PTF Newsletter

Particle Technology Forum

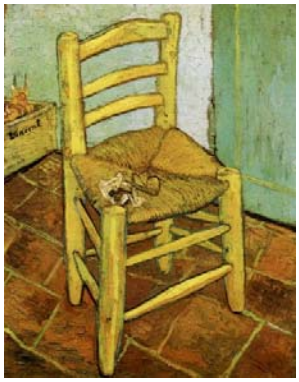
AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

Vol. 11 No. 2 Spring 2006

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



The PTF programming at the Annual Meeting in Cincinnati appeared to be well received. We had good attendance at all of the sessions that I attended and I credit part of the success to our tenacity at staying away from Friday sessions. We will continue to work towards this in our future programming. Also, we had a large crowd at our dinner and were particularly delighted to have our award winners in attendance as well as John Chen, President of AIChE and Joe Cramer, Director of Programming. They both know PTF puts on a great banquet and that they are in the company of friends! We will plan on a banquet dinner in San Francisco on Wednesday as well. These two changes (no programming on Friday and dinner on Wednesday evening) seem to have been positive.

I want to encourage all PTF members to attend the Fifth World Congress on Particle Technology being held in Orlando (April 23-27) as part of (but separate venue, Disney's Dolphin Hotel) the AIChE Spring, 2006 meeting. This will be a significant event and I want to acknowledge up front the massive efforts being made by the Track Chairs, and particularly to George Klinzing, Shrikant Dhodapkar, Ralph Nelson, and Mark Bumiller. The PTF is co-sponsoring the Poster Session and so I encourage you to attend for social, science, and technology enrichment! In addition, we have worked with AIChE to provide a mechanism for attendees to join AIChE and the PTF during their registration or on-site. The WCPT5 is truly a global event and we are proud to be the 2006 organizer.

Finally, I want to acknowledge our new Area Chairs and Vice-chairs (3A: Raj Dave, Patrick Spicer; 3B: Ray Cocco, Jesse Zhu; 3C: Jim Davis, Ben Glasser; 3D: George Fotou, Chad Xing; 3E: Chester Clark, Charles Painter) and I want to encourage all members of PTF to consider getting more involved in PTF programming activities. I have been involved in PTF from the very beginning and for many years before PTF was founded. This is an exceptional group to be involved with. My interactions in both technical and social aspects of the PTF have been very satisfying for the duration.

On a concluding note, please consider submitting nominees for the PTF 2006 Awards (http://www.aiche.org/About/Awards/Division.aspx) by April 1, 2006. An Award Nomination Form can be obtained from the AIChE web site (http://www.aiche.org/uploadedFiles/About/Awards/gen_award_nom_form_06.doc). It should be completed and it along with the supporting documentation should be submitted directly to the Award's Chair, Dr. Shrikant Dhodapkar, B-1402, Solids Processing Lab, Engineering Sciences and Market Development, The Dow Chemical Company, Freeport, TX 77541; Ph: 979-238-7940; Fax: 979-238-0969; E-mail: sdhodapkar@dow.com.

Professor Alan Weimer
PTF Chair

Call for PTF Award Nominations

Send nominations to the Particle Technology Forum Awards Committee Chair, Dr. Shrikant Dhodapkar, B-1402, Solids Processing Lab, Engineering Sciences and Market Development, The Dow Chemical Company, Freeport, TX 77541; Phone: 979-238-7940; Fax: 979-238-0969; E-mail: sdhodapkar@dow.com.

Deadline: May 15, 2006

For more information, please visit the website:
http://www.aiche.org/About/Awards/Division.aspx

Best Ph.D. in Particle Technology Award

Sponsor: Procter and Gamble Company

Description: Recognizes an outstanding dissertation by an individual who has earned a doctoral degree. The dissertation can be in any discipline in the physical, biomedical or engineering sciences, but must be in particle science and engineering. Selection criteria include:

1. An outstanding original dissertation with relevance to particle technology.
2. The candidate must have received a doctoral degree within the last three calendar years prior to the year the award is given.

Nomination: Nominations can be made by any member of the Particle Technology Forum. Nominations should include

1) a letter of nomination
2) an extended abstract of up to six pages including a list of refereed publications resulting directly from that dissertation
3) no more than three supporting letters, all of which must be from institutions outside the one granting the dissertation
4) at least one letter from industry
5) The letter of nomination should include a critical review stating the value of the dissertation in terms of its originality, significance, and potential applications in the field of particle science and technology. The supporting letters may focus on any of these attributes.

Award: A plaque and a $500 honorarium.

Presentation: The award is presented at a Forum sponsored event during the AIChE Annual Meeting.

