

FINAL PROGRAM

EIGHTH INTERNATIONAL
SYMPOSIUM ON

CONTACT ANGLE, WETTABILITY AND ADHESION

To be held at Université Laval,
Québec City, Québec, CANADA
June 13-15, 2012



SYMPOSIUM HISTORY AND MOTIVATION

In his opening remarks at the first symposium in this series Professor Robert Good pointed out that Galileo in the 17th century was quite likely the first investigator to observe contact angle behavior with his experiment of floating a thin gold leaf on top of a water surface. Since that time contact angle measurements have found wide application as a method for determining the energetics of surfaces. This, in turn, has a profound effect on the wettability and adhesion of liquids and coatings to surfaces.

This symposium is concerned with both the fundamental and applied aspects of contact angle measurements. Issues such as the applicability and validity of various measurement techniques and the proper theoretical framework for the analysis of contact angle data are of prime concern.

In addition, a host of applications of the contact angle technique are explored including but not limited to: wettability of powders, fibers, wood products, paper, polymers and monolayers. Further focus is on the use of contact angle data in evaluating surface modification procedures, determining relevance of wettability to adhesion, the role of wettability in bioadhesion, ophthalmology, prosthesis and in the control of dust in mining and milling applications.

AUDIENCE AND PARTICIPATION

The primary focus of this symposium is to provide a forum for the discussion of cutting edge advancements in the field and to review and consolidate the accomplishments which have been achieved thus far.



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Regular mail:

Conference Chairman
3 Hammer Drive
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E-mail: rhl@mstconf.com

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Contact by phone: 845-897-1654;
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Full conference details and
registration via the Internet will be
maintained on our web site:

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We are pleased to acknowledge the support of Université Laval and FPInnovations for their generous support and organizational efforts for this symposium.

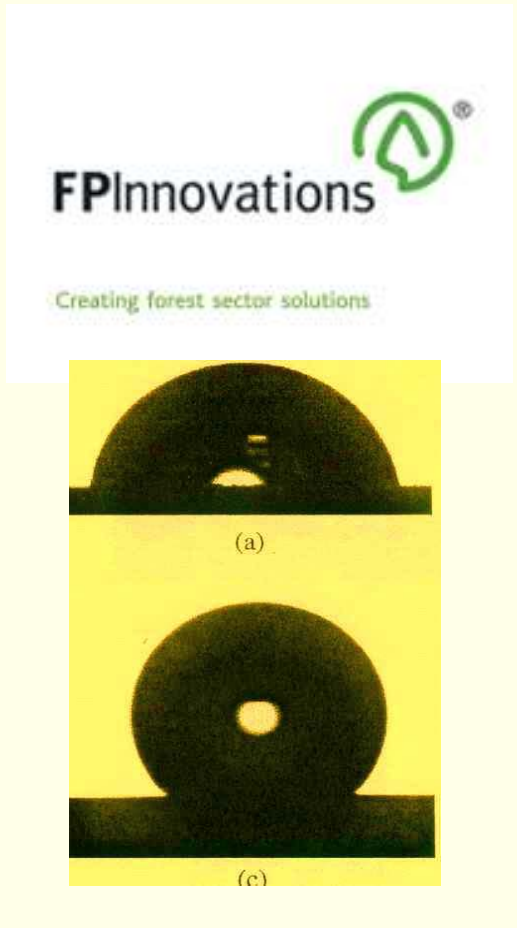
ORGANIZERS AND CONTACT INFORMATION:

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SESSION I: WEDNESDAY JUNE 13,
2012; FUNDAMENTALS

8:00-8:05: INTRODUCTORY REMARKS

8:05-8:35: Edward Bormashenko;
Head of the Laboratory of Polymers, Ariel
University Center of Samaria, P.O.B. 3,
Ariel 40700, ISRAEL; Physics of
Wetting Transitions

8:35-9:05: Michael Nosonovsky;
College of Engineering & Applied Science;
University of Wisconsin-Milwaukee,
Milwaukee, WI 53211; Contact Angle
Hysteresis and Wetting Transitions in
Underwater Oleophobic Metallic
Surfaces

9:05-9:35: StÉphane Douezan, Randa
Naouar, Silvie Dufour,
Damien Cuvelier and Francoise Brochard-
Wyart; Lab. PCC-UMR168, Institute Marie
Curie, F-75231 Paris Cedex 05, FRANCE;
Wetting Transition of Living Drops

9:35-10:05: Rafael Tadmor; Dan F.
Smith Dept. of Chemical Engineering,
Lamar University, P. O. Box 10053
Beaumont TX 77710; Approaches in
Wetting Phenomena

10:05-10:35: D. Seveno , J. Conti and J.
De Coninck; Laboratory of Surface and
Interfacial Physics, University of Mons,
Place du Parc , 20, 7000 Mons, BELGIUM;
Which Is the Best Wetting Theory?

