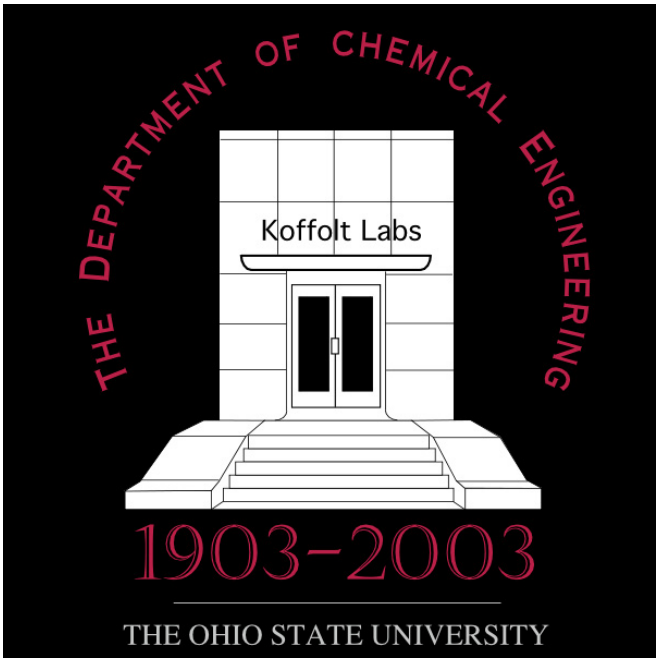
The Department of

Chemical Engineering

Fifty-fifth Annual Report to the Alumni
2003



College of Engineering
The Ohio State University
Columbus, Ohio

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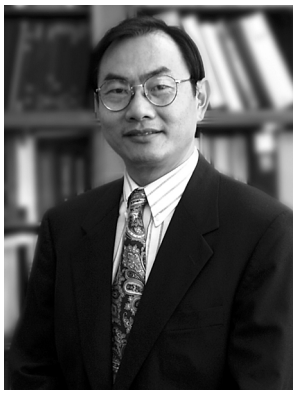
Message from the Chair

Dear Alumni:



I am very pleased to announce that Dean Jim Williams has appointed Professor Stuart Cooper as the sixth Chair of the Department. He will be appointed as University Scholar Professor and Chair beginning January 1, 2004. Stuart has a very distinguished career as an accomplished administrator, scholar, and researcher. He served as the Chairman of the Chemical Engineering Department at the University of Wisconsin–Madison, Dean of Engineering at the University of Delaware, Provost at the Illinois Institute of Technology, and Provost at North Carolina State University. He has decided to return to teaching, research, and administration in Chemical Engineering and the opportunities in the Chemical Engineering Department at Ohio State provide an excellent match. Professor Cooper is an authority in the area of biomaterials and polymer science and engineering. His research focus has been on the structure-property relationships of polyurethane ionomers and block polymers, mechanical and dielectric spectroscopy, X-ray scattering, polyurethane materials, and blood material interactions. A Fellow of the AIChE and the American Association for the Advancement of Science, he has served as the President of the Society of Biomaterials. The Department, as well as the College of Engineering and the University, is excited about his appointment. Stuart will also provide leadership in the important interdisciplinary area of biomaterials on campus. Welcome aboard Stuart!

I would like to also introduce another new faculty member, Dr. Barbara Wyslouzil who comes to us from the Worcester Polytechnic Institute. She joined the Department in Autumn 2003 as Associate Professor with Tenure. She received her B.S. degree from Queens University in Canada, her M.S. degree in Chemical Engineering from the University of Alberta, and her Ph.D. from Cal Tech. Her research focuses on experimental explorations and applications of aerosol physics. On the fundamental side, she is studying the formation, growth, and microstructure of nanoparticles using a unique set of experimental techniques to measure the properties of an aerosol *in situ*. Her research will have significant impacts on the Environmental Science Initiative Program on campus. Her teaching will be on transport phenomena and aerosol science at both the undergraduate and graduate levels.

It has been a great pleasure and honor for me to serve as Department Chair for the last nine years. I very much enjoyed my interactions with students, faculty, staff, and alumni. This unique role has allowed me to appreciate deeply the loyalty of our alumni whose dedication and generosity to the Department have truly made a tremendous difference in the progress of Chemical Engineering at Ohio State. I am proud to have had the privilege of preserving the tradition of the Department of caring for students and their education and this tradition will continue with the new leadership.

I am also very excited about the expansion of the Department's research programs into theory and into technology development. Many of the faculty research efforts have had major impacts in their respective research fields and in industry. The Department's reputation continues to grow because of its excellence in education and research. It gives me great satisfaction to have been a part of such progress.

The Department is most fortunate to have been successful with several recent major grants from the state's Third Frontier Funding and from the federal government. In the past several months, approximately $6 million has been awarded to the Department from Ohio's Third Frontier Funding and Ohio Board of Regents' Hayes Investment Fund made up of: Professors Jim Lee, Kurt Koelling, and Dave Tomasko's $2 million for polymer nanofabrication and $2 million for composite materials of nanoparticles and polymers, and Professors Umit Ozkan, Winston Ho, and L.S. Fan's $2 million for hydrogen fuel processing for fuel cell applications. Professor Jeff Chalmers received $2.1 million from the National Cancer Institute and an NSF-SBIR grant to apply immunomagnetic cell separation technology to rare cancer cell separation and T-cell depletion for bone marrow transplants. The U.S. Department of Energy and the Ohio Coal Development Office are providing $0.8 million to support Professor Fan's clean coal technology research. It is clear that these major fundings will significantly enhance the research productivity of the Department.

From left to right: Professors Arthur Westerberg, Howard Brenner, Michael Shuler, Matthew Tirrell

On April 24 and 25, 2003 the Department celebrated its Centennial with a symposium on "Unsolved Problems in Chemical Engineering" and a look back at the development of the profession and at the Department's history. On the 24th, Professors Howard Brenner of the Massachusetts Institute of Technology, Michael Shuler of Cornell University, Arthur Westerberg of Carnegie Mellon University, and Matthew Tirrell of the University of California at Santa Barbara focused on unsolved problems in their chemical engineering research areas: fluid mechanics, biomolecular engineering, systems engineering, and nanotechnology. On Friday, April 25 Professor Skip Scriven of the University of Minnesota described the evolution of chemical reactor design in the profession. A highlight of the Friday program was a video-power point presentation of the history of the Department narrated by Professor Brodkey. The show was written, directed, and produced by Geoff Hulse, our Computer Director, and was extremely well-received by the audience of alumni, friends, faculty, and students. On Friday afternoon, alumni from the class of '34 and from more recent classes offered presentations focusing on the

Pictured, clockwise, from left to right: Eric Grulke (BS ’71, MS ’72, PhD ’75), Ed Slowter (BC ’34, MS ’35, PR ’39), Alex Lemmon (BC ’43), Bill Lowrie (BC ’66), Bruce Poling (BC ’67, MS ’67), Tom Koffolt

history of the department and their experiences. Tom Koffolt and Professors Sweeney, Zakin, and I spoke about our experiences in the Department. A gala banquet closed out the celebration.