Past Recipients:

2005 Stephen Conway	2004 Ecevit Bilgili
2003 Stephen Tallon	2002 Himanshu Gupta
2000 H. Shinto	1999 R. Agnihotri
1998 P. Spicer	1997 C. M. Hrenya

Fluidized Processing Recognition Award

Sponsor: Dow Chemical Company Foundation

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.

Deadline: Awarded bi-annually in odd numbered years. Next award year is 2007.

Award: A plaque and a $500 honorarium.

Presentation: The award is presented bi-annually at a Forum sponsored event during the AIChE Annual Meeting.

Past Recipients:

2005 M. Colakyan	2003 H. Arastoopour
2001 D. King	1999 J. Chen
1997 A. W. Weimer	1995 L. Fan
1994 T. Allen	1993 W. Yang

Lectureship Award in Fluidization

Sponsor: PSRI

Description: Recognizes an individual's outstanding scientific/technical research contributions with impact in the field of fluidization and fluid-particle flow systems. Selection criteria include:
1. An outstanding contribution advancing fluidization or fluid-particle flow systems.
2. The awardee is required to deliver a keynote paper at the Fundamentals of Fluidization and Fluid-Particle Systems session of Area 3b during the AIChE Annual Meeting. The awardee is also required to submit a written manuscript. 3. Membership in the Particle Technology Forum or AIChE is not required.

Nomination: Nomination package should include nomination letter, detail biographical information and at least three supporting letters.

Award: A plaque and a $1,000 honorarium.

Presentation: The award is presented at a Forum sponsored event during the AIChE Annual Meeting.

Past Recipients:

2005 S. Mori	2004 Ye Mon Chen
2003 Norman Epstein	2002 Dimitri Gidaspow
2001 M. Horio	2000 W. Yang
1999 H. Arastoopour	1998 J. Werther
1997 M. Kwauk	

Particle Technology Forum Award

Sponsor: E.I. duPont de Nemours & Company

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.

Nomination: Nomination package should include nomination letter, detail biographical information, summary of significant contributions to particle technology and at least three supporting letters.

Award: A plaque and $1,000 honorarium.

Presentation: The award is normally presented at a Forum sponsored event at the AIChE Annual Meeting.

Past Recipients:

2005 Joerg Schwedes	2004 George Klinzing
2003 Chi Tien	2002 Brian Kaye
2001 S. K. Friedlander	2000 B. Scarlett
1998 A. W. Jenike	1997 R. Davies
1996 K. Leschonski	1995 R. Pfeffer

Thomas Baron Award in Fluid-Particle Systems

Sponsor: Shell Global Solutions (US)

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. Selection criteria include: 1. An outstanding contribution advancing fluid-particle systems, or a related field. 2. The awardee is invited to deliver a Plenary Lecture at an AIChE Annual Meeting session. The awardee is also required to submit a written manuscript.

Nomination: Nomination package should include nomination letter, detail biographical information and at least three supporting letters.

Award: A plaque and $1,000.

Presentation: The award is presented at a Forum sponsored event at the AIChE Annual Meeting.

Past Recipients:

2005. S. Sundaresan	2004 D. Ramakrishna
2003 Sotiris Pratsinis	2002 Darsh Wasan
2001 L. White	2000 R. Pfeffer
1998 S.L. Soo	1997 R. C. Flagan
1996 D. D. Joseph	1995 J. C. Chen
1994 L. Fan	1993 R. Jackson

2006 AIChE Annual Meeting

November 12-17, 2006
San Francisco Hilton
San Francisco, California
URL: http://www.aiche.org/conferences/annual/

PTF Session	Chair	Co-Chair
Primary Sponsor Particle Technology Forum (03)	Alan W. Weimer Phone Number: 303-492-3759 Email: alan.weimer@colorado.edu	Shrikant Dhodapkar Phone Number: 979-238-7940 Email: sdhodapkar@dow.com
03001 Particle Technology Forum Poster Session	Shrikant Dhodapkar Phone Number: 979-238-7940 Email: sdhodapkar@dow.com	Joseph McCarthy Phone Number: 412-624-7362 Email: mccarthy@engrng.pitt.edu
03A00 Synthesis and Applications of Engineered Structured Particulates	Rajesh Dave Phone Number: 973-596-5860 Email: dave@NJIT.EDU	Silvina Tomassone Phone Number: 732-445-2972 Email: silvina@sol.rutgers.edu
03A01 Supercritical Fluids for Food and Pharmaceuticals	Rajesh Dave Phone Number: 973-596-5860 Email: dave@NJIT.EDU	Sandro R.P. DaRocha Phone Number: 313-577-4669 Email: sdr@eng.wayne.edu
03A02 Agglomeration and Granulation Processes	Paul Mort Phone Number: 513-627-8876 Email: mort.pr@pg.com	Rebecca L. Carrier Phone Number: 617-373-7126 Email: rebecca@coe.neu.edu
03A03 Population Balance Modeling for Particle Formation Processes: Nucleation, Aggregation and Breakage Kernels	Roger Place Phone Number: +44 1740 620688 Fax Number: +44 1740 623530 Email: rogerplace@compuserve.com	Edward P. Gatzke Phone Number: 803-777-1159 Email: gatzke@sc.edu
03A04 Dynamics and Modeling of Particles, Crystals and Agglomerate Formation	Roger Place Phone Number: +44 1740 620688 Fax Number: +44 1740 623530 Email: rogerplace@compuserve.com	Jan Sefcik Phone Number: +44 141 5482410 Fax Number: +44 141 5522302 Email: jan.sefcik@strath.ac.uk

