

### **Introductory Statement**

New Frontiers in Chemical Engineering Education is a series of workshops whose aim is to specify an undergraduate chemical engineering curriculum that

- builds on our unique position in engineering
- attracts the best and brightest students
- is valued by industry
- contains a good supply of examples, contributed from the wide community of chemical engineering
- uses the best available practices for instruction

The series is funded by the National Science Foundation and conducted under the auspices of the Council for Chemical Research.

The AIChE Workshop was held as a Special Event Session at the AIChE Annual Meeting in San Francisco on 2003 November 16. The participants were

Robert Armstrong	MIT
Nurcan Bac	Northeastern University
Frank Bates	University of Minnesota
Dan Burkey	Northeastern University
John Corn	Ohio State University
Jeffrey Csernica	Bucknell University
David Dandy	Colorado State
David DiBiaso	WPI
Mohamed El-Genk	University of New Mexico
Guellekin Erdem	ETH
Maria Flytzani-Stephanopoulos	Tufts University
Scott Fogler	University of Michigan
Julia Fulghum	University of New Mexico
Francis Gadala-Maria	University of South Carolina
Jeffrey Gray	Johns-Hopkins
David Harding	University of New Haven
Andrew Hrymak	McMaster University
Vijay John	Tulane University
Duane Johnson	University of Alabama
Erdogan Kiran	Virginia Tech
David Kofke	SUNY Buffalo
Kyung Kwon	Tuskegee University
Douglas LeVan	Vanderbilt University
Kuyen Li	Lamar University
Douglas Ludlow	Missouri-Rolla
Vasilios Manousiouthakis	UCLA
Alon McCormick	University of Minnesota

## New Frontiers in Chemical Engineering Education Proceedings

### AIChE Workshop

2003 Nov 16

Anthony McHugh	Lehigh University
Kenneth McNeil	Widener University
Jovan Mijovic	Polytechnic University
Vincent Murphy	Colorado State
John O'Connell	University of Virginia
Peter Pintauro	Case Western
Christopher Pope	
Bob Powell	UC Davis
P. A. Ramachandran	Washington University
Govino Rao	UMBC
Carlos Rinaldi	UPRM
Christopher Roberts	Auburn University
Antonio Rocha	University Aut de Nuevo Leon
Ronald Rousseau	Georgia Tech
Howard Saltsburg	Tufts University
Glenn Schrader	Iowa State/NSF
David Shonnard	Michigan Technological University
Stewart Slater	Rowan University
Thomas Spicer	University of Arkansas
Eric Stuve	University of Washington
Garth Thomas	West Virginia Tech
Tate Tsang	University of Kentucky
Israel Wachs	Lehigh University
Ted Watson	Colorado State
Huan Zhang	MIT
Kyriacos Zygourakis	Rice University

The session co-chairs were Robert Armstrong of MIT and Ronald Rousseau of Georgia Tech. The meeting Facilitator was Jeannette Gerzon of Belmont MA; additional planning and support were provided by Barry Johnston of MIT.

The AIChE Workshop was intended to acquaint participants with the results of the NSF/CCR Workshops held in January through June 2003. In these, a new undergraduate chemical engineering curriculum was envisioned, based on three organizing principles:

- molecular transformations
- multiscale analysis
- systems analysis and synthesis

Participants in this shorter AIChE workshop were divided into six groups, charged to address six questions:

- What skills, attributes, and values will the ChE need in 2015?
- What will ChE careers look like in 2015? Who will be hiring?
- What aspects of molecular transformations should a ChE know in 2015?
- What aspects of multiscale analysis should a ChE know in 2015?
- What aspects of systems approaches should a ChE know in 2015?

- What content would you include in the UG ChE curriculum in 2015 that would convey the excitement and novelty of your research?

The Proceedings for the AIChE Workshop comprise

- Overview by Armstrong
- List of opportunities and challenges
- Group reports on the questions
- Discussion of group reports