We are proud of our research accomplishments and the quality of the education we provide our students and their accomplishments. I must also note, however, how delighted we are about the continued support and good will that we receive from so many of our alumni. Not only is this a source of gratification to our faculty and me, but your contributions have truly made a difference in our continuing efforts to improve the education of our students and our research accomplishments.

Best wishes,

L.S. Fan

Department Faculty and Staff

Professors
Robert S. Brodkey (Emeritus)
Jeffrey J. Chalmers
Liang-Shih Fan
Martin Feinberg
Morton Friedman (Emeritus)
Christie Geankopolis (Emeritus)
Ed Haering (Emeritus)
Harry Hershey (Emeritus)
Winston Ho
L. James Lee
Umit Ozkan
H.C. (Slip) Slider (Emeritus)
Edwin E. Smith (Emeritus)
Thomas L. Sweeney (Emeritus)
Shang-Tian Yang
Jacques L. Zakin (Emeritus)

Associate Professors
Bhavik R. Bakshi
Barbara Wyslouzil
Kurt W. Koelling
James F. Rathman
David L. Tomasko
Karlis Svanks (Emeritus)

Assistant Professor
Isamu Kusaka

Visiting Scholars, Post Doctoral and Research Associates
Nuray Oktar
Oktar Okan
Xueqin Wang
Chen Caixia
Yang Zhao
W. Warsito
Raja A. Jadhav

Administrative Staff

Academic Advisor
Sherry McDonald

Assistant to the Department Chair
Sherry Stoneman

Fiscal & Human Resources Administrator
Ibrahima Ndoye

Assistant to the Graduate Studies Chair
Kathleen Monegan

Administrative Assistant, Editorial
Daniel Kline

Design Engineer
Leigh Evrard

Building Coordinator
Carl Scott

Laboratory Supervisor
Paul Green

Director, ChE/MSE Joint Computing Lab
Geoff Hulse

Systems Analyst
Mike Davis

Systems Engineer
Dave Jones

CAPCE Administrator
Paula Stevenson

New Chemical Engineering Faculty and Staff

Faculty

Stuart L. Cooper will join us on January 1, 2004 from North Carolina State University. He received his B.S. in Chemical Engineering from Massachusetts Institute of Technology and his PhD Chemical Engineering from Princeton University (1967). Areas of interest include structure-property relations of polyurethanes, blood-material interactions, adhesive protein and cell-surface interactions, and white cell surface

Barbara Wyslouzil joined us on October 1, 2003 from Worchester Polytechnic Institute in Massachusetts. She received her BS in ChemE from Queens University, and her MS in ChemE from U of Alberta, both in Canada. She earned her PhD from the California Institute of Technology. Her current research is in aerosol science including nanodroplet structure, vapor phase nucleation and their biological applications activation.

Staff

Angela Jones started on October 27, 2003 as the graduate program coordinator. She received her BS degree in Business Administration specializing in Management Information Systems from Ohio State University 2002.

Mary Lamont joined our department as an Academic Advisor and Staff Assistant. She was an Information Associate for the first year engineering program. She received her B.A. in Political Science with a minor in Philosophy from Ohio State University in December 2002.

Faculty Research Areas

Bakshi, Bhavik, Associate Professor, Ph.D., M.I.T. 1992. Process Systems Engineering, Green Engineering, Industrial Ecology.

Brodkey, Robert S., Professor Emeritus, Ph.D., University of Wisconsin 1952. Turbulent Motion, Mixing and Kinetics, Image Processing and Analysis, and Turbulent Reactor Design.

Chalmers, Jeffery J., Professor, Ph.D., Cornell University 1988. Biochemical Engineering, Hydrodynamic Effects on Cells, Bioengineering Magnetic Cell Separation, Mixing and Fluid Mechanics in Bioreactor.

Fan, Liang-Shih, Distinguished University Professor and Chair, Ph.D., West Virginia University 1975. Fluidization, Powder Technology, Multiphase and Particulate Reaction Engineering, Energy and Environmental Engineering, and Mathematical Modeling.

Feinberg, Martin, The Richard M. Morrow Professor, Ph.D., Princeton University 1968. Chemical Reaction Network Theory, Complex Biochemical Networks, Reactor Design with Complex Chemistry, and Reactor Optimization for Complex Reaction Systems.

Ho, W.S. Winston, University CMR Scholar Professor, Ph.D., University of Illinois at Urbana 1971. Molecular-based Membrane Separations, Fuel-Cell fuel Processing, Transport Phenomena in Membranes, Polymer and Liquid Membranes, Separations with Chemical Reaction and Bioprocessing with Membranes

Koelling, Kurt W., Associate Professor, Ph.D., Princeton University 1992. Advanced Polymer Processing, Microfluidics, Bubble and Drop Dynamics, Rheology of Complex Fluids, Biocompatible Polymers, Nanocomposite Foams, Gas-assisted and Thin-wall Injection Molding.

Kusaka, Isamu, Assistant Professor, Ph.D., California Institute of Technology 1998. Statistical Mechanics, Molecular Level Simulation and Nucleation.

Lee, L. James, The Helen C. Kurtz Professor, Ph.D., University Minnesota 1979. Novel Polymer Processing, Composite Manufacturing, Micro-/Nano-Engineering, BioMEMS/NEMS**,** Microfluidics. .

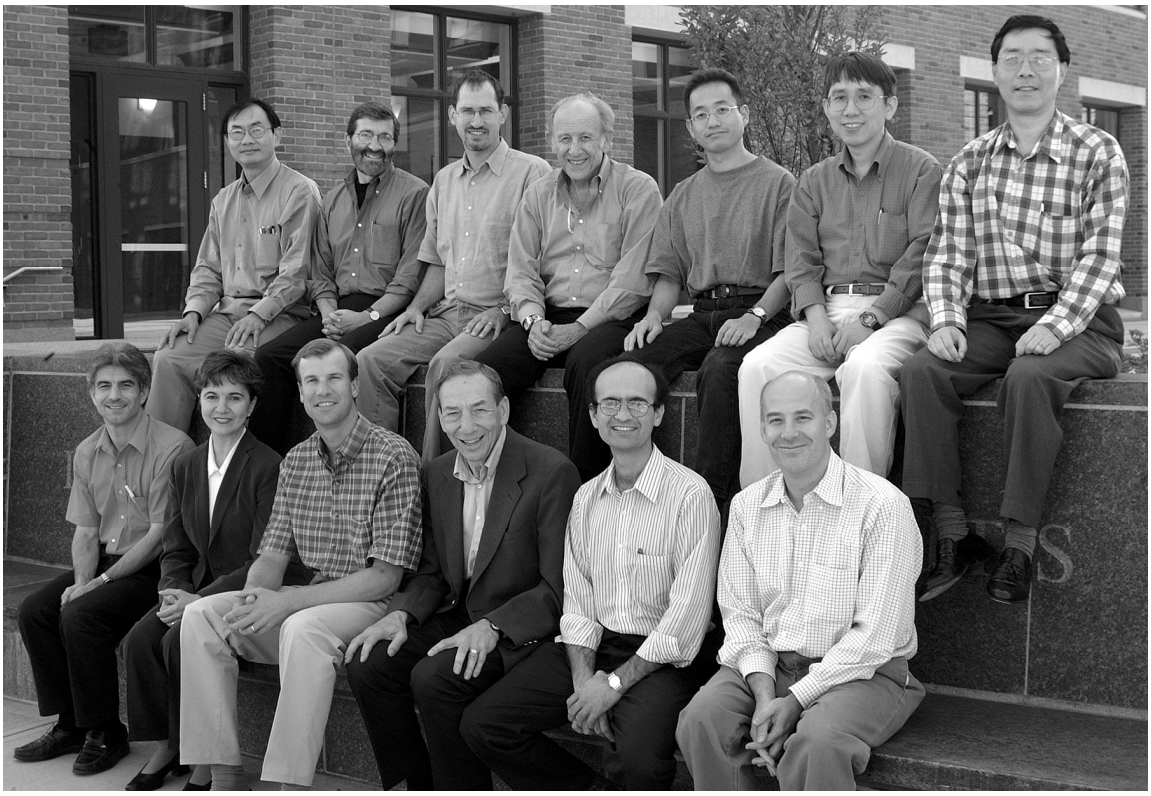
Ozkan, Umit S., Professor, Ph.D., Iowa State University 1984. Application of Heterogeneous Catalysis to Energy and Environmental Issues, Catalytic Materials, and Heterogeneous Kinetics.

