



# PTF *Newsletter*

Particle Technology Forum

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## AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

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Vol. 11 No. 1

Fall 2005

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](http://www.erpt.org/ptf) for more information.

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## LETTER FROM THE CHAIR

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We're looking forward to an exciting PTF program in Cincinnati (October 30-November 4) and we hope you can join us. PTF has 7 sessions on Monday; 4 sessions on Tuesday, including our posters; 10 sessions on Wednesday; and 5 sessions on Thursday. We tried really hard to have all sessions Monday to Wednesday, but couldn't pull it off with AIChE. We did manage to have more than 80% of our events Monday to Wednesday. The Baron Award Lecture will be mid-afternoon on Wednesday this year (instead of early evening) in an attempt to increase the audience. We have attempted to avoid conflicts with other PTF sessions as best we could. The PTF Banquet Dinner will be on Wednesday night instead of Tuesday night in order to avoid as many conflicts as possible with the poster session and with hospitality and other events that usually fill up that time. PTF will supply wine during the 6:30 to 7:30 social pre-dinner event. Finally, I encourage all of you to take part in the Fifth World Congress in Orlando, Florida (April, 2006) by submitting abstracts by October 1. Involvement in PTF is a great way to learn professionally and make new friends. I look forward to seeing all of you in Cincinnati!

Professor Alan Weimer  
PTF Chair

### PTF 2005 Annual Meeting (Cincinnati) Meetings

PTF Area 3a Meeting Salon B/C (4th level) Hilton Hotel	Wednesday	November 2	10:30 AM	11:00 AM
PTF Area 3b Meeting Salon D/E (4th level) Hilton Hotel	Monday	October 31	10:30 AM	11:00 AM
PTF Area 3c Meeting 206 North (2nd level) Cinergy Center	Wednesday	November 2	10:30 AM	11:00 AM
PTF Area 3d Meeting 204 North (2nd level) Cinergy Center	Tuesday	November 1	10:30 AM	11:00 AM
PTF Area 3e Meeting Salon FG Hilton Cincinnati Netherland Plaza	Thursday	November 3	10:30 PM	12:00 PM
PTF Baron Award Lecture Rookwood Hilton Cincinnati Netherland Plaza	Wednesday	November 2	2:15 PM	3:15 PM
PTF Exec. Committee Meeting Cardinal Room (4th floor, South Tower) Millennium Hotel	Sunday	October 30	4:00 PM	5:00 PM
PTF General Meeting Salon D/E (4th level) Hilton Hotel	Monday	October 31	5:00 PM	6:00 PM
PTF Programming Meeting Salon B/C (4th level) Hilton Hotel	Wednesday	November 2	5:30 pm	6:30 pm

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## 2005 AIChE Annual Meeting

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**October 30 - November 4, 2005**  
**Cincinnati Convention Center**  
**Cincinnati, OH**

URL: <http://www.aiche.org/conferences/annual/>



<b>Day of Week</b>	<b>Start Time</b>	<b>Session Title</b>	<b>Location</b>
Monday	8:00 AM	Fundamentals of Fluidization I	Salons DE (Hilton Cincinnati Netherland Plaza)
Monday	12:30 PM	Fundamentals of Fluidization II	Salons DE (Hilton Cincinnati Netherland Plaza)
Monday	12:30 PM	Solids Handling and Processing	Salons FG (Hilton Cincinnati Netherland Plaza)
Monday	12:30 PM	Gas Phase Synthesis of Particles	Salons HI (Hilton Cincinnati Netherland Plaza)
Monday	3:15 PM	Fundamentals of Fluidization III	Salons DE (Hilton Cincinnati Netherland Plaza)
Monday	3:15 PM	Fred Thomson Memorial Session: Industrial Perspective of Solids Processing	Salons HI (Hilton Cincinnati Netherland Plaza)
Monday	3:15 PM	Characterization of Engineered Particles and Nano-structured Particles	Salons FG (Hilton Cincinnati Netherland Plaza)
Tuesday	8:00 AM	Circulating Fluidized Beds	Salons BC (Hilton Cincinnati Netherland Plaza)
Tuesday	12:30 PM	Computational and Numerical Approaches to Particle Flow	Salons BC (Hilton Cincinnati Netherland Plaza)
Tuesday	3:15 PM	Transport in Fluidized Beds	Salons BC (Hilton Cincinnati Netherland Plaza)
Tuesday	6:00 PM	Particle Technology Forum Poster Session	Exhibit Hall A (Cincinnati Convention Center)

