

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

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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.

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In this issue	
News and Announcements	2
♦ Letter from the Chair	_
♦ 2007 AIChE Annual Meeting	2
♦ 2007 AIChE PTF Meetings in Salt Lake	
◆ PTF Awards	6
♦ PTF Sponsors Best Paper Awards	8
PTF Award Lectures	
◆ PTF Banquet Dinner	_
◆ ICR Mini-Symposium on Granular Materials	
and Ageing	10
♦ "Know Floe's Korner"	
Upcoming Conference Calendar	
PTF Organizational Information	14
♦ Officer and Committee Listing	14
♦ Report from the Treasurer	16
♦ From the Editor's Desk	
◆ Moving? New E-mail?	
♦ Membership Information	

PTF Newsletter Fall 2007

LETTER FROM THE CHAIR



The AIChE annual meeting will be held in Salt Lake City this year. Salt Lake City has a special significance for our particle technology community. Over 50 years ago, Dr. Andrew Jenike set up the Bulk Solids Flow Laboratory at the University of Utah to conduct research in bulk solids flow. His pioneering work on bin/hopper flow theory is still considered as the gold standard and practiced today to design bins/hoppers/silos. We will be honoring his legacy during the meeting through special sessions sponsored by the PTF.

As a community, we have thrived and expanded during the past decade. Inclusion of Nanoparticle Technology and Energetic Materials to our portfolio has helped us embrace new research fronts. I hope that we continue this trend in the future.

Particle technology plays a key role in pharmaceutical engineering. We have cosponsored a number of exciting sessions with "Pharmaceutical Engineering for the 21Century" topical. My sincere thanks to Manuk Colakyan and Ecevit Bilgili for their hard work in putting together an excellent technical program.

For many years, we have discussed ways to encourage good quality presentations at the meeting and inclusion of papers in the conference proceedings. The PTF Executive Committee agreed last year to sponsor best paper awards *for each group*. The award consists of a plaque with specific citation from AIChE/PTF. The session chairs (all sessions sponsored or co-sponsored by the PTF) will forward one nomination from their session to the respective group chairs. Each group chair, co-chair and a distinguished peer will review the nominations and select the best paper. The awards will be given during the PTF banquet next year.

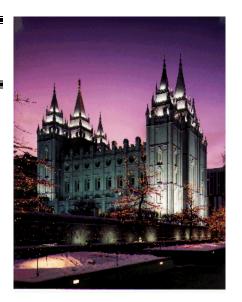
I am looking forward to an exciting meeting this year and hope to see you at Salt Lake City.

Shrikant Dhodapkar Chair, Particle Technology Forum

2007 AIChE Annual Meeting

November 4-9, 2007 Salt Lake Convention Center Salt Lake City, UT

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



Day of			
Week	Start Time	Session Title	Location
Sunday 12:30 PM		Panel Discussion – Industrial Scaleup of Nanopar-	M – Salon G&H (Marriott
		ticles and Systems (03D06)	Salt Lake City -Downtown)
Monday	8:30 AM	Dynamics and Modeling of Particulate Systems I	M – Salon G&H (Marriott
		(03C00)	Salt Lake City –Downtown)
Monday	8:30 AM	Fundamentals of Fluidization (03B00)	Room 251F (Salt Palace
			Convention Center)
Monday	8:30 AM	Liquid-Phase Synthesis of Nanomaterials and	M – Salon H (Marriott Salt
		Particles (03D00)	Lake City-Downtown
Monday	12:30 PM	Circulating Fluidized Beds (03B02)	Room 251F (Salt Palace
			Convention Center)
Monday	12:30 PM	Dynamics and Modeling of Particulate Systems II	M – Salon D (Marriott Salt
		(03C01)	Lake City-Downtown)
Monday	12:30 PM	Gas Phase Synthesis of Nanoparticles (03D04)	M – Salon H (Marriott Salt
			Lake City-Downtown)
Tuesday	8:30 AM	Functional Nanoparticles and Nanocoatings on	Grand Ballroom H (Salt Palace
		Particles-I (03D02)	Convention Center)
Tuesday	8:30 AM	Memorial Session Honoring Andrew Jenike	Grand Ballroom G (Salt Palace
		(03C03)	Convention Center)
Tuesday	12:30 PM	Functional Nanoparticles and Nanocoatings on	Grand Ballroom H (Salt Palace
		Particles-II (03D03)	Convention Center)
Tuesday	12:30 PM	Legacy of a. Jenike's Silo Theory and Future	Grand Ballroom G (Salt Palace
		Challenges for Silo Design (03C04)	Convention Center)
Tuesday	12:30 PM	Tutorial on Emerging Technologies in Fluidization	Room 250 E (Salt Palace
		and Fluid-Particle Systems (03B06)	Convention Center)
Tuesday	3:30 PM	Computational and Numerical Approaches to	Room 250 F (Salt Palace
		Particle Flow (03B04)	Convention Center)

