

## TRANSACTIONS OF THE FALL 2002 MEETING OF THE TEXAS TECH PROCESS CONTROL AND OPTIMIZATION CONSORTIUM

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<http://www.che.ttu.edu/pcoc/>

### HIGHLIGHTS

- The Fall 2002 meeting marks the 10<sup>th</sup> Anniversary of the Texas Tech University Process Control and Optimization Consortium meeting.
- **Workshop:** Prof. John MacGregor (McMaster Univ, Hamilton, Ontario) presented the workshop on “Closed-Loop Identification: An overview of 30 years of research”. The presentation included the definition of closed-loop identification and open-loop identification with pure feedback data (parametric and non-parametric methods); model validation; and conditions for identifiability of parametric models.

Handouts of the workshop can be found at [www.che.ttu.edu/pcos/pres/default.htm](http://www.che.ttu.edu/pcos/pres/default.htm). Please contact either Professor Riggs at (806) 742-1765 for login and password or Professor Hoo at (806) 742-4079 if assistance is needed.

The results of a questionnaire that was handed out to the workshop participants can be found at [www.che.ttu.edu/meetings/meetings.htm](http://www.che.ttu.edu/meetings/meetings.htm).

Seven students presented informative posters at the Hospitality Suite.

- **Panel Discussion:** A panel discussion followed the workshop. The panel members were Charles R. Culter (Cutler-Johnston Corp), John MacGregor (McMaster Univ.), and Derrick Kozub (Shell). There was lively discussion among the panelists and the participants on the issue of persistent excitation in closed-loop.
- **Prof Gilbert Froment** of Texas A & M, spoke on “Modeling of Complex Petroleum Refining and Petrochemical Processes.” He gave a general approach for the kinetic modeling of complex processes carried out on acid catalysts. The catalytic cracking of vacuum gas oil was used to demonstrate the approach. It can be concluded that this approach can be used for further developments of conceptual and operational aspects of catalytic cracking and of the required catalysts.
- **Dennis Carr** of Sensa (Houston, TX) gave an interesting presentation on “The Benefits of Using Optical Fiber Distributed Temperature Sensing Systems to Monitor Process Plants”. Sensa is associated with Schlumberger industries. Dennis described the use of a length of ordinary telecom grade optical fiber deployed within a distillation column to provide complete temperature profiles, or along a hazardous pipeline or within the annulus of an LNG storage tank looking for leaks, or around a high temperature reactor vessel monitoring for hot spots. Once reliable data are known, applications such as monitoring, fault detection,

control, optimization, and protection can be realized.

- **Scott Boyden** gave the third presentation on “One Potential Future of Emission Monitoring Regulations.” New regulatory procedures for electronic records of emissions monitoring are being developed by the US Environmental Protection Agency (US EPA). Topics he addressed included: What is the status of new EPA emissions monitoring regulations? What is US FDA 21CFR11? What are some of the implications of 21CFR11-like regulations to the process industries?
- **Student Presentations:** [Douglas \(Daguang\) Zheng](#) on “Reduced-order Modeling for Distributed Parameter System” and Rohit Kawathekar on “Nonlinear MPC”.
- Jim Riggs presented an overview of his research program.
- [Karlene](#) presented an overview of her research program. Major programs include (1) [Modeling and control of distributed processes](#) using a new system identification method. (2) [Transition control](#) using an adaptive state-shared model design in a model predictive control framework. (3) [Integrating process design](#) with operability and controllability considerations using a modular decomposition of the steady state flowsheet. (4) Phenomenological modeling [of black liquor falling film evaporators](#). Recent manuscripts on these can be found by accessing the underlined key words.
- There were representatives from six (6) visiting companies, in addition to the present membership, in attendance at the meeting. (See visitors below)
- We welcome Control Consulting Inc., who is now officially a sponsor of the PCOC.

## ATTENDANCE

### *Member Representatives*

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AspenTech  
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***Visitors***

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