

# ASEE Chemical Engineering Division Newsletter



## IN THIS ISSUE:

### MESSAGE FROM THE CHAIR

Pages 1: Conference Programming, Goals, Elections, Summer School, and more....

### ELECTIONS

Pages 2-8: Please vote for one candidate for Chair-Elect (Michael Prudich, or Brian Dickson), one candidate for Director. (Jeff Csernica, Lisa Bullard, or Arthur Felse), and one candidate for Secretary/Treasurer (Laura Ford). Check your email listed with ASEE for your personal link to your online ballot. Votes must be received by Friday, May 20th.

### 2012 SUMMER SCHOOL

Page 9: See the progress that our team has made planning for this outstanding workshop.

### PROGRAM FOR THE 2011 MEETING

Page 10-17: Program overview with 55 full paper contributions for the Vancouver meeting is included. Session moderators are noted. Please contact programming chair, Adrienne Minerick at [minerick@mtu.edu](mailto:minerick@mtu.edu) with questions.

## A Message from the Chair

Greetings Chemical Engineering Colleagues!

Spring has finally arrived in central Pennsylvania: the daffodils are in bloom, the basement is full of water, and the 4th years are evenly split between panic about finishing their design projects and senioritis. I hope similarly happy events are playing out on your campuses (except for the water in the basement, I don't wish that on anyone). Spring means two more things: time to plan your travel for ASEE and time to write your abstract for AIChE (due May 2!).

The upcoming meeting in Vancouver brings many exciting events to the ChemE Division. A record number of papers are being presented on a variety of topics (see page 10). We are pleased to introduce invited topical panels, a new addition to the division this year. Big thanks to Adrienne Minerick for organizing the program. Be sure to plan to attend the business meeting as well, to help shape the San Antonio meeting and beyond. Finally, you will not want to miss the view (or the company!) at the awards dinner- seats are limited, so get your ticket now!

The Chemical Engineering Division is also pleased to announce its support of the first ever Science, Engineering and Technology Student of the Year awards in North America. Given for over a decade in Europe, this marks the first year that these awards will be given on this side of the Atlantic. ASEE ChemE Division arranged for the volunteer judges for this competition; if you'd like to get involved, please consider nominating an exceptional student: <http://www.setawards.org/>

Chemical Engineers create and deliver (in quantity!) the raw materials of civilization. Bringing the standard of living of the seven billion people on Earth to the level they deserve, sustainably and reliably is an awesome responsibility. Looking at the program for the upcoming meeting, you can see that our colleagues are doing amazing work in chemical engineering education. And we need to. When you come to the conference, find an idea that's been demonstrated to be effective, and bring it home to your campus. When education improves, everyone wins. There are seven billion people out there, and only a tenth of a tenth of that many engineers. The world needs our students, and it needs them to be good. Let's make it happen.

Don't forget to vote for your next executive committee by May 20th!

Margot Vigeant, Bucknell University



# CHEMICAL ENGINEERING DIVISION ELECTION 2011

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Your involvement in selecting the next leaders of our division is welcomed and encouraged. We have an excellent slate of candidates for three positions: Division Chair-Elect, Director, and Secretary/Treasurer. Biographical information and Candidate's statements are included on the following pages.

**Choose one for Division Chair-Elect:**

**Brian Dickson  
Michael Prudich**

**Choose one for Director:**

**Lisa Bullard  
Jeff Csernica  
Arthur Felse**

**Choose one for Secretary/Treasurer:**

**Laura Ford**

We have a new voting system for 2011! The online election will be token-based, and each person listed in the ASEE ChED roll with a valid email address will receive an individual tokenized link to the election site.

**TO VOTE:**

- **Check your email listed with ASEE for your personal link to your online ballot.**  
***\*If you do not receive an email ballot, please contact David Silverstein at [SilverDL@engr.uky.edu](mailto:SilverDL@engr.uky.edu).***
- **Alternatively, you may print this page, neatly print your name at the top, then neatly circle your choices and fax to David Silverstein at 270-534-6317.**

**Votes must be received by Friday, May 20th, 2011**

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## *Position: Division Chair-Elect*

This person would serve one year as Chair-Elect and then serve as Chair in 2012-2013.

- 1) **Brian Dickson**
- 2) **Michael Prudich**

### **Brian R. Dickson**

Dept. of Chemical & Process Engineering  
University of Strathclyde, Glasgow, UK

My main teaching interests are assisting students to be “job ready and plan their career development. Here at Strathclyde, we are considered as a target recruitment market for Oil Majors and International Pharma and that in part is due to providing scope for students to build core business skills before graduating or as part of a Masters programme. My teaching and programme management activities have been a major contributor to that and it is an approach that I have shared in ASEE Conferences since 2002. (See below)

My involvement in this building of student skills comes from teaching responsibilities as a Senior Teaching Fellow, and Academic Selector for all pg taught full and part time courses.

My teaching duties include classes in:

- Undergraduate “Safety & Loss Prevention ”
- Post Graduate “Safety Management Systems” and also “Business Management Practices”
- PG Masters “Project Management”
- Supervisor of Group Projects on MSc in Chemical Processing

Further involvement includes:

- During the period 1997- 2008, I managed two distance learning MSc courses for industry-based students with a cohort of 65, with responsibility for the curriculum design; initial and ongoing recruitment; the specification and contracting of course material development, achieving IChemE accreditation, sponsorship and approved CPD status from the Royal Society of Chemistry.
- I have just completed a 3 year term as Director of the Graduate School of Engineering, where I was responsible for the Graduate School of Engineering and the management of its Strategy in particular: the development of new modules and flexible modes of delivery, support for funding applications for course development, the development of a multi-disciplinary Generic Soft Skills teaching programmes and the promotion of the courses to international markets including briefings to International Officers, Recruitment Agents and recruitment visits.