Rathman, James F., Associate Professor, Ph.D., University of Oklahoma 1987. Molecular Self-Assembly, Nanostructured Materials, Interfacial Phenomena in Biological Systems, Chemical Reactions in Surfactant Solutions, Chemo and Bioinformatics.

Tomasko, David L., Associate Professor, Ph.D., University of Illinois at Urbana 1992. Intermolecular Interactions in Supercritical Fluids Separations and Materials Processing, Molecular Thermodynamics, High Pressure Phase Equilibria.

Yang, Shang-Tian, Professor Ph.D., Purdue University 1984. Biotechnology, Bioprocesses for Production of Value-added Products, Fermentation, Cell Culture, Tissue Engineering, Nanofiltration, Membrane Extraction for Fermentation Product Recovery.

Zakin, Jacques L., Helen C.Kurtz Professor Emeritus, D. Eng.Sc., New York University 1959. Surfactant Drag Reduction, Heat Transfer Enhancement, Rheology and Microstructures of Complex Fluids, Flow Birefringence.



Row1: from right to left Prof L. James Lee, Prof. S.T.Yang, Prof. Isamu Kusaka, Prof. Robert S. Brodkey, Prof. David Tomasko, Prof. Martin Feinberg, Prof. L.S.Fan.

Row2: Prof. James F. Rathman, Prof. Bhavik R. Bakshi, Prof. Jack Zakin, Prof. Kurt W. Koelling, Prof. Umit S. Ozkan, Prof. Jeffrey J. Calmers.

Awards and Honors Received by Faculty Members

Brodkey, R.S.
Elected a fellow of the American Academy of Mechanics, (2002).

Fan, Liang-Shih
Awarded an Honorary Doctoral Degree (Doctorate Honoris Causa) from the Institute de Estudios Superiores en Engenieria, Puebla, Mexico, September 12, (2002). (Citation: "Distinguished contributions to Engineering Education, outstanding contributions to engineering technology, and high interest in the globalization of engineering."

Lumley Research Award – College of Engineering, The Ohio State University, (2002).

Plenary/Keynote Lecturer of Instituto Mexicano de Ingenieros Quimicos, A.C.- XVIi Reunion Nacional Estudiantil, Puebla, August 6, (2002).

Ho, W.S. Winston
Member, National Academy of Engineering, U.S.A., (2002).

Invited Member, the Scientific Committee, International Congress on Membranes and Membranes Processes, Toulouse, France, July 7-12, (2002).

Chairman of the Board, Chinese-American Chemical Society, (2002).

Koelling, Kurt W.
Lumley Research Award - College of Engineering, The Ohio State University, (2002).

Lumley Award Interdisciplinary Research – College of Engineering, The Ohio State University, (2002) with **Lee,L.J., Tomasko,D.L.,** Tony Luscher and Jose Castro.

Lee, L.James.
Clara M. and Peter L. Scott Faculty Award for Excellence in Engineering Education, (2002).

Fellow, Society of Plastics Engineers

Lumley Award Interdisciplinary Research – College of Engineering, The Ohio State University, (2002) with **Koelling, K.W., Tomasko,D.L.,** Tony Luscher and Jose Castro.

Ozkan, Umit.S.
American Chemical Society Columbus Section Award (2002).

Top Contributor of Technology (TOPCAT) Award, Industry and Technology Council of Central Ohio, (2002).

Middle East Technical University Professor Somer Distinguished Alumni Award, (2002).

Society of Women Engineers Award, (2002).

Rathman, James.F
Lectureship Award, Japan Research Institute of Material Technology, (2002)

Tomasko, David.L.
Alumni Award for Distinguished Teaching- The Ohio State University, (2002).

Lumley Award Interdisciplinary Research – College of Engineering, The Ohio State University, (2002) with **Koelling,K.W., Lee, L.J.,** Tony Luscher and Jose Castro.

Dave Tomasko receiving his 2002 Alumni Award for Distinguished Teaching from President Kirwan

Zakin, J.L.
Keynote Lecture 15th International Congress of Chemical and Process Engineering (CHISA) Prague, Czech Republic, August 29, 2002.

Publications and Proceedings

PUBLICATIONS

Books and Book Chapters

Brodkey, R.S. and Kresta. S., Chapter, "*Introduction and the Fundamentals of the Science of Mixing",* in "Turbulence: Engineering Viewpoint and Implications for Mixing Operations" in press.

Fan, L.S., Furusaki, S. and Garside, John. "*The Expanding World of Chemical Engineering"*, 2nd edition, 357 pages, Taylor and Francis, New York, (2002).

Fan, L.S., "*Special Issue of Journal of the Chinese Institute of Chemical Engineers in honor of Dr. Norman Li"*, Vol.33, no. 1, (2002).

Ho, W.S. Winston, Drioli, E., Lipscomb, G. and Li, N.N., Eds. "*Advanced Membrane Technology*," New York, in press.

K. W. Koelling, "*Chemical Engineering in Polymer Processing*", in The Expanding World of Chemical Engineering, 2nd Ed., Taylor and Francis Publishers, 71-81, (2002)

Ozkan, Umit. S. and Watson,R.K., "*Catalysis: Energy, Environment and Economics*" in Changing World of Chemical Engineering, Second Edition, Eds. Fan,L.S., Farside, J. and Furusaki, S., New York, N Y, (2002).

Ozkan, Umit. S., "*Catalytic Hydrodenitrogenation*" in Encyclopedia of Catalysis, Ed.I.Horwath, John Wiley & Sons, New York, N Y, (2002).

Zhu,Y. and **Yang, S.T.,** "*Enhancing Butyric Acid Production with Mutants of Clostridium Tyrobutyricum Obtained from Metabolic Engineering and Adaptation in a Fibrous-Bed Bioreactor",* ACS Symposium Series on "Fermentation Process Development", American Chemical Society, in press.

