PTF Newsletter

Particle Technology Forum

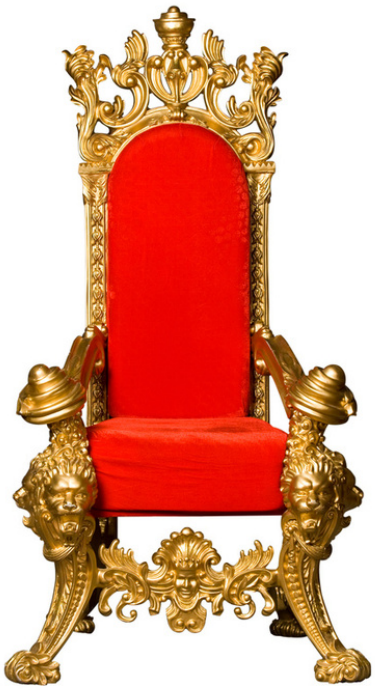
AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

Vol. 16 No. 1 Fall 2010

The PTF is an international and interdisciplinary forum that promotes information exchange, scholarship, research, and education in the field of particle technology – that branch of science and engineering dealing with the production, handling, modification, and use of a wide variety of particulate materials, both wet or dry, in sizes ranging from nanometers to centimeters. Particle technology spans a range of industries to include chemical, petrochemical, agricultural, food, pharmaceuticals, mineral processing, advanced materials, energy, and the environment. See www.erpt.org/ptf for more information.

In this issue…

LETTER FROM THE CHAIR



Where is particle technology research today? I decided to look at what is being presented this year at the 2010 AIChE Annual Meeting. First of all, the work submitted is so extensive in nature that is difficult to grasp the full extent of it in a single sweep. We have the sessions that the PTF sponsors alone but the co-sponsored sessions bring in a huge range of possibilities. So the approach may be the one that one uses when traveling: do a random walk and choose, almost at random, a paper in each session. Not scientific, but interesting. I will just give the name of the presenter and the paper session number. I encourage the reader to follow on his own the same procedure for the sheer pleasure of it. What do we find? Does a pattern arise?

There are two fields of application that seem to dominate the current work: pharmaceutical and energy. In all cases we are still struggling to proper model gas solid flows as the behavior of the flow changes dramatically with the solids concentration and the types of energy exchange between particles going from the quasi static to the rapid flow where collisions are dominant. An example of such a fundamental work is given by Sundaresan (18a), Alenzi (190f) and Mendez (211f). For more dilute flows, the models beg for comparison with experimental results. Such a comparison is to be presented by Cocco (22f). One additional difficulty is that experiments, where some of the parameters of the models can be determined are truly challenging, as can be seen in the particle velocimetry work of Gopalan(143b), on pressure fluctuations by Van Omnen(97), gamma ray densitometry by Aradhya (384e) and 3D xray imaging by (477a). Other effects, such as electrostatic forces are considered by Rokkam (538b). All of these contributions are supported for their potential applications, such as chemical looping for CO2 capture or H2 production as described by Zeng (146b), Abbasi (592b) and Kongkitisupchai (465c). Coal combustion in a CFB continues to be important as shown by Sun (633a).

For the pharmaceutical industry, a first past indicates that mixing and agglomeration are at the top of the list as shown by Gao (409b). Agglomeration is discussed by McCann (). Mixing using a single blade is the work of Radl (303e) and Metzger (90f). The detailed mechanics of particle deformation at a surface, necessary for strong adhesion, has been studied by Chaffee-Cipich (212c). A generic approach to solids flow problems is given by Hajra (304c).

