



FINAL PROGRAM

SIXTH INTERNATIONAL SYMPOSIUM ON **SILANES** AND OTHER COUPLING AGENTS

To be held June 13-15, 2007; University of Cincinnati
Cincinnati, Ohio, USA

This symposium continues the tradition set by the first symposium in this series: "Silanes and Other Coupling Agents" which was hosted in 1991 by the Dow Corning Corporation in honor of Dr. Edwin P. Plueddemann. As with its predecessors, this symposium will be concerned with the technological areas where the use of surface primers such as silanes is critical to the success of many technologies. It is also our distinct privilege to be able to hold this the sixth symposium in the series in collaboration with Prof. Wim van Ooij and his group at the University of Cincinnati. Prof. van Ooij was a participant at the 1991 symposium in honor of Dr. Plueddemann and has been an active researcher in the field of silanes ever since. Prof. van Ooij and his group look forward to hosting this symposium and greeting all participants from both academia and industry from all corners of the globe. Historically the silanes have been used as coupling agents for thin films in the microelectronics industry and in glass fiber composites where the use of

silanes has been an enabling factor in the success of many manufactured products. Quite surprisingly, silanes have also found a role in biotechnology as specific coupling agents for bonding polynucleotides to the so-called "gene chips" and also in cosmetic applications. This symposium is organized to bring together scientists, technologists and engineers interested in all aspects of coupling agent technology, 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 geographically and scientifically. **NOTE** the address given may apply only to the presenting author.

SESSION I: WEDNESDAY, JUNE 13, 2007

1:30-1:35: INTRODUCTORY REMARKS

1:35-2:05: Barry Arkles and Youlin Pan; Gelest Inc., 11 East Steel Rd., Morrisville, PA 19067; **Hydrophobicity, Hydrophilicity and Silane Surface Modification**

2:05-2:35: Eric Pohl, Misty Huang and Antonio Chaves; Momentive Performance Materials, 771 Old Saw Mill River Road, Tarrytown, NY 10591; **New Silanes for Low VOC Adhesives and Sealants**

2:35-3:05: Burkhard Standke, Björn Borup, Peter Jenkner, and Christian Wassmer; Degussa GmbH, Rheinfelden, GERMANY; **VOC Free Multifunctional Organosilane Systems - A New Modular Concept for Water Borne Sol-Gel Coatings**

3:05-3:35: E.T. Kang and K.G. Neoh; Dept. of Chemical and Biomolecular Engineering, National University of Singapore, Kent Ridge, SINGAPORE 119260; **Silane-Coupling Agents for Surface-Initiated Living Radical Polymerizations**

3:35-4:05: Marie-Laure Abel; UniS Materials Institute & School of Engineering, University of Surrey, Guildford, Surrey GU27XH UK; **The Use of Organo-Silanes as Primers and Within an Adhesive Formulation**

4:05-4:20: COFFEE BREAK

4:20-4:50: H. T. Deo; Polygel Technologies India Private Limited, Fort, Mumbai, INDIA; **Coupling Agents in Chelating Chemicals, Printing Inks, Silicon Emulsions and Paint Adhesive Formulations**

4:50-5:20: Ezzeldin Metwalli; Physikdepartment E13, Technische Universität München James-Franck-Straße 1, D-85747, Garching GERMANY; **Aminosilane treated glass substrates for DNA microarrays**

5:20-5:50: R Raval, **S J Shaw** and G Woods; Defence Science and Technology Laboratory, Salisbury, UK; **Spectroscopic Probing of Model Silane Coupling Compounds at Model Surfaces**

5:50-6:20: **Stephen L. Kaplan**; 4th State, Inc., 1260 Elmer Street, Belmont, CA 94002; **Plasma Silanization of Metals, Ceramics and Polymers**

SESSION II: THURSDAY, JUNE 14, 2007

8:00-8:30: **Carl Tripp**; Laboratory for Surface Science & Technology, Engineering and Science Research Building, University of Maine, Orono, ME 04469; **The Use of Supercritical CO₂ for Conducting Silane Reactions on Surfaces**