I have been an active member of ASEE since 2002 and normally attend Annual conferences on a two year cycle. During that period I have developed both a teaching and course development interest across the wide scope that ASEE offers and now believe that I can offer some of that experience to the Chemical Engineering Division along with having just completed a cycle of both undergraduate & post graduate chemical engineering programme reviews here at Strathclyde.



***Check your email listed with ASEE for your personal link to your online ballot.***

**Votes must be received by Friday, May 20th, 2011**

## *Division Chair-Elect cont...*

This person would serve one year as Chair-Elect and then serve as Chair in 2012-2013.

- 1) Brian Dickson
- 2) Michael Prudich

# Michael Prudich

Department of Chemical and Biomolecular Engineering  
Ohio University

A little bit about my background – I am a member for the CHE and ERM divisions of ASEE and have served as an abstract and paper reviewer for one or both divisions for quite a few years. I am also a member of the AIChE Education division. I continue to teach at all levels of the chemical engineering curriculum ranging from new freshman learning communities all the way through to Ph.D. specialty courses (once or twice during the same quarter). I am a teaching “jack-of-all-trades,” having at one time or other taught over one-half of the required courses in our chemical engineering curriculum. In the past I have been involved in the FYE (First Year Experience) program for the university-wide freshman class at Ohio. I’ve authored and co-authored several ChE Division papers over the years, served as a session chair, was the 2010 ChE division program chair (Louisville), and currently serve the division as a director.



I am currently a professor in the Department of Chemical and Biomolecular Engineering at Ohio University where I have also held several administrative positions (department chair, institute/center director, interim associate dean). Prior to joining Ohio University, I spent my time working for Gulf Oil Corporation near Pittsburgh, PA. I received all of my degrees from West Virginia University where I received an excellent education and learned to use a slide rule and to read nomographs. During my career my technical research focus has been in the area of energy and fuels.

My foci upon entering the sequence of offices that lead to division chair would be working towards defining and enhancing the relationship(s) between the ASEE ChE Division and the Education Division of AIChE, promoting participation in the ASEE by chemical engineering educators, and helping to continue the gains in chemical engineering participation realized for this year’s (Vancouver) annual conference.

***Check your email listed with ASEE for your personal link to your online ballot.***

**Votes must be received by Friday, May 20th, 2011**

## *Position: Director*

This person would serve as an advisor to the executive board for a term of 2 years.

- 1) **Lisa Bullard**
- 2) Jeff Csernica
- 3) Arthur Felse

## **Lisa Bullard**

Department of Chemical Engineering  
North Carolina State University

I appreciate your consideration for election as a Director for the Chemical Engineering Division of ASEE. I am currently an Alumni Distinguished Undergraduate Professor and Director of Undergraduate Studies in the Department of Chemical and Biomolecular Engineering at North Carolina State University. I received my BS in Chemical Engineering from NC State in 1986 and my Ph.D. in Chemical Engineering from Carnegie Mellon University in 1991. I served in engineering and management positions within Eastman Chemical Company from 1991-2000 before returning to join the faculty at NC State. I currently teach the material and energy balance course, a professional development seminar, and the senior design course at NC State. I truly love the combination of teaching and advising in my departmental role, and my previous industrial experience helps inform both of these activities.



My educational scholarship interests include teaching and advising effectiveness, academic integrity, process design instruction, and the integration of writing, speaking, and computing within the curriculum. I have been blessed with exceptional teaching mentors and collaborators, many of whom I met through ASEE and the CHE Division. I have attended ASEE and made presentations for 9 of the last 10 years (with the only year missed due to open heart surgery!) My commitment to engineering education is reflected in 14 peer reviewed articles and 32 presentations and conference proceedings in the area of educational scholarship.

I have been honored as the recipient of ASEE's Raymond W. Fahien Award (2010), ASEE's Joseph J. Martin Award (2007 and 2010), John Wiley Premier Award for Engineering Education Courseware (2009), NCSU Faculty Advising Award, National Effective Teaching Institute Fellow (2007), NCSU Alumni Outstanding Teacher Award (2005), George H. Blessis Outstanding Undergraduate Advisor Award (2005), ASEE's Southeastern Section New Teacher Award (2004), and ASEE-ERM Apprentice Faculty Grant Award (2003). I currently serve on the Editorial Board of Chemical Engineering Education.

If elected to serve as a CHE Division Director, I look forward to working with the division leadership to continue the strong programming at the ASEE Annual Conference and to implement the ASEE ChE Summer School in 2012. I also believe we have an opportunity to make resources shared at ASEE electronically available in a centralized fashion for easier access by ChE educators. I would like to continue the partnership with the newly energized AIChE Education Division. Each year I return from ASEE with new ideas, new contacts, and new motivation to be a better educator. I would like to see more of our colleagues have this same experience!

***Check your email listed with ASEE for your personal link to your online ballot.***

**Votes must be received by Friday, May 20th, 2011**

## *Position: Director cont...*

This person would serve as an advisor to the executive board for a term of 2 years.

- 1) Lisa Bullard
- 2) **Jeff Csernica**
- 3) Arthur Felse

## **Jeff Csernica**

Department of Chemical Engineering  
Bucknell University

I am happy to be considered for the open position of Director for the Chemical Engineering Division of ASEE. I have been on the chemical engineering faculty at Bucknell University since 1989, a full professor since 2003, and a member of ASEE since 1991. My chemical engineering degrees are from Lehigh (BS) and MIT (PhD), and I have held visiting positions during my academic career at MIT, Penn State (Materials Science), and the Colgate-Palmolive Company. I am a member of Tau Beta Pi and Phi Beta Kappa, and received Bucknell's Lindback Award for Distinguished Teaching in 2001.



