

Program

Particulate Processes in the Pharmaceutical Industry II

February 3 - 8, 2008

Gran Melia Puerto Rico

1000 Coco Beach Boulevard, Rio Grande, Puerto Rico
Tel: +1-787-809-1770 - Fax: +1-787-809-1785

Conference Chairs

Jennifer Sinclair Curtis (University of Florida)
Smita Debnath (Merck Frosst Canada)
Jonathan Seville (University of Birmingham)



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6 MetroTech Center
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1-718-260-3743 – F: 1-718-260-3754

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Sunday, February 3, 2008

16:00 - 18:00	Registration
17:00 - 17:30	Meeting of Conference and Session Chairs
18:00 - 19:00	Opening Reception (Mirador Grill)
19:00 - 20:30	Opening Dinner (Mirador Grill)
20:30 - 21:30	Social Hour (Mirador Grill)

IMPORTANT ANNOUNCEMENTS

- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Be sure to make any corrections to your name/contact information on the Master Participant List or confirm that the listing is correct. A corrected copy will be sent to all participants after the conference.
- All technical sessions will be held in **Puerto Rico Ballroom 1**.
- All posters sessions will be held in **Puerto Rico Ballroom 2**.
- Participants can eat lunch at **Café Soleil** or at the **Wet Grill**. There are no tables reserved specifically for the conference.
- Group dinners will be held at the **Mirador Grill**. Participants are free to make their own reservations at other restaurants within the hotel.

Monday, February 4, 2008

07:15 - 08:15 Breakfast

08:15 - 08:30 Opening Remarks:
Conference Chairs: Jennifer Sinclair Curtis, Smita Debnath, Jonathan Seville
ECI Liaison: Herman Bieber

08:30 - 09:15 **Plenary 1: Mixing and Blending**
Keynote Speaker: Fernando Muzzio, Rutgers University, USA
A Quality by Design Approach to Pharmaceutical Blending

Technical Session 1 – Powder Flow, Mixing and Blending **Session Chair: Judy Raper, NSF**

09:15 - 09:25 **Effect of Bed Thickness on Mixing/Segregation Behavior of Particle Mixtures in a Gas Fluidized Bed**
A. Yu and Y. Feng, University of New South Wales, Australia

09:25 - 09:35 **The Influence of Air Presence on Flow, Mixing, and Segregation of Powders During Die Filling**
Y. Guo, D. Kafui, C-Y Wu, C. Thornton, J. Seville, University of Birmingham, UK

09:35 - 09:45 **Experimental Investigation of Particle Segregation in Hopper Discharge**
B. Chu, J. Sinclair Curtis, University of Florida; W. Ketterhagen, B. Hancock, Pfizer Inc.; C. Wassgren, Purdue University, USA

09:45 - 09:55 **Horizontal Dense-Phase Pneumatic Conveying**
I. Lecreps, K. Sommer, TU Muenchen, Germany

09:55 - 10:05 **Limiting Segregation via Flow Perturbations**
J. McCarthy, University of Pittsburgh, USA

10:05 - 10:15 **Modeling the Mixing of Granular Materials with the Discrete Element Method: Present and Future**
J. Doucet, O. Dube, J. Bouffard, F. Bertrand, J. Chaouki, Ecole Polytechnique de Montreal, Canada

10:15 - 10:25 **Prediction of the Flow Structure and Pressure Drop in Dilute Phase Pneumatic Conveying**
M. Sommerfeld, Martin-Luther-University Halle, Germany; S. Lain, Universidad Autonoma Occidente, Colombia

10:25 - 10:35 **Fluidization in a Centrifugal Field Generated by the Tangential Injection of the Fluidization Gas in a Static Fluidization Chamber**
J. De Wilde, Universite Catholique de Louvain, Belgium; A. de Broqueville, Belgium

10:35 - 11:35 Coffee Break and Poster Viewing for Technical Session 1

Monday, February 4, 2008 (continued)

