

CAPD e-Newsletter, April 2007

<http://capd.cheme.cmu.edu>

Dear CAPD member,

Welcome to the CAPD e-Newsletter!

We hope this newsletter will have information that is of interest to you.

Best regards, Ignacio Grossmann

- We would like to welcome Paragon Decision Technology who joins GAMS Development and Dash Optimization as a software donor member of CAPD. Paragon markets AIMMS, a modeling system that a number of the CAPD companies are using. The contact person from Paragon Decision Technology will be Gertjan de Lange.

- Annual Review Meeting

The Annual Review Meeting of CAPD took place on March 12-13, 2007. We had a record attendance of 37 participants from industry (ABB, Air Products, Aspen Technology, Bayer, BP, Cargill, Dash Optimization, Dow Chemical, Eastman Chemical Company, GAMS, ExxonMobil, Honeywell, Paragon Technologies, NETL, NOVA Chemicals, Paragon Decision Technology, PETROBRAS, PPG, Simsci-Esscor/Invensys, Sunoco Chemicals, Total). On the first day we had research overviews of the faculty, six excellent industrial presentations and a poster session. The dinner this year took place at Monterey Bay Fish Grotto Restaurant. On the second day, we had the presentations by last year students as well a special session on Modeling Systems (see below). You can access an electronic version of the agenda, list participants and slides presented at the 2007 CAPD Annual Review Meeting in:

<http://www.cheme.cmu.edu/internal/capd2007.zip>

Please take note that the next Annual Review Meeting will take place on **March 10-11, 2008**.

- Modeling Systems session. As a new feature, we had a special session on modeling systems at the Annual Review Meeting that was well received. Speakers presented overviews of AIMMS, GAMS, Dash and SIMPL. Slides of these presentations can be found in:

http://egon.cheme.cmu.edu/ewocp/docs/aimms_cmu.pdf

http://egon.cheme.cmu.edu/ewocp/docs/GAMSpresentation_CMU.pdf

http://egon.cheme.cmu.edu/ewocp/docs/Mosel_evolution.pdf

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- Short course

The CAPD short course will take place on June 6-12, 2007. The course is organized in three modules: Conceptual Design (6-6/6-7), Optimization (6-8/6-9), Operations (6-11/6-12). You can take one, two or all three modules. CAPD members receive a 25% discount. <http://capd.cheme.cmu.edu/shortcourse.html>

The detailed contents are described in:

http://capd.cheme.cmu.edu/shortcourse_details.htm

- Enterprise-wide Optimization

The project "Computational Models and Algorithms for Enterprise-wide Optimization of Process Industries," which is being funded by the Pennsylvania Infrastructure Technology Alliance (PITA), has continued with the participation of ABB, Air Products, BP, Dow Chemical, ExxonMobil and NOVA Chemicals. The last meeting took place right after the CAPD Meeting on March 13-14. The project involves a total of 7 Ph.D. students, and 5 faculty (CMU: Biegler, Grossmann, Hooker; Lehigh: Linderoth; UPitt: Schaeffer). A webpage describing this project, including seminar slides and meeting slides can be found in: <http://egon.cheme.cmu.edu/ewocp/>

Companies interested in participating in this research program should contact grossmann@cmu.edu

- Bayer Lecture in Process Systems Engineering. Professor Chris Floudas from Princeton University delivered this lecture on Tuesday, March 20. The title of his lecture was, "Advances and Challenges in De Novo Protein Design"

<http://www.cheme.cmu.edu/newsevents/news/archive/06-07/FloudasAbstract.pdf>

- Special Issue on Enterprise-wide Optimization (EWO) in *Computers & Chemical Engineering*. Kevin Furman and Ignacio Grossmann are editing this special issue. Papers are being sought that address EWO problems through deterministic and stochastic linear or nonlinear models, and effective solution algorithms that are aimed ultimately at the optimization of entire supply chains. Applications to real world problems and co-authorships with industrial researchers are strongly encouraged. The deadline for the submission of papers is April 30, 2007. Please submit your paper to *Computers & Chemical Engineering* website:

<http://ees.elsevier.com/cace/>

After you enter your username and password and login as an author, click submit new manuscript, enter title of your paper, and then choose article type: **Special Issue E.W.O.** Then proceed with the rest of submission as a normal paper.