News and Announcements

Tuesday	4:30 PM	Particle Technology Forum Poster Session (03001)	Exhibit Hall B (Salt Palace Convention Center)	
Wednesday	8:30 AM	Applications of Fluidization (03B01)	M – Salon B (Marriott Salt Lake City-Downtown)	
Wednesday	8:30 AM	Functional Nanoparticles and Nanocoatings on Particles-III (03D09)	Grand Ballroom H (Salt Palace Convention Center)	
Wednesday	8:30 AM	Solids Handling and Processing (03C02)	M – Salon F (Marriott Salt Lake City-Downtown)	
Wednesday	12:30 PM	Functional Nanoparticles and Nanocoatings on Particles-IV (03D10)	Grand Ballroom H (Salt Palace Convention Center)	
Wednesday	12:30 PM	Particle Technology Forum Award Lectures (03000)	M – Salon F (Marriott Salt Lake City-Downtown)	
Wednesday	3:30 PM	Characterization of Engineered Particles and Nano- Structured Particles (03A03)	M – Salon B (Marriott Salt Lake City-Downtown)	
Wednesday	3:30 PM	Piloting and Scale-up of Particles Processes (03C05)	M – Salon F (Marriott Salt Lake City-Downtown)	
Wednesday	3:30 PM	The Fluidized Bed Reactor (03B05)	M – Salon I (Marriott Salt Lake City (Downtown)	
Thursday	8:30 AM	Modeling and Scaleup of Nanoparticle Processing (03D01)	Grand Ballroom H (Salt Palace Convention Center)	
Thursday	8:30 AM	Nano-Energetic Materials (03E00)	M – Salon F (Marriott Salt Lake City-Downtown)	
Thursday	8:30 AM	Transport in Fluidized Systems (03B03)	M – Salon B (Marriott Salt Lake City-Downtown)	
Thursday	12:30 PM	Applications of Engineered Structured Particulates (03002)	M – Salon D (Marriott Salt Lake City-Downtown)	
Thursday	12:30 PM	Energy Systems in Fluidization and Fluid-Particle Systems (03B07)	M – Salon B (Marriott Salt Lake City-Downtown)	
Thursday	12:30 PM	Processing and Safety of Energetic Materials (03E01)	M – Salon F (Marriott Salt Lake City-Downtown)	
Thursday	12:30 PM	Strength and Breakage of Nanoagglomerates (03D07)	Grand Ballroom H (Salt Palace Convention Center)	
Thursday	3:30 PM	Environment & Lifecycle Issues Related to Energetic Materials (03E02)	M – Salon F (Marriott Salt Lake City-Downtoan)	
Thursday	3:30 PM	Health and Environmental Effects of Nanoparticles (03D08) Grand Ballroom H (Salt Pala Convention Center		

2007 AIChE PTF Meetings in Salt Lake



PTF Executive Committee: Sunday, November 4, 5:00-6:00 pm, Marriott Downtown, Solitude (Main Floor)

General PTF Meeting: Monday, November 5, 6:00-7;00 pm, Salt Palace Convention Center, Room 251F (Upper Level)

Group 3A Meeting: Monday, November 5, 11 am-2:00 pm, Salt Palace Convention Center, Room 155B (Lower Level)

Group 3B Meeting: Monday, November 5, 11:00am to 12:00 pm, Salt Palace Convention Center, Room 155C (Lower Level)