## News and Announcements

Wednesday	8:00 AM	Agglomeration, Granulation and Particle Formation Processes	Salons HI (Hilton Cincinnati Netherland Plaza)
Wednesday	8:00 AM	Functional Nano-particles and Applications I	Salons BC (Hilton Cincinnati Netherland Plaza)
Wednesday	8:00 AM	Dynamics and Modeling of Particulate Systems I	206 (Cincinnati Convention Center)
Wednesday	3:15 PM	Dynamics and Modeling of Particulate Systems II	206 (Cincinnati Convention Center)
Wednesday	12:30 PM	Population Balance Modeling for Control of PF Processes: Nucleation, Aggregation and Breakage Kernels	206 (Cincinnati Convention Center)
Wednesday	12:30 PM	Functional Nano-Particles and Applications II	Salons BC (Hilton Cincinnati Netherland Plaza)
Wednesday	12:30 PM	Mixing and Segregation	200 (Cincinnati Convention Center)
Wednesday	3:15 PM	Functional Nano-particles and Applications III	Salons BC (Hilton Cincinnati Netherland Plaza)
Wednesday	3:15 PM	Modeling and Scale-up of Nano-particle Processing	200 (Cincinnati Convention Center)
Wednesday	2:15 PM	PTF Baron Award Lecture	Rookwood (Hilton Cincinnati Netherland Plaza)
Thursday	8:00 AM	Processing and Safety of Energetic Materials	Salons FG (Hilton Cincinnati Netherland Plaza)
Thursday	8:00 AM	Purification, Separation, and Manipulation of Nano-particles	Salons HI (Hilton Cincinnati Netherland Plaza)
Thursday	12:30 PM	Supercritical Fluids for Food and Pharmaceuticals	Salons FG (Hilton Cincinnati Netherland Plaza)
Thursday	12:30 PM	Nano-Energetic Materials	Salons HI (Hilton Cincinnati Netherland Plaza)
Thursday	3:15 PM	Energetic Materials: Environmental and Life Cycle Issues	Salons FG (Hilton Cincinnati Netherland Plaza)

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## PTF Award Winners

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### Particle Technology Forum Award

The Particle Technology Forum award is given in recognition of lifetime of excellence and accomplishments in the field of particle technology. The recipient of the award this year is Professor Joerg Schwedes (Technical University of Braunschweig, Germany). This award recognizes his distinguished career, contributions to particle technology research and scholarship, and for outstanding leadership to the Particle Technology community worldwide. This award is sponsored by E. I. du Pont de Nemours and Company.



### Thomas Baron Award in Fluid-Particle Systems

This award recognizes outstanding scientific/technical accomplishment in the field of fluid-particle systems or in a related field with potential for cross-fertilization. The recipient of the award this year is Professor Sankaran Sundaresan (Princeton University) in recognition of his pioneering and outstanding contributions on the dynamics of fluid-particle flows. This award is sponsored by Shell Global Solutions (US), Inc.

### Lectureship Award in Fluidization

This award recognizes outstanding scientific/technical research contributions with impact in the field of fluidization and fluid-particle flow systems. The recipient of the award this year is Professor Shigekatsu Mori (Nagoya University, Japan). This award is sponsored by Flour [Fluor?] Corporation.





### **Best PhD in Particle Technology Award**

This award recognizes outstanding original dissertation in physical, biological, or engineering sciences with emphasis on particle science and technology. The recipient for the award this year is Dr. Stephen L. Conway for his outstanding contributions in mixing, segregation, and dynamics of granular materials. Stephen attended Rutgers University and was advised by Professor Ben Glasser. The award is sponsored by Procter and Gamble.