Particle synthesis is a very active area, both for conventional particles and, for their potentially unique properties, of nanoparticles. Structuring particles using "heatable" nanoparticles has been proposed by Zadrazal (60b), inducing "spherical" crystallization by Wang (116e) or, starting by the crystallization itself, by Ward (167c). Nano particles can be used to give special properties to surfaces as shown by Luhtalampi (220d) where, surprisingly, hydrophilic nanoparticles create a super hydrophobic surface. They can also be used to increase drug availability as discussed by Bahkay (303f) and Eerdenbrugh (311f) and Grigorov (194c). Rezvanpour (253d) shows how small particles can also be separated using an electric field or they can be made magnetic as by Zeltner (471d). They can also be prepared by milling as given by Wang (392a) and by controlled chemical synthesis (Codari, 533b). Supercritical precipitation and the subsequent stabilization of small particles is discussed by Azad (612b). Nanowires may have new applications as shown by Kumar (739b). A technique to create coatings are given by Pratsinis (95c). Nanoparticles play a role in catalysis of processes like Fisher-Tropsh and their synthesis is presented by Brunner (351b). Finally some of the safety concerns associated with nanoparticles are addressed by Jones (533c).

We have, of course, two great award lectures: Multiscale Modeling of Motor-Driven Microtubules by Tony Ladd (488a), our 2010 Thomas Award winner and Real-Time Simulation of Particle-Fluid Systems–Dream or Reality? By Jinghai Li.

The Energetics sessions include work on Nanoenergetic materials (Redner, 605a), safety (Kalyon, 665a) and metal combustion (Baddiola, 716a).

Much of the work on continuous handling of pharmaceutical products refers to the control systems required as discussed by Giridhar (383e) and Lakeveld (444c), but some continuous production processes are also included, such as the continous production of nanoparticles by Prud'homme (509c).

At the end of this tour one finds, that for gas-solid flows the applications are dominated by the modeling of large scale processes such as those to be used in emerging energy processes. Granular flows research and the corresponding, mixing and segregation and aggregation are very much focused in the pharmaceutical industry. The field of particle formation, including crystallization and, above all nanoparticles, is too large to be described in a few words. The most important conclusion is that Particle Technology is, and will continue to be, a lively, economically important and intellectually challenging field that should attract the best minds.

Hugo S. Caram
Chair – Particle Technology Forum

2010 AIChE Annual Meeting

November 7-12, 2010
Salt Palace Convention Center
Salt Lake City, UT
URL: http://www.aiche.org/Conferences/AnnualMeeting/index.aspx

Day of Week	Start Time	Session Title	Location
Monday	8:30 AM	Agglomeration and Granulation Processes (03A01)	250 F Room (Salt Palace Convention Center)
Monday	8:30 AM	Dynamics and Modeling of Particulate Systems I (03C04)	251 B Room (Salt Palace Convention Center)
Monday	8:30 AM	Fundamentals of Fluidization I (03B00)	251 F Room (Salt Palace Convention Center)
Monday	12:30 PM	Applications of Engineered Structured Particulates (03A02)	250 F Room (Salt Palace Convention Center)
Monday	12:30 PM	Dynamics and Modeling of Particulate Systems II (03C08)	251 B Room (Salt Palace Convention Center)
Monday	12:30 PM	Functional Nanoparticles and Nanocoatings on Particles I (03D08)	151 C Room (Salt Palace Convention Center)
Monday	12:30 PM	Fundamentals of Fluidization II (03B01)	251 F Room (Salt Palace Convention Center)
Monday	12:30 PM	Particle Formation and Crystallization Processes from Liquids, Slurries, and Emulsions I (02B00)	251 E Room (Salt Palace Convention Center)
Monday	3:15 PM	Dynamics and Modeling of Particulate Systems III (03C09)	251 B Room (Salt Palace Convention Center)
Monday	3:15 PM	Fluidization and Fluid-Particle Systems for Gasification and Biomass Utilization (03B08)	251 F Room (Salt Palace Convention Center)
Monday	3:15 PM	Functional Nanoparticles and Nanocoatings on Particles II (03D02)	251 C Room (Salt Palace Convention Center)
Monday	3:15 PM	Particle Formation and Crystallization Processes from Liquids, Slurries, and Emulsions II (02B06)	251 E Room (Salt Palace Convention Center)
Monday	3:15 PM	Population Balance Modeling for Particle Formation Processes: Nucleation, Aggregation and Breakage Kernels (03A00)	250 F Room (Salt Palace Convention Center)

