



FINAL PROGRAM

SIXTH INTERNATIONAL SYMPOSIUM ON POLYMER SURFACE MODIFICATION: RELEVANCE TO ADHESION

To be held June,11-13, 2007; University of Cincinnati
Cincinnati, Ohio, USA

This symposium continues the tradition set by the first in the series entitled: "Polymer Surface Modification: Relevance to Adhesion" which was held in Las Vegas, NV, 1993. As with its predecessors, this symposium will be concerned with the technological areas where surface modification is a key technology which allows for the processing and manufacture of products which would otherwise be unobtainable. It is also our distinct privilege to be able to hold the sixth symposium in the series in collaboration with Prof. Wim van Ooij and his group at the University of Cincinnati. Prof. van Ooij has been an active researcher in the field and he and his group look forward to hosting this symposium and greeting all participants from both academia and industry from all corners of the globe. Proper adhesion characteristics are vital to the success of any practical implementation of polymer materials.

Though polymers are generally not very adhesionable, careful surface modification can result in greatly improved adhesion without altering bulk properties. This symposium is organized to bring together scientists, technologists and engineers interested in all aspects of polymer surface modification, to review and assess the current state of knowledge, to provide a forum for exchange and cross-fertilization of ideas, and to define problem areas which need intensified efforts.

The invited speakers have been selected so as to represent widely differing disciplines and interests, and they hail from academic, governmental and industrial research laboratories. This meeting is planned to be a truly international event both in geographic coverage as well as in spirit. Please **NOTE** that the address given may apply only to the highlighted speaker.

9:35-10:05: E.T. Kang and K.G. Neoh; Dept. of Chemical and Biomolecular Engineering, National University of Singapore, Kent Ridge, SINGAPORE 119260; **Modification of Polymers via Surface-Initiated Living Radical Polymerizations**

10:05-10:20: COFFEE BREAK

10:20-10:50: S. Temmel, Ch. Buchgraber and W. Kern; Polymer Competence Center Leoben GmbH, A-8700 Leoben, AUSTRIA; **Improvement of Surface Properties of Polymers Modified by Photo-induced Processes**

10:50-11:20: Dae Up Ahn and **Erol Sancaktar**; Department of Polymer Engineering, The University of Akron, Akron, OH 44325-0301, **Direct Fabrication of High Density Polymer or Silicon Nano-Dots by Excimer Laser Irradiation on Block Copolymer Masks**

11:20-11:50: M. Masudul Hassan, M. Rabiul Islam and Mubarak A. Khan; Technical University of Berlin, Polymertechnik/Polymerphysik, Fasanenstr. 90, D- 0623 Berlin, GERMANY; **Effect of Radiation on Surface Modification of Cellulose with Acrylamide**

SESSION I: MONDAY, JUNE 11, 2007; **BIOLOGICAL APPLICATIONS**

8:00-8:05: INTRODUCTORY REMARKS

8:05-8:35: Carel Jan van Oss; Department of Microbiology and Immunology, School of Medicine and Biomedical Sciences, University at Buffalo, South Campus, Buffalo, New York, NY 14214-3000; **Surface Properties of Bacteria, Human Cells and Solid Substrata - Which Factors Cause Adhesion or Non-Adhesion to Prevail**

8:35-9:05: Thomas Bahnert, Klaus Opwis, Markus Milster and Eckhard Schollmeyer; Deutsches Textilforschungszentrum Nord-West e. V., Adlerstr. 1, D-47798 Krefeld, GERMANY; **Surface Modifications for the Control of Cell Growth on Textile Substrates**

9:05-9:35: Klaus Opwis and Thomas Mayer-Gall, **Torsten Textor** and Eckhard Schollmeyer; Deutsches Textilforschungszentrum Nord-West e. V., Adlerstr. 1, D-47798 Krefeld, GERMANY; **Immobilization of Organometallic Catalysts on Textile Carrier Materials**

11:50-12:20: K.-D. Weltmann, J. Ehlbeck, R. Brandenburg, T. V. Woedtke, U. Krohmann, M. Stieber, K. Rackow, E. Kindel and R. Foest; Institute of Low-Temperature Plasma Physics (INP), Felix-Hausdorff-Straße 2, D-17489 Greifswald, GERMANY; **Polymer Surface Decontamination of Heat-Sensitive Goods Using Low Temperature Plasma Technology**

12:20-1:30: LUNCH

**SESSION II: MONDAY, JUNE 11, 2007:
SURFACE MODIFICATION AND ADHESION**

1:30-2:00: W. G. Mahy; Akzo Nobel Chemicals Research & Technology, THE NETHERLANDS; **Increasing the Performance of Polymer-Based Applications by Interphase Modification: Relevance of Microanalysis**

2:00-2:30: Graham J Leggett; Department of Chemistry, University of Sheffield, Brook Hill, Sheffield S3 7HF, UK; **Measuring Molecular Organisation at the Nanometre Scale: Surface Analysis by Friction Force Microscopy**

2:30-3:00: Andrew Nelson; ANSTO, New Illawarra Road, Menai, NSW 2234, AUSTRALIA; **The Role of Reflectometry Techniques in Examining Thin Polymer Film Compositions**