11:35 - 12:20 General Q&A for Technical Session 1

12:30 Lunch

14:30 - 15:15 **Plenary 2: Granulation I**
Keynote Speaker: Jim Litster, Purdue University, USA
Towards Quantitative Engineering Design of Wet Granulation for Pharmaceutical Processing

Technical Session 2 - Granulation

Session Chair: Jennifer Sinclair Curtis, University of Florida

15:15 - 15:25 **Acoustic and Vibration Detection in Pharmaceutical Granulation**
E. Hansuld, L. Briens, University of Western Ontario, Canada; A. Sayani, J. McCann, GlaxoSmithKline, USA

15:25 - 15:35 **A Novel Wet Granulation End Point Determination Method**
C. McDade, D. Clancy, GlaxoSmithKline, USA

15:35 - 15:45 **Relations Between Granule Size Distribution (GSD) and Growth Behavior in High-Shear Mixer**
W-D Tu, A. Ingram, J. Seville, University of Birmingham, UK; S-S Hsiau, National Central University, Taiwan

15:45 - 15:55 **Compositional Distributions in Bicomponent Granulation**
T. Matsoukas, Penn State University, USA; P. Rajniak, Merck & Co., Inc., USA, K. Lee, T. Lee, Yonsei University, Korea

15:55 - 16:05 **Selection of Storage Conditions after the Milling Process to Maintain the Stability of Particle Size and Properties**
R. Tan, W. Ng, J. Kwek, National University of Singapore, Singapore

16:05 - 16:15 **Numerical Modeling of the Deagglomeration of Pharmaceutical Powders**
R. Yang, Z. Tong, A. Yu, University of New South Wales, Australia; H. Chan, University of Sydney, Australia

16:15 - 16:25 **Dry Granulation: Parameter Influencing the Particle Size Distribution of Roller Compacted Flakes**
R. Lammens, Technical Services Consult Lammens, Germany; S. Wiesweg, K-J Steffens, University of Bonn, Germany

16:25 - 16:35 **Morphological Characterization and Density Determination of Minocycline Powder Micronized by a Supercritical Antisolvent Process**
M. Cardoso, V. Geraldes, J. Cabral, A. Palabra, Technical University of Lisbon, Portugal

16:35 - 17:35 Coffee Break and Poster Viewing for Technical Session 2

Monday, February 4, 2008 (continued)

17:35 - 18:20 General Q&A for Technical Session 2

18:30 -19:30 Social Hour

19:30 - 21:00 Dinner

Tuesday, February 5, 2008

07:30 - 08:30 Breakfast

08:30 - 09:15 **Plenary 3: Compaction**
Keynote Speaker: Metin Celik, President, Pharmaceutical Technologies International, Inc.
Theory and Practice of Pharmaceutical Compaction

Technical Session 3: Compaction and Crystallization
Session Chair: Smita Debnath, Merck Frost

09:15 - 09:25 **An Analysis of the Fracture of Pharmaceutical Tablets due to Air Entrapment**
C. Wu, B. Lin, J. Seville, University of Birmingham, UK

09:25 - 09:35 **Determination of the Stress Distribution During the Die Compaction of Pharmaceutical Powders by Numerical Simulation**
J-D Prigge, K. Sommer, TU Munchen, Germany

09:35 - 09:45 **DEM Simulation of the Tableting of Pharmaceutical Powders**
R. Yang, A. Yu, University of New South Wales, Australia; H. Chan, University of Sydney, Australia

09:45 - 09:55 **Product and Process Design for Tablet Compaction**
M. Pore and C. Cooney, Massachusetts Institute of Technology, USA

09:55 - 10:05 **Modeling of Temperature Increase of Tablets During Compression**
U. Brockel, Umwelt-Campus Birkenfeld, Germany

10:05-10:15 **Productivity Enhancement of Preferential Crystallization by Racemization**
M. Elsner, K. Petrusevska, G. Ziomek, A. Seidel-Morgenstern, Max Planck Institute, Germany

10:15 - 10:25 **Numerical Simulation and Scale-Up of Anti-Solvent Crystallization Using CFD-PBE Approach**
X. Liu, H. Arastoopour, A. Myerson, Illinois Institute of Technology, USA

