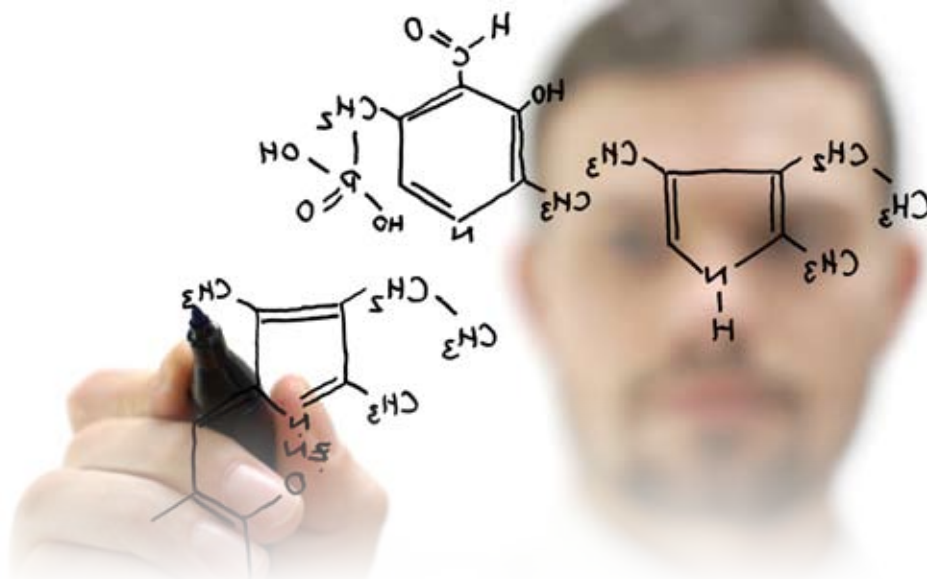




**SAVE THE DATES:**  
**OCTOBER 4-6, 2011**  
SINGAPORE



Mixing Consultants, Inc. Presents:

## **ADVANCES IN PHARMACEUTICAL PROCESS DESIGN**

by Academic Experts from Rutgers University and Recognized Industry Leaders

*Sponsored by Freeman Technology, Gericke, Glatt Systemtechnik and K-Tron Process Group*

### **FUNDAMENTALS OF BATCH AND CONTINUOUS POWDER PROCESSING:**

Overview of solid dose and inhalable products. Design of sampling methods. Thief sampling. Thief errors. NIR spectroscopy and other PAT methods for blending. Blending fundamentals. Critical variables in blending. Types of equipment. Failure modes. Segregation, segregation testing. Design of the lubrication step. Blend overlubrication. API agglomeration, causes and diagnosis. Failure modes. Characterization of powder flow properties and their effects on process and product performance.

### **QBD METHODOLOGIES FOR BATCH AND CONTINUOUS PROCESSES:**

Statistical methods for characterization of products and processes. Critical material properties: cohesion, density, hydrophobicity and electrostatics. Critical process parameters: shear, strain, compression force and speed. Effects on product quality attributes: dissolution, content uniformity, weight uniformity.

### **CONTINUOUS MANUFACTURING TECHNOLOGIES:**

Regulatory issues. Design Fundamentals. API pre-conditioning. Feeders. Continuous mixers. API delumping and mixing. Continuous lubrication. Roller compaction. Continuous granulation. Tableting. Capsule filling. Continuous coating. Equipment, critical variables. PAT approaches.

### **ABOUT MIXING CONSULTANTS, INC.**

Mixing Consultants, Inc. provides technical services, supporting research and development and technology transfer in all areas regarding characterization, design, optimization and control of mixing processes for powders, liquids and suspensions. Our focus are pharmaceutical, food, chemical and energy industries. Our mission is to support and educate industry in the application of technical knowledge and modern methods to achieve excellence in product and process design, manufacturing, scale-up, technology transfer and control.

*Additional information and inquiries by e-mail to [info@mixingconsultants.com](mailto:info@mixingconsultants.com) or phone +1 (954) 727-3120.*

**Visit us at [www.mixingconsultants.com](http://www.mixingconsultants.com)**

## PROGRAM

Lectures will be presented by Professor Muzzio unless otherwise indicated.  
Daily: Registration & breakfast 7:30 – 8:30 am  
Lunch 12:00 – 1:00 pm (one-on-one consultation available upon request)

### Day 1: Powder Processing Fundamentals

- 8:30 – 9:30 Overview of powder-based products: tablets, capsules, and aerosol products  
9:30 – 10:30 Powder sampling, NIR spectroscopy, and other PAT methods  
10:30 – 12:00 Fundamentals of batch powder mixing  
1:00 – 2:30 Powder segregation and agglomeration  
2:30 – 4:00 Powder lubrication and overlubrication  
4:00 – 5:00 New technical solutions for automated NIR applications for powder blending  
*Mr. Ralf Kretzschmar, Glatt Systemtechnik*