Monday	6:00 PM	Poster Session: Particle Technology Forum (03000)	Hall 1 (Salt Palace Convention Center)
Tuesday	8:30 AM	Advances and Case Studies in Crystallization and Post-Crystallization Processing (02B01)	251 F Room (Salt Palace Convention Center)
Tuesday	8:30 AM	Characterization and Measurement in Powder Processing (03C06)	251 B Room (Salt Palace Convention Center)
Tuesday	8:30 AM	Characterization of Engineered Particles and Nano-Structured Particles (03A03)	250 F Room (Salt Palace Convention Center)
Tuesday	8:30 AM	Gas Phase Synthesis of Nanoparticles (03D03)	251 C Room (Salt Palace Convention Center)
Tuesday	12:30 PM	Characterization of Engineered Particulate Systems for Pharmaceutical Active Ingredient Delivery (03A07)	250 F Room (Salt Palace Convention Center)
Tuesday	12:30 PM	Solids Handling and Processing (03C03)	251 B Room (Salt Palace Convention Center)
Tuesday	12:30 PM	Solids Handling Considerations and Challenges in Pilot and Demonstration Plants (12B00)	Grand Ballroom G (Marriott Downtown)
Tuesday	12:30 PM	Synthesis, Characterization and Modeling of Nanoparticle Systems with Pharmaceutical Applications (03D04)	251 C Room (Salt Palace Convention Center)
Tuesday	3:15 PM	Engineered Composite Particulate Systems for Pharmaceutical Active Ingredient Delivery (03A08)	250 F Room (Salt Palace Convention Center)
Tuesday	3:15 PM	Nanostructured Particles for Catalysis (03D07)	251 C Room (Salt Palace Convention Center)
Wednesday	8:30 AM	Aggregate and Agglomerate Nanoparticle Formation Dynamics (03D00)	251 C Room (Salt Palace Convention Center)
Wednesday	8:30 AM	Applications of Continuous Processing in the Pharmaceutical Industry (15B12)	Grand Ballroom D (Salt Palace Convention Center)
Wednesday	8:30 AM	Applications of Fluidization (03B02)	251 F Room (Salt Palace Convention Center)
Wednesday	8:30 AM	Comminution – Experiments, Theory and Modeling (03A06)	250 F Room (Salt Palace Convention Center)
Wednesday	8:30 AM	Measurement, Monitoring and Characterization Methods for Particulate Systems Research in Powder and Granular Mixing (03C00)	251 B Room (Salt Palace Convention Center)
Wednesday	12:30 PM	Advanced On-Line Analytical and Optimization Tools in Pilot Plants (03E01))	251 C Room (Salt Palace Convention Center)
Wednesday	12:30 PM	Applications of Continuous Processing in Manufacture of Drug Product (15B02)	Grand Ballroom D (Salt Palace Convention Center)

Wednesday	12:30 PM	Industrial Application of Computational and Numerical Approaches to Particle Flow I (03B05)	251 F Room (Salt Palace Convention Center)
Wednesday	12:30 PM	Magnetic Particle Synthesis and Properties (03A09)	250 F Room (Salt Palace Convention Center)
Wednesday	12:30 PM	Mixing and Segregation of Particulates I (03C02)	251 B Room (Salt Palace Convention Center)
Wednesday	12:30 PM	Particle Technology Forum Awards Lectures (03001)	Grand Ballroom J (Salt Palace Convention Center)
Wednesday	3:15 PM	Applications of Continuous Processing in Manufacture of Drug Substance/API (15B08)	Grand Ballroom D (Salt Palace Convention Center)
Wednesday	3:15 PM	Dynamics and Modeling of Particles, Crystals and Agglomerate Formation (03A04)	250 F Room (Salt Palace Convention Center)
Wednesday	3:15 PM	Health and Environmental Effect of Nanoparti-cles (03D06)	251 C Room (Salt Palace Convention Center)
Wednesday	3:15 PM	Industrial Application of Computational and Numerical Approaches to Particle Flow II (03B06)	251 F Room (Salt Palace Convention Center)
Wednesday	3:15 PM	Mixing and Segregation of Particulates II (03C05)	251 B Room (Salt Palace Convention Center)
Thursday	8:30 AM	Gas/Solid Mixing and Heat/Mass Transfers in Fluidized Beds (03B04)	251 F Room (Salt Palace Convention Center)
Thursday	8:30 AM	Nano-Energetic Materials (03E00)	251 C Room (Salt Palace Convention Center)
Thursday	8:30 AM	Particle Formation in Supercritical Fluids for Food and Pharmaceuticals (03A05)	250 F Room (Salt Palace Convention Center)
Thursday	12:30 PM	Circulating Fluidized Beds (03B03)	251 F Room (Salt Palace Convention Center)
Thursday	12:30 PM	Processing and Safety (03E02)	251 C Room (Salt Palace Convention Center)
Thursday	3:15 PM	Thermophysical Properties (03E03)	251 C Room (Salt Palace Convention Center)
Friday	8:30 AM	Nanowires III: Bulk Production and Assembly (22C02)	Seminar Theater (Hilton)