8:30-9:00: David Vincent and **Janis Matisons**; Nanomaterials Group, School of Chemistry, Physics and Earth Sciences, Flinders University, Sturt Road, Bedford Park, South Australia, AUSTRALIA 5042; **Investigation of the Surface Effects of Sulfur and Nitrogen Containing Silanes for the Design and Production of Novel Silane Compounds used in Surface Modification**

9:00-9:30: X. Liu, J. L. Thomason and **F. R. Jones**; Department of Engineering Materials, University of Sheffield, Sheffield S1 3JD, UK; **The Concentration of Hydroxyl Groups on Glass Surfaces and Their Effect on the Structure of Silane Deposits**

9:30-10:00: **X. M. Liu**, J. L. Thomason and F. R. Jones; Department of Engineering Materials, University of Sheffield, Sheffield S1 3JD, UK; **XPS and AFM Study of the Structure of Hydrolysed Aminosilane on E-glass Surfaces**

10:00-10:15: COFFEE BREAK

10:15-10:45: Peng Wang, Bill Hamilton and **Dale W. Schaefer**; Dept. of Chemical and Materials Engineering, Univ. of Cincinnati, Cincinnati, OH 45221; **Characterization of Hydrothermal Degradation of Organosilane Films on Silicon Wafer by Neutron Reflectivity**

10:45-11:15: **Peng Wang** and Dale W. Schaefer, Dept. of Chemical and Materials Engineering, Univ. of Cincinnati, Cincinnati, OH 45221; **Characterization of Epoxy-Silane Films by Combined Scattering Techniques**

11:15-11:45: **F. Deflorian**, S. Rossi, M. Fedel and L. Fedrizzi; Dipartimento di Ingegneria dei Materiali e Tecnologie Industriali, Università di Trento, Via Mesiano 77, 38050 Trento, ITALY; **Advanced Electrochemical Techniques for Studying Silane Based Pretreatments as Adhesion Promoters on Different Metals**

11:45-12:15: **V. Cech**, S. Lichovnikova, J. Sova, and J. Studynka; Institute of Materials Chemistry, Brno University of Technology, Brno, CZECH REPUBLIC; **Surface Free Energy of Silicon-Based Plasma Polymer Films**

12:15-1:30: LUNCH

SESSION III: THURSDAY, JUNE 14, 2007

1:30-2:00: **R. De Palma**, S. Peeters, W. Laureyn, G. Borghs, C. Van Hoof and G. Maes; Interuniversity Microelectronics Center (IMEC), BELGIUM; Katholieke Universiteit Leuven, Chemistry Department, BELGIUM; **How to Tune the Functionality of Magnetic Nanoparticles Using Silanes?**

2:00-2:30: **Mandla A. Tshabalala**, Vina Yang and Ryan Libert; USDA Forest Service, Forest Products Laboratory, One Gifford Pinchot Drive, Madison, WI 53726-2398; **Surface Modification of Wood by Alkoxysilane Sol-gel Deposition to Create Anti-mold and Anti-fungal Characteristics**

2:30-3:00: **Ramsey Hamade**; American University of Beirut, 850 Third Avenue 18th floor, New York, NY 10022; **Durability of Silane-Modified Adhesive Bonds**

3:00-3:30: **E. Metwalli**, V. Körstgens and P. Müller-Buschbaum; Physik-Department, TU München, LS E13, James-Franck-Str. 1, D-85747 Garching, Germany; **Adhesion of Different Modified Glass Surfaces to a Model Pressure-sensitive Adhesive**

3:30-4:00: L. Ge, S. Sethi, Betül Yurdumakan, P. M. Ajayan and **A. Dhinojwala**; Department of Polymer Science, University of Akron, Akron, OH 44320; **Synthetic Gecko Foot-hairs from Multiwalled Carbon Nanotubes**

4:00-4:15: COFFEE BREAK

4:15-4:45: Jukka P. Matinlinna *, Jon E. Dahl, Stig Karlsson, Lippo V. J. Lassila and Pekka K. Vallittu; NIOM – Nordic Institute of Dental Materials, P.O.Box 70, NO-1305 Haslum, NORWAY; **The Effect of the Novel Silane System to the Flexural Properties of E-glass Fiber-Reinforced Composite**