Refereed Papers

Bakshi, B.R., *A Thermodynamic Framework for Ecologically Conscious Process Issue on Selected Engineering*, Computers and Chemical Engineering invited to special issue on Selected Papers from PSE 2000, 26(2), 269-285, (2002).

Bakshi, B.R., Hasebe, S., Hashimoto, I., Kano, M., Nagao, K, Ohno, H., and Strauss, R., *Comparison of Statistical Process Monitoring Methods: Application to the Eastman Challenge Problem*, Computers and Chemical Engineering invited for special issue on Selected Papers from PSE 2000, 26, (2), (2002).

Bakshi, B.R., Blower, P.E. Jr.**, Rathman, J.F.** and Yang, C., *Multiscale and Bayesian Approaches to Data Analysis in Genomics High Throughput Screening*, Current Opinion in Drug Discovery and Development, 5(3), 428-438, (2002).

Bakshi,B.R., Goel,P.K., Nounou,M.N. and Shen,X., *Process Modeling by Bayesian Latent Variable Regression*, AIChE Journal, 48(8), 1775-1793, (2002).

Aradhye,H.B., **Bakshi,B.R.** and Davis,J.F., *ART-2 and Multiscale ART-2 for On-Line Process Fault Detection-Validation via Industrial Case Studies and Monte Carlo Simulation*, Annual Reviews in Control, 26(1), 113-127, (2002).

Bakshi, B.R., Goel, P.K., Nounou, M.N. and Shen, X., *Bayesian Principal Component Analysis*, J. Chemometrics, 16(11), 576-595, (2002).

Koeltzsch, K., Qi, Y., **Brodkey, R.S.,** and **Zakin, J.L.**, *Drag Reduction Using Surfactants in a Rotating Cylinder Geometry*, Exp. in Fluids, (in press).

Chalmers,J.J., Koelling,K. and Ma.N., , *The Fabrication and Use of A Transient Contractional Flow Device to Quantify the Sensitivity of Mammalian and Insect Cells to Hydrodynamic Forces*, Biotechnology and Bioengineering 80, 428-437, (2002).

Chalmers, J.J., Moore, L.R., Williams, S. and Zborowski, M., *Separations Based on Magnetophoretic Mobility*, Separation Sciences and Technology, 37, 3611-3633, (2002).

Chalmers, J.J., Bolwell, B., Hoyos, M., McCloskey, K., Moore, L.R., Nakmura, M., and Zborowski, M., *Pulse-injection Studies of Blood Progenitor Cells in a Quadruple Magnetic Flow Sorter*, J. Separation Science and Technology, 37(4), 1-23, (2002).

Feinberg, M., *Toward a Theory of Process Synthesis*, Ind. Eng. Chem. Res., 41, 3751-3761, (2002).

Feinberg, M. *Geometric Control Theory and Classical Problems of Chemical Reactor Design*, Proceedings of 15th IFAC World Congress, Barcelona, (2002).

Abraham, Thomas K. and **Feinberg, M.,** *Kinetic Bounds on Attainability in the Reactor Synthesis Problem,* Ind. Eng. Chem. Res. (in press).

Ho, W.S.W. and Wang,B.*, Strontium Removal by New Alkyl Phenylphosphonic Acids in Supported Liquid Membranes with Strip Dispersion*, Ind. Chem. Eng. Res., 41, 381, (2002).

Ho, W.S.W., Nuemuller, T.E. and Poddar, T.K., *Removal and Recovery of Copper and Zinc by Supported Liquid Membranes with Strip Dispersion,* J.Chin.Inst.Chem.Engrs., 33, 67, (2002).

Bechtel, S.E., **Koelling, K.W.,** Nguyen, W., Tan, G. *A New Technique for the Measurement of the Dynamic Evolution of Surface Tension*, J. Colloid and Interfacial Science, 245, 142-162 (2002)

Lilly, B., **Koelling, K.W.,** Kuswanti, C., Stuart, J.A., Qiao, J and Xu, G., *Characterization of Virgin/Post-consumer High Impact Polystyrene Resins for Injection Molding*, J.Applied Polym. Sci., 84, 1-8 (2002)

Juang,Y.J., **Lee,L.J**., and **Koelling,K.W.**, *Hot Embossing of Polymers for Microfabrication, Part I. Experimental*, Polym. Eng. Sci., 42(3), 539-550 (2002)

Juang,Y.J., **Lee,L.J**., and **Koelling,K.W.,** *Hot Embossing of Polymers for Microfabrication, Part II. Rheological Characterization and Process Analysis*, Polym. Eng. Sci., 42(3), 551-566 (2002).

Koh,C.G., **Lee,L.J**., **Koelling,K.W.,** Madou.,M.J. and Yu,L., *Experimental Investigation and Numerical Simulation of Injection Molding with Micro-Features*, Polym. Eng. Sci., 42(5), 871-888 (2002).

Koelling, K.W., Kuswanti, C., Lilly, B., Stuart, J.A., Qiao,J. and Xu, G., *An Engineering Approach to Plastic Recycling: Rheological Characterization to Determine Injection Molding Parameters while Reducing Experimental Molding Runs*, J. Ind. Ecology, (in press).

Lee,L.J., Li,H., Liu,D., Han,X., and **K.W. Koelling**, **Tomasko,D.L**. and Wingert,M.J., *A Review of CO_2 Applications in the Processing of Polymers*, Ind. Eng. Chem. Res., (in press).

Han, X., **Koelling, K.W., Lee, L.J.** and Tomasko, D.L., *Effect of Die Temperature on the Morphology of Microcellular Foams*, Polym. Eng. & Sci., (in press).

Kusaka,I., Oxtoby, D.W. and Wang,Z.G., *On the Direct Evaluation of Equilibrium Distribution of Clusters by Simulation.II*, J. Chem. Phys., 115, 6898-6906, (2001).

Kusaka,I. and Oxtoby, D.W., *A Monte Carlo Simulation of Nucleation in Amphiphilic Solution*, J. Chem. Phys., 115, 4883-4889, (2001).

Kusaka,I., *On Scaling the Behavior of the Free Energies of Nucleation*, J. Chem. Phys, (in press).

Lee,L.J. and Shih,C-H., *Analysis of Void in Liquid Composite Molding Using Microflow Models, Polym. Composites*, 23(1), 120-131, (2002).

Lee,L.J. and Yang,H., *Effects of resin Chemistry on Redox-Polymerization of Unsaturated Polyster Resins*, Journal Applied Polym. Science, 84, 211-227, (2002).

Chiu,H.T. and **Lee,L.J**., *Simulation of Reactive Liquid Composite Molding based on Control-Volume Finite Element Method*, Int'l J. Polym. Eng., 22(3), 155-175, (2002).

Cao,H., **Lee,L.J**. and Yu,B., *A Fractal In-plane Permeability Model for Fabrics, Polym. Composites*, 23(2), 201-221, (2002).

Lee,L.J., Svoboda,P., Wang,H. and Zeng,C., *Morphology and Mechanical Properties of PP/Organoclay Nanocomposites*, J. Applied Polym. Sci., 87, 1562-1570, (2002).