Beyond a deep interest and commitment to the future of chemical engineering education, I believe that the breadth of roles I've had in my academic position make me well suited to provide informed insight and advice on a range of issues of potential interest to the Division. These personal experiences include: department chair since 2002, a time which included two ABET reviews, several curriculum modifications, and five new faculty hires with associated mentorship; two-time interim dean of engineering (student affairs-focused position); coordinator of our multidisciplinary first-year college engineering course; chair of our university-level promotion and tenure committee, and conference contributor (session chair, presenter, paper reviewer, etc.) for ASEE and AIChE. While my interests are broad, one area of particular importance for me is participation and mentorship of young faculty within the Division.

I appreciate the nomination and again, look forward to contributing if elected.

***Check your email listed with ASEE for your personal link to your online ballot.***

**Votes must be received by Friday, May 20th, 2011**

## *Position: Director cont...*

This person would serve as an advisor to the executive board for a term of 2 years.

- 1) Lisa Bullard
- 2) Jeff Csernica
- 3) **Arthur Felse**

# Arthur Felse

Department of Chemical & Biological Engineering  
Northwestern University

I consider it a great honor to be nominated for the Director's position in the Chemical Engineering Division of ASEE.

I am currently a Lecturer in the Chemical & Biological Engineering department and in the Master of Biotechnology Program at Northwestern University. I completed Ph.D. and post-doctoral training in the areas of fermentation engineering and biocatalysis respectively. My post-doctoral research on lipase-catalyzed polymerizations at New York University's Polytechnic Institute was recognized with the Presidential Green Chemistry Challenge Award in 2003. I have developed and taught courses at all levels in the ChE department at Northwestern University. My academic responsibilities are shared with the Master of Biotechnology Program which has given me an immense opportunity to teach and interact with non-engineering students. I am largely responsible for curriculum development for the Master of Biotechnology Program and also function as it's the research training coordinator. I am a member of ASEE's ChE, BME and CIP divisions, and the American Chemical Society. I will be organizing two special sessions at the ASEE Annual Conference in 2011 and have reviewed conference abstracts for the CHE division.



I will bring to this position a unique expertise in multi-disciplinary teaching and management. My experience in teaching freshmen to graduate level specialty courses gives me the ability to understand various types of ChE education. Teaching non-engineers has given me an opportunity to look at ChE education from not-so-obvious viewpoints. Operating as research coordinator for the Master of Biotechnology Program has given me the experience in managing a training program with over seventy faculty members spread across the schools Engineering, Sciences, and Medicine, and the industry.

I am looking at a future where the ChE discipline will experience a significant overlap with other science and engineering disciplines. As boundaries between disciplines become indistinct, I will use my cross-disciplinary experience to make this division a champion in preparing ChE students, educators, and practitioners who will play a significant role in addressing "future societal challenges" such as energy security, healthcare, sustainability, food and water security, climate change, etc.

If elected as Director, my primary commitment will be to actively engage with the Chair to accomplish the missions and goals of the ChE division. I will strive to promote exposure of ChE educators to emerging and futuristic challenges through appropriate special sessions and workshops. Being an enthusiast of internet communications, I will work to enhance our division's prominence through professional online tools such as LinkedIn and other information exchange platforms.

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## Secretary/Treasurer Candidates

**1) Laura Ford**

This person would serve as Secretary/Treasurer on the executive board for a term of 2 years.

### Laura Ford

Department of Chemical Engineering  
University of Tulsa

Laura Ford is an Associate Professor at the University of Tulsa. She earned her chemical engineering degrees at Oklahoma State University (BS) and the University of Illinois at Urbana-Champaign (MS and PhD). Her research areas are surface science of photovoltaic materials and hydrate dissociation modeling. She often teaches the senior lab courses. Her teaching interests are in getting students more involved in classes to promote better understanding.

Laura has been the Division's secretary/treasurer since June 2009 and looks forward to the possibility of serving as secretary/treasurer for another two years.



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**Votes must be received by Friday, May 20th, 2011**

## DON'T FORGET ABOUT THE INTERNET!

*By David Silverstein, Webmaster*



With the busy lives that faculty members lead both professionally and personally, it is easy to forget about a critical resource that has the potential to impact your life. They call this resource THE INTERNET. And on the internet you will find one resource with particular potential to influence your educational life—the ASEE Chemical Engineering Division Website, <http://www.asee-ched.org>!

The Division website is updated frequently with not only news from the ChE Division, but also with links to the newest sites with information you can use. Recent examples of current news include an updated listing of REU opportunities from Professor Michael Cutlip; nomination resources for Division awards; and as always the most current edition of this newsletter.

Consider using the ASEE Chemical Engineering Division Website for dissemination of your latest educational project, news item of interest to the chemical engineering education community, or anything else you'd like to see made visible to others with a passion for chemical engineering education. Submissions should be made to David Silverstein, ChED Webmaster, [SilverDL@engr.uky.edu](mailto:SilverDL@engr.uky.edu).

**<http://www.asee-ched.org>**

## 2012 SUMMER SCHOOL

*Joseph A. Shaeiwitz, Randy S. Lewis, Jennifer S. Curtis, John J. Hwalek, Greg Ogden, and Kim Ogden*



Plans continue for the next Chemical Engineering Summer School which will be July 21-26, 2012, at the University of Maine in Orono, Maine.

Rich Felder and Rebecca Brent have agreed to present a one-day teaching workshop on Saturday, July 21. Proposals for workshop sessions were solicited and are currently under review.

