

Preface to Perspectives

In 2004 the *AIChE Journal* celebrated its 50th anniversary. In connection with this milestone, a symposium on “The Future of Chemical Engineering Research” was organized at the Annual AIChE Meeting in Austin. The symposium consisted of three sessions entitled:

- Fundamentals
- Biological Engineering
- Complex Systems

In each session seven talks by leading chemical engineers were followed by a three-member panel discussion. A one-person overview that integrated the talks and discussions within the context of our discipline’s research tradition closed the proceedings.

The symposium proved an excellent opportunity for taking a broad look at the current landscape of chemical engineering research, and for thinking about its future. It is clearly impossible to organize three sessions that can provide a comprehensive representation of every important aspect of chemical engineering research. Nevertheless, we believe that the scope and quality of the talks were such that it is of value to our profession to preserve a written record of the symposium. We are delighted that the *AIChE Journal* will be the medium for its publication.

This issue of the *AIChE Journal* features the third collection of Perspective articles dedicated to the 2004 Symposium “The Future of Chemical Engineering Research.” The three articles in this issue correspond to the session on Biological Engineering. The session on Complex Systems appeared in July, and the series of Fundamentals Perspectives appeared in the September issue. We are grateful to the many speakers who were able to contribute to this collection by putting their talks and thoughts on paper.

We feel honored and privileged to have organized the symposium and to edit this collection of papers. The program of the session on Biological Engineering is reproduced below.

Arup K. Chakraborty, Pablo G. Debenedetti, Julio M. Ottino

The Future of Chemical Engineering Research

November 8, 2004

AIChE Annual Meeting, AUSTIN, TX

SESSION II: BIOLOGICAL ENGINEERING

Arup Chakraborty, Chair; University of California-Berkeley

Pablo Debenedetti, co-Chair; Princeton University

Materials For Drug Delivery

Mark E. Davis, California Institute of Technology

Metabolic Engineering of Bacteria for Drug Production

Jay D. Keasling, University of California-Berkeley

Entropy, Disease, and New Opportunities for Chemical Engineering Research

Michael W. Deem, Rice University

Protein Engineering and Biopharmaceutical Design

K. Dane Wittrup, M.I.T.

Biomaterials in Regenerative Medicine: Future Thrusts

Kristi Anseth, University of Colorado-Boulder

Developing Pharmaceutical Products

Mauricio Futran, Bristol, Myers, Squibb

Intercellular Communication in the Adaptive Immune System: Plenty of Room at the Bottom

Arup Chakraborty, University of California-Berkeley

Summary and Discussion

George Georgiou (University of Texas, Austin)

Daniel A. Hammer (University of Pennsylvania)

Gregory Stephanopoulos (MIT)

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