10:35-1055: COFFEE BREAK

10:55-11:25: Ateeque Malani, Miguel
Amat, Anilkumar Raghavanpillai, Ernest
Wysong and Gregory Rutledge;
Department of Chemical Engineering,
Massachusetts Institute of Technology,
Cambridge, MA; Molecular Modeling of
Three Phase Contact for Static and
Dynamic Contact Angle Phenomena

11:25-11:55: A. M. Emelyanenko and
L. B. Boinovich; Russian Academy of
Sciences, A.N. Frumkin Institute of Physical
Chemistry and Electrochemistry, 31
Leninsky prospect, 119991 Moscow,
RUSSIA; The Analysis of Wettability as
an Effective Tool to Study the
Physico-chemical Processes at
Interfaces

11:55-12-25: Angela Duparré;
Fraunhofer Institute for Applied Optics &
Precision Engineering, Optical Systems
Department, Head Surface
Characterization Group,
Albert-Einstein-StraÙe 7, D-07745 Jena,
GERMANY; Assessment Criteria for
(Super)hydrophobic Surfaces with
Stochastic Roughness

12:25-1:30: LUNCH BREAK

SESSION II: WEDNESDAY, JUNE 13,
2012; SUPERHYDROPHOBIC/
HYDROPHILIC BEHAVIOR

1:30-2:00: S. T. Picraux, Dongqing
Yang , S. G. Choi , P. Aella , Antonio A.
Garcia; Center for Integrated
Nanotechnologies, Los Alamos National
Laboratory, Los Alamos, New Mexico
87545; Design of Nanowire Surfaces
with Photo-induced Superhydrophilic
to Superhydrophobic Switching

2:00-2:30: Md. A. Rahman, and
Anthony M Jacobi ; Department of
Mechanical Science and Engineering,
University of Illinois at Urbana-Champaign,
Urbana, IL 61801; Wetting Anisotropy
on Brass Surfaces With Parallel
Microgrooves

2:30-3:00: Masao Iwamatsu;
Department of Physics, Tokyo City
University, Setagaya-ku, Tokyo 158-8557,
JAPAN; Heterogeneous Nucleation on
a Completely Wettable Substrate

3:00-3:30: Pierre Letellier and Mireille Turmine; Laboratoire Interfaces et Systèmes Electrochimiques, CNRS, UPR15 LISE, Université Pierre et Marie Curie Paris 6, Case 133, 4 place Jussieu, 75252 Paris Cedex 05, FRANCE; Bubble Wettability and Solubility: non Extensive Thermodynamics Approach

3:30-4:00: Beatrice White, Zi-Jun Wang and Anne Kietzig; Department of Chemical Engineering, McGill University, Montreal; CANADA; Water Harvesting on Surfaces with Defined Hydrophobic-Hydrophilic Patterns

4:00-4:20: COFFEE BREAK

4:20-4:40: Ri Li and Yanguang Shan; School of Engineering, University of British Columbia, Okanagan Campus, CANADA; Wetting of Contact Line on Textured Hydrophobic Surfaces

4:40-5:00: Edward Bormashenko; Head of the Laboratory of Polymers, Ariel University Center of Samaria, P.O.B. 3, Ariel 40700, ISRAEL; Novel Investigations of Liquid Marbles

5:00-5:20: Mikael Järn, Qian Xu and Mika Lindén; YKI, Institute for Surface Chemistry, Drottning Kristinas väg 45, SE-114 86, Stockholm, SWEDEN; Wettability Studies of Selectively Functionalized Nanopatterned Surfaces

5:20-5:40: Hong Zhao, Kock-Yee Law and Kyoo-Chul Park; Xerox Corporation, 800 Phillips Road, W147-59B, Webster, NY 14580; Effect of Surface Texturing on Repellency and Wetting Hysteresis of Superoleophobic Surfaces