Group 3C Meeting: Tuesday, November 6, 11:00 am-12:00 pm, Salt Palace Convention Center, Room 251B (Upper Level)

Group 3D Meeting: Tuesday, November 6, 11:00 am-12:00 pm, Salt Palace Convention Center, Room 251A (Upper Level)

Group 3E Meeting: Thursday, November 8, 11:00 am-12:00 pm, Marriott Downtown, Ballroom F (Main Floor)

PTF Awards

Particle Technology Forum Award

(Sponsored by DuPont)

Dr. L. T. Fan

Contact Details:

Department of Chemical Engineering Kansas State University

Award Description:

Recognizes outstanding contributions in the field of particle technology, teaching of particle technology (as evidenced by the aggregate contributions of the nominee's PhD students to the field) and the advocacy of particle technology within industry, academia, and government.



Thomas Baron Award in Fluid-Particle Systems

(Sponsored by Shell Global Solutions)

Dr. John Grace

Contact Details:

Department of Chemical and Biological Engineering The University of British Columbia

Award Description:

Recognizes an individual's outstanding scientific/technical accomplishment which has made a significant impact in the field of fluid-particle systems or in a related field with potential for cross-fertilization.



Lectureship Award in Fluidization

(Sponsored by Particulate Solid Research, Inc.)

Professor Jennifer Sinclair Curtis

Department of Chemical Engineering University of Florida

Award Description:

Recognizes an individual's outstanding scientific/technical research contributions with impact in the field of fluidization and fluid-particle flow systems.



Fluidized Processing Recognition Award

(Sponsord by Shell)

Ye-Mon Chen Shell

Award Description:

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.



Best Ph.D in Particle Technology

(Sponsored by Procter & Gamble)

Mahesh V. Iyer, Ph.D. Shell Global Solutions, Inc.

Award Description:

Recognizes an outstanding original dissertation in particle science and engineering.



PTF Sponsors Best Paper Awards

Particle Technology Forum (Group 3) is sponsoring five awards (one for each group 3a, b, c, d and e) to recognize the best papers (oral presentation and written) during the conference. The objective of the best paper awards is to encourage high quality paper/presentation at PTF session by recognizing excellence.



All sessions sponsored and co-sponsored by PTF (Group 3) are included. This includes sessions in cosponsored Topicals (e.g. "Topical I: Pharmaceutical Engineering for the 21Century" this year)

BEST PAPER/PRESENTATION CRITERIA:

- I. High quality presentation
- II. High quality of research (content)
- III. Documentation: Inclusion of manuscript in conference proceedings. The documentation policy will be strictly enforced next year since we have not publicized the criteria early.

EVALUATION PROCESS:

- a. Each session chair/co-chair will nominate ONE paper for the best paper category from their respective sessions.
- b. Group chairs will collect this information from the session chairs.
- c. Group chair, cochair plus one "renowned member" to review all the inputs from session chairs and determine the BEST paper award for their respective subgroup (Group 3a / 3b / 3c/ 3d / 3e). The evaluation process should be concluded by March 31. The winners will be informed immediately.

THE AWARD:

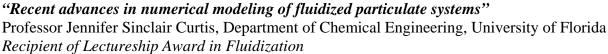
Award plaques to be presented during following year's PTF Award Banquet. (Only one plaque will be given for each best paper regardless of the number of authors)

PTF Award Lectures

Wednesday, November 7 12:30 – 3:00 Marriott - Salon F

"Non-uniform distribution of flows through parallel identical paths associated with gas-fluidized beds"

Professor John Grace, Department of Chemical and Biological Engineering, The University of British Columbia Recipient of Thomas Baron Award in Fluid - Particle Systems





Date: Wednesday, November 7, 2007 Time: 6:30 – 7:30 pm, reception

7:30-10:00, dinner and awards

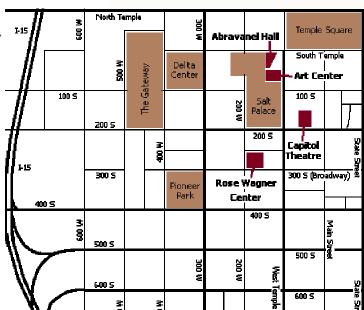
presentation

Location: Abravanel Hall, 123 S.

