. Clark, Loctite Corp.

- 6:45 F. W. Harris INVITED
University of Akron
"Adhesives and Elastomers via Nucleophilic Additions to Bispropynones"
- 7:25 K. J. Bruza
Dow Chemical Company
"Benzocyclobutene Based High Performance Polymers"
- 7:50 J. L. Hedrick
IBM Research Division
"Poly(aryl Ether Benzothiazoles)"
- 8:15 B. J. Jensen and D. C. Working
NASA Langley Research Center

- “Controlled Molecular Weight Imide/Arylene Ether Copolymer Adhesives”
- 8:40 *A. F. Jacobine*, D. M. Glaser and P. Salamon
Loctite Corporation
“Novel Photocurable Adhesives Based on Thiol Crosslinked Norbornene Resins”
- 9:05 Business Meeting

WEDNESDAY, FEBRUARY 19, 1992

SESSION V: EVALUATION OF ADHESIVE JOINTS AND COMPOSITES II

Chairman: Donald L. Hunston, NIST

- 8:30 *C. K. Riew* and A. R. Siebert
B. F. Goodrich
“Thermoset Resin Toughened With Preformed Particles”
- 8:55 G. L. Anderson
Thiokol Corporation
“Continuum and Fracture Mechanical Studies of Contaminated Bonding Surfaces”
- 9:20 *J. J. Lesko*, S. W. Case, G. P. Carman, D. A. Dillard and K. L. Reifsnider
Virginia Polytechnic Institute
“Fiber/Matrix Interface Interrogation by Means of Meso-Indentation Testing”
- 9:45 *R. D. Adams* and V. Mallick
University of Bristol
“Temperature Stresses in Adhesively-Bonded Composites”
- 10:10 Coffee

SESSION VI: GENERAL I

Chairman: Kenneth M. Liechti, University of Texas

- 10:30 D. Katz
Technion-Israel Institute of Technology
“Bioadhesives for Hard Tissues”
- 10:55 *J. L. Rose*, J. J. Ditri, D. Galella and T. Grant
Drexel University
“Adhesive Bond Inspection Utilizing Ultrasonic Lamb Waves”
- 11:20 M. Buck and *M. Grunze*
University of Heidelberg
“Spectroscopic Identification of Buried Interfaces: New Experimental Approaches”
- 11:45 *H. F. Webster* and J. P. Wightman
Virginia Polytechnic Institute

“The Role of the Interphase in Copper/Polyphenylene Sulfide Adhesion”

12:10 Lunch

SESSION VII: GENERAL II

Chairman: Kenneth M. Liechti, University of Texas

- 1:30 K. W. *Stickney*, T. D. Lin, A. Prasad, H. Marand, R. M. Davis and J. S. Riffle
Virginia Polytechnic Institute
“Synthesis and Characterization of Controlled Small Particle Sizes in Polyimides”
- 1:55 C. T. Chou, U. *Gaur* and B. Miller
TRI
“Mechanism of Fiber/Resin Debonding in Carbon Reinforced Composites”
- 2:20 R. Joseph, J. P. *Bell* and A. J. McEvily
University of Connecticut
“Effects of Variables Upon Fatigue Crack Growth in Aluminum/Epoxy and Steel/Epoxy Joints”
- 2:45 Y. J. Lee, T. H. Yoon, A. Gungor, C. Smith and J. E. *McGrath*
Virginia Polytechnic Institute
“Adhesion Study of Phosphorous Containing Polyimides and Polyethers”
- 3:10 J. M. *Kaltenecker* and T. C. Ward
Virginia Polytechnic Institute
“A Study of H₂O Ingression into Polyimidesiloxane Adhesives”
- 3:35 Adjourn

POSTER SESSION, MONDAY, FEBRUARY 17, 1992, 6:00–7:30 PM

- J. Liu and J. F. Watts
University of Surrey
“Interfacial Characterization of a Laminated Metal/Polymer System”
- J. Yang and A. Garton
University of Connecticut
“Primers for Polyolefin/Cyanoacrylate Adhesion”
- B. J. Love, R. F. Hochman, and K. E. Starling
Georgia Institute of Technology
“Orthodontic Adhesive Modifications to Enhance After-Treatment Removal”
- M. Pastor-Blas, M. S. Sanchez-Adsuar, J. M. Martin-Martinez
Universidad de Alicante
“Chlorination of Styrene-Butadiene Rubber with Trichloroisocyanuric Acid”
- J. W. Connell
NASA Langley Research Center
“Chemistry and Adhesive Properties of Blends of Acetylene Terminated Materials”