The University of Maine is in Orono, just a few miles from Bangor and its airport. It is about one hour or so from Acadia National Park and Bar Harbor. There are hiking and biking trails throughout the area, including many in Bangor. There are plenty of recreational opportunities on campus for participants and families, including hiking/biking/running trails and canoeing/kayaking on the Stillwater River. Canoes and kayaks can be rented on campus. Maine is a wonderful vacation spot, and it is usually quite comfortable in the summer. Summer highs average around 80°F, with lows in the high 50s. One of the goals of this summer school is to provide an environment for the whole family. To this end, there will be more time for family and participant activities. The current schedule is being planned from Saturday to Thursday. The preliminary program includes group/family events Sunday until 5 p.m.; several family activities are being planned. Family movie nights are also scheduled for the evening. Free time will also be available in the afternoons on Monday, Wednesday, and Thursday. The evening will end around 8:30-9:30 p.m.



Please address your feedback to both [joseph.shaeiwitz@mail.wvu.edu](mailto:joseph.shaeiwitz@mail.wvu.edu) and [randy.lewis@byu.edu](mailto:randy.lewis@byu.edu).

Here are some links to activities in the vicinity of the University of Maine:

[http://www.bangormaine.gov/vb\\_recreation.php](http://www.bangormaine.gov/vb_recreation.php)

<http://www.bangorinfo.com/parks.html>

<http://www.nps.gov/acad/>

<http://www.acadia.national-park.com/>

[http://en.wikipedia.org/wiki/Mount\\_Katahdin](http://en.wikipedia.org/wiki/Mount_Katahdin)

[http://www.bangormaine.gov/cs\\_parksrec.php](http://www.bangormaine.gov/cs_parksrec.php)

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

<http://www.acadia.net/anp/>

<http://www.baxterstateparkauthority.com/>

***ASEE Chemical Engineering Division Webpage - Click on 'Summer School' to see materials from past Summer Schools:***

**<http://www.asee-ched.org>**

# 2011 Annual Conference: Vancouver, BC, 26-29 June



**Monday June 27, 2010**

## **SPECIAL SESSION: What Works to Retain Students in Chemical Engineering Programs**

**Monday, 7:00 AM - 8:30 AM**

*Moderators: Adrienne R. Minerick (Michigan Technological University), Donald P. Visco (University of Akron)*

Student retention is an important issue that every department and college must face, especially as more states link their appropriations to student retention rates (and shift from entering enrollments). This session will feature six different efforts from five different institutions that contribute to the retention of students as well as special efforts to retain students of differing demographics (gender, race / ethnicity, first generation college students, etc.). It is valuable to note the creative approaches that most enthruse students to continue to study chemical engineering and connect with their discipline, program, and faculty mentors. Personal interactions and sustained communication are themes that arise. In addition, connecting with the students via technology or by focusing on current topics are themes that have yielded success with regards to retention. The efforts at each institution will be discussed separately followed by an open panel discussion on overarching best practices.

### **1. Special Session: What Works to Retain Students in Chemical Engineering Programs**

Adrienne R. Minerick (Michigan Technological University), Donald P. Visco (University of Akron), Susan M. Montgomery (University of Michigan), Daina Briedis (Michigan State University), Neeraj Buch (Michigan State University), Jon Sticklen (Michigan State University), Colleen A. McDonough (Michigan State University), S. Patrick Walton (Michigan State University), Amanda M. Portis (Michigan State University), Eldred H. Chimowitz (University of Rochester), Willie (Skip) E. Rochefort (Oregon State University), Keith L. Levien (Oregon State University), Nimir Elbashir (Texas A&M University), Jennifer Condit (University of Rochester), and Stephen Lindeman (Affiliation unknown)

## **ChE Executive Committee Meeting**

**Monday, 7:00 AM - 8:30 AM**

*Moderators: Margot A Vigeant (Bucknell University), Stephanie Farrell (Rowan University)*

## **SPECIAL SESSION: Educational Methods and Tools to Encourage Conceptual Learning I**

**Monday, 12:30 PM - 2:00 PM**

*Moderators: David L. Silverstein (University of Kentucky), Milo Koretsky (Oregon State University)*

The goal of this two part special session is to provide educators with an overview of specific educational methods and tools that they can bring back to the classroom to encourage their students to think deeply about the concepts central to core chemical engineering and materials science courses. Presentations will focus on the use of concept inventories, peer instruction and conceptests, repair of misconceptions, and technology-based tools to facilitate active pedagogies. The session will culminate in a panel discussion to address barriers to implementing these methods. The intent of this session is to create a dialog amongst educators and develop the community of instructors interested in increasing engagement of their students in learning core concepts in the classroom.

### **1. Tiered Scaffolding of Problem-Based Learning Techniques in a Thermodynamics Course**

Nancy K. Lape (Harvey Mudd College)

### **2. Instructional Videos with Purpose: Compensate, Support and Challenge Chemical Engineering Students in an Introductory Thermodynamics Course**

Dan Cernusca (Missouri University of Science & Technology) and Dr. Daniel Forciniti (Missouri University of Science & Technology)

### **3. Improved student achievement in Material and Energy Balances using personalized online homework**

Matthew W Liberatore (Colorado School of Mines)

### **4. Connecting Mass and Energy Balances to the Continuum Scale with COMSOL DEMos**

Adrienne R. Minerick (Michigan Technological University), Jason M. Keith (Michigan Technological University)

# 2011 Meeting Schedule: Mon, 27 June



University), Faith A. Morrison (Michigan Technological University), Maria Fernanda Tafur (Michigan Technological University), and Aytug Gencoglu (Michigan Technological University)