### Day 2: QbD Methodologies

- 8:30 – 10:30 Statistical characterization of materials, products, and processes  
10:30 – 12:00 Measuring and understanding powder flow  
*Mr. Tim Freeman, Freeman Technology*  
1:00 – 2:30 Other critical material properties: cohesion, density, hydrophobicity, electrostatic  
2:30 – 4:00 Fundamental process parameters: shear, strain, compression force and speed  
4:00 – 5:00 Effect of material properties on product performance: A QbD approach to tablet dissolution, hardness, CU

### Day 3: Continuous Manufacturing

- 8:30 – 9:30 Theoretical aspects and main design principles of continuous mixing processes  
*Dr. Ralf Weinekötter, Gericke*  
9:30 – 10:30 Operational principles of loss in weight feeders and their refill in continuous operations  
*Ms. Sharon Nowak, K-Tron*  
10:30 – 12:00 Loss in weight feeders and continuous mixers – Case studies  
1:00 – 2:00 Continuous methods for particle size enlargement: Roller compaction and wet granulation  
2:00 – 3:30 Tableting and encapsulation  
3:30 – 5:00 General design principles of a continuous manufacturing operation

## MEET THE EXPERTS

**Dr. Fernando Muzzio, PhD.** Professor, Rutgers University. Director, Engineering Research Center on Structured Organic Particulate Systems. Expert on Pharmaceutical Powder Processing.

**Mr. Tim Freeman.** Director of Operations, Freeman Technology. Expert in powder flow ability in relation to processing and formulation development.

**Mr. Ralf Kretzschmar.** President, Glatt Systemtechnik GmbH. He is a recognized expert in Pharmaceutical Manufacturing, with special focus in powder handling.

**Ms. Sharon Nowak.** Global Business Development Manager, K-Tron Process Group. She is a recognized leading expert in the fields of macro/micro feeding and conveying of pharmaceuticals, and in pharmaceutical process engineering/equipment design.

**Dr. Ralf Weinekötter.** General Manager, Gericke AG. He is one of the world's leading experts in the design and implementation of continuous powder handling, feeding, and mixing systems.

## ENJOY THE LOCATION!



For a step into Singapore history, take a walk up to Fort Siloso and the Pioneers of Singapore museum. Visit nature-themed attractions like the Jurong Bird Park, Night Safari, Singapore Zoological Gardens and Underwater World & Dolphin Lagoon. If you prefer something more horticultural, proceed to the National Orchid Garden, located within the Singapore Botanical Gardens. Enjoy your evening with the calming riverside view offered at Boat Quay or partake in the up-tempo discos along Orchard Road.

**Registration Fees (per attendee):** 1-2 days: USD 650 per day; 3 days: USD 1,600 ♦ Early registration: 1-2 days: USD 600 per day; 3 days: USD 1,500 ♦ Early registration expires on September 9, 2011 ♦ On-site registration: USD 800 per attendee per day ♦ **Multiple registrations:** Special fees are available for companies registering 5 or more full time participants.  
All fees are expressed in United States dollars (USD).

### Registration:

Complete the following information and e-mail a signed scanned copy to [info@mixingconsultants.com](mailto:info@mixingconsultants.com) or fax it to Mixing Consultants, Inc. at +1 (954) 880-0228.

Please register me for the course on **Advances in Pharmaceutical Process Design** ~ October 4-6, 2011 ~ Pan Pacific Singapore, 7 Raffles Boulevard, Marina Square, Singapore 039595 (Tel: +65 6336 8111)

Last Name \_\_\_\_\_ Name on badge \_\_\_\_\_

Title/Position \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Country \_\_\_\_\_

Phone: \_\_\_\_\_ Ext. \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

Tuesday, October 4<sup>th</sup>     Wednesday, October 5<sup>th</sup>     Thursday, October 6<sup>st</sup>

I agree to pay \_\_\_\_\_ regardless if I attend.

Total days registered: \_\_\_\_\_ Total cost: \_\_\_\_\_ Signature: \_\_\_\_\_

How did you hear about this seminar:  Freeman Technology     Gericke     Glatt Systemtechnik     K-Tron

Mixing Consultants, Inc.     Colleagues, word of mouth, etc. \_\_\_\_\_

**Payment method:** Major credit cards or check to Mixing Consultants, Inc., 5093 SW 153<sup>rd</sup> Terrace, Davie, FL 33331 USA

**Cancellation policy:** Cancellations will be assessed a non-reimbursable fee of USD 300 per attendee per day. Cancellations made after September 9, 2011 will not be reimbursable and will require full payment. Attendee replacements within the same company are welcome with prior express agreement by Mixing Consultants, Inc.

**Mixing Consultants, Inc. reserves the right to change the place dates, and speakers of the event.**

Discounted hotel rates are available but limited. Contact us for reservations.

Additional information and inquiries by e-mail to [info@mixingconsultants.com](mailto:info@mixingconsultants.com) or call +1 (954) 727-3120.



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