West Temple, Salt Lake City

Dinner

Ticket: \$65 per person





ICR: Mini-Symposium on Granular Materials and Ageing



Dear colleague,

I am writing to invite you to submit an abstract for one of the Granular Flow sessions at the International Congress of Rheology, 2008, to be held at Monterey, California, from 3-8 April 2008. The Congress, which convenes every four years, is the premier forum for the world's leading rheologists to present and discuss the latest advances in the field.

Melany Hunt and I are organising a mini-symposium on granular flows at the International Congress of Rheology to be held at Monterey, California, from 3-8 August, 2008. The details of the Congress can be found at www.rheology.org/icr2008/

This mini-symposium has four sessions, and abstracts can be submitted directly on the web site. We request you to consider submitting an abstract to any of the granular sessions of interest to you. Please note that the deadline for abstracts for oral submissions is 15 November 2007, and authors will be informed of acceptance by 15 February, 2008.

The deadline for poster contributions is February 29, 2008.

This promises to be a meeting with a strong technical content. An added attraction is the fact that this meeting will take place in Monterey, California in the middle of summer, and the Congress includes an exciting social program. We invite you to participate in the Congress.

Best wishes.

V. Kumaran

"Know Floe's Korner"

ogy ogy

Bits of Advice to Researchers in Particle Technology

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



- 1. Don't think that any problem is too fundamental or an experiment too simple to yield new information. Often times the value of research extends beyond the immediate scope of study. Thoroughly define the experimental conditions so that valid comparisons can be made by other researchers.
- 2. It has been said that... "Without experiments modeling is sterile and without modeling experiments are futile". Having a balance between the two approaches is essential.
 - Have Passion, Show Persistence, Keep Patience (3 Ps) while tackling difficult problems.
 - Consider using statistical data exploration tools (e.g. JMP, Minitab) to understand underlying trends and effect of key variables.
 - Use DOE (Design Of Experiments) to economize experimental effort where appropriate.
 - Experimentalists and modelers should collaborate so relevant data is generated and realistic models are developed.
 - Simplify problem as much as possible, but no simpler!! (paraphrasing Einstein). For instance, by limiting our studies to spherical and mono-size particles we miss the important affects of particle shape and size distribution.
 - If you are told that what you are attempting to do is impossible, think hard about the realities. Then figure out how to prevail... because that is the way to break new grounds.
- 3. In general, look for research topics with industrial relevance. This is not to say that exploring purely curiosity driven research is not useful. However, it may take a while to have a full appreciation of this research. Its value is not easily calculable, but great discoveries come this way.
 - Devising experiments that utilize an existing plant within routine production operations is an economical way to undertake full-scale investigations.
 - Seek out industrial cooperation and partnerships. This relationship can build trust
 and confidence and often can provide funding resources and generate future employment opportunities for students. These students will then become your champions in the industry.
 - Taking concepts from lab scale curiosity to commercial success is a long and tortuous road. The ability to make it happen is a valuable trait.