Ding,Z., Engelen,H., **Lee,L.J**., Li,S. and Xu,L., *Influence of Heat Transfer and Curing on the Quality of Pultruded Composites*, *Part I. Experimental*, Polym. Composites, 23(5), 947-956, (2002).

Ding,Z., **Lee,L.J**., Li,S. and Xu,L., *Influence of Heat Transfer and Curing on the Quality of Pultruded Composites*, *Part II. Modeling and Simulation*, Polym. Composites, 23(5), 957-969, (2002).

Castro,J.M., **Lee,L.J**. and Li,S., *Void Removal in Composite Processing,* Effective Mass Diffusity in Composites, Journal of Composite Materials, 36(14), 1709-1724, (2002).

Han.X., **Koelling,K.W**.,**Lee, James.L**. and Tomasko,D.L., *Continous Microcellular Polystyrene Foam Extrusion with Supercritical CO2*, Polym. Engineering and Science, 42(11), 2094-2106, (2002).

Lee, James.L. and Li,L., *Effect of Chelating Agent- 2,4 P on Low Temperature Cure of Vinylester and Unsaturated Polyester Resins,* Polym. Engieering and Science, 23(6), 971-990, (2002).

Castro,J.M., Hogade,R., **Lee,L.J**. and Li,M.., *Development of an Isothermal Lubricating Layer Model for Injection Pultrusion of Electronic Pre-pregs*, Polymer Engineering and Science, 23(1), 1-9, (2002).

Bunch,A.Y., and **Ozkan,U.S.,** *Investigation of the Reaction Network of Benzofuran Hydrodeoxygenation over Sulfide and Reduced Ni-Mo/Al_2O_3 Catalysts*, J. Catal., 206 (177) (2002).

Karakas,G., **Ozkan,U.S.** and Watson,J.M., *No Reduction with CH4 Over Wet-Impregnated and Sol-Gel Pd/Tio_2: Characterization by In-Situ DRIFTS*, Cat. Communications. 3, 199-206 (2002).

Ozkan,U.S. and Watson,R.B., *Spectroscopic and Structural Characterization of Low-Level Alkali Doping effects on Mo/Silica-Titania Catalysts*, J. Phys. Chem., 106(27), 6930-6941, (2002).

Gotoh,T., Hashimoto,S., Imura,T., Otake,K., **Rathman,J.F**., Sakai,H., Yokoyama,S. and Yuasa,M., *Preparation and Physiochemical Properties of Various Soybean Lecithin Liposomes using Supercritical Reverse Phase Evaporation Method,* Colloids and Surfaces B: Biointerfaces, 27(3), 133-140, (2002).

Huang,Y.L., **Rathman,J.F**., Yang,S.T. and Wang,Z.F., *Lecithin Enhanced Biotransformation of Cholesterol to Androsta-1,4-diene, 17-dione and Androsta-4-ene-3, 17-dione*, J. Biotechnology, 77(12), 1349-1357, (2002).

Tomasko,D.L., Wang,Y. and Yang,C., *Confocal Microscopy Analysis of Supercriticle Fluid Impregnation of Ploypropylene*, Ind.Eng.Chem.Res., 41(7), 1780-86, (2002).

Lee, L.J., Svoboda,P., **Tomasko,D.L.,** Wang,H. and Zeng,C., *Morphology and Mechanical Properties of Polypropylene/Organoclay Nanocomposites*, J. Appl. Polym. Sci., 85, 1562-1570, (2002).

Bezanehtak,K., Combes,G.B., Dehgani,F., Foster,N.R. and **Tomasko,D.L.,** *Vapor-Liquid Equilibrium for Binary Mixtures of Carbon Dioxide + Methanol, Hydrogen + Methanol, and Hydrogen + Carbon Dioxide at High Pressures,* J. Chem. Eng. Data, 47(2), 161-168, (2002).

Albayrak,N. and **Yang,S.T.,** *Production of Galacto-oligosaccharides from Lactose by Apergillus Oryzae β-Galacosidase Immobilized on Cotton Cloth*, Biotechnol, Bioeng., 77, 8-19, (2002).

Cheung,C.M., Huang,Y.L., Wu,L., **Yang,S.T.,** and Zhang,L., *Production of Carboxylic Acids from Corn Meal by Immobilized Cell Fermentation in a Fibrous-Bed Bioreactor*, Bioresource Technol, 82, 51-59, (2002).

Albayrak,N. and **Yang,S.T.,** *Immobilization of β-Galacosidase on Fibrous Matrix by Polyethylenimine for Production of Galacto-oligosaccharides from Lactose,* Biotechnol. Progress, 18, 240-251, (2002).

Cheung,C.M., Huang,Y.L. and **Yang,S.T.,** *Continuos Production of Development Endothelial Locus-1 in a Fibrous-Bed Bioreactor*, J. Biotechnol., 97, 23-29, (2002).

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Feinberg, M., *How Geometric Control Theory Provides Surprising Answers to Classical Questions of Chemical Reactor Theory*, AIChE National Meeting, Indianapolis, IN, November, (2002).

El-Azzami,L., **Ho,W.S.W**. and Tee,Y.H., *Carbon Dioxide-Selective Membranes for Hydrogen Purification, International Congress on Membranes and Membrane Processes*, Paper 2003, Toulouse, France, July 7-12, (2002).

El-Azzami,L. and **Ho,W.S.W**., *Modeling of CO_2-Selective Water-Gas-Shift Membrane Reactor for Fuel Cells*, AIChE Meeting, Indianapolis, IN, November 3-8, (2002).

El-Azzami,L. and **Ho,W.S.W**., *Modeling of H_2S/CO_2-Removal and Water-Gas-Shift Membrane Reactor for Fuel Cells*, Meeting with H2fuel, Lexington, KY, February 26, (2002).

Ho,W.S.W., *Development of Novel and Water-Gas-Shift Membrane Reactor for H2 Enhancement,* Meeting with DOE and H2fuel, Lexington, KY, April 24, (2002).

Ho,W.S.W., *Fuel-Cell Fuel Processing with Membrane,* Meeting with GM and H_2fuel, Lexington, KY, May 20, (2002).

Ho,W.S.W., *Development of Novel and Water-Gas-Shift Membrane Reactor,* Presentation to Freedom CAR Fuel Cell Tech Team, USCAR, Detroit, MI, June19, (2002).

Ho,W.S.W., *Fuel-Cell Fuel Processing,* Meeting with Honda R&D Americas, Columbus, OH, October 24, (2002).

Ho,W.S.W., *Fuel-Cell Fuel Processing,* DaimlerChrysler Visit, Columbus, OH, October 29, (2002).

Ho,W.S.W. and Phil Westmoreland, *Tropical Conference How-to-Guide*, AIChE Annual Meeting, Indianapolis, IN, November 3-8, (2002).

Ho,W.S.W., *Fuel-Cell Fuel Processing*, Delphi and Battelle Visit, Columbus, OH, November 11, (2002).

Koelling,K.W., *Solution Spinning of Fibers and Extensional Rheology of Dilute Polymer Solutions" Radici Spandex*, Tuscaloosa, AL, February 14, (2002).