10:25 - 10:35 **Measurement of Crystal Growth in Individual Face Directions Using 2-D and 3-D Imaging**
X. Wang, University of Leeds, UK

10:35 - 11:30 Coffee Break and Poster Viewing for Technical Session 3

11:30 - 12:15 General Q&A for Technical Session 3

12:30 – 13:30 Lunch

13:30 – 18:30 Free time / *ad hoc* sessions

18:30 - 19:30 Social Hour

Tuesday, February 5, 2008 (continued)

19:30 - 21:00 Dinner

21:00 - 22:30 Poster Session and Social Hour

Wednesday, February 6, 2008

07:30 - 08:30 Breakfast

08:30 - 09:15 **Plenary Lecture 4: Coating**
Keynote Speaker: Richard Turton, West Virginia University, USA
Challenges in the Coating of Pharmaceutical Products

Technical Session 4: Coating
Session Chair: Smita Debnath, Merck Frosst

09:15 - 09:25 **Novel Temperature Sensing Technique for Real Time On-Line Monitoring**
C. McDade, Z. Arp, GlaxoSmithKline, USA

09:25 - 09:35 **Tribocharging Assessment of Powder Coatings During Fluidization and Pneumatic Conveying**
K. Saleh, A. Thomas, P. Guigon, Compiegne University of Technology, France; C. Czechowski, Velizy Technical Center, France

09:35 - 09:45 **Influence of Polymer Coating on Strength of Particles: Polymer Parameters**
G. Perfetti, G. Meesters, K. Jansen, Delft University, The Netherlands

09:45 - 09:55 **Attrition, Abrasion, and Fragmentation Testing of Coated Granules**
B. van Laarhoven, Delft University; S. Schaafsma, G. Meesters, DSM, The Netherlands

09:55 - 10:05 **Coating of Tribocharged Host Particles with Nanoparticles Using Electro spraying**
J. van Ommen, R. Beetstra, J. Nijenhuis, C. Yurteri, J. Marijnissen, Delft University, The Netherlands

10:05 - 10:15 **Rheology of Fats and Their Coating Characteristics**
C. Grabsch, K. Sommer, TU Munchen, Germany

10:15 - 10:25 **Inter-tablet Coating Variability**
C. Wassgren, Purdue University, USA

10:25 - 11:30 Coffee Break and Poster Viewing for Technical Session 4

11:30 - 12:15 General Q&A for Technical Session 4

12:30 – 13:30 Lunch

Wednesday, February 6, 2008 (continued)

14:30 - 15:15

Plenary 5: Drying

Keynote Speaker: Oraphin Rubino, Glatt Air Techniques, Inc., USA
Fluid Bed Based Applications in Pharmaceutical Manufacturing

Technical Session 5: Drying

Session Chair, Jonathan Seville, University of Birmingham

15:15 - 15:25

Numerical Study of Mass and Heat Transfer in Rotating Fluidized Beds in a Static Geometry

J. De Wilde, Universite Catholique de Louvain; A. de Broqueville, Belgium

15:25 - 15:35

Acoustic and Vibration Monitoring of Fluidized Bed Drying of Pharmaceutical Granules

M. Bojarra, L. Briens, University of Western Ontario, Canada

15:35 - 15:45

Modeling and Simulation of Aggregate Formation and Behavior: Application to Spray Drying

M. Sommerfeld, S. Stubing, Martin-Luther-University Halle, Germany

15:45 - 16:30

Coffee Break and Poster Viewing for Technical Session 5

16:30 - 17:00

General Q&A for Technical Session 5

18:30 - 19:30

Social Hour

19:30

Conference Dinner
(Puerto Rico Ballroom 3,4,5)

Thursday, February 7, 2008

07:30 - 08:30 Breakfast

08:30 - 09:15 **Plenary Lecture 6: Measurement Techniques**
Bruno Hancock, Research Fellow, Pfizer, Inc., USA
Particle and Powder Property Measurements for Predicting Processing Performance