- 4. Do not get trapped into using only the "standard" methods of measurements. Often times, you have to invent a new technique. While "out-of-box" thinking is more challenging and risky, it has the potential of creating paradigm shifts. Take full advantage of advances in electronics and computers in your measurement systems.
- 5. Try to understand the physics on a particle level wherever possible. This will provide a strong base for your theories and analyses.
 - Avoid correlations without physical basis.
 - Always document ideas which did not work and why they did not. Be curious to follow up on your failures to understand underlying factors.
 - Identifying causes and solutions in a systematic manner may enable phenomenon to be better predicted.
- 6. Think about creating a critical mass of expertise in specific areas but have a broad appreciation of related domains to avoid "tunnel vision" in research. Explore research themes with industrial colleagues to seek their practical experience and application expertise.
- 7. Do not assume that electronic searches will be comprehensive. Much of particle technology literature is still not electronically searchable.
 - Particle technology is multi-disciplinary field. Look for information in various domains – such as chemical, petrochemical, polymers, agricultural, pharmaceutical, mining, mechanical, physics, geomechanics, food, aeronautics and ceramics. Compartmentali-zation of published literature and lack of awareness across various disciplines often results in reinvention.
 - Extend your search to patent literature make it global. There is a huge body of teachings in the patent literature which does not make it into journal publications.
 - Think "cross-pollination". How can you take ideas from one domain and apply it to the other?
 - Opportunities can be found at the "interface" between various disciplines and technologies. Seek them out!
 - Do not underestimate the value of patents and intellectual property. Protect, understand and exploit it to your advantage.
- 8. Be willing to challenge established models and their assumptions. Acquire new validation data or seek to test the models against broadest range of existing data. Utility and validity of a model is not necessarily proportional to its complexity.
- 9. Financial resources are needed to conduct and implement research. Being aware of the various funding sources is imperative. National Science Foundation (e.g. GOALI program), Departments of Energy and Defense (US government), National Institute of Health, Small Business Interaction agencies SBIRs and STTRs, research consortiums (e.g. IFPRI) and company specific research funding are good sources for US based researchers. Remember, networking opens up many funding opportunities.
- 10. Knowledge and intellect is ubiquitous. Be willing to partner across the globe. Seek out partnership & collaboration with others with complementary skill sets. Academics should consider short industrial sabbaticals while industrial researchers should consider short leave of absence in a University environment.

Acknowledgement: The authors would like to thank Professor Al Weimer for his comments and suggestions.

Upcoming Conference Calendar



2007

Annual AIChE Meeting

November 4-9, 2007, Salt Palace Convention Center, Salt Lake City, Utah

Abstract Deadline: May 14, 2007

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

2008

Particulate Processes in the Pharmaceutical Industry II

January/February 2008, San Juan, Puerto Rico Online request: www.engconfintl.org/8ap.html

The 9th International Conference on Circulating Fluidized Beds

May 13-16, 2008, Hamburg, Germany

Abstract deadline: passed Website: http://www.cfb9.org

Gordon Research Conference on Granular and Granular-Fluid Flow

June 22-27, 2008, Colby College, Maine

Applications due: June 1, 2008

Website: http://www.grc.org/programs.aspx?year=2008&program=granular

The XVth International Congress on Rheology: Mini-Symposium on Granular Materials and Ageing

August 3 - 8, 2008, Monterey, California

Abstract deadline: November 15, 2007 (oral) and February 29, 2008 (posters)

URL: http://www.rheology.org/ICR2008/default.aspx

Annual AIChE Meeting

November 16-21, 2008, Philadelphia Marriott & Pennsylvania Convention Center, Philadelphia, PA

Website: http://www.aiche.org/Conferences/Calendar/2008.aspx

Officer and Committee Listing



Officers:

Chair 2006-2008 Dr. Shrikant Dhodapkar, sdhodapkar@dow.com, 979-238-7940 Vice-Chair 2006-2008: Professor Hugo S. Caram, hsc0@lehigh.edu, 610-758-4259 Immediate Past Chair 2004-2006: Professor Alan Weimer, weimera@colorado.edu, 303-492-3759

Secretary 2006-2008: Dr. Patrick Spicer, spicer.pt@pg.com, 513-634-9628

Treasurer 2006-2008: Professor Joseph McCarthy, mccarthy@engr.pitt.edu, 412-624-7362

Liaisons:

Academic 2004-2008: Professor Christine Hrenya, hrenya@colorado.edu, 303-492-7689

Academic 2004-2008: Professor Rajesh N. Dave, dave@njit.edu, 973-596-5860

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

Industry 2004-2008: Dr. Ray Cocco, raycocco@mac.com, 989-631-1166

Industry 2004-2008: Dr. Patrick Spicer, spicer.pt@pg.com, 513-634-9628

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

AIChE-CTOC: Dr. Joseph Cramer, josec@aiche.org, 313-577-3767

AIChE Staff Associate: Mr. Simon Spitalny, simos@aiche.org, 212-591-7478

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/<u>hsc0@lehigh.edu.edu</u>, 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

<u>Position</u> <u>Person</u> <u>Affiliation</u>

Group 3a – Particle Production and Characterization

Chair **Dr. Patrick Spicer** Procter & Gamble Co. CETL

Vice-Chair **Prof. M. Silvina Tomassone** Rutgers University

Group 3b – Fluidization and Fluid-Particle Systems

Chair **Dr. Ray Cocco** Dow Chemical Co.