2010 AIChE PTF Meetings in Salt Lake City

Particle Technology Forum - General Meeting
Monday, November 8, 2010
Time: 5:30-7:00 PM
Location: 251b, Salt Palace Convention Center

PTF- Group 3a (Particle Production and Characterization) – Programming Meeting
Monday, November 8, 2010
Time: 11:00 AM-12:30 PM
Location: 250f, Salt Palace Convention Center

PTF- Group 3b (Fluidization and Fluid-Particle Systems) – Programming Meeting
Tuesday, November 9, 2010
Time: 11:00 AM-12:30 PM
Location: 251b, Salt Palace Convention Center

PTF - Group 3c (Solids Flow, Handling, and Processing) – Programming Meeting
Tuesday, November 9, 2010
Time: 11:00 AM-12:30 PM
Location: 250f, Salt Palace Convention Center

PTF - Group 3d (Nanoparticles) – Programming Meeting
Wednesday, November 10, 2010
Time: 11:00 AM-12:30 PM
Location: 251C, Salt Palace Convention Center

PTF - Group 3e (Energetic Materials) – Programming Meeting
Thursday, November 11, 2010
Time: 11:00 AM-12:30 PM
Location: 251c, Salt Palace Convention Center

PTF Awards

PSRI Lectureship Award

Sponsored by Particlate Solid Research, Inc.

Professor Jinghai Li

Affiliation: Chinese Academy of Sciences

In recognition of his pioneering research, outstanding contributions and tireless leadership in Fluidizatin and Fluid-Particle Systems.

Particle Technology Award

Sponsored by Particulate Solid Research, Inc.

Prof. Dr. Ing. Joachim Werther

Affiliation: Technische Universitāt Hamberg-Harburg

In recognition of his distinguished career, contributions to particle technology research and scholarship, and for outstanding leadership to the Particle Technology community worldwide.

Thomas Baron Award in Fluid-Particle Systems

Sponsored by Shell Global Solutions

Professor Tony Ladd

Affiliation: University of Florida

For his contributions to the fundamental understanding and seminal contributions to the development of the lattice-Boltzmann technique for application to fluid-particle systems.

Best Ph.D. Thesis Award

Sponsored by Proctor and Gamble

Dr. Fanxing Li

Ph.D.: The Ohio State University

For his doctoral work that laid the foundation for the on-going scale-up efforts in commercializing the novel chemical looping gasification process.

PTF Award Lectures

Wednesday, November 10, 2010
12:30 PM
Grand Ballroom J (Salt Palace Convention Center)

"Multiscale Modeling of Motor-Driven Microtubules"
Professor Tony Ladd, University of Florida
Recipient of Thomas Baron Award

"Real-Time Simulation of Particle-Fluid Systems – Dream of Reality?"
Professor Jinghai Li, Chinese Academy of Sciences
Recipient of PSRI Lectureship Award

Best Paper Awards from 2009 Annual Meeting

Group 3A - Particle Production and Characterization
Title: *Two and Three Dimensional Micro Particle Characterization Using Digital Holography*
Authors: Taslima Khanam, Emmanouil Darakis, Arvind Ragendran, Vinay Kariwala, Anand K. Asundi, Nanyang
Affiliation: University in Singapore