### **Fluidization Processing Recognition Award**

This award recognizes a forum member who has made significant contribution to the science and technology of fluidization or fluidized processes, and who has shown leadership in the engineering community. The recipient of the award this year is Dr. Manuk Colakyan (Dow Chemical) in recognition of his significant accomplishments in the application of fluidized bed technology to monomer removal and olefin reaction processes. This award is sponsored by the Dow Chemical Company.



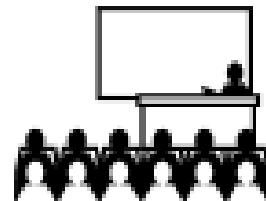
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## **PTF Awards Lecture**

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Baron Lecture (Prof. Sankaran Sundaresan, Princeton University) will be on Wednesday, November 2, 2:15 to 3:15 in the Rookwood Room of the Hilton Cincinnati Netherland Plaza. “Challenges in Quantitative Analysis of Particulate Flow”

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## **PTF Awards Banquet**

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Our PTF Dinner at AIChE Meeting in Cincinnati would be held on November 2nd, 2005 at The Phoenix located at 812 Race Street, Cincinnati, OH 45202

Social: 6:30 pm to 7:30 pm

Dinner starts at 7:30 pm

The cost of dinner ticket is \$55 (includes wine).

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## **Powder Technology Special Issue on PTF Contributions**

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The Special Issue, “Engineered Particle Processing” of Powder Technology containing peer reviewed papers presented in sessions at the PTF 2003 Annual AIChE Meeting (San Francisco) has been published (August 23, 2005) as Volume 156, Issues 2-3, pages 61-238. These papers were peer-reviewed in 2004, modified, and accepted for publication. Papers in this Special Issue cover a wide range of topics related to powder technology including aerosols, comminution, dispersion, agglomeration, granulation, flocculation, energetic materials, and process control. The Special Issues was edited by Professors Al Weimer and Christine Hrenya. They'd like to thank the authors for submitting these papers and the reviewers for helping them to ensure a quality collection of papers.

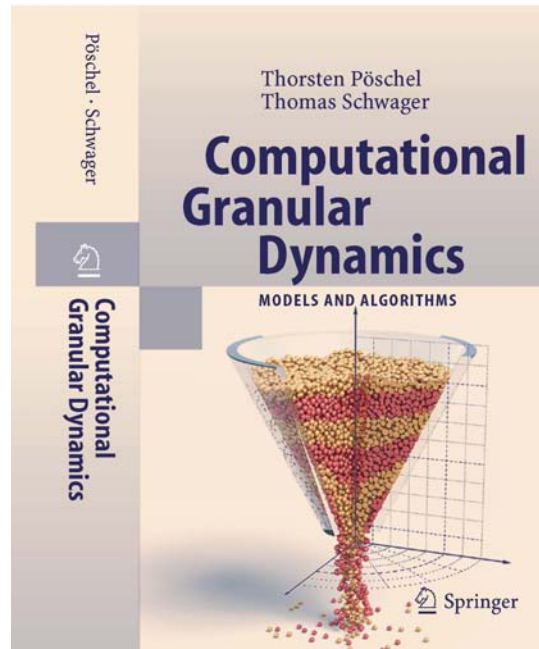
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## New Text on Computational Granular Dynamics

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Pöschel · Schwager  
**Computational Granular Dynamics**

Computer simulations not only belong to the most important methods for the theoretical investigation of granular materials, but also provide the tools that have enabled much of the expanding research by physicists and engineers. The present book is intended to serve as an introduction to the application of numerical methods to systems of granular particles. Accordingly, emphasis is placed on a general understanding of the subject rather than on the presentation of the latest advances in numerical algorithms. Although a basic knowledge of C++ is needed for the understanding of the numerical methods and algorithms in the book, it avoids usage of elegant but complicated algorithms to remain accessible for those who prefer to use a different programming language. While the book focuses more on models than on the physics of granular material, many applications to real systems are presented.