## 5. Student Designed Desktop Modules in a Thermodynamics Course

Donald P. Visco, Jr. (University of Akron)

## SPECIAL SESSION: Educational Methods and Tools to Encourage Conceptual Learning II

**Monday, 2:15 PM - 3:45 PM**

*Moderators: Milo Koretsky (Oregon State University), David L. Silverstein (University of Kentucky)*

### 1. SPECIAL SESSION: Educational Methods and Tools to Encourage Conceptual Learning

Milo Koretsky (Oregon State University), Ronald L. Miller (Colorado School of Mines), Dr. John L. Falconer P.E. (University of Colorado, Boulder), Michael J. Prince (Bucknell University), Margot A Vigeant (Bucknell University), Stephen J Krause (Arizona State University), and David L. Silverstein (University of Kentucky)

## Chemstation Lectureship Award and Presentation

**Monday, 4:00 PM - 5:30 PM**

*Moderators: Phil Wankat (Purdue University), Jason Keith (Michigan Technological University)*

This award, sponsored by Chemstations, Inc., is presented to a distinguished engineering educator to recognize and to encourage outstanding achievement in an important field of fundamental chemical engineering theory or practice. This individual has demonstrated achievement through the formulation of fundamental theory or principles, improvements of lasting influence to chemical engineering education with books and/or articles, and the demonstration of success as a teacher. In addition, evidence of the ability to conduct original, sound, and productive research, and an interest in the progression of chemical engineering through participation in professional and educational societies has been demonstrated. This year's recipient and lecturer is **Dr. Richard Noble**, Department of Chemical and Biological Engineering, University of Colorado, Boulder.

## ChE Division Awards Dinner

**Monday, 6:00 PM - 8:00 PM**

*Moderators: Ryan Anderson (University of British Columbia, Local Liaison)*

This annual dinner is a great networking opportunity. This year it will be hosted at Cloud 9 Revolving Restaurant & Lounge [www.empirelandmarkhotel.com](http://www.empirelandmarkhotel.com) [www.cloud9restaurant.ca](http://www.cloud9restaurant.ca) The 2011 award winners will be announced.

## Tuesday June 28, 2010

### Project-Based, Inquiry Guided, & High Performance Learning Environments: Effective Approaches

**Tuesday, 7:00 AM - 8:30 AM**

*Moderators: Pedro Arce (Tennessee Technological University), Paul B. Golter (Washington State University)*

Sound pedagogical and high retention instructional environments are built on four key pedagogical principles: learned-centered, knowledge-centered, assessment-centered, and community centered. These effective help students to critically explore new concepts in order to build a knowledge pool, know when to apply it, eliminate misconceptions, and connect with other knowledge while concurrently practicing the engineering culture to be effective professionals. Problem-based, Inquiry-Guided, and High Performance Learning Environments (Hi-PeLE) are unique and use functional-team based learning that it is not usually present in others environments. This aspect promotes an important innovation and creativity from the students. Hi-PeLE also promotes lifelong learning by documentation cycles and reduces effectively the number of subjects in a course by employing "principal objects of knowledge" (POK's). In this session, contributions will cover diverse aspects of project-based, inquiry-guided HiPeLE.

# 2011 Meeting Schedule: Tues, 29 June



- 1. Use of HiPeLE Approach in a Split-Level Chemical Engineering Elective Course**  
Adrienne R. Minerick (Michigan Technological University)
- 2. Assessment in the High Performance Learning Environment**  
Sharon G. Sauer (Rose-Hulman Institute of Technology) and Pedro E. Arce (Tennessee Technological University)
- 3. Motivation and Engagement of Learning in the Cooperative Problem-based Learning (CPBL) Framework**  
Khairiyah Mohd-Yusof (Universiti Teknologi Malaysia), Syed Helmi Syed Hassan (Universiti Teknologi Malaysia), Mohammad Zamry Jamaludin (Universiti Teknologi Malaysia (UTM)), and Nor Farida Harun (Department of Chemical Engineering, Faculty of Chemical Engineering, Universiti Teknologi Malaysia)
- 4. An Inquiry-Guided Learning Approach to Process Integration, Simulation, and Economics**  
Lale Yurttas (Texas A&M University), Dr. Mahmoud M El-Halwagi (Texas A&M University), and Houssein A Kheireddine (Texas A&M University)
- 5. Team Building in a Project-based Learning Course**  
Bernard J. Van Wie (Washington State University), Denny C. Davis (Washington State University), Paul B Golter (Washington State University), Ashfaq Ansery (Washington State University), and Baba Abdul (Washington State University)
- 6. Student teams, a simulation or a real team experience?**  
Joseph J. Biernacki (Tennessee Technological University)

## ChE Department Chair Meeting

**Tuesday, 7:00 AM - 8:30 AM**

*Moderators: Randy S. Lewis (Brigham Young University)*

Department chairs will assemble for an ad hoc discussion. Meet at the Hyatt Regency Vancouver lobby (655 Burrard Street) at 7 a.m. to walk to a breakfast location.

## Impact of the Gulf Coast Oil Spill on Chemical Engineering Education & Misc.

**Tuesday, 8:45 AM - 10:15 AM**

*Moderators: Tamara Floyd Smith (Tuskegee University), Phil Wankat (Purdue University)*

This session will include papers that describe the current and proposed impact that the Gulf Coast oil spill has on chemical engineering education. Appropriate topics are wide ranging. Examples include the incorporation of lessons learned into classroom content and the Gulf Coast Oil Spill and ABET outcomes f, h or j. Two additional contributions on REUs and Brewing are included.