4:45-5:15: M. Masudul Hassan, and **Mubarak A. Khan**; Radiation and Polymer Chemistry Lab., Institute of Nuclear Science and Technology, Bangladesh Atomic Energy Commission, P. O. Box 3787, Dhaka, BANGLADESH; **Role of Amino-Silane on the Mechanical Performance of the Jute-Polycarbonate Composites**

5:15-5:45: Khodzhaberdı Allaberdiyev; Ukraine State Scientific Research Institute for Plastics, Illich pr. 97, Donetsk 83059, UKRAINE; **Investigation of the Interphase Epoxy Composites**

SESSION IV: FRIDAY JUNE 15, 2007

8:00-8:30: Anthony A. Parker, Todd Wagler and Peter Rinaldi; A. A. Parker Consulting & Product Development, Newtown, PA; Solid State NMR Studies of Surface Adsorbed Molecules on Inorganic Pigments

8:30-9:00: A. N. Khramov, L.S. Kasten, V. N. Balbyshev and J. A. Johnson; Universal Technology Corp., 1270 N. Fairfield Rd., Dayton, OH 45432-2600; **Phosphonate-Functionalized Sol-Gel Surface Treatments for Aluminum and Magnesium Alloys**

9:00-9:30: T. Textor, F. Schroeter and E. Schollmeyer; Deutsches Textilforschungszentrum Nord-West e. V., Adlerstr. 1, D-47798 Krefeld, GERMANY; **Photocatalytic Titania Derived by Sol-Gel-Technique for Textile Application**

9:30-10:00: T. Textor, **T. Bahners**, F. Schröder, B. Schulz and E. Schollmeyer; Deutsches Textilforschungszentrum Nord-West e.V., Adlerstr. 1, D-47798 Krefeld, GERMANY; **Application of Nanosols to Improve Different Properties of P-aramide Fabrics Used for Bullet-proof Vests**

10:00-10:15: COFFEE BREAK

10:15-10:45: W. J. van Ooij; Dept. of Materials Science and Engineering, University of Cincinnati, Cincinnati, OH 45221-0012; **Overview of Potential of Silanes to Protect Metal Against Corrosion Phenomena**

10:45-11:15: Qingsong Yu; Department of Chemical Engineering, Center for Surface Science and Plasma Technology, University of Missouri-Columbia, Columbia, MO 65211; **Plasma Polymer Coatings in Corrosion Protection of Metallic Materials**

11:15-11:45: Rosa Di Maggio; Department of Engineering Materials and Industrial Technologies, University of Trento, Via Mesiano, 77, 38100 Trento, ITALY; **Zirconia for Corrosion Resistant Primers**

11:45-12:15: Ji-Ming Hu, Wei-Gang Ji, Liang Liu, Jian-Qing Zhang and Chu-Nan Cao; Department of Chemistry, Zhejiang University, Hangzhou 310027, P. R. CHINA; **Improving the Corrosion Performance of Epoxy Coatings by the Modification with "Active" and "Non-Active" Silane Monomers**

12:15-1:30: LUNCH

SESSION V: FRIDAY, JUNE 15, 2007

1:30-2:00: Dale W. Schaefer; Department of Chemical and Materials Engineering, University of Cincinnati, Cincinnati, OH 45221; **The Role of Silane Coupling Agents in Metal-Protective Films**

2:00-2:30: Paula Puomi, Zhangzhang Yin, Wim J. van Ooij, Akshay Ashirgade and Anuj Seth; University of Cincinnati, 560 Engineering Research Center, Cincinnati, OH 45221-0012; **Novel Chromate-Free Silane-Containing Superprimer Technology**

2:30-3:00: Danqing Zhu, Man Xu and Wim J. van Ooij; Ecosil Technologies, 160-A Donald Drive, Fairfield, OH 45014; **Corrosion Protection of Galvanized Steel with Waterborne Silane-based Systems**

3:00-3:30: Zhangzhang Yin, Akshay Ashirgade, Anuj Seth, Paula Puomi and Wim J van Ooij; Department of Chemical and Materials Engineering, University of Cincinnati, Cincinnati, OH 45221; **Zinc Phosphate as an Effective Anticorrosion Pigment in Silane-based Waterborne Primers**