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## World Congress on Particle Technology V

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Every four years members of the global particle technology community converge to share their latest insights and applications to industrial, academic, and civil problems. The meeting place cycles between three groups of continents. The Fifth World Congress on Particle Technology will be held on April 23-27 in Orlando, Florida (USA), alongside the Spring meeting of the American Institute of Chemical Engineers (AIChE).

The WCPT-5 will be held on *April 23-27, 2006*,  
in the United States of America  
at the Swan and Dolphin Hotel in Walt Disney World,  
Lake Buena Vista, Florida.

### WHAT WILL WCPT-5 OFFER?

- a student conference prior to the Congress
- fourteen tutorials will review the basics of various areas within particle technology
- five technical tracks will include many interdisciplinary sessions
- a technical exposition with the latest information and hardware resources for making, measuring, processing, and handling all types of particles
- eight plenary speakers will explain recent advances in key technical areas
- banquet and coffee breaks to chat with your colleagues
- many tourist attractions are nearby for you and your family to enjoy

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## Summer School in Winter at PERC

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The Particle Science Summer School in Winter is an exceptional opportunity for graduate students from across the world to participate in specialized modules taught by world-renowned experts. It is also an unparalleled occasion to network with other graduate students working in the field. Students have the opportunity to select one 2-day module from a roster of different offerings to allow them to tailor the week to meet their specific training needs. Each module includes an instructor from industry to provide an industrial perspective of the topic. A highlight for student participants is the poster session in which they can share their research with the group. Students from past conferences have identified this as the most valuable feature of the week, as it provides students with a look at what others are researching and provides opportunities for future collaborations among participants.

For the first time, SSIW will be held two days prior to the World Congress on Particle Technology 2006 (WCPT5) Student Conference in Cocoa Beach, Florida, April 22 & 23 (<http://www.erc.ufl.edu/studentconference/index.html>). Every four years members of the global particle technology community converge to share their latest insights and applications to industrial, academic, and civil problems. The University of Florida is pleased to be one of the host institutions. The 2006 meeting will take place in Orlando, Florida April 23-27, 2006. Please see <http://www.wcpt5.org/> for more information on the World Congress.

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## “Know Floe’s Korner”

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### Top Ten Tips for Dense Phase Pneumatic Conveying

Shrikant Dhodapkar (The Dow Chemical Company, USA)

George Klinzing (University of Pittsburgh, PA, USA)

Lyn Bates (Ajax Equipment, UK)

Peter Wypych (University of Wollongong, Australia)

1. The term “dense phase” is often misused in practice. For example, many so-called “dense-phase” systems are found to be operating in dilute-phase (or suspension flow). Also, many researchers and designers define “dense-phase” as a flow mode with solids loading greater than 10 or 15. Many different types of dense-phase have been developed over the past few decades to take advantage of certain product properties (e.g. air retention, deaeration, permeability, cohesion, particle size distribution). In most cases, “dense-phase” can simply be considered as some form of non-suspension flow that occurs at some time at any section along the pipeline. Using solids loading as an indicator of flow mode can be misleading (e.g. solids loading is a mass concentration parameter that depends on the mass or density of the particles; some dilute phase systems are operating at a solid loading greater than 40 and some dense phase systems less than 10). ***Ensure that the choice of a flow mode (and system) is based on the product properties (rather than an imprecise definition or misleading solids loading), and that the selected or supplied flow mode is confirmed during commissioning.***
2. Coarse/granular materials that can be conveyed in dense phase (viz. low-velocity slug-flow) exhibit an unstable operating zone in between (high-velocity) dilute phase and (low velocity) dense phase conveying. The dense phase regime is bound by a high-velocity (unstable zone) boundary and a low-velocity (blockage) boundary. ***Make sure the operating point (gas flow rate, solids flow rate) falls well within these bounds at all locations in the system and for all pipeline configurations (if applicable).***
3. ***The minimum and maximum conveying rates in a process must be defined upfront.*** Compared with dilute phase, the dense phase regime can be more limiting and sensitive to variations in air flow and/or conveying rate. For some materials, a reduction in solids flow rate can shift the operating point into the unstable zone, thereby causing severe instability (line vibrations and pressure spikes).
4. Bench top characterization tests (wall friction, permeability, deaeration, etc.) are helpful for preliminary screening of a material’s suitability for dense phase conveying. Dense phase conveying performance can be quite sensitive to variations in material property (particle size, size distribution, shape, density, moisture, cohesion, etc.). ***It is highly***

