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.

Workshop III was held at the Ocean Edge Resort and Golf Club, in Brewster MA on Cape Cod, during 2003 June 11-13. The participants were

Nick Abbott Wisconsin
Bob Armstrong MIT
Lisa Bullard NC State
Manny Cano Shell
Rebecca Carrier Pfizer
Eldred Chimowitz Rochester
David DiBiasio WPI
Tom Edgar Texas
Scott Fogler Michigan
Christos Georgakis Polytechnic U.
Charles Glatz Iowa State
Bill Green MIT
David Hackleman Oregon State
Kenneth Hall Texas A&M
Duane Johnson Alabama
Cammy Kao Stanford
Tonya Klein Alabama
Harold Kung Northwestern
Henry Lamb NC State
Kuyen Li Lamar U.
Lance Lobban Oklahoma
Vasilios Manousiouthakis UCLA
Tony McHugh Lehigh
Greg McRae MIT
Bill Olbracht Cornell
Marc Ostermeier Johns Hopkins
Bob Parker Pittsburgh
Henrik Pedersen Rutgers
New Frontiers in Chemical Engineering Education
Cape Cod Workshop Proceedings 2003 June 11-13

Bob Powell
Michael Prudich
Helen Qammar
Jim Rawlings
Bridget Rogers
Ron Rousseau
Howard Saltsburg
Jim Schneider
Suresh Sureshkumar
Michael Thien
Carlos Valenzuela
Ted Watson
Fred Weber
Phillip Westmoreland
Ted Wiesner
John Wiest
Andrew Zydney
UC Davis
Ohio
Akron
Wisconsin
Vanderbilt
Georgia Tech
Tufts
Carnegie Mellon
Washington U.
Merck Research Lab
Air Products
Colorado State
Tennessee
Massachusetts
Texas Tech
Alabama
Penn State

The meeting Facilitator was Jeannette Gerzon of Belmont MA; additional planning and support were provided by Barry Johnston and Melanie Miller of MIT. Guest speaker was Prof. Dean Whitla of Harvard University.

Workshop III was charged to develop instruction modules that would support a curriculum based on 3 organizing principles, as developed in Workshop II:

• molecular processes
• multiscale analysis
• systems analysis and synthesis

In addition, participants considered methods of curriculum delivery and instructional methods. Finally, next steps were identified for continuing the work begun in these three workshops.

The Proceedings for Workshop III comprise

• Overview by Armstrong
• Session 1: instructional modules, including presentations by Sureshkumar, Edgar, and Westmoreland
• Session 2: teaching and delivery of the curriculum, including presentations by Whitla, Fogler, and DiBiasio
• Session 3: further definition of the curriculum
• Session 4: planning
• Summary by Green, Rawlings, and Thein