PTF Session	Chair	Co-Chair
03B00 Fundamentals of Fluidization: in Honor of Prof. Bob Pfeffer on the Occasion of His 70th Birthday	L.S. Fan Phone Number: 614-292-4935 Email: fan.1@osu.edu	Marc-Olivier Coppens Phone Number: 00 31 15 2784748
03B01 Applications of Fluidization	Maureen A. Howley Phone Number: 973-596-3585 Fax Number: 973-596-8436 Email:howley@njit.edu	Bruce D. Hook, Sr. Phone Number: 979-238-1291 Email: bdhook@dow.com
03B02 Circulating Fluidized Beds	Isaac K. Gamwo Phone Number: 412-386-6537 Fax Number: 412-386-5920 Email: Gamwo@netl.doe.gov	Vasilis Papavassiliou Phone Number: 716-879-7130 Fax Number: 716-879-7567
03B03 Transport in Fluidized Systems	Kimberly H. Henthorn Phone Number: 573-341-7633 Fax Number: 573-341-4377 Email: henthork@umr.edu	S.B. Reddy Karri Phone Number: 773-523-7227 Fax Number: 773-523-7367 Email: rkpsri@ix.netcom.com
03B04 Computational and Numerical Approaches to Particle Flow	Pedro E. Arce Phone Number: 931-372-3189 Fax Number: 931-372-6352 Email: parce@tntech.edu	Jennifer S. Curtis Phone Number: 352-392-0882 Fax Number: 352-392-9513 Email: jcurtis@che.ufl.edu
03C00 Mixing and Segregation	Benjamin J. Glasser Phone Number: 732-445-4243 Fax Number: 732-445-2581 Email: bglasser@rutgers.edu	Bruce D. Hook, Sr. Phone Number: 979-238-1291 Email: bdhook@dow.com
03C01 Dynamics and Modeling of Particulate Systems	Kimberly H. Henthorn Phone Number: 573-341-7633 Fax Number: 573-341-4377 Email: henthork@umr.edu	Joseph McCarthy Phone Number: 412-624-7362 Fax Number: 412-624-9639 Email: mccarthy@engrng.pitt.edu
03C02 Solids Handling and Processing	Clive E. Davies Phone Number: 64 6 356 9099 Fax Number: 64 6 350 5604 Email: c.davies@massey.ac.nz	Jim Davis Phone Number: 513-983-1100 Email: davis.jl.2@pg.com
03D00 Characterization of Engineered Particles and Nano-Structured Particles	Gregory Beaucage Phone Number: 513-556-3063 Email: beaucag@uc.edu	CoChair

PTF Session	Chair	Co-Chair
03D01 Functional Nanoparticles and Nanocoatings on Particles I	Alan Weimer Phone Number: 303-492-3759 Fax Number: 303-492-4341 Email: alan.weimer@colorado.edu	Sotiris Pratsinis Phone Number: 1-632-3180 Fax Number: 1-632-1595 Email: pratsinis@ptl.mavt.ethz.ch
03D02 Gas Phase Synthesis of Particles	Lutz Madler Phone Number: 310-500-8736 Fax Number: 310-206-4107 Email: lutz@seas.ucla.edu	Karsten Wegner Phone Number: 41 1 632 2490 Fax Number: 41 1 632 1595 Email: wegner@ptl.mavt.ethz.ch
03D03 Functional Nanoparticles and Nanocoatings on Particles II	George Fotou Phone Number: 505-563-4275 Fax Number: 505-342-2168 Email: george_fotou@cabot-corp.com	Rajesh Dave Phone Number: 973-596-5860 Fax Number: 973-642-7088 Email: dave@NJIT.EDU
03D04 Nanoparticle Manipulation and Separation	Yangchuan Xing Phone Number: 573-341-6772 Fax Number: 573-341-4377 Email: xingy@umr.edu	Benjamin Fuchs Phone Number: 302-695-2146 Fax Number: 302-695-3501
03D05 Modeling and Scaleup of Particle Processing	Roger Place Phone Number: +44 1740 620688 Email: rogerplace@compuserve.com	Herbert Riemenschneider Phone Number: 251-443-2400
03D06 Health and Environmental Effects of Nanoparticles	Richard C. Flagan Phone Number: 626-395-4383 Email: flagan@cheme.caltech.edu	Alan W. Weimer Phone Number: 303-492-3759 Fax Number: 303-492-4341 Email: alan.weimer@colorado.edu
03D07 Multiscale Modeling of Nanoparticle Systems	Silvina Tomassone Phone Number: 732-445-2972 Email: silvina@sol.rutgers.edu	Yee Chiew Phone Number: 732-445-0315
03E00 Nano-Energetic Materials	Jan A. Puszynski Phone Number: 605-394-1230 Email: Jan.Puszynski@sdsmt.edu	Bruce Cranford Phone Number: 301-340-0052
03E01 Processing and Safety of Energetic Materials	Dilhan M. Kalyon Phone Number: 201-216-8225 Email: dkalyon@stevens.edu	Bruce Cranford Phone Number: 302-340-0052
03E02 Energetic Materials: Environmental and Life Cycle Issues	Charles R. Painter Phone Number: 301-744-6772 Email: paintercr@ih.navy.mil	Erica Becvar Phone Number: 210-536-4314 Email: erica.becvar@brooks.af.mil