*recommended that pilot scale or full scale testing be conducted on representative material, especially for new or different products where no prior experience is available.*

5. Using a conventional or “off-the-shelf” pipeline, not all materials can be conveyed reliably in dense phase. Some materials can be conveyed in single or multi slug/plug mode, some in fluidized moving bed type flow, while others can **only** be conveyed in dilute phase. Not selecting the right flow mode for a particular material or the right operating condition for a given flow mode can result in excessive pressure spikes, system shutdown, unstable vibrations and/or pipeline blockages. *For materials that do not have a natural tendency for conventional dense phase conveying, consider specialized systems with controlled and regulated gas injection or bypass pipeline technology. Also, ensure proper dense phase flow actually is achieved during commissioning.*
6. Feeder gas leakage can be a significant fraction (up to 50%) of total gas consumption. *The gas leakage at the feeder (esp. rotary valves) must be considered in design calculations and compensated appropriately. Ensure proper venting at the feeder to avoid feeding problems that may result from the gas blowback.*
7. *Use a gas flow control system for multi-product and multi-destination systems to ensure that the operating point is maintained within the stable operating zone.* Also, ensure that the gas flow control system provides a constant gas mass flow rate for the full range of operating pressures and pressure fluctuations. Numerous control logic schemes are available from various vendors or can be designed by reputable consultants.
8. In dense phase systems, gas expansion can be significant between feed point and destination. This will result in a corresponding increase in gas velocity, and a possible transition from dense to dilute phase flow along the conveying pipeline. *For high pressure drop systems (7 psi or 50 kPa and higher), consider stepping the line diameter to reduce the velocity and maintain dense phase conditions.*
9. The motion of slugs and stresses generated within the conveying line during directional changes (bends or diverter valves) results in significantly higher stresses on pipe supports as compared to dilute phase systems. *It is essential to work closely with an experienced vendor to design and install proper pipeline supports to prevent excessive deflection and line movement, and reduce the prospect of fatigue failure.*
10. To purge a dense phase line clean, a controlled increase in gas velocity may be required. *A proper purge control sequence may need to be designed and tested to avoid unnecessary product degradation and/or pipeline blockage. The dust collector must be designed to handle the peak gas flow rates.*

*Acknowledgement: The authors would like to thank Dr. David Mills (UK) for his comments and suggestions.*

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# ***Upcoming Conference Calendar***

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2005

**American Association for Aerosol Research Second International Symposium  
on Nanotechnology and Educational Health**

October 17-21, 2005, Hilton Austin, Austin, TX

Website: <http://www.aaar.org>

**AIChE Annual Meeting**

October 30-November 5, 2005, Cincinnati Convention Center, Cincinnati, OH

Abstract Deadline: Passed

Website: <http://www.ich.org/conferences/annual/>

2006

**The Fifth World Congress on Particle Technology**

April 22-26, 2006, Orlando FL

Abstract Deadline: Passed

Website: <http://www.wcpt5.org>

**Gordon Conference on Granular and Granular-Fluid Flow**

July 23-28, 2006, Queens College, Oxford University

Website: <http://www.grc.uri.edu/programs/2006/granular.htm>

**CHOPS-05, 2006 – The Fifth International Conference for Conveying and  
Handling of Particulate Solids**

August 27-31, 2006, Hilton Hotel, Sorrento, Italy

Abstract Deadline: Passed

Website: [www.ortra.com/solids](http://www.ortra.com/solids)

**Annual AIChE Meeting**

November 12-17, 2006, San Francisco Hilton, San Francisco, CA

(details will be available in February 2006)

