

# ANNOUNCEMENT AND PRELIMINARY PROGRAM

## INTERNATIONAL SYMPOSIUM ON SURFACE SCIENCE ASPECTS OF PHARMACEUTICAL SCIENCE, PHARMACOLOGY, COSMETICS AND BIO-TECHNOLOGY

April 19-21, 2010 in Danbury, Connecticut, USA

The staff of MST CONFERENCES are happy to announce the inaugural symposium in a planned series on the surface science aspects of pharmaceutical science, pharmacology, cosmetics and bio-technology. The scope of the program will deal, among others, with all aspects which are critically dependent on understanding the nature of surface interactions which control the behavior and biological activity of therapeutical formulations as well as cosmetic and biomedical technologies such as bio-adhesives, drug delivery systems, cosmetic formulations and gene chip arrays.

The overall focus of the symposium will of necessity be multi-disciplinary in nature involving researchers engaged in developing new drugs to surface scientists concerned with the detailed nature of surface interactions and their accurate measurement. It is indeed a prime objective of the symposium to bring these normally disparate groups together within a forum where needs, ideas and methodologies can be discussed and mutually beneficial collaborations encouraged.

It is well recognized that a wide range of critical biological interactions occur at or across surfaces including drug absorption, cellular adhesion, autoimmune reactions, skin inflammation and cell growth to name a few.

Thus in order to control or modify these processes it is first critical to understand the fundamental nature of the surface interactions which control them. It is at this level that the surface scientist and the bio-technologist can collaborate to develop innovative technologies for drug delivery, cellular and bone repair, cosmetic formulations and advanced diagnostic methods such as gene chip arrays.

On the one hand, the pharmaceutical scientists and bio-technologists can elucidate the problems and methods of their disciplines with regard to issues relating to delivery and adsorption of drug metabolites, interactions leading to inflammation or implant rejection and adverse immune system response to medical treatments. The surface scientist, on the other hand, can demonstrate how the methods of surface analysis and measurement can be brought to bear on the problem of understanding the basic surface chemistry which controls these processes. As an example, the bio-technologist might explain the problems associated with a topical skin treatment whereas the surface scientist can demonstrate how contact angle measurements can be used to evaluate the wettability characteristics of skin and how this affects the absorption of and reaction with topical medications.

### SYMPOSIUM TOPICS:

#### Needs of the Biomedical, Pharmaceutical and Cosmetic industries:

1. Interaction of biologically active molecules with tissue substrates.
2. Problems of drug delivery in vivo
3. Drug interactions with cellular surfaces relating to immune system response and implant rejection
4. Interactions with biomaterial surfaces
5. Biocompatibility
6. Problems relating to drug encapsulation in capsules or tablets
7. Skin surface chemistry and interactions

#### Tools and Methodologies of Surface Science:

1. Surface analytical methods
  - a. ESCA, AUGER, SIMS ...
  - b. Atomic Force Microscopy
  - c. Contact Angle Goniometry
  - d. Surface Micro-Calorimetry
2. Theoretical concepts of Surface Science
  - a. Hamaker theory
  - b. JKR theory
  - c. Surface thermodynamics
  - d. Acid-Base interactions

3. Surface Chemistry Modification

- a. Silane adhesion promoters
- b. Chemical grafting
- c. Plasma and radiation modification

#### Applications:

1. Drug Delivery Systems
  - a. Delivery through fabrics made with surface modified fibers
  - b. Advanced capsule and tablet technologies
  - c. Delivery using surface activated particles
  - d. Drug screening, label free detection
2. Advanced adhesives for mending bone fractures
3. Gene chip arrays
4. Immobilization strategies of biomolecules on solid surfaces
5. Cosmetic applications

#### Cross-Disciplinary Studies:

1. Use of Atomic Force Microscopy to study biological surfaces
2. Contact angle measurements on skin and dental tissues

3. Bioadhesives such as hydrogels
4. Advanced adhesive applications employing the GECKO effect
5. Applications of superhydrophobicity and the LOTUS LEAF effect
6. Micro/Nano Technology; e.g. smart implants using MEMS

## PRELIMINARY PROGRAM

The following is a **partial** list of papers to be presented at the symposium:

### BIOLOGICAL SURFACE PROPERTIES AND CELL ADHESION

Thomas Ballet, Laurence Boulangé, Yves Bréchet, **Franz Bruckert**, Paolo Mangiagalli, Laurent Nault, Marianne Weidenhaupt; **Kinetics of Insulin Amyloid Fiber Formation on Hydrophobic Surfaces**

**Peilin Chen**; Research Center for Applied Sciences, Academia Sinica, Nankang, Taipei 115, TAIWAN; **Observation of Enhanced Cell Adhesion and Transfection Efficiency on the Superhydrophobic Surfaces**

**K. Fricke**, K. Schröder, T. v. Woedtke and K.-D. Weltmann; Leibniz Institute for Plasma Science and Technology (INP), Felix-Hausdorff-Strasse 2, 17489 Greifswald, GERMANY; **Atmospheric Pressure Plasma Sources - Modification and Decontamination of Biomedical Relevant Surfaces**

**Odessa Petzold**, Wageesha Senaratne, Ying Wei, Lijun Zou and Lung Wu; CORNING Incorporated, Sullivan Park, Corning, NY 14831; **Exploiting Liver Cell Membrane Receptors and Mechano-Sensing to Modulate Cell Attachment and Morphology**

**Cláudia Sousa**; IBB-Institute for Biotechnology and Bioengineering Centre of Biological Engineering, University of Minho, Campus de Gualtar 4710-057 Braga, PORTUGAL; **Thermodynamic Analysis of S. Epidermidis Adhesion to Biomedical Materials**

### SURFACE SCIENCE ASPECTS OF DRUG DELIVERY

**Xiaoping Cao**; Pfizer Global Research & Development, Eastern Point Road, Groton, CT 06340; **Characterizing Surface Properties of Pharmaceutical Materials Using Atomic Force Microscopy**

**Arthur J. Cury**; 154 Warren Avenue, Boston, Massachusetts 02116; **Local Drug Delivery from Synthetic Hydrogel Implants**

Laila J. Jallo, Yuhua Chen, Xi Han, James Bowen, Frank Etzler, and **Rajesh Davé**; New Jersey Center for Engineered Particulates, New Jersey Institute of Technology, 138 Warren Street, Newark, NJ, 07102-1982, USA; **Adhesion Force Prediction for Fine Particles from Surface Energy and Surface Roughness Measurements**

**Mitsuhiro Ebara**, Takao Aoyagi, Masayuki Yamato and Teruo Okano; Biomaterials Center, National Institute for Materials Science, JAPAN; **Switchable Surface Capture/ Release Systems For Cells, Biomolecules, And Analytical Beads**

F.J. Chen, Tommasina Bramante, Richard Deanne, George Gereg, Svetlana Sienkiewicz, Luying Wang and **Frank M. Etzler**, Pharmaceutical R&D, Boehringer-Ingelheim Pharmaceuticals, Inc. POB 368, 900 Ridgebury Road, Ridgefield, CT 06877; **Effect of Sodium Dodecyl Sulfate on the Tableability, Compressibility and Compactibility of Common Pharmaceutical Excipients**

**G. Papandreou**, K. Wolf, J. Meng, N. Rahbar, C. A. Maryanoff, and W. Soboyejo; Convergent Product Development, Cordis Corporation, Welsh and McKean Roads, Spring House, PA 19477; **Durability Studies of Drug-Eluting Stents**

**K. Schröder**, B. Finke, K. Fricke, U. Menyes, A. Ohl, T. Vorhaben, D. Böttcher, U. T. Bornscheuer and K.-D. Weltmann; Leibniz Institute for Plasma Science and Technology (INP), Felix-Hausdorff-Strasse 2, 17489 Greifswald, Germany; **Plasma-assisted Immobilization of Bioactive Molecules for Biomedical and Biotechnological Applications**

Jean-Sébastien Samson, Hilton Barbosa de Aguiar, Alex de Beer and **Sylvie Roke**; Max-Planck Institute for Metals Research, Stuttgart, GERMANY; **Structure and Functionality of a Potential Liver Cancer Medicine**

**Sofia Svedhem**; Rickard Frost, and Bengt Kasemo; Dept. of Applied Physics, Chalmers University of Technology, 412 96 Göteborg, SWEDEN; **Supported Lipid Membranes as Model Systems for Nanodrug and Nanoparticle Interactions at Biological Barriers**