If you do not have a username and/or password, please register in <http://ees.elsevier.com/cace/>

- Faculty News

Larry Biegler has been selected recipient of the 2007 CACHE Award for Excellence in Computing in Chemical Engineering Education. This award, sponsored by the CACHE Corporation, is presented for significant contributions in the development of computer aids for chemical engineering education. Larry was recognized for leadership in the development of strategies and methods for process optimization, particularly for the pioneering implementation of the successive quadratic programming (SQP) method in the process simulator FLOWTRAN that has allowed many students to optimize process flowsheets. The award consists of a plaque and a \$1,000 honorarium that will be

presented at the Chemical Engineering Division awards banquet held at the ASEE Annual Conference, June 24-27, 2007 in Honolulu, Hawaii.

http://www.asee.org/activities/awards/otherDivision.cfm#Chemical_Engineering_Division

Ignacio Grossmann delivered the lecture, "New Developments in Discrete-Continuous Optimization of Process Systems," Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, February 8, 2007. He also gave a keynote lecture "Computational Methods for Enterprise-wide Optimization of Process Industries," at the 2nd International Conference on Modeling, Simulation and Applied Optimization, on March 24 – 27, 2007, at the Petroleum Institute, Abu Dhabi, UAE.

Erik Ydstie delivered the lecture "Inventory and Flow Control in Complex Process Networks" at the University of Rhode Island on April 12, 2007. Two new PostDoc students have joined the research group. Sudhir Ranjan is a Chemist specializing in solar cells and synthesis. He is working on a new wafering technique for solar Silicon which is based on the float glass process for making flat glass. Wengtao Chen has joined from Tsinghua University. He will work on model synchronization for power systems. iLS has two new employees who will work on adaptive control and parameter estimation in the process industries. Keyu Li from CSU is going to work on industrial implementation of a MISO adaptive controller for ethane propane cracking with Dow and Superheater control in large coal fired and nuclear power plants. Richard Chan from Sidney is going to work on adaptive MPC for load dispatch control in complex power systems. Erik is giving a Department seminar at Queen's University in Kingston, Ontario, on April 26, 2007.

John D. Siirola (Ph.D. S2005) and his advisors Prof. Arthur W. Westerberg and Prof. Steinar Hauan have received the "Best Paper 2005" award in the journal *Computers & Chemical Engineering* (CCE) for their paper entitled "Computing Pareto Fronts using Distributed Agents" (*Computers & Chemical Engineering*, Volume 29, Issue 1, 15 December 2004, Pages 113-126).

- Student News

Christy White successfully defended her Thesis on Particulate Processes, April 17, 2007. She will be joining HTR in TX.

Juan Arrieta plans to defend his Ph.D. thesis in April. He will be joining McKinsey & Company in Mexico City.

Muge Erdirik plans to defend her Ph.D. thesis in August. She will be joining ExxonMobil in Fairfax, Virginia.

Vishnu Chapamaladugu is due to complete his MS thesis on IGCC modeling and control on May 10

Kendell Jillson defends his Thesis on Complex Process Networks, May 2, 2007. He will do a PostDoc on IGCC modeling and control.

Yoshiaki Karawajiri plans to defend his Ph.D. thesis in July.

Ramkumar Karuppiah also plans to defend his thesis in August.

-Webpages. The following sites might be of interest to you:

Virtual library on Process Systems Engineering:

<http://cepac.cheme.cmu.edu/pasilectures.htm>

You can access webpages of all PSE faculty in the Americas in:

<http://cepac.cheme.cmu.edu/country.htm>

- PSE/ESCAPE-17.

The following papers by CAPD faculty will be presented at that meeting

<http://www.escape17.upb.ro/>

Biegler, L. T., "Large-scale Nonlinear Programming: An Integrating Framework for Enterprise-Wide Dynamic Optimization"

Caballero, J.A., I.E.Grossmann,"Logic Based Algorithms for the Rigorous Design of Thermally Coupled Distillation Sequences"

Erdirik-Dogan, M., I.E. Grossmann, J. Wassick, "A Bi-level Decomposition Scheme for the Integration of Planning and Scheduling in Parallel Multi-Product Batch Reactors."