**International Aerosol Conference 2006**

September 10-15, 2006, St. Paul, MN

Abstract Deadline: February 1, 2006

Website: <http://www.aaar.org/IAC06/index.htm>

**Southern Workshop on Granular Materials**

September 13-16, 2006, Viña del Mar, Chile

Website: <http://www.dfi.uchile.cl/~granular06/>

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## Officer and Committee Listing

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### Officers:

Chair 2004-2006: Professor Alan Weimer, [alan.weimer@colorado.edu](mailto:alan.weimer@colorado.edu), 303-492-3759

Vice-Chair 2004-2006: Dr. Shrikant Dhodapkar, [sdhodapkar@dow.com](mailto:sdhodapkar@dow.com), 979-238-7940

Immediate Past Chair 2002-2004: Dr. Ralph D. Nelson, [erptmged@aol.com](mailto:erptmged@aol.com), 302-239-0409

Secretary 2004-2006: Dr. Pat Spicer, [spicer.pt@pg.com](mailto:spicer.pt@pg.com), 513-634-9628

Treasurer 2004-2006: Professor Judy Raper, [raperj@umr.edu](mailto:raperj@umr.edu), 573-341-7518

### Liaisons:

Academic 2002-2006: Professor Hugo S. Caram, [hsc0@lehigh.edu](mailto:hsc0@lehigh.edu) 610-758-4259

Academic 2002-2006: Professor Brij Moudgil, [BMoudgil@erc.ufl.edu](mailto:BMoudgil@erc.ufl.edu) 352-846-1194 x 225

Academic 2004-2008: Professor Christine Hrenya, [hrenya@colorado.edu](mailto:hrenya@colorado.edu), 303-492-7689

Academic 2004-2008: Professor Judy Raper, [raperj@umr.edu](mailto:raperj@umr.edu), 573-341-7518

Industry 2002-2006: Professor Manuk Colakyan, [colakymc@dow.com](mailto:colakymc@dow.com), 304-747-4580

Industry 2002-2006: Dr. Costas Coualaloglou, [costas.a.coualaloglou@exxonmobil.com](mailto:costas.a.coualaloglou@exxonmobil.com)

Industry 2004-2008: Dr. Ray Cocco, [raycocco@mac.com](mailto:raycocco@mac.com), 989-631-1166

Industry 2004-2008: Dr. Pat Spicer, [spicer.pt@pg.com](mailto:spicer.pt@pg.com), 513-634-9628

AICHe-CTOC: Esin Gulari, [egulari@nsf.gov](mailto:egulari@nsf.gov), 703-292-7026

AICHe Staff Associate: Ms. Anette Ngijol, [anets@aiche.org](mailto:anets@aiche.org), 212-591-7478

### Standing Committees (Chairs):

Awards Committee 2004-2006: Dr. Shrikant Dhodapkar, [sdhodapkar@dow.com](mailto:sdhodapkar@dow.com), 979-238-7940

Education: Professor George Chase, [gchase@uakron.edu](mailto:gchase@uakron.edu), 330-972-7943

Membership: Dr. Manuk Colakyan, [colakymc@ucarb.com](mailto:colakymc@ucarb.com), 304-747-4580

Newsletter Editor: Professor Christine Hrenya, [hrenya@colorado.edu](mailto:hrenya@colorado.edu), 303-492-7689

Nominations: Dr. Ralph Nelson, [erptmged@aol.com](mailto:erptmged@aol.com), 302-239-0409

Recognition: Professor Sotiris Pratsinis, [pratsinis@ivuk.mavt.ethz.ch](mailto:pratsinis@ivuk.mavt.ethz.ch), 41-1-732-3180

World Congress 2006: Professor George Klinzing, [klinzing+@pitt.edu](mailto:klinzing+@pitt.edu), 412-624-0784