3:00-3:30: Michel Grisel; URCOM Université du Havre, 25 rue Philippe Lebon, F-76058 LE HAVRE Cedex, FRANCE; **Polymer Surface Modification for Improvement of Adhesion Properties of Structural Composites Used in Aeronautics**

3:30-4:00: Arthur J. Coury; Genzyme Corporation, Cambridge, MA; **Achieving and Verifying Tissue Adherence to Assure Performance of Hydrogel-Based Medical Devices**

4:00-4:15: COFFEE BREAK

4:15-4:45: P. R. Norton, Natasha Patrito, Jessica McLachlan, Sarah Faria, Seyed Tadayyon, Claire McCague and Nils O. Petersen; Department of Chemistry, University of Western Ontario, London, ON. CANADA; **Novel Techniques for PDMS Surface Modification: Microscale Biocompatible Patterning and Robust Bonding**

4:45-5:15: Jeremy W. Bartels, Kenya T. Powell, Jinqi Xu, Chong Cheng and Karen L. Wooley; Center for Materials Innovation, Department of Chemistry and Department of Radiology, Washington University in Saint Louis, Saint Louis, MO 63130; **Adhesion of a Non-Adhesive Coating: The Use of PEGylated Hyperbranched Fluoropolymers as Surfaces with Unique Anti-Biofouling, Uptake and Release, and Mechanical Characteristics**

5:15-5:45: Dae Up Ahn and Erol Sancaktar; Department of Polymer Engineering, The University of Akron, Akron, OH 44325-0301; **Control of Block Copolymer Cylinder Orientation by Homopolymer Blending**

5:45-6:15: R. Bongiovanni and A. Priola; Department of Materials Science and Chemical Engineering Politecnico di Torino, Torino, ITALY; **Adhesion of Fluorinated UV-cured Coatings on Functionalised Polyethylene**

6:15-6:45: Zheng CAO, Jingxin LEI, Jun GAO and Qiman LI; State Key Lab. of Polymer Materials Engineering, Polymer Research Institute, Sichuan University, Chengdu 610065; P.R. CHINA; **Surface Modification of Polyolefin via a Novel Non-vapor and Non-liquid Photografting Method**

**SESSION III: TUESDAY, JUNE 12, 2007:
PLASMA, RADIATION AND ADHESION**

8:00-8:30: Norihiro Inagaki; Shizuoka University, Laboratory of Polymer Chemistry, Hamamatsu 432-8023, JAPAN; **Plasma Surface Modification of Aromatic Polyester Films for Copper Metallization: Dynamic Surface Properties of Plasma-Modified Films**

8:30-9:00: C. Lew, F. Chowdhury, M. V. Hosur and A. N. Netravali; Dept. of Fiber Science and Apparel Design, Cornell University, Ithaca, NY 14853-4401; **The Effect of Silica (SiO₂) Nanoparticle and Ethylene/Ammonia Plasma on the Carbon Fiber/NanoEpoxy Interfacial Shear Strength**

9:00-9:30: K. Schröder, B. Busse, H. Steffen, A. Ohl, A. Quade and K.-D. Weltmann; Institute of Low-Temperature Plasma Physics (INP), Felix-Hausdorff-Straße 2, D-17489 Greifswald, GERMANY; **Plasma-Induced Generation of Cell-Adhesive and Cell-Repulsive Polymer Surfaces for Cell-based RNA Arrays**

9:30-10:00: Masukuni Mori; Mori Consultant Engineering office 36-1 Shinmeikuruwa Kaimei Ichinomiya, Aichi 494-0001, JAPAN; **What Effects does Ar-Plasma Irradiation Lead to in Dyeing Properties as well as Antifelting Properties of Wool Fibers?**

10:00- 10:15: COFFEE BREAK

10:15-10:45: S. Wettmarshausen, D. Kühn, G. Hidde and J. F. Friedrich; Bundesanstalt für Materialforschung und -prüfung (BAM), D-12200 Berlin, GERMANY; **Plasmabromination – The Selective Way to Produce Monotype Functionalized Polymer Surfaces**

10:45-11:15: M. Kryszak, A. Jayasekar, B. Parekh, T. Debies, K. S. V. Santhanam, R. A. DiLeo, B. J. Landi, R. P. Raffaele and **G. A. Takacs;** Department of Chemistry, Center for Materials Science and Engineering, Rochester Institute of Technology, Rochester, NY 14623; **Gas-Phase Surface Functionalization of Carbon Nanotubes with UV Photo-oxidation**

11:15-11:45: J. Friedrich, **R. Mix** and J. Falkenhagen; Bundesanstalt für Materialforschung und Prüfung (BAM), Unter den Eichen 87, D-12205 Berlin, GERMANY; **Deposition and Characterization of Plasma Copolymerized Allyl Alcohol Adhesion Promoting Polymer Layers**

11:45-12:15: I. Hudec, M. Jaššo, **M. Cernák,** L. Cernáková and H. Krump; Institute of Physics, Comenius University, Bratislava, SLOVAKIA; **Adhesion Strength Study Between Plasma Polymerized Polyester Cords and a Rubber Matrix**