- 1. Gulf Coast Oil Spill Instruction at Tuskegee University**  
Tamara Floyd Smith (Tuskegee University) and Nadar Vahdat (Tuskegee University)
- 2. Did the CSB get it wrong? A Review of teaching Safety and Loss Prevention**  
Brian Robert Dickson (University of Strathclyde)
- 3. Examining Current and Historical Events in a Freshman Chemical Engineering Seminar**  
Rebecca K. Toghiani (Mississippi State University) and Bill B Elmore (Mississippi State University)
- 4. Special Session: The Impact of the Gulf Coast Oil Spill on Chemical Engineering Education Gulf Coast Oil Spill Clean-up Technologies Using Absorbent Materials**  
Willie (Skip) E. Rochefort (Oregon State University) & Gail Ellen Gerdemann (STEPs at Oregon State Univ)
- 5. An Assessment Plan for Evaluating a Four Site Undergraduate Research Program in Biofuels and Biorefining Engineering**  
Daniel Knight (University of Colorado, Boulder), Frances C. Ray-Earle (Colorado Center for Biorefining & Biofuels (C2B2), University of Colorado at Boulder), and Nancy S. Tway (University of Colorado)
- 6. Home Brew Wort Cooler as Subject of Process Modeling and Design: A Compelling Education Module**  
Michael A Smith (Villanova University) and Noelle K Comolli (Villanova University)

# 2011 Meeting Schedule: Tues, 29 June



## **SPECIAL SESSION: Interdisciplinary Course Design Opportunities for Chemical Engineers**

**Tuesday, 12:30 PM - 2:00 PM**

*Moderators: Bernard J. Van Wie (Washington State University), Donald P. Visco (University of Akron)*

There are courses within chemical engineering curricula with interdisciplinary impact and others that can benefit from input from a breadth of engineering disciplines. For example, chemical, mechanical, civil and bio- engineers all need courses from the thermal and transport series. At the same time there are many instances in which the various disciplines are intertwined with computer & electrical engineering principles such as in courses that focus on process control, hydroelectric power, heat engines, etc. Other elective courses taught within the chemical engineering discipline attract non-chemical engineering students – topics such as bio-energy, materials, the environment and biotechnology serve as examples. Finally, there are new capstone courses that involve entrepreneurship where projects require interdisciplinary teams that mirror those seen in industry. Many of these courses are team taught by two or more faculty representing more than one discipline. In this session are contributions from faculty who have designed and/or taught such multidisciplinary courses. Of particular interest are novel pedagogical approaches suitable for such classes where faculty use collaborative, cooperative, hands-on, active, problem and project-based paradigms to enhance learning. In addition to the course description, a discussion of relevant logistical issues such as dividing up responsibilities, assigning faculty credit and origin of the interaction is provided.

### **1. Unpacking the interdisciplinary mind: Implications for teaching and learning**

Wendy C. Newstetter (Georgia Institute of Technology)

### **2. Experience with a Cross-disciplinary Intensive, Hands-on Pre-transport Course**

Baba Abdul (Washington State University), Edgar A O'Rear (University of Oklahoma), Gary Robert Brown (Office of Assessment and Innovation), Ashley Ater Kranov (Washington State University), Bernard J. Van Wie (Washington State University), Mr. Paul B Golter (Washington State University), and David B. Thiessen (Washington State University)

### **3. Interdisciplinary Course Design Opportunities for Chemical Engineers: A Material Balances course with integrated concept-based active learning pedagogy - comparison of student perception and performance with their attitudes and approaches to learning**

Jeffrey A Nason (Oregon State University), Bill J. Brooks (Oregon State University), and Milo Koretsky (Oregon State University)

### **4. A new interdisciplinary course for engineering and business students: the Global Pharmaceutical Industry**

William J Kelly (Villanova University)

### **5. Introducing Interdisciplinary Content through Electives**

Joseph J. Biernacki (Tennessee Technological University) and Christopher D. Wilson (Tennessee Technological University)

## **Poster Sessions for Unit Operations Lab Bazaar and Tenure Track Faculty**

**Tuesday, 4:00 PM - 6:00 PM**

*Moderators: Michael E Prudich (Ohio University), Jason M. Keith (Michigan Technological University)*

UO Lab Bazaar: This poster session will be a sharing of information regarding novel unit operations laboratory experiments and/or experiences as well as innovations related to more traditional unit operations laboratory topics. Innovations and experiences in terms of overall unit operations laboratory course design and course assessment would also be legitimate topics for a poster presentation. Ideally, we will all be able to go home with a number of ideas that might be applied to the improvement of the unit operations laboratories at our home institutions.

New Faculty: This poster session is an opportunity for new faculty to share research efforts and pedagogical interests with peers at other institutions. It is envisioned that this will help start collaborations with faculty at other

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institutions to strengthen research and/or teaching. Non-tenured faculty (at the tenure-track or instructor level) will present both their research and teaching efforts in a special poster session. Half of each poster will contain information on research related pursuits while the rest should will information on teaching efforts/interests.