5:40-6:00: Edward Bormashenko and Roman Grynyov; Ariel University Center of Samaria, Physics Faculty, 40700, P.O.B. 3, Ariel, ISRAEL; Plasma Treatment Modification of Surfaces of Biological Objects

6:00-6:20: Muhammad Osman and Roger A. Sauer; Aachen Institute for Advanced Study in Computational Engineering Science (AICES), RWTH Aachen University, Aachen, GERMANY; Computational Aspects of Self-Cleaning Surface Mechanisms

6:20-6:40: Chunlei Wang and Haiping Fang; Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Jialuo Road 2019, Jiading Shanghai, Shanghai 201800, CHINA; Effect of Ordered/Disordered Water on the Wetting Behavior Based on Molecular Dynamics Simulation

SESSION III: THURSDAY, JUNE 14, 2012; NOVEL INVESTIGATIONS AND APPLICATIONS

8:00-8:30: P.G. Rouxhet, M.J. Genet, J. Landoulsi, S. Fleith, V.G. Baldovino, F.A. Denis, S. Derclaye and Y. Adriaensen; Institute of Condensed Matter and Nanosciences, Université Catholique de Louvain, Croix du Sud 1 / Box L7.04.01, B-1348 Louvain-la-Neuve, BELGIUM; How Clean Is a Cleaned Surface? Contact Angle Measurements vs Surface Chemical Analysis

8:30-9:00: Luca Mazzola; University "Roma Tre", Italy, Dipartimento di Ingegneria Meccanica e Industriale, Mechanical and Industrial Engineering Department, Via della Vasca Navale 79 - 00146 Rome, ITALY; Determination of the Surface Free Energy at Nanoscale via Atomic Force Microscopy Without Altering the Original Morphology

9:00-9:30: Daryl R. Williams; Surfaces and Particle Engineering Laboratory, Department of Chemical Engineering, Imperial College London, South Kensington Campus, London, SW7 2AZ, U.K.; The Surface Energy of Pharmaceutical Solids- Its Importance in Solids Processing

9:30-10:00: [A. A. Kafi](#) and B. L. Fox; Composite Research Group, Centre for Materials and Fibre Innovation, Deakin University Geelong Victoria 3217, AUSTRALIA; Mapping the Surface Properties of PAN based Carbon Fibres

10:00-10:20: COFFEE BREAK

10:20-10:50: [Athanassia Athanassiou](#), Francesca Villafiorita-Monteleone, Claudio Canale, Elisa Mele, Silvia Dante, P. Davide Cozzoli, Dario Pisignano, Despina Fragouli and Roberto Cingolani; Istituto Italiano di Tecnologia (IIT), Genova, ITALY; Polymers/TiO₂ Nanorods Nanocomposites with UV-Enhanced Wettability for Novel Applications: from Microfluidic Systems to Selective Cell Growth

10:50-11:20: I. Mira, A. Swerin, M.A. Javed, M. Järn and [K. Johansson](#); YKI, Institute for Surface Chemistry, P.O. Box 5607, SE-11486 Stockholm, SWEDEN; Surface Modifications at YKI for Improved Water and Ice Repellence

11:20-11:50: Jin Gyu Kim, Ilbeom Choi and [Dai Gil Lee](#); School of Mechanical Aerospace & Systems Engineering, Korea Advanced Institute of Science and Technology, ME3221, Guseong-dong, Yuseong-gu, Daejeon 305-701, REPUBLIC OF KOREA; Contact Angle and Wettability of Hybrid Surface Treated Metal Adherends

11:50-12:20: [Yu Zheng](#) and [Dandina N. Rao](#); Craft & Hawkins Department of Petroleum, Engineering, Louisiana State University, Baton Rouge, LA 70803; Dependence of Wettability, Spreading and Adhesion on Brine Salinity and Composition in Gas-Condensate Reservoirs

12:20-1:30: LUNCH BREAK

SESSION IV: THURSDAY JUNE 14, 2012; MISC. APPLICATIONS

1:30-2:00: [Andrei S. Zelenev](#); CESI Chemical, a Flotek Company, 8701 New Trails Dr., Suite110, The Woodlands, TX 77381; Characterization of Mineral Rocks from Oil and Gas Reservoirs with Respect to Their Wettability and Surface Free Energy