12:15-1:30: LUNCH

SESSION IV: TUESDAY, JUNE 12, 2007: PLASMA AND FLAME TREATMENT

1:30-2:00: Rory A. Wolf; Enercon Industries Corporation - Surface Treatment, Induction Sealing & Power Supply Technologies, W140 N9572 Fountain Blvd., Menomonee Falls, WI 53051; **Advances in Adhesion with CO₂-Based Atmospheric Plasma Surface Modification**

2:00-2:30: J. Reece Roth; Dept. of Electrical & Computer Engr., 409 Ferris Hall, University of Tennessee, Knoxville, TN 37996-2100; **Polymer Surface Modification with a One Atmosphere Uniform Glow Discharge Plasma (OAUGDP)**

2:30-3:00: Terrence Vargo, David MacRae, and Derrick Lucey; Integument Technologies, Inc., 72 Pearce Avenue, Tonawanda, NY 14150; **Plasma Surface Modification Meets Nanotechnology**

3:00-3:30: S. Manolache, H. Jiang and F. S. Denes; Center for Plasma-Aided Manufacturing, University of Wisconsin, 1410 Engineering Drive #101, Madison, WI 53706-1608; **Chemical Versus Physical Nanotopography Generation into Polymer Surfaces Induced by Cold Plasma**

3:30-3:45: COFFEE BREAK

3:45-4:15: Michael S. Silverstein; Department of Materials Engineering, Technion-Israel Institute of Technology, Haifa 32000, ISRAEL; **Surface Modification of Low-k Dielectrics**

4:15-4:45: Joseph DiGiacomo; Flynn Burner Corp., 12550 Lake Avenue, Suite 1703, Lakewood, OH 44107; **Adhesion Promotion Using Direct Flame Plasma Surface Treatment**

4:45-5:15: Takaomi Kobayashi; Department of Chemistry, Nagaoka University of Technology, 1603-1 Kamitomioka, Nagaoka, JAPAN; **Ozone Modification on Surface of Polystyrene Derivatives**

5:15-5:45: T. Tanaka, K. Vutova, G. Mladenov and T. Takagi; Department of Electronics and Photonic Systems Engineering, Hiroshima Institute of Technology, 2-1-1, Miyake, Saiki-ku, Hiroshima 731-5193, JAPAN; **Surface Modification of Plastic Films by Charged Particles**

SESSION V: WEDNESDAY, JUNE 13, 2007: APPLICATIONS TO COATINGS

8:00-8:30: A. Narladkar, E. Balnois, G. Vignaud and Y. Grohens; Laboratoire Polymères, Propriétés aux Interfaces et Composites (L2PIC), Université de Bretagne Sud, BP 92116, 56321 Lorient Cedex, FRANCE; **Aggregation and Patterning in Thin Films of PLA and Their Stereocomplex: From Conformation to Glass Transition**

8:30-9:00: Frank Simon; Institute of Polymer Research, Hohe Straße 6, D-01069 Dresden, GERMANY; **Super-Hydrophobic Aluminium Surfaces**

9:00-9:30: E. Metwalli, V. Körstgens and P. Müller-Buschbaum; Physik-Department, TU München, LS E13, James-Franck-Str. 1, D-85747 Garching, GERMANY; **Evaluation of the Interfacial Adhesion Between a Model Pressure Sensitive Adhesive and Chemically Modified Surfaces Using the Probe Tack Method**

9:30-10:00: M. Ignat, C. Malhaire, G. Ravel and E. Quesnel; SIMAP INP Grenoble, FRANCE; **Cracking and Deadhesion of Thin Metal Films on Mechanically Modified Polymer Surfaces**

10:00-10:15: COFFEE BREAK

10:15-10:45: M. Charbonnier, F. Gaillard and **M. Romand**; Université de Lyon, Laboratoire des Sciences Analytiques, UMR-CNRS # 5180, Université Claude Bernard-Lyon 1, 43 Bd du 11 Novembre 1918, F-69622 Villeurbanne Cedex, FRANCE; **Compared Catalytic Activity and Subsequent Electroless Metallization of Polymer Surfaces Treated by NH₃ and N₂ Plasma**

10:45-11:15: Jay J. Senkevich, Carissa S. Jones and Young-Soon Kim; Brewer Science Inc., 2401 Brewer Dr., Rolla, MO 65401; **Direct Electroless Metallization of a CVD Polymer Film Without a Catalytic Layer**

11:15-11:45: Wang Ke, Liang Hong, and Zhao-Lin Liu; Department of Chemical and Biomolecular Engineering, National University of Singapore, BLK E5 02-02, 4 Engineering Drive 4, SINGAPORE 117576; **Developing a Substantially Thin Ni/P Layer on the Surface of Silicone Elastomer**

11:45-12:15: Grigoriy Kyryk and **Alexander Stadnick**; Ukrrosmetall Concern, 6 Kursky Avenue, Sumy, UKRAINE 40020; **Reception of Metal Coverings on Polymeric Materials by Methods of Conductors Electric Explosion**