Kang, K., Lai,S., Lee,L.J., **Koelling,K.W.,** *Design and Analysis of Electrophoresis of DNA on Polymer Microchips*, BioMEMS2002, Columbus, Ohio

Koelling,K.W. and Wang,Y **,** *Effect of Non-Newtonian Rheology on Gas-Assisted Injection Process*, AIChE Annual Meeting, Indianapolis, IN, November , (2002).

Lee,L.J., Kang,K. and **Koelling,K.W.,** *Effects of Fluids and Interface Characteristics on Microfluidic*, AIChE Annual Meeting, Indianapolis, IN, November, (2002).

Han,X., **Koelling, K.W.,** Lee,L.J. and Tomasko,D.L., *Foam Extrusion of Polystyrene and its Nanocomposites by Using Supercritical CO2*, Annual Meeting, Indianapolis, IN, November, (2002).

Koelling,K.W., Koh,C.G., **Lee,L.J.,** Yu,L., *Investigation of Thin-Wall Injection Molding with Micro-Features*, International Meeting of the Polymer Processing Society, Guimares, Portugal, June 16-20, (2002).

Yang,Y., **Lee,L.J.,Koelling,K.W.,** "*Investigation of Structure Evolution in Polymer Blending using Microfabricated Samples*, International Meeting of the Polymer Processing Society, Guimares, Portugal, June 16-20, (2002).

X. Han, C. Zeng, **L.J. Lee, D.L. Tomasko**, **K.W. Koelling** "*Polymer Nanocomposite Foams by Using Supercritical CO2*" (Keynote Presentation), , International Meeting of the Polymer Processing Society, Guimares, Portugal, June 16-20, 2002

Kusaka,I., *On the Scaling Behavior of the Free Energetics of Nucleation*, 77th ACS Colloid and Surface Science Symposium, Atlanta, GA, June 15-18, (2003).

Guan,J., Hansford,D.J. and **Lee,L.J.** *Microfabricated Polymer Particles for Drug Delivery*, AiChE Annual Conference, Indianapolis, IN, November, (2002).

Han,X., **Lee,L.J., Tomasko,D.L.,** Yang,Y. and Zeng,C., *Supercritical CO_2 Assisted Microfabrication of 3D Scaffolds for Tissue Engineering*, AIChE Annual Conference, Indianapolis, IN, November, (2002).

Hansford,D.J., Guan,.J., Lai,S., **Lee,L.J.** and Wang,S., *Nanoporous Membrane Based on Polymer Nanofabrication Methods*, AIChE Annual Conference, Indianapolis, IN, November, (2002).

Lai,S. and **Lee,L.J.,** *A Novel Gel Loading Method for Improved Microchip Capillary Electrophoresis*, AIChE Annual Conference, Indianapolis, IN, November, (2002).

Basu,S., **Lee,L.J.,** and **Yang,S.T.,** *Culturing Human Astrocytoma Cells in 3D Matrices*, AIChE Annual Conference, Indianapolis, IN, November, (2002).

Lannutti,J.J., **Lee,L.J**. and Zeng,C., *Interfacial Synthesis of Nanoporous Silica Nanoparticles*, AIChE Annual Conference, Indianapolis, IN, November, (2002).

Hu,X. and **Lee,L.J.,** *FEM Simulation on Viscoelastic Flows Using the CONFFESSIT Method,* AIChE Annual Conference, Indianapolis, IN, November, (2002).

Liu,C., **Ozkan,U.S**. and Watson,R.B., *Silica-titania Mixed-oxide Supported Molybdenum Catalysts for the Oxidative Dehydrogenation of Propane and Ethane*, National Meeting of American Chemical Society,Orlando, FL, April, (2002).

Holmgreen,E., Munteanu,R., Oktar,N., **Ozkan,U.S**., and Watson,J.M., *Selective Catalytic Reduction of Nitric Oxides with Ch4 over Palladium-based Catalysts,* Tri-State Catalysis Society Spring Symposium, Lexington, Kentucky, April, (2002).

Liu,C., **Ozkan,U.S**. and Watson,R.B., *Effect of Chlorine on the Catalytic Performance of Mo/Si:Ti Catalysts in the Oxidative Dehydrogenation of Ethane,* Tri-State Catalysis Society Spring Symposium, Lexington, Kentucky, April, (2002).

Matter,P. and **Ozkan,U.S.,** *Catalytic Steam Reforming and Partial Oxidation of Methanol for Hydrogen Production,* Tri-State Catalysis Society Spring Symposium, Lexington, Kentucky, April, (2002).

Matter,P. and **Ozkan,U.S.,** *Catalytic Steam Reforming and Partial Oxidation of Ethanol and Methanol for Hydrogen Production,* AIChE, Indianapolis, IN, November, (2002).

Rathman,J.F. and Sun,P., *Mixed Monolayers and Langmuir-Blodgett Films Composed of Phospholipids and Collagen*, AIChE Annual Meeting, Indianapolis, IN, November, (2002).

Rathman,J.F. and Triplett,M.D., *Effects of Material Characteristics and Synthesis Techniques on Physiochemical Properties of Solid Lipid Nanoparticles,* AIChE Annual Meeting, Indianapolis, IN, November, (2002).

Blower,P.E., Myatt,G., **Rathman,J.F**. and Yang,C.*, Model for the Absorption of Drug-Like Compounds Based on Structural Features and Thermodynamic Properties*, AIChE Annual Meeting, Indianapolis, IN, November, (2002).

Bakshi,B.R., **Rathman,J.F**., Yang,C. and Yu,L., *Multiscale Hierarchical Classifications of Genes from Microarray HTS Genomics Data,* AIChE Annual Meeting, Indianapolis, IN, November, (2002).

Archer,J.R., **Rathman,J.F**. and Lee,Y.S., *Mesostructured Silica Films with Crystalline Domains and Structural Features on Multiple Length Scales,* 3rd International Mesostructured Materials Symposium, Jeju City, Korea, July, (2002).

Blower,P.E., Myatt,G., **Rathman,J.F**., Utkin,I. and Yang,C.*, Model for the Absorption of Drug-like Compounds Based on Structural Features and Interfacial Properties*, AIChE Annual Meeting, Indianapolis, IN, November, (2002).

Li,H., **Lee,L.J**., and **Tomasko,D.L.,** *Interfacial Tension of Polystyrene/CO_2 Systems,* AIChE Annual Conference, Indianapolis, IN, November, (2002).

Lee,L.J., **Tomasko,D.L.,**Yang,Y. and Zeng,C., *Polymer Scaffolds Foamed with CO_2 for Tissue Engineering*, AIChE Annual Conference, Indianapolis, IN, November, (2002).

Lannutti,J., Lee,J,A., Sproule,T. and **Tomasko,D.L.,** *Bioactive Polymer Surfaces via Supercritical Fluids*, poster presented at 8th meeting on Supercritical Fluids, Bordeaux, France, May, (2002).