## **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

<u>Position</u>	<u>Person</u>	<u>Affiliation</u>
Area 3 Liaison	<b>Dr. Manuk Colakyan</b>	The Dow Chemical Co.
Area 3 Vice Liaison	<b>Prof. Alan Weimer</b>	University of Colorado
<i>Group 3a – Particle Production and Characterization</i>		
Chair	<b>Prof. Rajesh N. Dave</b>	New Jersey Inst. of Technology
Vice-Chair	<b>Vacant</b>	
<i>Group 3b – Fluidization and Fluid-Particle Systems</i>		
Chair	<b>Prof. T.C. Ho</b>	Lamar University
Vice Chair	<b>Dr. Ray Cocco</b>	The Dow Chemical Co.
<i>Group 3c – Solids Flow, Handling, and Processing</i>		
Chair	<b>Prof. Joe McCarthy</b>	Univ. of Pittsburgh
Vice Chair	<b>Dr. James Davis</b>	Procter & Gamble Co.
<i>Group 3d - Nanoparticles</i>		
Chair	<b>Dr. George Fotou</b>	Cabot, Inc.
Vice Chair	<b>Professor Yangchuan Xing</b>	University of Missouri
<i>Group 3e – Energetic Materials</i>		
Chair	<b>Bruce Cranford, P.E.</b>	EMF Co.
Vice Chair	<b>Chester Clark</b>	Naval Surface Warfare Center



## Report from the Treasurer

### PTF Report from the Treasurer

The transactions for the PTF account from the time period 01/01/05 through 07/31/05 are given in the table below:

Description of Transaction	Transaction Amount	Balance
<b>Beginning Balance 01/01/05</b>		<b>\$12,891.33</b>
<b>Expenses 01/01/05-07/31/05</b>		
Supplies – special purpose	\$ 140.92	
Travel – AIChE Division Leaders Mtg	\$ 300.00	
Newsletter Expenses	\$ 281.65	
Web-Site maintenance	\$ 233.70	
Miscellaneous Services and Expenses	\$ 22.72	
PTF Dinner Deposit for Cincinnati	\$ 500.00	
<b>Total expenses for period</b>	<b>\$1,478.99</b>	\$11,412.34
<b>Revenues 01/01/05-07/31/05</b>		
Dues Income	\$1,571.54	
Contributions - Corporate	\$1,000.00	
Contributions - private	\$ 50.00	
Investment Income - Interest	\$ 566.36	
<b>Total income for period</b>	<b>\$3,187.90</b>	
		<b>\$14,600.24</b>

Respectfully submitted,  
Professor Judy Raper, Treasurer

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## From the Editor's Desk

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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

**Professor Christine M. Hrenya**  
**Department of Chemical and Biological Engineering**  
**University of Colorado**  
**Boulder, CO 80309-0424**  
**Tel: (303) 492-7689; Fax: (303) 492-4341**  
**email: [hrenya@colorado.edu](mailto:hrenya@colorado.edu)**

If you would prefer to continue receiving a hard copy of the newsletter instead of the electronic version, please send a note to this effect to the editor at the above address.

Advertisements may also be placed in the newsletter. The rates on a per issue basis are:

1/4 page \$40

1/2 page \$60

Full page \$110

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## Moving? New E-mail?

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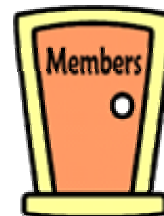
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Help us get PTF news to your new address by filling in and e-mailing a change of address form. See the PTF web page at

<http://www.erpt.org/ptf/addrchng.txt>





## 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: \_\_\_\_\_

Work Phone: \_\_\_\_\_ FAX: \_\_\_\_\_

Email: \_\_\_\_\_

**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)

Make payable to **Am. Inst. of Chem. Engineers**. Mail with form to the address below.

credit card (only VISA or MasterCard are accepted)

I agree to pay the amount checked-off above to the **Am. Inst. of Chem. Engineers**

3 Park Avenue, New York, NY 10016-5991, United States of America

according to the merchant agreement through my  VISA or my  MasterCard

Card Number: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ Expiration Date \_\_\_\_ / \_\_\_\_

Cardholder's Signature \_\_\_\_\_ Date: \_\_\_\_\_

Cardholder's Daytime Telephone Number: \_\_\_\_\_

Print cardholder's name and address below if different from CONTACT INFORMATION:

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Mail to the address below or FAX to (212)-591-8888 (in the United States)

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