2:00-2:20: [Golrokh Heydari](#), Mikael Järn and Per M. Claesson; Department of Chemistry, Surface and Corrosion Science, Royal Institute of Technology, SE-100 44 Stockholm, SWEDEN; Measurement of Contact Angle at Sub-zero Temperatures and Implication for Ice Formation

2:20-2:40: [Philseok Kim](#), Tak-Sing Wong, Jack Alvarenga, Michael J. Kreder and Joanna Aizenberg; Wyss Institute for Biologically Inspired Engineering, Harvard University, Cambridge, MA; Slippery Icephobic Coatings on Aluminum

2:40-3:00: [Jorge Lehr](#) and Anne Kietzig; Department of Chemical Engineering, McGill University, Montreal, CANADA; Adjustable Surface Wettability of Metallic Surfaces by Femtosecond Laser Irradiation

3:00-3:20: [Chang Seon Bang](#), Jin Gyu Kim and Dai Gil Lee; Department of Mechanical Engineering, Korea Advanced Institute of Science and Technology, ME3221, Guseong-dong, Yuseong-gu, Daejeon 305-701, REPUBLIC OF KOREA; Role of Contact Angle in the Performance Improvement of Adhesively Bonded Metal Joints at Cryogenic Temperatures

3:20-3:40: Q.V. Bui, K.S. Kim and S.B. Jung; School of Advanced Materials Science and Engineering, Sungkyunkwan University, 300 Cheoncheon - Dong, Jangan - Gu, Suwon 440-746, KOREA; Wettability, Interfacial Reaction and Ball Shear Strength of Sn-1.0Ag-XCe Solders on ENIG Surface Finish

3:40-4:00: COFFEE BREAK

4:00-4:20: Kwang-Seok Kim, Quoc Vu Bui, Yongil Kim, Yong-Ho Choa and Seung-Boo Jung; SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University, Suwon, 440-746, Republic of KOREA; Contact Angle Analysis on the Printed Pattern Shapes Controlled by Viscosity of Cu Nanopaste

4:20-4:40: Emil Chibowski, Konrad Terpilowski and Lucyna Holysz; Department of Physical Chemistry-Interfacial Phenomena Faculty of Chemistry, Maria Curie-Sklodowska University, 20-031 Lublin, POLAND; Effect of Relative Humidity on Contact Angle and its Hysteresis on Phospholipid DPPC Bilayer Deposited on Glass

4:40-5:00: Miguel Gómez, Enric Bertran and Ricardo Molina; Chemical and Biomolecular Nanotechnology Department, Institute of Advanced Chemistry of Catalonia (IQAC), Consejo Superior de Investigaciones Científicas (CSIC), Jordi Girona 18-26, 08034 Barcelona SPAIN; Hydrophilic-Oleophobic Coatings by Plasma Assisted Polymerization in Liquid Phase and Fluorosurfactant Complexation

5:00-5:20: L. Ziyani, V. Gaudefroy, V. Ferber and F. Hammoum; PRES LUNAM Ifsttar, Route de Bouaye, CS4, 44344 Bouguenais Cedex, FRANCE; Wettability of Mineral Surfaces by Bituminous Binders: Applications to Road Industry

5:20-5:40: G.C. Pirlot, O. Debaisieux, A. Goedel, A. Lacroix, B. Nysten and P. G. Rouxhet; Institute of Condensed Matter and Nanosciences, Université catholique de Louvain, Croix du Sud 1 / Box L7.04.01, B-1348 Louvain-la-Neuve, BELGIUM; Aluminum Adherence to Polypropylene Films Used for Food Packaging : Input and Limitation of Contact Angle Measurements

SESSION V: FRIDAY, JUNE 15, 2012: SUPERHYDROPHOBICITY

8:00-8:30: Stefan Seeger; Universität Zürich, Physikalisch-Chemisches Institut, Winterthurerstrasse 190. 8057 Zürich, SWITZERLAND; Wettability Behavior and Surface Characterization of Various Materials, Subtopic: Superhydrophobicity

8:30-9:00: Athanassia Athanassiou, Athanasios Milionis, Luigi Martiradonna, George C. Anyfantis, Ilker S. Bayer and Despina Fragouli; Istituto Italiano di Tecnologia (IIT), Via Morego 30, 16163, Genova, ITALY; Control of the Water Wettability and Adhesion on Micropillars Using Combined Geometrical and Chemical Surface Design