### ANALYTICAL MEASUREMENTS ON BIOLOGICAL SURFACES

**Matthias Lauer**; F.Hoffmann La-Roche LTd., Pharmaceutical Research, Basel 4070, SWITZERLAND; **Screening Assay to Probe API/Excipient Melt Miscibility and Stabilities using Scanning Probe Microscopy**

**Thomas Luxbacher**; Anton Paar GmbH, Anton-Paar-Strasse 20, A-8054 Graz, AUSTRIA; **Assessment of Biomaterial Surfaces by Streaming Potential Measurement**

**Saurabh Mittra** and Robert E. Baier; CPF (Pepsi) & NEHF (Lipton) Inc, 25 Copeland Drive, Ayer, MA 01432 ; **Infrared Microscopic Monitoring of Microfouling on Germanium Surfaces**

**Mark Poggi**; Biolin Scientific, 808 Landmark Drive Suite 124, Glen Burnie, MD 21061; **Enabling in vitro Real-Time Characterization of Biointerfaces with Quartz Crystal Microbalance with Dissipation Monitoring**

**Nicholas Randall**; CSM Instruments, Needham MA; **State-of-the-art in Surface Mechanical Properties Characterization of Biomaterials**

Xu Li, Junfei Tian and **Wei Shen**; Australian Pulp and Paper Institute, Department of Chemical Engineering, Monash University, Clayton Campus, VIC 3800 AUSTRALIA; **Thread-based Low-cost Semi-quantitative Diagnostic Sensors**

**Ruchirej Yongsunthon**, Wendy Baker, Marie Bryan, Jin Liu, Theresa Chang and Odessa Petzold; CORNING Incorporated, Sullivan Park, Corning, NY 14831; **Force Spectroscopy to Investigate Cell Reconstruction of Culture Surfaces**

#### **INVESTIGATIONS OF BIOLOGICAL CRYSTALS AND LIQUID STATE**

A.E. Jefferson, D.R. Williams and **J. Y. Y. Heng**; Surfaces and Particle Engineering Laboratory, Department of Chemical Engineering, Imperial College London, South Kensington Campus, London SW7 2AZ, United Kingdom; **Surface Energy Heterogeneity of Pharmaceutical Powders**

**J. Y. Y. Heng**; Imperial College London, South Kensington Campus, London SW7 2AZ; **Geometrical and Chemical Interactions for Controlled Nucleation and Crystallization of Lysozyme**

Hilton Barbosa de Aguiar, Alex de Beer, Matthew L. Strader and **Sylvie Roke**; Max-Planck Institute for Metals Research, Stuttgart, Germany; **SDS Surfactant Has a Marginal Effect on the Interfacial Tension of Nanoscopic Oil Droplets in Water**

#### **LOCATION:**

DANBURY PLAZA  
Hotel & Conference Center  
18 Old Ridgebury Road  
Danbury, CT 06810  
Tel. 203-794-0600  
FAX. 203-798-7735

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**Web Site:** [www.danburyplaza.com](http://www.danburyplaza.com)

**HOTEL:** Please make room reservations directly with the Danbury Plaza Hotel. A block of rooms has been set aside for conference registrants until March 15, 2010. After this date the hotel will accept reservations on a space available basis and they cannot guarantee that the special conference rate of \$99/night will apply. Make your reservations early and be sure to mention that you are attending the MST symposium in order to receive the reduced conference hotel rate.

**TRANSPORTATION:** Limousine and shuttle service is available from Laguardia and Kennedy airports

#### **TO SUBMIT AN ABSTRACT OR GET ON**

**CONFERENCE MAILING LIST:** This symposium is being organized by MST Conferences under the direction of Dr. K. L. Mittal, Editor-in-Chief, Journal of Adhesion Science and Technology and in collaboration with the technical staff of the Boehringer Ingelheim and Corning corporations. It is planned to publish papers presented in this symposium in the Journal of Adhesion Science and Technology, edited by the conference director Dr. Mittal. Please notify the conference chairman of your intentions to present a paper as early as possible. An abstract of about 200 words should be sent by **March 30, 2010** to the conference chairman by any of the following methods:

BY PHONE: 845-897-1654; 845-227-7026  
BY FAX: 212-656-1016  
E-mail: [rhl@mstconf.com](mailto:rhl@mstconf.com)

#### **ONLINE:**

[www.mstconf.com/SurfSciPharm.htm](http://www.mstconf.com/SurfSciPharm.htm)

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