Vice Chair **Prof. Jesse Zhu** Univ. of Western Ontario

Group 3c – Solids Flow, Handling, and Processing

Chair **Dr. James Davis** Procter & Gamble Co.

Vice Chair **Prof. Benjamin Glasser** Rutgers University

Group 3d - Nanoparticles

Chair **Professor Yangchuan Xing** University of Missouri-Rolla

Vice Chair

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



Treasurer's Report Joseph McCarthy, PTF Treasurer – 10/21/07

In my second report, I am finally coming fully up to speed on the AIChE account. Despite the fact that the last report was sent in February, I received the 2006 final account data from AIChE after that, and things got a bit interesting. After much detective work my numbers balance and can all be attributed to a reasonable credit/debit. The only odd expense coming from a correction from 2005 that I am unable to verify (since I only became treasurer in late 2006). From here on out, these should be unequivocal.

AIChE Account	Starting	Income	Expenses	Balance
As of 11/30/2006	\$14,055.92	2		
Investment Income (Dec.)		\$704.55		
Investment Income (April)		\$200.88		
Investment Income (June)	1	\$751.79) [']	'
Investment Income YTD				\$952.67
Dues Income - Divisions (Dec.)		\$35.00)	
Dues Income - Divisions (Jan.)		\$885.00)	
Dues Income - Divisions (Feb.)		\$210.00)	
Dues Income - Divisions (Mar.)		\$180.00)	
Dues Income - Divisions (Apr.)		\$225.00)	
Dues Income - Divisions (May)		\$120.00)	
Dues Income - Divisions (June)		\$90.00)	
Dues Income - Divisions (July)		\$78.00)	
Dues Income - Divisions (Aug)		\$600.00)	
Total Dues YTD				\$2,388.00
Registration Income - Special Events		\$195.00)	
Contributions – Al Weimer		\$500.00)	
Contributions – PSRI		\$1,000.00)	
Contributions - Dupont		\$1,000.00)	
PTF Dinner Awardees			\$0.00	
Conference Restaurant – Payment			\$0.00	
Supplies - Special Purpose (Plaques)			\$0.00	
Miscellaneous Exp (Election)			\$0.00	
AIChE correction from 2005			\$2,500.00	
Totals as of 02/01/2007	\$14,055.92	\$6,775.22	2 \$2,500.00	\$18,331.14
Pitt Account	Starting	Income	Expenses	Balance
As of 01/24/2007	\$1,432.68	.		
Add'l Plaque (Area 3e)	ψ1, 102.00	•	\$63.00	
Miscellaneous Exp (bank fee)			\$22.39	
Web Hosting			\$119.70	
Totals as of 02/01/2007	\$1,432.68	\$0.00	·	

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

Professor Christine M. Hrenya
Department of Chemical and Biological Engineering
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Boulder, CO 80309-0424
Tel: (303) 492-7689; Fax: (303) 492-4341

email: 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

Moving? New E-mail?



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 INFORM	MATION (print or ty	/pe):
Name:		Title:
Category (check only	one): AIChE Member	r [# if you are a member =]
	Not an AIChE n	nember
Company or Universi	ty:	<u></u>
Address:		
City:	State: ZIP	e: Country:
Work Phone:	FA	AX:
Email:		<u></u>
75.00 \$US for five which is provided as a second with the second which is provided as a second with the s	MENT (check and fillen \$US on a U.S. bank of to Am. Inst. of Cheminternational money or to Am. Inst. of Chem VISA or MasterCard at the amount checked-of the merchant agreement [Amount of Inst. of Inst. of Inst. of Chem VISA or MasterCard at the amount checked-of the merchant agreement [Amount of Inst. of Ins	ff above to the Am. Inst. of Chem. Engineers 6-5991, United States of America through my VISA or my MasterCard/ Expiration Date/ Date: below if different from CONTACT INFOMATION: 0 (212)-591-8888 (in the United States)

3 Park Avenue

New York, NY 10016-5991