Group 3C - Solids Flow, Handling and Processing
Title: *Impact of Binary and Continuous Particle Size Distributions on Clustering, Granular Shear Flows*
Authors: R. Brent Rice, Christine M. Hrenya
Affiliation: University of Colorado at Boulder, United States

Group 3D - Nanoparticles
Title: *Two-Nozzle Flame Synthesis of NOx Storage Reduction Catalysts*
Authors: Robert Büchel, Sortiris E. Pratsinis, Alfons Baiker
Affiliation: ETH Zurich, Switzerland

Group 3E - Energetic Materials
Title: *Vapor Pressure and Melting Points of Select Munitions Compounds*
Authors: Siri Chakka, Veera Boddu, Stephen W. Maloney, Reddy Damavarapu
Affiliation: US Army Engineer Research and Development Center, United States

PTF Banquet Dinner

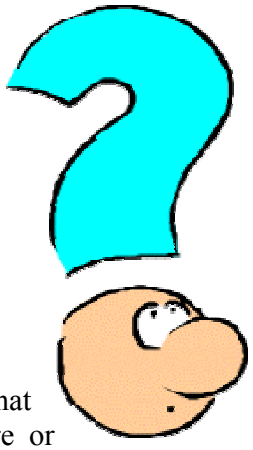
Date: Wednesday, November 10
Time: 6:00 pm Reception
7:30 pm Dinner

This year's PTF Dinner will be held at the Log-Haven Restaurant on 6451 Millcreek Canyon Road, Salt Lake City, UT. It is located five miles from the Salt Palace Convention Center in canyons. Salt Lake steel baron and Metropolitan Opera member L.F. Rains created the breathtaking log hideaway in 1920. Logs from Oregon were shipped via San Francisco and hauled four miles up Millcreek Canyon by horse-drawn wagon. Appropriately named "Log Haven" and built at the base of cliffs and flowing waterfalls, the Rains family used the sanctuary as a summer home.

During the Depression, an insurance executive named Gleed Miller bought Log Haven and turned it into a year-round residence. He added additional rooms and built an ice skating pond and horse stables across the road. When the Miller children grew up and left their wilderness-near-the-city-nest, the property passed to Stanley Sprouse, who converted the log home to a restaurant. During the late 1980s, Log Haven fell into disrepair and was slated to be destroyed. Luckily, Margo Provost purchased Log Haven in 1994 and completely refurbished and renovated this historic retreat.

Today, the Log-Haven Restaurant is one of Salt Lake City's premiere restaurants and has been awarded the Wine Spectator Award of Excellence, Fodor's Choice, Best American Contemporary Restaurant and Best American Fine Dining Restaurant in 2010 alone. It has also been given the Highest Achievement Award by the Distinguished Restaurants of North America. Our menu will include Hazelnut-Pomegrante Glazed Organic Chicken, Mushroom Brown Arborio Risotto, Okanegan Highlands Steelhead Trout, and Double R Range Filet Mignon with a finish of Chocolate Flourless Cake. Tickets are $85 and seat is limited.

"Know Floe's Korner"



Bulk Density: Some Points To Ponder …

Lyn Bates, Ajax Equipment, UK
Shrikant Dhodapkar, The Dow Chemical Company, TX
George Klinzing, University of Pittsburgh, PA

Bulk density is simply defined as the mass of a bulk solid divided by the volume that it occupies. On the surface this would appear to be an easy value to measure or calculate, however, the more one delves into the topic the more complex the topic becomes. The bulk density can have an important bearing on the design and performance of equipment as well as commercial and legislative effects, such as when a product is sold by weight but dispensed for packing by volume, where small variations can have large consequences on the bottom line or of meeting legal requirements. It is most important to appreciate that the bulk density is not a fixed value, but depends on the nature of the material and how it is measured. Interest in the measurement also varies, according to the application in which its use is being considered. The most common reason for needing a bulk density value is for bulk storage calculations, where the holding capacity of a container is determined by the mass that fills the available space; whether a large silo or a small packet. The apparent simplicity of the definition can lead to misleading assumptions, so the following points offer a general guide to securing an appropriate useful value.