WCPT5

WCPT5 - Designed to Help You Build Your Career!

by Ralph Nelson, vice chair for Technical Programming

We are now completing the final months of preparing for the Fifth World Congress on Particle Technology (WCPT5) on April 23-27. Some 750 presentations have been accepted and we expect a comparable number of registrants to enjoy the fine meeting facilities at the Dolphin Hotel in the Disney World complex near Orlando FL. Sponsors are subsidizing costs in several important areas, vendors will display the latest advances in instrumentation and equipment to an international audience of academics and industrial practitioners. The majority of participants are likely to be non-U.S., so this will be a good opportunity to meet colleagues from other nations and to let them hear about the good work being done in the U.S.

Even if you are not registered for WCPT5 please check out our Web site at www.wcpt5.org. It has changed considerably as we have finalized the track and session topics, named plenary speakers and tutorial leaders. There will be a student conference in the several days before the Congress itself, and several international coordinating bodies (IFPRI, ISO) are taking advantage of the gathering to have their own meetings just before or after the WCPT5. The PTF agreed to participate in an AIChE test of a Web-based interactive system for tutorials. We are grateful to PTF chair Al Weimer (Univ. Colorado) and PTF member Jesse Zhu (Univ. Western Ontario), who volunteered to have their tutorials broadcast live.

A BIT OF HISTORY: This is the first time that the Congress has ever been held in the Americas. The first Congress was held in Japan in 1990, and it was supposed to be held in the Americas in 1994, but the PTF had just been formed and was not ready for such a large task, so the Congress was held in Nuremberg, Germany, instead. The next two Congresses were held in Brighton, England, in 1998 and Adelaide, Australia, in 2002. For the fifth Congress PTF chair George Klinzing led the Americas (PTF) team to an early start, establishing a committee, preparing a proposal, and gathering support from other particle technology organizations in the Americans outside the U.S.

Joe Cramer, Program Director for the AIChE, suggested that the AIChE could provide the organizational framework for the meeting (instead of contracting it to a private conference management service, as had been done for the Australian meeting). This meant that we would use the same abstract submission and scheduling programs that we were used to using and that the negotiations for hotel space, collection of extended abstracts, production of the conference CD, registration services, etc., would be done by a single agency in which we had strong confidence. The AIChE agreed to move its Spring meeting to a later date than usual to allow co-

location of the two meetings, providing additional bargaining power for hotel facilities and eliminating the staff schedule problems of managing two meeting held at different times.

I started a Web site to keep the world community aware of the upcoming meeting and to provide a resource site for the thirty members of the World Assembly of Particle Technology who were serving as monitors and advisors. While chair of the PTF I visited several particle technology conferences in the U.S. (the Powder and Bulk Solids Conference) and Europe (Partec / Powtech) to publicize the WCPT5, the PTF, and also the AIChE (which no longer had funds to send a staff person). Jesse Zhu, vice chair of the Congress, a member of the PTF, and representing the Canadian chemical engineering community, publicized the Congress at Congresses in China. Mark Bumiller (Malvern Instruments), former secretary of PTF, publicized the WCPT5 during his extensive business travel in South America and kept the vendor community aware of the Congress as he participated in exhibitions around the world.