Baxter,A.R., Han,X**., Koelling,K.W., Lee,L.J**. **and Tomasko,D.L.,** *Influences of Solubility and Viscosity in the Polystyrene/CO_2 Microcellular Foaming Extrusion*, Paper presented at SPE-ANTEC, San Francisco, CA, May, (2002).

Han,X., **Koelling,K.W., Lee,L.J.,Tomasko,D.L.** and Zeng,C., *Processing of Cell Structure of Nano-clay Modified Microcellular Foams*, Paper presented at SPE-ANTEC, San Francisco, CA, May, (2002).

Han,X., **Koelling,K.W., Lee,L.J., Tomasko,D.L.** and Zeng,C., *Structure of Nanocomposites Foams,* Paper presented at SPE-ANTEC, San Francisco, CA, May, (2002).

Basu,S. and **Yang,S.T.,** *GDNF Expression by Atrocytes in Three Dimensional Polymeric Matrices,* Engineering Tissue Growth International Conference and Exposition, Pittsburgh, PA, March 19-21, (2002).

Ramey,D.E., **Yang,S.T.** and Zhu,Y., *A Novel Two-Stage Fermentation Process for Butanol Production from Corn,* 24th Symposium on Chemicals anf Fuels from Biomass, Gattleburg, TN, April 28-May1, (2002).

Yang,S.T., *Advancements in Fermentation Technologies*, (Invited speaker for the symposium), Challenges and Outlook of Bioprocess Engineering in Food, IFT Annual Meeting, Anaheim, CA, June 15-19, (2002).

Albayrak,N., Gore,J.P., Ozen,B.F., Singh,R.K., Tay,A. and **Yang,S.T.,** *Monitoring the Formation of Galacto-oligosaccharides from Lactose using Fourier Transform Infrared Spectroscopy*, IFT Annual Meeting, Anaheim, CA, June 15-19, (2002).

Suwannakham,S. and **Yang,S.T.,** *Metabolic Engineering for Enhanced Propionibacterium Acidipropionici*, ACS National Meeting, Boston, MA, August 18-22, (2002).

Talabardon,M., Thongchui,N. and **Yang,S.T.,** *A Routing Fibrous Bed Bioreactor for Filamentous Fungal Fermentation*, ACS National Meeting, Boston, MA, August 18-22, (2002).

Basu,S., Lee,L.J. and **Yang,S.T.,** *Culturing Human Astrocytoma Cells in Three Dimensional Matrices*, AIChE Annual Meeting, Indianapolis, IN, November3-8, (2002).

Thongchui,N. and **Yang,S.T.,** *Effects of Fungal Morphology and Oxygen Transfer on Lactic Acid Production in A Rotating Fibrous Bed Bioreactor,* ACS National Meeting, Boston, MA, August 18-22, (2002).

Yang,S.T., *A Fibrous-Bed Bioreactor for Three-Dimensional Culturing of Animal Cells*, BioPhex, Santa Clara, CA, October 22-24, (2002).

Robinson,C. and **Yang,S.T.,** *Three-Dimensional Model for in vitro Study of Colon Cancer*, AIChE Annual Meeting, Indianapolis, IN, November3-8, (2002).

Luo,J. and **Yang,S.T.,** *CHO Cell Culture in a Fibrous-Bed Bioreactor for Recombinant Protein Production,* AIChE Annual Meeting, Indianapolis, IN, November3-8, (2002).

Lai,S., **Lee,L.J.**, Luo,J. and **Yang,S.T.,** *Microchip-Based Enzyme-Linked Immunosorbent Assays,* AIChE Annual Meeting, Indianapolis, IN, November3-8, (2002).

Thongchui,N. and **Yang,S.T.,** *A Rotating Fibrous Bed Bioreactor for Enhanced Oxygen Transfer and Lactic Acid Production in Filamentous Fungal Fermentation*, AIChE Annual Meeting, Indianapolis, IN, November3-8, (2002).

Sanz-Valero,J.I., Tang, I.C. and **Yang,S.T.,** *Production of Galacto-oligosaccharides from Whey Lactose by Immobilized* Enzyme Reaction and Nanofiltration**,** AIChE Annual Meeting, Indianapolis, IN, November3-8, (2002).

Supaporn,S. and **Yang,S.T.,** *Metabolic Engineering of Enhanced Propionic Acid Production from Glucose and Xylose by Propionibacterium Acidipropionici*, AIChE Annual Meeting, Indianapolis, IN, November3-8, (2002).

Yang,S.T., *Three-Dimensional Fibrous Scaffolds for Culturing Engineered Human cells and Tissue, Engineering Tissue Growth International Conference and Exposition, Pittsburgh, PA, March 17-19, (2003).*

Zhang,Y., Qi,Y., Talmon,Y., **Zakin,J.L.,** *Drag Reduction of Mixed Surfactant Systems,* AIChE, Indianapolis, IN, November 3-8, (2002).

Zhang,Y., Qi,Y., **Zakin,J.L.,** *Headgroup Effect on Drag Reduction and Microstructures of Quaternary Ammonium Surfactants*, The Society of Rheology (SoR), Minneapolis, MN, October 13-17, (2002).

Organizers and Session Chairs of National and International Meeting

Bakshi,B.R., Member, Technical Advisory Committee, *2nd Meeting of International Society for Industrial Ecology*, Ann Arbor, MI, (2003).

Bakshi,B.R., Session Chair*, Measurement Validation and Fault Detection*, AIChE 2002 Annual Meeting, Indianapolis, IN,. (2002).

Bakshi,B.R., Chair, *Topical Conference on Global Climate Change and the Chemical Industry*, AIChE 2002 Spring Meeting, New Orleans, LA, (2002).

Chalmers,J.J., 15 d/e Division Chair, AIChE, (2002).

Fan,L.S., Conference Co-Chair, 6th *International Conference on Gas-Liquid and Gas-Liquid-Solid Conference*, Vancouver, Canada, Aug 16-20, (2003).

Fan,L.S., Member, Organizing Committee, *National Research Council, Board of Chemical Sciences and Technology's Workshop on National Security and Homeland Defense,* Irvine, CA, Jan. 14-16, (2002).; contributing author for NRC Report "National and Homeland Defense"

Fan,L.S., Member, International Advisory Committee, *2nd International Symposium on Multiphase, Non-Newtonian and Reacting Flows*, Beijing, China, June, (2004).

Ho,W.S.W., Session Chair, *Fuel-Cell Membranes Session, International Congress on Membranes and Membrane Processes*, Toulouse, France, July 7-12, (2002).

Ho,W.S.W., Session Chair, *Novel Membranes and Membrane Processes for Recovery/Recycle Session,* AIChE Annual Meeting, Indianapolis, IN, November 3-8, (2002).

Koelling,K.W., Session Chair, *Polymer Processing and Rheology*, AIChE Annual Meeting, Indianapolis, IN, November , (2002).

Koelling,K.W., Organizing Committee, *The 8th International Conference on Numerical Methods in Industrial Forming Processes*, NUMIFORM 2004, Columbus, OH, June 13-17, (2004).

Kusaka,I., Co-Organizer, *Midwest Thermodynamics and Statistical Mechanics Conference*, Columbus, OH, My 28-29, (2003).