9:00-9:30: L.B. Boinovich, and A.M. Emelyanenko; Russian Academy of Sciences, A.N. Frumkin Institute of Physical Chemistry and Electrochemistry, 31 Leninsky prospect, 119991 Moscow, RUSSIA; The Mechanisms of Anti-icing Resistance of Superhydrophobic Surfaces

9:30-10:00: Chang-Hwan Choi; Department of Mechanical Engineering, Stevens Institute of Technology, Hoboken, New Jersey; Ice Adhesion on Superhydrophobic Surfaces

10:00-10:20: COFFEE BREAK

10:20-10:40: Wei Xu and Chang-Hwan Choi; Department of Mechanical Engineering, Stevens Institute of Technology; Is a Superhydrophobic Surface Really Slippery?: a New Criterion to Determine the Stickiness of Superhydrophobic Surfaces

10:40-11:00: Peichun Amy Tsai; Complex Fluids Group, Dept. Mechanical & Aerospace Engineering, Princeton University, Princeton, NJ; Evaporation and Impact of Water Droplet on Superhydrophobic Surfaces

11:00-11:30: Zong-Han Yang, Fan-Ching Chien, Chiung-Wen Kuo, Di-Yen Chue, and Peilin Chen; Center for Applied Sciences, Academia Sinica, 128, Section 2, Academia Road, Nankang, Taipei 115, TAIWAN; Interfacial Adhesion of Superhydrophobic Surfaces with Pillar-like Hierarchical Structures

11:30-12:00: Thomas Bahnert, Lutz Prager and Jochen S. Gutmann; Deutsches Textilforschungszentrum Nord-West e.V., Adlerstr. 1, 47798 Krefeld, GERMANY; Super-hydrophilic Surfaces by Photo-induced Micro-Folding

12:00-12:20: Luisa Coriand, Angela Duparré, and Andreas Tünnermann; Fraunhofer Institute for Applied Optics and Precision Engineering, Albert-Einstein-Strasse 7, 07745 Jena, GERMANY; Investigation of Hydrophilic Optical Coatings with Anti-Fog Behavior

12:20-1:30: LUNCH BREAK

SESSION VI: FRIDAY, JUNE 15, 2012;
WOOD PRODUCT TECHNOLOGY

1:30-1:50: Herbert P. Jennissen, Steffen Lüers and Markus Laub; Institute of Physiological Chemistry, University of Duisburg-Essen, Hufelandstr. 55, D-45122 Essen, GERMANY; Defining and Quantitating Superhydrophilicity

1:50-2:20: B. Riedl, C. Anghel, P. Blanchet and V. Blanchard; Département Des Sciences du Bois et De La Forêt, Université Laval, Québec, QC, CANADA; Influence of Atmospheric Pressure Plasma on North-American Wood Surfaces

2:20-2:40: Bouddah Poaty Bernard Riedl, Pierre Blanchet, Vincent Blanchard, and Luc Stafford; Centre de Recherche sur le Bois, Pavillon G.-H. Kruger, Université Laval, Québec (QC), G1V 0A6, CANADA; Improved Water-Repellency of Black Spruce Wood Surfaces after Treatment In Carbon Tetrafluoride Plasmas

2:40-3:10: M. Petric, A. Kutnar, L. Rautkari, K. Laine and M. Hughes; University of Ljubljana, Biotechnical Faculty, Department of Wood Science & Technology, Ljubljana, SLOVENIA; Dynamic Wettability Behaviour of Wood Modified by Surface Densification

3:10-3:30: Luc Stafford; Department of Physics, University of Montreal, Montreal, Quebec H3C 3J7, CANADA; Grafting Dynamics of Hydrophobic Functional Groups on Wood Surfaces Using Atmospheric-Pressure, Organosilicon-containing Plasmas

3:30-3:50: Fabio Tomczak and Bernard Riedl; Université Laval, Centre de Recherches sur le bois, Pavillon Gene-H.-Kruger, Quebec City, G1V0A6 QC, CANADA; ZnO Deposition on Wood by Plasma: the Effect on Wettability

3:50-4:10: COFFEE BREAK

4:10-4:30: Fabio Tomczak and Bernard Riedl; Université Laval, Centre de Recherche sur le bois, Pavillon Gene-H.-Kruger, Quebec City, G1V0A6 QC, CANADA; Wettability of Canadian Woods