Shrikant Dhodapkar, vice chair of the PTF and chair of Technical Programming for WCPT5, undertook the daunting task of securing and organizing the leadership for five tracks (10 leaders) containing about 100 sessions (200 leaders). Fortunately he has excellent background for the job – having served as program chair for several PTF Topical Symposia. Meanwhile George Klinzing was utilizing the breadth of contacts and negotiating skills honed through his administrative positions and international activities to secure plenary speakers, sponsors, advertising in major particle technology publications, and opportunities for the papers at the WCPT5 to be published in the major technical journals in the field. He also patiently listened to our difficulties, helped us resolve them, and smoothed ruffled feathers when communications were unclear or planning went astray.

It was an anxious summer, as we reminded and reminded people but had only 200 papers submitted two day before the deadline. However 500 papers were submitted in the next 48 hours, ensuring success. During the next several months authors, session chairs, and track chairs were busy exchanging Emails as the abstracts were evaluated, moved as needed between sessions, sessions were juggled on the grid to avoid conflicts for the session leaders and presenters, and the inevitable drop-outs and late submissions were dealt with. This activity was interspersed with the more mundane details of selecting a conference logo and bag, getting the CD titled properly, deciding on an affordable banquet menu, and securing funds for the farewell mixer.

After all this work we are ready for a great Congress, and we expect participants to have a memorable and enjoyable and profitable time. Are you ready to join us?

Now, a word to the young. There's nothing like working on a good team to give you an appreciation for (and perhaps to learn) strong leadership skills. The World Congress will return to the Americas in 2018. We hope that the Particle Technology Forum will still be a vigorous force within the AIChE. We hope that there will be stronger technical organizations in our sister nations in the Americas to share the burden of organization, contribute fine presentations, and enjoy our world fellowship. So pay attention at this Congress, take time to participate in the Congresses of 2010 and 2014, and you'll be well-prepared to play a senior role in organizing the WCPT8 somewhere in the Americas in 2018.

Gordon Research Conference on Granular and Granular-fluid Flows: Young Scholars Nominations

Gordon Research Conference on Granular and Granular-fluid Flow, The Queen's College Oxford, UK, July 23-28, 2006

ANNOUNCEMENT AND CALL FOR APPLICATIONS/NOMINATIONS FOR SHORT PRESENTATIONS BY YOUNG SCHOLARS

As part of the GRC on Granular and Granular-Fluid flow, young scholars (PhD students, post-doctoral fellows, other young scientists and engineers within three years of completing their PhDs, but who have not yet assumed permanent positions) will be invited to give short presentations. Four short presentations are planned, each of ten minutes duration followed by a five minute question and discussion period. The invitees will also have the opportunity to present a poster in the poster sessions following the short presentations. The organizers hope to provide full registration costs to the invitees, contingent on pending requests for funding.

The Gordon conferences provide a unique forum for the exchange of fresh scientific ideas. The guiding principles of the conference include the presentation of new, unpublished work followed by free, unhampered discussion among all participants. The latter is aided by GRC's "off the record" policy, which prohibits the publication of conference proceedings or the recording or photography of sessions. Attendance is limited to ~130 participants, and all participants are encouraged to stay for the whole conference. The programme for the 2006 GRC on Granular and Granular-Fluid Flow is available at http://www.grc.org/programs/2006/granular.htm

The Organizing Committee (Professors Behringer, Brady, Clement, Gray, Hrenya, Jenkins, Louge, Mucha, Nott, Poschel, Shinbrot, Weeks) invites applications or nominations for the short presentations. The application should include the following:

1) An abstract of the presentation (not more than a page), highlighting the main contribution of the work, its novelty, and significance
2) A letter of nomination and recommendation from the advisor or mentor of the scholar, stressing on the impact and originality of the work, and the contribution of the scholar
3) The CV of the scholar (in which the scholar's full contact details, including email, are given)

All the above should be sent to: Prabhu Nott (prnott@chemeng.iisc.ernet.in), by March 31, 2006. Email is the preferred mode of communication, but if that is not possible, fax or mail is OK. The full contact details are given below.

The selection of the speakers will be made by a panel and communicated to the applicants before April 30, 2006.

ETH Short Course

Announcement for Short Courses on Modelling and Computation of Multiphase Flows
Part I: Bases
Part IIA: New Reactor Systems and Methods or
Part IIB: Computational Multi-Fluid Dynamics (C*M*FD)
Part III: C*M*FD with Commercial Codes

March 20-24, 2006
Hosted by the Swiss Federal Institute of Technology (ETH)
Zurich, Switzerland.

Multiphase flows and heat transfer with phase change are of interest to researchers and engineers working in power, nuclear, chemical-process, oil-and-gas, cryogenic, space, micro-technology, and other industries. Courses similar to this one have been offered in the past at Stanford University, the University of California-Santa Barbara, and for 22 years now at ETH-Zurich; over 1300 participants attended the Zurich courses.