- T. P. Harvey, J. D. Rancourt, and L. T. Taylor
Virginia Polytechnic Institute
"Electrical Detection of the Onset of Delamination in Bonding Applications"
- P. A. Percha, G. L. Wilkes, and D. A. Dillard
Virginia Polytechnic Institute
"The Effect of Molecular Orientation on Adhesive Bond Strength"
- M. Babai and J. P. Wightman
Virginia Polytechnic Institute
"Solvent Vapors and Cured Sealant Surfaces: Acid-Base Interactions"
- C. L. Heisey, P. A. Wood, J. E. McGrath, and J. P. Wightman
Virginia Polytechnic Institute
"A Study of the Adhesion Between Carbon Fibers and BIS (3-Maleimidophenoxy) Triphenylphosphine Oxide, a Potential High Performance Composite Matrix"
- Y. Bao and D. A. Dillard
Virginia Polytechnic Institute
"Application of the Peninsula Blister Test to Study the Adhesion of Thin Polymer Films"
- T. Kadowaki and M. H. Litt
Case Western Reserve University
"Synthesis, Characterization and Surface Properties of Block Copolymers with Vic-Diol Groups"
- Y. H. Lai and D. Dillard
Virginia Polytechnic Institute
"A Study of High Stress Gradients and Singularity Between Dissimilar Materials"
- M. H. McCord and J. C. Duke
Virginia Polytechnic Institute
"Acoustic Microscopy of Adhesively Bonded Surfaces"
- R. Sharma, J. K. Lin, and J. Drye
Motorola Inc.
"A New Method to Evaluate Thin Film Adhesion"
- K. M. Johnson, J. R. Babu, and J. S. Riffle
Virginia Polytechnic Institute
"Synthesis of Acrylate Functionalized Polyethyloxazoline for Adhesive Applications"
- J. C. Wells and J. G. Dillard
Virginia Polytechnic Institute
"Bond Failure in Adhesively Bonded Composites"
- B. L. Holmes and J. G. Dillard
Virginia Polytechnic Institute
"Surface Characterization and Durability of Adhesively Bonded Composites"
- K. L. Wolfe, J. G. Dillard, J. E. McGrath, and A. Gungor
Virginia Polytechnic Institute
"Adhesive Bonding of Phosphine Oxide Polyimide Polymers to Aluminum"

- M. M. Ellison, J. D. Rancourt, and L. T. Taylor
Virginia Polytechnic Institute
"Iron-Modified, Sulfur Containing Polyimide Films"
- T. Park and T. C. Ward
Virginia Polytechnic Institute
"Thermal Degradation Behavior of Poly(Arylene Ether Phosphine Oxide)s (PEPO)"
- Y. Yang and T. C. Ward
Virginia Polytechnic Institute
"Determination of Fiber Surface Interactions"
- J. Cartwright, J. Hellgeth, S. Wilkinson, and T. C. Ward
Virginia Polytechnic Institute
"Preliminary Investigation of the Cure of Toughened Bismaleimides: Kinetics and Morphology"
- D. R. Hahn, J. W. Hellgeth, and T. C. Ward
Virginia Polytechnic Institute
"Assessment of Photopolymer Network Formation Via Coupled Remote Sensing Dielectric Spectroscopy/Attenuated Total Reflectance Infrared Spectroscopy"
- C. Li and R. A. Dickie
Ford Motor Company
"Bonding Adhesive Joints with Radio-Frequency Dielectric Heating"
- M. A. Vrana and T. C. Ward
Virginia Polytechnic Institute
"Synthesis and Characterization of Crosslinked Polyimides Prepared from Maleated Poly(Propylene)"
- R. J. Davies and M. Ritchie
Rialtech Limited
"The Development of Pretreatments for the Adhesive Bonding and Surface Protection of Continuous Fibre Reinforced Aluminum Metal Matrix Composite Components"
- D. J. Progar and T. L. St. Clair
NASA Langley Research Center
"Polyimide Blends as Adhesives"
- C. DiFrancia
Virginia Polytechnic Institute
"Fiber Optic Strain Sensor for Detection of Delamination at Fiber/Resin Interface"
- B. R. K. Blackman, A. J. Kinloch and J. P. Dear
Imperial College
"The Environmental and Impact Resistance of Adhesively Bonded Thermoplastic Fibre Composites"
- E. Jabbari and N. A. Peppas
Purdue University
"Interfacial Adhesion of Poly(vinyl chloride)/poly(ethyl methacrylate)"

G. Fernlund and J. K. Spelt

University of Toronto

“Fracture Mechanics and Design of Structural Adhesive Joints”

G. M. Porta, B. R. Karas and D. F. Foust

GE Corporate Research and Development

“The Development of Adhesion in Copper-Coated Polyetherimide Films”

D. J. Doyle

GMI Engineering and Management Institute

“Excimer Laser Surface Preparation of Polyethylene”