## 1. Poster Session for Tenure Track Faculty

Donald P. Visco (Tennessee Technological University), Jason M. Keith (Michigan Technological University), Dr. Jeffrey A Nason (Oregon State University), Roger C. Lo (Department of Chemical Engineering, California State University, Long Beach), Dr. James P Abulencia (Manhattan College), and Sergio Mendez (California State University, Long Beach)

## 2. Unit Operations Lab Bazaar

Michael E Prudich (Ohio University), Daina Briedis (Michigan State University), Robert Y. Ofoli (Michigan State University), Robert B. Barat (New Jersey Institute of Technology), Norman W. Loney (New Jersey Institute of Technology), Dr. Ali Pilehvari P.E. (Texas A&M University, Kingsville), Michael J. Elsass (University of Dayton), Robert J. Wilkens (University of Dayton), Danilo Pozzo (University of Washington), Jim Pfaendtner (University of Washington), William B. Baratuci (University of Washington), Jim Henry (University of Tennessee, Chattanooga), Bridget R. Rogers (Vanderbilt University), John F. Sandell (Michigan Technological University), Adrienne R. Minerick (Michigan Technological University), Jason M. Keith (Michigan Technological University), Horacio Adrian Duarte (Texas A&M University-Kingsville), David W. Caspary (Michigan Technological University), Charles Nuttelman (University of Colorado at Boulder), Pablo LaValle (University of Michigan), Naoko Ellis (University of British Columbia), Sergio Mendez (California State University, Long Beach), and Arne Biermans (Chemical Engineering Department, University of Washington)

## 3. Unit Operations Lab Bazaar: Incorporation of Laboratory Experiences in Six Integrated Pillar Courses

Michael Jefferson Baird (University of Pittsburgh) and Schohn L. Shannon (University of Pittsburgh)

## 4. Introducing Professional Skills during Unit Operations Laboratory

Deniz Rende (Rensselaer Polytechnic Institute), Nihat Baysal (Yeditepe University), and Sevinc Rende (Isik University)

## 5. Unit Operations Lab Bazaar: Assessment of Miniature Industrial Equipment

Laura Coon (Washington State University), Mr. Paul B Golter (Washington State University), Mr. Derek Allen Cline (Affiliation unknown), Ashley Ater Kranov (Washington State University), David B. Thiessen (Washington State University), and Bernard J. Van Wie (Washington State University)

## 6. Integration of the Chemical Engineering Laboratory with a Focus on Bio-Fuel Production

Danilo Pozzo (University of Washington), Jim Pfaendtner (University of Washington), Marvi A. Matos (University of Washington), Dr. William B. Baratuci (B-Cubed), Dr. Jim L Borgford-Parnell (University of Washington), and Arne S.A. Biermans (Chemical Engineering Department, University of Washington)

## Wednesday June 29, 2010

### Emerging Areas: Biotechnology, Microtechnology, and Energy

Wednesday, 7:00 AM - 8:30 AM

*Moderators: S. Patrick Walton (Michigan State University), Joe H. Holles (University of Wyoming)*

Chemical engineering principles are applied in increasingly diverse, emerging areas such as biotechnology, micro- and nano-technology, green chemistry, climate change, sustainability, clean energy, and others. This session includes papers on preparation, delivery and assessment of learning in chemical engineering courses that are related to such emerging areas. This session will provide a dialogue for chemical engineering educators to discuss the progression and future of chemical engineering applications in emerging fields and the prudence of including those in chemical engineering curriculum/courses. Several chemical engineering concepts are becoming an essential part of the knowledge matrix for scientists and engineers working in numerous cross-disciplinary areas. Consequently, there is a desire for students and professionals from other disciplines to learn the basic and

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sometimes advanced concepts of chemical engineering. Participants will benefit from the several contemporary ideas and examples for inclusion in various special topics courses in emerging areas.

## 1. Development and Assessment of Energy Modules in the Chemical Engineering Curriculum

Jason M. Keith (Michigan Technological University), Daniel López Gaxiola (Michigan Technological University), Daniel A. Crowl (Michigan Technological University), David W. Caspary (Michigan Technological University), Abhijit Mukherjee (Michigan Tech), Dennis Desheng Meng (Michigan Technological University), Jeffrey D Naber (Michigan Technological University), Jeffrey S. Allen (Michigan Technological University), Dr. John T. Lukowski (Michigan Technological University), Barry D Solomon (Michigan Tech University), Jay Scott Meldrum, Sr. (Michigan Technological University), & Dr. Thomas F. Edgar (University of Texas, Austin)

## 2. Microfluidics @ the Beach: Introduction of Microfluidics Technology to the Chemical Engineering Curriculum at CSULB

Thuyoanh Truong (Department of Chemical Engineering, California State University, Long Beach), William Ferguson (Department of Chemical Engineering, California State University, Long Beach), and Roger C. Lo (Department of Chemical Engineering, California State University, Long Beach)

## 3. Development and Delivery of a Physiological Transport Phenomena Course

Arthur Felse (Northwestern University)

## 4. Biology across the curriculum: Preparing students for a career in the life sciences

Claire Komives (San Jose State University), Michael J. Prince (Bucknell University), Dr. Theresa A. Good (University of Maryland, Baltimore County), Laurent Simon (New Jersey Institute of Technology), John P. O'Connell (University of Virginia), Jeffrey John Chalmers (Department of Chemical and Biomolecular Engineering), and Erik Fernandez (University of Virginia)

## 5. Teaching Chemical Engineering Concepts to Nonchemical Engineers: Indigo: A World of Blues

Polly R. Piergiovanni (Lafayette College)

## 6. Teaching Fluid Mechanics and Mass transport to Biologists

Arthur Felse (Northwestern University)

## Chemical Engineering in Silico

**Wednesday, 8:45 AM - 10:15 AM**

*Moderators: Brian Robert Dickson (University of Strathclyde), Rebecca K. Toghiani (Mississippi State University)*

This session includes talks on the use of technology in chemical engineering education. Podcasts, Wikis, YouTube videos, simulations, and virtual experiments are all included.

### 1. Student led development of engineering estimate problems based on YouTube videos

Matthew W Liberatore (Colorado School of Mines) and Charles Russell Vestal (Colorado School of Mines)

### 2. A Comparison of Learning between Experiments Using Virtual Reality and Hands On Experiments – What is Real Enough?