4:30-4:50: Maziar Sedighi, Mikael Järn, Per M. Claesson, Magnus Wålinder and Agne Swerin; YKI, Ytkemiska Institutet AB/Institute for Surface Chemistry, Box 5607, SE-114 86 Stockholm, SWEDEN; Comparison of Different Methods for Studying Wood Wettability and Liquid Penetration

4:50-5:20: Niklas Nordgren, Petra Nordqvist, Farideh Khabbaz, Eva Malmström and Malin Bergensträhle-Wohlert; YKI Institute for Surface Chemistry, Drottning Kristinas väg 45, Box 5607, SE-114 86 Stockholm, SWEDEN; A Multiscale Approach to Evaluate Bio-Adhesives for Wood

5:20: CONCLUDING REMARKS

REGISTRATION INFORMATION DATES:

JUNE 13-15, 2012: EIGHTH
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3) Downtown hotels:

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SHORT COURSES ON APPLIED ADHESION MEASUREMENT METHODS (June 11, 2012) AND DURABILITY OF ADHESIVE JOINTS (June 12, 2012) :

Associated with this symposium MST gives short courses on adhesion related topics. Since nearly all of the MST symposia have some relation to adhesion phenomena, the ability to quantify the adhesion of one material layer to another is clearly one of the unifying themes. These courses are designed to mesh with the topical symposia by presenting an overview of the most useful techniques for evaluation of the adhesion of coatings and the durability of adhesive joints. Emphasis is given to methods which can be carried out in a manufacturing environment as well as in the lab and which give results that are directly relevant to the durability and performance of coatings, adhesive joints and other bonded laminate structures. The effects of material elastic properties and residual stress are considered as well as environmental influences which affect coating adhesion and joint durability.

OVERVIEW OF TOPICS COVERED IN ADHESION MEASUREMENT METHODS COURSE I INCLUDE:

1. Basics of adhesion measurement
2. Role of residual stress and material mechanical properties on adhesion
3. Problem of setting adhesion requirements for coating applications
4. Adhesion measurement at atomic and molecular level (fundamental adhesion)
5. Applications

OVERVIEW OF TOPICS COVERED IN ADHESIVE JOINTS COURSE I INCLUDE:

1. Two Aspects of Adhesive Action
2. Durability of Adhesive Joints
3. Direct Measurement of Joint strength
4. Tests That Measure Practical Adhesion Between Adhesive and Adherend
5. Measuring Adhesive Thermal-Mechanical Properties
6. Role of Residual Stress
7. Nondestructive Inspection

Audience: Scientists and professional staff in R&D, manufacturing, processing, quality control/reliability involved with adhesion aspects of coatings or laminate structures.

Level: Beginner to Intermediate

Prerequisites: Elementary background in chemistry, physics or materials science.

Duration: 1 day

Registration fee: \$695: Includes course notes, handouts and a copy of the newly published handbook and reference volume: ADHESION MEASUREMENT METHODS: THEORY AND PRACTICE (CRC Press, 2006).

HOW YOU WILL BENEFIT FROM THIS COURSE:

- ▶ Understand advantages and disadvantages of a range of adhesion measurement techniques.
- ▶ Gain insight into mechanics of adhesion testing and the role of intrinsic stress and material properties
- ▶ Learn optimal methods for setting adhesion strength requirements for coating applications.
- ▶ Learn how to select the best measurement technique for a given application.
- ▶ Gain perspective from detailed discussion of actual case studies of product manufacturing and development problems.

CANCELLATIONS: Registration fees are refundable, subject to a 15% service charge, if cancellation is made by May 20, 2012. NO refunds will be given after that date. All cancellations must be in writing. Substitutions from the same organization may be made at any time without penalty. MST Conferences reserves the right to cancel any of the symposia or the short course if it deems this necessary and will, in such event, make a full refund of the registration fee. No liability is assumed by MST Conferences for changes in program content.

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EIGHTH INTERNATIONAL SYMPOSIUM ON CONTACT ANGLE, WETTABILITY AND ADHESION, JUNE 13-15, 2012 (regular attendee)	\$595
Sub Total	
Deduct additional 10% if more than 1 participant from same institution	
Short Course on Durability of Adhesive Joints (June 11,2012)	\$695
Short Course on Applied Adhesion Measurement Methods (June 12,2012)	\$695
LATE FEE: Add \$100 to registration fee is registering after May 20, 2012	\$100
TOTAL REGISTRATION FEE	

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