The courses are organised in a modular form as intensive introductory courses for persons having basic knowledge of fluid mechanics, heat transfer, and numerical techniques, but also serve as advanced courses for specialists wishing to obtain the latest information.

Part I, **Bases** covers the common background material and emphasises the latest modelling and computational aspects of multiphase flows.

The **New Reactor Systems and Methods** part IIA reviews some of the most recently proposed advanced reactor system designs (including those in Generation IV) and introduces the state-of-the-art and beyond in modelling and simulation methods for core design and accident analysis.

The module IIB on **Computational *Multi*-Fluid Dynamics (C*M*FD)** reflects the growing interest in the application of CFD techniques to multi-phase flows; it is continuously updated to cover most new computational techniques.

The **C*M*FD with Commercial Codes** module III is attached to both Parts IIA and IIB. The participants will have the possibility to meet the main commercial code developers and discuss their products.

General discussion sessions with all the lecturers have been added this year to give to the participants the opportunity to bring their problems and discuss them in class.

Course language: English

Lecturers: S. Banerjee, D. Bestion, M.L. Corradini, G. Hetsroni, G.F. Hewitt, S. Lo, G. Scheuerer, G. Tryggvason, S. A. Vasquez, G. Yadigaroglu and S. Zaleski.

For further information contact (preferably by e-mail):

Prof. G. Yadigaroglu
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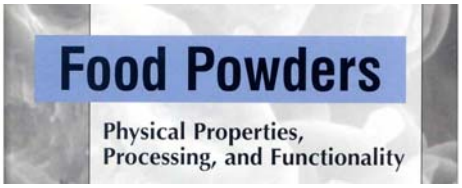
e-mail: yadi@ethz.ch
Internet: http://www.ascomp.ch/ShortCourse

New Textbook: Food Powders



Food Powders: Physical Properties, Processing, and Functionality

Gustavo V. Barbosa-Cánovas, Enrique Ortega-Rivas, Pablo Juliano, and Hong Yan

Kluwer Academic/Plenum Publishers

Food powders represent a large fraction of the many food products available in the food industry, ranging from raw materials and ingredients, such as flours and spices, to processed products like instant coffee or powdered milk. Food powders can be distinguished not only by their composition and microstructure, but also by particle size, size distribution, chemical and physical properties, and functionality. Historically, a number of unit operations have been developed and adopted for the production and handling of different food powders. Information on the physical properties, production, and functionality of food powders has been published, mainly through research and review articles, reports in trade magazines, and symposia presentations. This is likely the first book ever authored that addresses key aspects of food powder technology.

This book was designed and developed as a useful reference for individuals in both the food industry and academic interested in an organized and updated review, from an engineering perspective. The book consists of twelve chapters including several tables, figures, diagrams, and extensive literature citation, and covers as thoroughly as possible a fascinating field of study and practical applications. The first section of the book (Chapters 1-3) deals with food powder characterization. Chapter 1 presents statistical concepts related to powder sampling as well as techniques, equipment, and procedures for optimal sampling. Single particle-related properties and their evaluation are covered in Chapter 2, which includes particle size and shape, density, size distribution, surface area, and moisture. Chapter 3 describes in detail the bulk powder properties, giving special attention to flow, packing, strength, and instant properties.

The second part of the book describes, analyzes and provides tools needed for the design of a typical unit operation, as related to production, handling, and processing of food powders. Chapter 4 includes useful information about storage alternatives for food powders, as well as flow patterns, together with the analysis of natural and assisted discharge from bins. Chapter 5 covers typical food powder transportation systems utilized during processing, which includes belts, chain, screw and pneumatic conveyors, among other conveying systems. Size reduction, and conversely, size enlargement processes are covered in Chapters 6-8. Reduction of larger food pieces or particles, including energy requirements and equipment used, is described in Chapter 6. Particle enlargement methods, fundamentals, and other design aspects are described in Chapter 7. A specific case on particle size enlargement, i.e., particle encapsulation, can be found in Chapter 8 with focus on the methods used for the production of different food capsules.

Chapter 9 analyzes in depth fundamentals aspects and the design of food particle mixing systems, while Chapter 10 deals with dry powder separation and classification technology. The most widely encountered process in food particle production is drying, a subject covered in Chapter 11 that includes relevant drying systems commonly used in the food industry. Last but not least, in Chapter 12 four key undesirable phenomena occurring during food particle handling, processing and testing—namely particle attrition, segregation, bulk caking, and dust explosion—are addressed. A thorough description of each phenomenon is given, including evaluation tests, methods for minimization, and mechanisms of action.

We truly hope this book will be a valuable addition to the food powder technology literature and will promote additional interest in advancing food powders research, development, and implementation.