Charles Nippert (Widener University) and Byung-Hwan Um (Widener University)

### 3. Adaption of a Virtual Laboratory Curriculum: A Preliminary Study of Implementation at Other Institutions

Debra Gilbuena (Oregon State University), Ben Uriel Sherrett (Oregon State University), and Milo Koretsky (Oregon State University)

### 4. Cooking a hamburger in silico to prevent food poisoning

Charles J. Coronella (University of Nevada, Reno) and Victor R. Vasquez (University of Nevada, Reno)

### 5. Characterization of Student Model Development in Physical and Virtual Laboratories

Erick J Nefcy (Oregon State University), Philip H. Harding (Oregon State University), and Milo Koretsky (Oregon State University)

### 6. Engineering Ethics Case Studies in Senior Unit Operations Laboratory

James P Abulencia (Manhattan College)

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## ABET & Curriculum-Level Assessments

**Wednesday, 12:30 PM - 2:00 PM**

*Moderators: Jim Henry (University of Tennessee, Chattanooga), Rebecca K. Toghiani (Mississippi State University)*

This session focuses on curriculum level assessments of student learning, chemical engineering program optimizations and reform. Unique approaches as well as integrated curriculum structures will be discussed.

**1. Student Learning and the Continuous Program Improvement Process in a Chemical Engineering Program**

Howard S. Kimmel (New Jersey Institute of Technology), Angelo J. Perna (New Jersey Institute of Technology), Shari Klotzkin (Affiliation unknown), John D. Carpinelli (New Jersey Institute of Technology), and Prof. Reginald Percy Tomkins (New Jersey Institute of Technology)

**2. Collecting Programmatic Assessment Data with No “Extra” Effort: Consolidated Evaluation Rubrics for Chemical Plant Design**

Kevin D. Dahm (Rowan University)

**3. Design of a Sustainable Process for Undergraduate Curriculum Reform, Development and Assessment: a Chemical Engineering Case Study**

Larissa V. Pchenitchnaia (Texas A&M University) and Lale Yurttas (Texas A&M University)

**4. Assessment of ABET Student Outcomes During Industrial Internships**

Dr. Karyn L. Biasca (University of Wisconsin - Stevens Point) and Dr. Steve Hill (University of Wisconsin-Stevens Point)

**5. Preparation of chemical engineers in the multi-level curriculum structure**

Valeriy Solomonov (Lomonosov Moscow State Academy of Fine Chemical Technology (MITHT)), Olga Belyaeva (Lomonosov Moscow State Academy of Fine Chemical Technology (MITHT)), and Alla Frolkova (Lomonosov Moscow State Academy of Fine Chemical Technology (MITHT))

**6. Evaluation and Results for an Integrated Curriculum in Chemical Engineering**

Joseph J. McCarthy (University of Pittsburgh) and Robert S. Parker (University of Pittsburgh)

## Chemical Engineering Division Business Meeting

**Wednesday, 12:30 PM - 2:00 PM**

*Moderators: Margot A Vigeant (Bucknell University), Stephanie Farrell (Rowan University)*

Division business is discussed. All members and potential members are encouraged to attend.

## Focus on Entry Experiences in Chemical Engineering

**Wednesday, 2:15 PM - 3:45 PM**

*Moderators: Kevin D. Dahm (Rowan University), Paul B. Golter (Washington State University)*

This session covers freshman & sophomore level chemical engineering courses, including perseverance studies.

**1. The First Course ChE Student: Lost in Translation**

David F. Ollis (North Carolina State University)

**2. Bi-modal No More Shifting the Curve in Material and Energy Balances Courses**

Suzanne M. Kresta (University of Alberta) and Inci Ayranci (University of Alberta)

**3. Chemical Engineering Problem Solving: How Important Is Persistence?**

Jeffrey Heys (Montana State University)

**4. Undergraduate Women in Chemical Engineering: Exploring Why They Come**

Catherine E. Brawner (Research Triangle Educational Consultants), Susan M. Lord (University of San Diego), and Matthew W. Ohland (Purdue University, West Lafayette)

**5. Gizmo Festival: K-8 Outreach as a Design/Build for Engineering Students**

Margot A Vigeant (Bucknell University) and Lori Smolleck (Bucknell University)

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## 6. Optimization Problems for all Levels

Brian J. Anderson (West Virginia University), Robin S. Hissam (West Virginia University), Joseph A. Shaeiwitz (West Virginia University), and Richard Turton (West Virginia University)

## Focus on Capstone Experiences in the Chemical Engineering Curriculum Wednesday, 4:00 PM - 5:30 PM

*Moderators: Jeffrey Heys (Montana State University), Randy S. Lewis (Brigham Young University)*

This session covers the capstone design and unit operations experiences including teams and transitioning into the workplace.

### 1. How We Teach: Kinetics and Reactor Design

David L. Silverstein (University of Kentucky) and Margot A Vigeant (Bucknell University)

### 2. Simulated Moving Bed Reactors - An Instructional Module for Incorporation of Process Intensification Concepts into the Senior Reactor Design Course

Rebecca K. Toghiani (Mississippi State University) and Carlen Henington (Mississippi State University)

### 3. Alternative Lab Reports - Engineering Effective Communication

Daniel Lepek (The Cooper Union) and Dr. Richard J. Stock (Cooper Union)

### 4. Design of a Senior Laboratory Sequence to Guide Students in Multiple Academic Programs Towards Workforce Preparedness

Philip H. Harding (Oregon State University) and Milo Koretsky (Oregon State University)

### 5. Transitioning Students to the Workplace in an Academic Setting

Michael Senra (Lafayette College) and H. Scott Fogler (University of Michigan)

### 6. The Research Proposition and Professional Development: Update on First Year Graduate Student Preparation

David F. Ollis (North Carolina State University)



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