Technical Session 6: Measurement Techniques
Session Chair: Jennifer Sinclair Curtis, University of Florida

09:15 - 09:25 **Monitoring of Transient Hydrodynamics in Fluidized Bed Granulators and Dryers**
J. Nijenhuis, J. van Ommen, Delft University, The Netherlands

09:25 - 09:35 **Flowability of Moist Pharmaceutical Powders**
E. Emery, J. Oliver, T. Pugsley, University of Saskatchewan, Canada; J. Zhou, Eli Lilly

09:35 - 09:45 **Monitoring Batch Cooling Crystallization Processes Using Near Infrared Spectroscopy**
X. Wang, S. Abebe, R. Li, University of Leeds, UK

09:45 - 09:55 **Investigation of Mixing of Fine Granular Ingredients Using a New Bulk Radioactive Particle Tracking Technique**
J. Doucet, J. Bouffard, O. Dude, J. Chaouki, Ecole Polytechnique de Montreal, Canada

09:55 - 10:05 **Measuring Particle Attrition**
R. Cocco, S. Karri, R. Hays, T. Knowlton, Particulate Solid Research, Inc., USA

10:05 - 10:15 **Comparing Focused Beam Reflectance Measurement with Air Jet Sieving for Measuring Particle Size During Dry Granulation**
R. Lammens, Technical Services Consult Lammens, Germany; S. Wiesweg, K-J. Steffens, University of Bonn, Germany; J. Scholl, Mettler-Toledo, Switzerland

10:15 - 11:15 Coffee Break and Poster Viewing for Technical Session 6

11:15 - 12:00 General Q&A for Technical Session 6

12:00 - 12:15 Wrap-up/Final remarks

12:30 Lunch

14:30 Optional tours/excursions

Dinner at the hotel – At your leisure

Friday, February 8, 2007

Morning

Breakfast and departures

(Check out time is 12 Noon)

Poster Presentations

- 1. Reduction of Periodic Inlet Fluctuations in a Continuous Dynamic Powder Mixer and Filling Degree Behavior Depending on Different Powder Properties**
D. Dopfer, K. Sommer, TU Munchen
- 2. Coordination Number Applied in the Quantification of Particle Mixing in a Vertical Bladed-Mixer**
Yu, G. Chandratilleke, University of New South Wales; J. Bridgewater, University of Cambridge; K. Shinohara, Hokkaido University
- 3. Continuous Blending of Pharmaceuticals: A Residence Time Distribution Model for Predicting Blender Performance and Dependence on Material Properties**
L. Pernenkil, F. Jalali-Yazdi, J. Whittaker, C. Cooney, MIT
- 4. Resonance-Induced Uniform Particle Suspension in Dense Gas-Solid Flows**
J. Li, Y. Liu, Argonne National Laboratory
- 5. Process Engineering-Aided Development of Pharmaceutical Particles**
V. Bucala, M. Garcia, J. Pina, Universidad Nacional del Sur; S. Castro, S. Palma, Universidad Nacional de Cordoba
- 6. A Rotating Chimney for Rotating Fluidized Beds**
J. de Wilde, E. Burlutskiy, Universite Catholique de Louvain
- 7. Dry Granulation: Improving the Homogeneity of Ribbon Density by Modifying Powder Supply During Roller Compaction**
R. Lammens, Technical Services Consult Lammens; S. Peter, K-J Steffens, University of Bonn
- 8. Dry Granulation: Predicting Roll Compaction Force from Tableting Experiments for Achieving a Given Ribbon Density**
R. Lammens, Technical Services Consult Lammens; S. Peter, K-J Steffens, University of Bonn
- 9. Characterization of Pharmaceutical Granules**
M. Bojarra, L. Briens, University of Western Ontario
- 10. Pharmaceutical Application of DEM – Opportunities and Challenges**
J. Favier, DEM Solutions Ltd.
- 11. A Study of Magnesium Stearate Lubrication by Radioactive Particle Tracking**
M. Perrault, F. Bertrand, J. Chaouki, Ecole Polytechnique de Montreal