2005 AIChE Annual Meeting
Student Poster Award Winners

First Place
Mr. Michael Weimer
"Particle ALD Based Ultrafast Electrical Surge Protection Devices"
Department of Electrical Engineering
University of Colorado

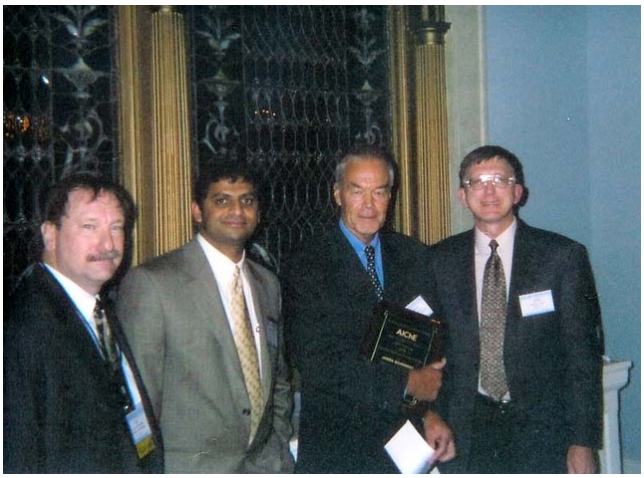
Second Place
Ms. Adetola Abatan
"Approaches to Non-Brownian Particle Migration in a Stirred Tank Flow"
Department of Chemical and Petroleum Engineering
University of Pittsburgh

Third Place
Mr. Preeteanshu Pandey
"Studies to Investigate Variables Affecting Coating Uniformity in a Pan Coating Device"
Department of Chemical Engineering
West Virginia University

Snapshots: 2005 AIChE Annual Meeting

Awardees for Nov 2005

Particle Technology Forum Award
Joerg Schwedes (Techn. Univ. Braunschweig)



Al Weimer, Shrikant Dhodapkar, Joerg Schwedes, and Tim Bell (DuPont)

Thomas Baron Award in Fluid-Particle Systems
Sankaran Sundaresan (Princeton Univ.)

Shrikant Dhodapkar, Sankaran Sundaresan, and Al Weimer

Best Ph.D. in Particle Technology Award
Stephen Conway (Rutgers Univ.)

Poster Session Awards

"Know Floe's Korner"

Top Ten Tips to Minimize Attrition

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

1. Attrition occurs due to fracture of particles or abrasion of particle surfaces. Identify the primary bulk behaviors responsible for attrition in a given process. Typical behaviors are: sliding, dilated flow, bulk shear, impact and particle trapping.

2. Identify relevant particle properties affecting attrition in the process or unit operation under consideration. Important particle properties include shape, particle size, particle size distribution, particle density, porosity, surface texture & hardness, elasticity, plasticity, brittleness and imperfections (e.g. cracks).

3. Bench top tests must emulate the primary bulk behaviors responsible for attrition. When evaluating attrition in a process, pay close attention to sampling technique and errors due to sampling.

4. Attrition can be minimized either through ***Particle Engineering*** (i.e. modification of particle properties to make a robust particle) and/or ***Process Engineering*** (i.e. controlling primary flow behaviors to minimize particle fracture and abrasion).

5. Minimize free fall and impact frequency. Employ spirals or cascades to reduce impact forces during loading operations. Use broad, deep and slow feed streams on chutes. Try to ensure contact velocities are low, oblique to contact surfaces and employ resilient contact materials to reduce sharp, concentrated loads.

6. Avoid shearing the bulk in confined or high stress conditions. Allow room for local expansion when shearing a settled powder bed. Reduce contact pressures and strain rate as far as practical.

7. Allow generous working clearances that will not trap or wedge particles.

8. Minimize overpressures on extracting devices in hoppers. Move the material slowly wherever possible, and expand the flow channel at changes of flow direction.

9. Converge a flow stream gently in dilated low velocity conditions by way of smooth contact surfaces. Avoid slip on rough surfaces, past flow obstructions or surface irregularities.

10. Choose dense phase (low velocity) pneumatic conveying as compared to dilute phase (high velocity) pneumatic conveying whenever possible. Pay particular attention to the conveying line layout to minimize bends or elbows.