- The starting point of any process to measure bulk density is to relate the method to both the specific nature of the application and physical properties of the bulk material. For example product in a dynamic condition of flow, such as being conveyed in a screw conveyor or filling into a small packet, will be in a dilated condition that depends on the degree of actions taking place between the particles. The bulk density in this condition will depend greatly on the nature of the bulk material and will differ to a greater or less extent from measurements taken in a static condition. Similarly, the rate at which a loose solid loaded into a storage container settles to a stable value will depend on how quickly excess air can escape from the voids of the dilated state in which it is filled.

- A distinction should be made between coarse products that settle by gravity quickly to a stable volume and fine bulk powders that can assume a dilated condition in flow or agitation and then settle progressively to a denser condition as the excess air percolates through the narrow interstices to ultimately attain an ambient pressure in the voidage. The reducing pressure differential between the voids and ambient, combined with the narrowing of the escape passage between the particles, results in an exponential decay in the rate of settlement that is sensitive to the viscosity of the void gas and fineness on the particle size of the bulk material. In general, products with the smallest particles greater than 50 μm will tend to settle rapidly to a stable value whereas materials having compositions of particles smaller than 30 μm will tend to be slow to attain a stable density condition.

- Consider both the prevailing stress and the stress history of the application under consideration to replicate preparation and test conditions for securing bulk density measurements.

- Coarse products tend to be free flowing and prone to segregate, so ensure samples used for the measurement have a composition reflecting the conditions of interest.

- The contact surface of a measuring container inhibits the close nesting arrangement of the particles of a bulk mass with reducing influence over a thickness of around five particles. The size of a measuring device should therefore be greater than 50 particle diameters to minimise boundary effects on the particle packing structure.

- Mixtures of bulk materials are likely to be composed of materials with differing size distributions and the packing of particles with a mixture size distribution may be quite different from that with a discrete size distribution. Care is particularly required in securing a 'representative' sample according to the homogeneity of the mix.

- It should be noted that coarse products settle rapidly to a stable density and are then capable of sustaining relatively high compressive loads with little density change because the nesting arrangement of the particles have formed stable load paths under the influence of gravity, most of which that can support greater loads by transferring the forces through the solid members of the composition. 'Tapped density' measurements taken by repetitively lifting and dropping the container a short distance does not significantly upset the structure, whereas a few sideways taps on the container is much more likely to de-stabilize the array and establish closer packing.

- Particle shape has an important bearing on the packing density that, as they increasing deviate in shape from perfect symmetry, is sensitive to the manner in which the particles are assembled into their bulk state. The way in which the material is entered to the measuring chamber affects their alignment and the uniaxial force of gravity then establishes the load paths through the points of contact that supports the bulk structure. The addition of a mild rotary vibration in a vertical axis to gravitation forces during the filling process induces a 'shuffling' motion in dilated surface conditions that is conducive to disturbing unstable points of contact and securing the maximum density conditions for particles that are plates shaped or have high aspect ratios.

- Bulk density reflects a specific state of particle packing of a bulk material and this determines the shear strength that it can sustain before failure under various normal load conditions. The graph of shear strength of a bulk solid in a given condition of density at differing normal loads is secured by tests in a Jenike type cell and forms a 'yield locus' diagram. The 'critical state' of a particulate solid is that at which an increase of normal load in failure conditions is the end point of a yield loci curve and leads to the material attaining a higher bulk density. Shear failure that takes place with normal loads less than the critical state condition results in the failure plane adopting a lower local condition of bulk density. The 'critical state' therefore represents a dynamic flow condition of a bulk solid, where continuous shear is taking place at a particular condition of bulk density of the media.