Gani, R. and I.E. Grossmann, "Process Systems Engineering and CAPE – What Next?"

Ortiga, J., J.C. Bruno, A. Coronas, I. E. Grossmann, "Review of Optimization Models for the Design of Polygeneration Systems in District Heating and Cooling Networks,

- DYCOPS-8th International Symposium on Dynamics and Control of Process Systems.

The following papers by CAPD faculty will be presented at that meeting

<http://www.dycops2007.org>

BAO, J. KR JILLSON and BE YDSTIE, Passivity Based control of Process Networks, to be published in Proc DYCOPS, Cancun, Mexico, June 2007.

DOZAL, YDSTIE, Stability and Robustness of Supervised Adaptive Predictive Control Using Dual Models to be published in Proc DYCOPS, Cancun, Mexico, June 2007.

THAKKER, DOZAL, YDSTIE, DYCOPS, Application of Supervised Adaptive Predictive Control Using Dual Models, to be published in Proc DYCOPS, Cancun, Mexico, June 2007.

- Upcoming meetings

AIChE Spring Meeting, April 22-27, 2007

Houston, Texas

<http://www.aiche.org/Conferences/SpringMeeting/index.aspx>

Conference on OR Practice 2007, April 29-May 1, 2007

Vancouver, Canada

<http://meetings.informs.org/Practice07/>

Workshop on Global Optimization: Methods and Applications

May 11-12, 2007, Fields Institute, Toronto

<http://www.fields.utoronto.ca/programs/scientific/06-07/globalopt/>

ESCAPE 17

May 27-30, Bucharest, Romania

<http://www.escape17.upb.ro/index.htm>

IFAC Symposium DYCOPS-8, June 4-6, 2007

Cancun, Mexico

<http://www.lingen.unam.mx/dycops-8>

American Control Conference (ACC), July 11-13, 2007

New York, USA

<http://a2c2.org/conferences/acc2007/>

Twelfth Conference on Integer Programming and Combinatorial Optimization

June 25-June 27, 2007, Cornell University

<http://ipco2007.orie.cornell.edu>

INFORMS Puerto Rico International 2007, July 8-11, 2007

Rio Grande, Puerto Rico

<http://meetings.informs.org/PuertoRico2007/>

Second Mathematical Programming Society International Conference on Continuous

OPTimization (ICCOPT), August 12-17, 2007, Ontario, Canada

<http://iccopt-mopta.mcmaster.ca/>

11th Conference on Stochastic Programming (SPXI), August 27-31, 2007

Vienna, Austria

<http://www.spxi.org/>

1st International Symposium on Sustainable Chemical Product and Process Systems Engineering (SCPAPSE 2007), September 23-26, 2007

South China University of Technology, Guangzhou, China
<http://www.scut.edu.cn/gct/>

INFORMS Annual Meeting, November 4-7, 2007
Seattle, WA
<http://meetings.informs.org/Seattle07/>

2007 AIChE Annual Meeting, November 4 -9, 2007
Salt Lake City, Utah
<http://www.aiche.org/Conferences/AnnualMeeting/index.aspx>

INFORMS Practice Conference: Applying Science to the Art of Business
April 13-15, 2008
Baltimore, Maryland

2008 AIChE Spring National Meeting, April 6-10, 2008
New Orleans, LA

SIAM Conference on Optimization (OP08), May 10-13, 2008
Boston, Massachusetts
<http://www.siam.org/meetings/calendar.php?id=191>

ESCAPE'18, June 1-4, 2008
Lyon, France
<http://www.escape18.org/>

2008 FOCAP0 Meeting, July 13 - 16, 2008
Marlborough, Massachusetts, USA
<http://www.focapo.org/>

18th Triennial Conference of IFORS, July 14, 2008 - July 18, 2008
Sandton, South Africa

INFORMS Annual Meeting 2008, October 12-15, 2008
Washington, DC

2008 AIChE Annual Meeting, November 16-21, 2008
Philadelphia, PA

2009 PSE'09 , Aug. 16-20, 2009
Salvador, Brazil
<http://www.cepema.usp.br/pse2009>

World Congress Chemical Engineering, Aug. 23-29, 2009
Montreal, Canada
<http://www.chemengcongress2009.com/>