Upcoming Conference Calendar

2006

The Fifth World Congress on Particle Technology

April 22-26, 2006, Orlando FL

Abstract Deadline: Passed

Website: http://www.wcpt5.org

Dygram 2006 Workshop: Granular Dynamics, Jamming, Rheology and Instabilities

June 19-23, 2006, Rennes, France

Abstract Deadline: March 3, 2006

Website: http://dygram2006.univ-rennes1.fr/ (in French)

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

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/

Annual AIChE Meeting

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

Abstract Deadline: May 1, 2006
Website: http://www.aiche.org/Conferences/AnnualMeeting/index.aspx

Granular Matter Summer School and Workshop on Granular Materials

December 4-8, 2006, The Australian National University, Canberra

Abstract Deadline: May 26, 2006
Website: http://wwwrsphysse.anu.edu.au/granularmatter/

2007

The 12th International Conference on Fluidization: New Horizons in Fluidization Engineering

May 13-17, 2007, Harrison Hot Springs – near Vancouver, BC (Canada)

Abstract Deadline: Passed
Website: http://www.engconfintl.org/7afbody.html

Annual AIChE Meeting

November 4-9, 2007, Salt Lake, UT

Officer and Committee Listing

Officers:

Chair 2004-2006: Professor Alan Weimer, alan.weimer@colorado.edu, 303-492-3759
Vice-Chair 2004-2006: Dr. Shrikant Dhodapkar, sdhodapkar@dow.com, 979-238-7940
Immediate Past Chair 2002-2004: Dr. Ralph D. Nelson, erptmged@aol.com, 302-239-0409
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Treasurer 2004-2006: Professor Judy Raper, raperj@umr.edu, 573-341-7518

Liaisons:

Academic 2002-2006: Professor Hugo S. Caram, hsc0@lehigh.edu 610-758-4259
Academic 2002-2006: Professor Brij Moudgil, BMoudgil@erc.ufl.edu 352-846-1194 x 225
Academic 2004-2008: Professor Christine Hrenya, hrenya@colorado.edu, 303-492-7689
Industry 2002-2006: Professor Manuk Colakyan, colakymc@dow.com, 304-747-4580
Industry 2002-2006: Dr. Costas Coulaloglou, costas.a.coulaloglou@exxonmobil.com
Industry 2004-2008: Dr. Ray Cocco, raycocco@mac.com, 989-631-1166
Industry 2004-2008: Dr. Pat Spicer, spicer.pt@pg.com, 513-634-9628
AIChE-CTOC: Esin Gulari, egulari@nsf.gov, 703-292-7026
AIChE Staff Associate: Ms. Anette Ngijol, anets@aiche.org, 212-591-7478

Standing Committees (Chairs):

Awards Committee 2004-2006: Dr. Shrikant Dhodapkar, sdhodapkar@dow.com, 979-238-7940
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Membership: Dr. Manuk Colakyan, colakymc@ucarb.com, 304-747-4580
Newsletter Editor: Professor Christine Hrenya, hrenya@colorado.edu, 303-492-7689
Nominations: Dr. Ralph Nelson, erptmged@aol.com, 302-239-0409
Recognition: Professor Sotiris Pratsinis, pratsinis@ivuk.mavt.ethz.ch, 41-1-732-3180
World Congress 2006: Professor George Klinzing, 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

Position	Person	Affiliation
Area 3 Liaison	**Dr. Manuk Colakyan**	The Dow Chemical Co.
Area 3 Vice Liaison	**Professor Alan Weimer**	University of Colorado
Group 3a – Particle Production and Characterization		
Chair	**Prof. Rajesh N. Dave**	New Jersey Inst. of Technology
Vice-Chair	**Dr. Patrick Spicer**	Procter & GambleCo. CETL
Group 3b – Fluidization and Fluid-Particle Systems		
Chair	**Dr. Ray Cocco**	The Dow Chemical Co.
Vice-Chair	**Professor Jingxu Zu**	Univ. of Western Ontario
Group 3c – Solids Flow, Handling, and Processing		
Chair	**Dr. James Davis**	Procter & Gamble Co.
Vice-Chair:	**Professor Benjamin Glasser**	Rutgers University
Group 3d - Nanoparticles		
Chair	**Dr. George Fotou**	Cabot, Inc.
Vice Chair	**Professor Yangchuan Xing**	University of Missouri
Group 3e – Energetic Materials		
Chair	**Chester Clark**	Naval SurfaceWarfare Center
Vice Chair	**Charles Painter**	Naval Surface Warfare Center

Report from the Treasurer

American Institute of Chemical Engineers – Particle Technology Forum
Annual Report – For the Period January 1 – December 31, 2005

The following report is split into two separate sections. The first table details transactions associated with the checking account that is administered by the treasurer. The second table reflects the funds administered by AIChE headquarters. The combination of the funds in these two accounts represents PTF's total assets. It should be noted that a $100 balance is maintained in a Colorado account that may be used for transactions of WCPT5.

Total Assets of PTF as of 01/01/05 = $2434.70 + $100.00 + $10,502.13 = $13,036.83
Total Assets of PTF as of 12/31/05 = $ 445.56 + $100.00 + $14,222.97 = $14,773.53

Respectfully submitted

Judy Raper
Treasurer, PTF

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
University of Colorado
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 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):
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