References:

- W.A.Grey, The Packing of Solid Particles, Chapman and Hall. London (1968)
- D.J. Cumberland and R.J. Crawford, The Packing of Particles, Handbook of Powder Technology Vol. 6, Elsevier, Amsterdam (1987).
- Randall M. German, Particle packing characteristics, Metal Powder Industries Federation Princeton, N.J . (1989)
- ASTM Standards: D1895, D6683 and D7481

Upcoming Conference Calendar

2010

2010 AIChE Annual Meeting

November 7-12, 2010, Salt Lake City, Utah

Website: http://www.aiche.org/Conferences/AnnualMeeting/index.aspx

Abstract Deadline: passed

2011

Circulating Fluidized Beds 10

May 1-5, 2011, Sunriver, Oregon

Website: http://cfb10.org/CFB10/Welcome_4.html

Abstract Deadline: passed

5th International Granulation Workshop

June 20-22, 2011, Lausanne, Switzerland

Website: http://www.shef.ac.uk/agglom2011/

Abstract Deadline: November 15, 2010

2011 AIChE Annual Meeting

October 16-21, 2011, Minneapolis, MN

2012

2012 AIChE Annual Meeting

October 28- November 2, 2012, Pittsburgh, PA

2013

Powders & Grains 2013

July 8-12, 2013, Sydney, Australia

2013 AIChE Annual Meeting

November 17-22, 2013, San Francisco, CA

Officer and Committee Listing

Officers:

Chair 2008-2012: Professor Hugo S. Caram, hsc0@lehigh.edu, 610-758-4259
Vice-Chair 2008-1012: Dr. Ray Cocco, ray.cocco@PSRIChicago.com, 773-523-7227
Immediate Past Chair 2006-2008: Dr. Shrikant Dhodapkar, sdhodapkar@dow.com, 979-238-7940
Secretary 2006-2008: Dr. Stephen Conway, Stephen-conway@merck.com, 215-652-6031
Treasurer 2006-2008: Professor Jennifer Sinclair Curtis, jcurtis@che.ufl.edu, 352-392-0882

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Academic 2008-2012: Professor Hamid Arastapoor, arastoopour@iit.edu, 312-567-3038
Academic 2008-2012: Professor Alissa Park, ap2622@columbia.edu, 212-854-8989
Academic 2006-2010: Professor Jennifer Sinclair Curtis, jcurtis@che.ufl.edu, 352-392-0882
Academic 2006-2010: Professor Joseph McCarthy, mccarthy@engr.pitt.edu, 412-624-7362
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Industry 2008-2012: Dr. Stephen Conway, Stephen-conway@merck.com, 215-652-6031
Industry 2006-2010: Dr. Ecevit Bilgili, ecevit_bilgili@merck.com, 215-652-2821
Industry 2006-2010: George Fotou, george_fotou@cabot-corp.com, 505-563-4275
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AIChE Staff Associate: Ms. Nina Scatton, ninas@aiche.org, 203-702-7660

Standing Committees (Chairs):

Awards Committee 2006-2008: Professor Hugo S. Caram, hsc0@lehigh.edu, 610-758-4259
Education: Dr. Ralph D. Nelson, erptmged@aol.com, 302-239-0409
Membership: Mark Bumiller/Hugo Caram, mark.bumiller@malvernusa.com, 508-480-0200, ext. 222/hsc0@lehigh.edu.edu, 610-758-4259
Newsletter Editor: Professor Christine Hrenya, hrenya@colorado.edu, 303-492-7689
Nominations: Professor Alan Weimer, weimera@colorado.edu, 303-492-3759
Recognition: Professor Sotiris Pratsinis, pratsinis@ivuk.mavt.ethz.ch, 41-1-632-3180

Technical Programming Area Liaison and Group Chairs

The main focus of the PTF has been arranging for the extensive technical programs at the annual AIChE meeting in November. A lot of hard work goes into developing session themes, negotiating for sufficient time and reasonable scheduling of the sessions, attracting and screening papers, finding and training new session chairs, and making sure the whole process flows smoothly. Shrikant Dhodapkar, our Area 3 Liaison, attends an all-day session each January to plan the technical sessions at the Annual Congress and to arrange for co-sponsored sessions with other Divisions and Forums. Participation in this process is excellent training in and proof of management capabilities. The leaders selected this fall were

Position	Person	Affiliation
Area 3 Liaison	**Dr. Manuk Colakyan**	The Dow Chemical Co.
Area 3 Vice Liaison	**Dr. Shrikant Dhodapkar**	The Dow Chemical Co.
Group 3a – Particle Production and Characterization		
Chair	**Prof. M. Silvina Tomassone**	Rutgers University
Vice-Chair	**Dr. Ecevit Bilgili**	Merck and Company, Inc.
Group 3b – Fluidization and Fluid-Particle Systems		
Chair	**Dr. Jesse Zhu**	Univ. of Western Ontario
Vice Chair	**Reza Mostofi**	UOP LLC
Group 3c – Solids Flow, Handling, and Processing		
Chair	**Prof. Benjamin Glasser**	Rutgers University
Vice Chair	**Dr. Bruce Hook**	Dow Chemical
Group 3d - Nanoparticles		
Chair	**Professor Yangchuan Xing**	University of Missouri-Rolla
Vice Chair	**Gary Liu**	DuPont
Group 3e – Energetic Materials		
Chair	**Charles R. Painter**	Department of the Navy
Vice Chair	**Jerry S. Salan**	Naval Surface Warfare Center

Report from the Treasurer

Here is the Fall 2010 PTF Treasurer's Report. This includes the state of the accounts through 8/31/10. The total PTF funds are $20,698.67, which consists of $14,865.57 in the AIChE Account and $5833.10 in the Florida Account.

Respectfully submitted, Jennifer Sinclair Curtis, PTF Treasurer

AIChE ACCOUNT	**Starting**	**Income**	**Expenses**	**Balance**
As of 2/28/10	$13,665.76			
Dues Income – Divisions (3/10)		$ 345.00		
Dues Income – Divisions (4/10		$ 120.00		
Dues Income – Divisions (5/10)		$ 45.00		
Dues Income – Divisions (6/10)		$ 75.00		
Dues Income – Divisions (7/10)		$ 75.00		
Dues Income – Divisions (8/10)		$ 465.00		
Registration Income – PTF Dinner (8/10)		$ 170.00		
New Website Annual Hosting Fee (3/10)			$ 95.19	
Totals as of 8/31/10	$13,665.76	$1295.00	$ 95.19	**$14,865.57**

FLORIDA ACCOUNT	**Starting**	**Income**	**Expenses**	**Balance**
Balance as of 2/28/10	$ 3757.83			
Donation from P&G (3/10)		$1490.00		
Travel M. Colakyan to attend Spring NPC Retreat (4/10)			$527.33	
Hosting erpt.org website 95/10)			$107.40	
Donation from Shell (7/10)		$1245.00		
Florida account credit card annual fee (7/10)			$ 25.00	
Totals as of 8/31/10	$ 3757.83	$2735.00	$659.73	**$5833.10**

From the Editor's Desk

The *PTF Newsletter* is published twice a year as a vehicle for communication for all PTF members. PTF members are encouraged to send in news and information of general interest to PTF members. Please address your communication to

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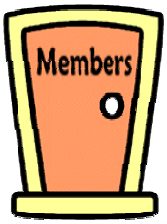

Membership Information

Membership Application for the Particle Technology Forum, AIChE

CONTACT INFORMATION (print or type):

Name: _____ Title: _____

Category (check only one): AIChE Member ___ [# if you are a member = _____]

Not an AIChE member _____

Company or University: _____

Address: _____

City: _____ State: _____ ZIP: _____ Country: _____

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MEMBERSHIP DUES (check only one line below) [Note that dues are for a calendar year]:
___ 15.00 $US for one year. Anyone use this option. For AIChE members dues will be listed on your AIChE dues invoice after your first year in PTF. Nonmembers don't receive a dues notice.
___ 75.00 $US for five years dues. ***Only*** nonmembers of AIChE are eligible for this option, which is provided as a courtesy so that non-members won't have to send in five small checks.

METHOD OF PAYMENT (check and fill-in only one line below):
___ check (must be in $US on a U.S. bank or on a foreign bank with a New York City branch.)
Make payable to **Am. Inst. of Chem. Engineers**. Mail with form to the address below.
___ money order (an international money order in $US is acceptable)
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I agree to pay the amount checked-off above to the **Am. Inst. of Chem. Engineers**
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