Kusaka,I., Session Chair, *Nucleation Session in at the 77th ACS Colloid and Surface Science Symposium*, Atlanta, GA, June 15-18, (2003).

Lee,L.J., Session Co-Chair*, Composite Processing***,** AIChE 2002 Annual Meeting.

Ozkan,U.S., Chair**,** *Catalytic Oxidation of Lower Alkanes, 223rd National Meeting of the American Chemical Society,* Orlando, Florida, April, (2002).

Ozkan,U.S., Chair and Organizer*, Metals and Metal Oxides, 18th Meeting of the North American Catalysis Society,* Cancun, Mexico, June, (2003).

Ozkan,U.S., Scientific Advisory Board*, Fourth International Symposium on Group 5 Elements*, Spain, (2002).

Rathman,J.F., Member, AIChE, ACS, ASEE.

Tomasko,D.L., Session Co-Chair, *Supercritical Fluids in Foods & Pharmaceuticals*, AIChE Annual Meeting, Indianapolis, IN, November, (2002).

Yang,S.T., Technical Program Chair, *Ohio Symposium on Advances in Science and Technology-2002*, sponsored by Ohio Chinese Academic and Professional Association and The Ohio State University, Columbus,OH, June 15, (2002).

Yang,S.T., International Scientific Board and Session Chair*, Bioreactor Scale Up and Design,* The 1st International Congress on Bioreactor Technology in Cell, Tissue Culture and Biomedical Applications, Tampere, Finland, July 14-18, (2003).

Zakin, J.L., Session Chair, *CHISA Meeting*, Prague, Czech Republic, August, (2002).

Zakin, J.L., International Organizing Committee, *Eastern Mediterranean Chemical Engineering Conference (EMCC-3)*, Thessaloniki, Greece, May 12-14, (2003).

Editorial Boards, National Committees and Other Professional Activities

Bakshi, B.R., Reviewer for National Science Foundation (CTS and BES), AIChE Journal, Computers and Chemical Engineering, Industrial and Engineering Chemistry Research, Journal of Chemometrics, Journal of Process Control, Journal of Cleaner Production, Cleaner Technologies and Environmental Policy.

Chalmers,J.J., Editorial Board, Biotechnology and Bioengineering.

Fan,L.S., Regional (USA) Editor, Powder Technology- An International Journal, Elesevier Science Publishers, January 1, 1991 to date.

Fan,L.S., Consulting Editorial Board, AIChE Journal (January, 1994 to date).

Fan,L.S., Editorial Board, International Journal of Multiphase Flow (July 1997 to date); Journal of Engineering Chemistry and Metallurgy (China) (1999 to date).

Fan,L.S., Editor- in -Chief, Book Series on Particle Technology, Noyes Publications, Noyes Data Corporation (1994 to date).

Fan,L.S., Editor, Handbook Series on Particle Technology, Elsevier Science Publisher (1998-date).

Fan,L.S., International Editor, Journal of Chinese Institute of Chemical Engineering Journal, (Taiwan, 2000 to date).

Fan,L.S., Editorial Advisory Board, eFluids (March 2001 to date).

Fan,L.S., Editorial Advisory Board, Encyclopedia of Chemical Processing, Dekker, (2001 to date).

Fan,L.S., Editorial Advisory Board, the International Journal of Chemical Reactor Engineering, (March 2002 to date.).

Fan,L.S., Member, Union Carbide Lectureship Award Committee, ASEE, Chemical Engineering Division, (2002).

Fan,L.S., Member, Institute Society Service Award Committee, AIChE, (2002-2004).

Fan,L.S., Member, Assisting the Public on Chemical Terrorism Committee, National Research Council, April 27, (2002).

Fan,L.S., Member, Panel of Reviewers, National Chair Award, Ministry of Education, Rep. Of China, (2002).

Fan,L.S., Review Panel, Rhodes Scholarships and Marshall Scholarships, The Ohio State University, Sept.-Oct., (2002).

Fan,L.S., Review Panel, The Korean Academy of Science and Technology's Korea Engineering Prize, (2002).

Fan,L.S., Invitee and Report Reviewer, National Research Council Meeting on Carbon Management, Irvine, California, Feb. 12-14, (2003).

Fan,L.S., Member, Minority Committee, National Academy of Engineering, (2002-2004).

Fan,L.S., Member, Panel of Judges, Kirkpatrick Award for Chemical Industries, Chemical Engineering Magazine, (2002-2003).

Feinberg,M., American Institute of Chemical Engineers National Awards Committee and AIChE Warren K. Lewis Award Sub-committee, (2003).

Ho,W.S.W., Member, the Executive Board of Programming Committee, American Institute of Chemical Engineers, (AIChE), (2002).

Ho,W.S.W., Member, NSF Review Panel on Bioprocessing and Industrial Bioproducts, (2002).

Koelling,K.W., Associate Editor, Journal of Injection Molding Technology

Koelling,K.W., Associate Director – NSF Industry/University Cooperative Research Center for Advanced Polymer and Composite Engineering (CAPCE), 1997-2002

Koelling,K.W., Co-Director - NSF Industry/multi-University Cooperative Research Center for Advanced Polymer and Composite Engineering (CAPCE), (2002-present).

Koelling,K.W., Supervisor - OSU Campus Rheological Measurement Laboratory 1993-present

Koelling,K.W., Consulting, Radici, Inc., Tuscaloosa, AL, "Fiber spinning of elastomeric fibers".

Lee,L.J., Editorial Board, Journal of International Polymer Processing.

Lee,L.J., Editorial Board, Science and Engineering of Composite Materials.

Lee,L.J., Editorial Board, Journal of Composite Materials.

Lee,L.J., Director of NSF Center for Advanced Polymer and Composite Engineering. (CAPCE)

Lee,L.J., Editorial Board, Journal of International Polymer Processing.

Lee,L.J., Director of NSF IGERT on Molecular Engineering of Micro-Devices.

Lee,L.J., Member of Polymer Ohio Board of Trustees.

Lee,L.J., Member of Polymer Ohio Third Frontier Task Force Team-Advanced Materials.

Lee,L.J., Proposal Reviewer and Panelist for NSF and other federal funding agencies**.**

Lee,L.J., Paper Reviewer for many technical journals in the field of polymers, composites and chemical engineering.

Ozkan,U.S., Guest Editor Catalysis Today (2002-2003).

Ozkan,U.S., North American Catalysis Society, Secretary (2001-present) (National).

Ozkan,U.S., American Chemical Society Petroleum Chemistry Division President-elect, (2000-2001).

Ozkan,U.S., Fourth International Symposium on Group 5 Elements, International Advisory Board (2000-2002) .

Ozkan,U.S., American Chemical Society Petroleum Chemistry Division President, (2001-2002) .

Ozkan,U.S., U.S. Department of Energy National Coal Council (1999-present) (National).

Ozkan,U.S., Professional Advisory Board, Clemson University, Department of Chemical Engineering (2001-present).

Ozkan,U.S., Academic Advisory Board, Iowa State University, Department of Chemical Engineering (2002-present).

Ozkan,U.S., Academic Advisory Board, Middle East Technical University, Department of Chemical Engineering (2002-present).

Ozkan,U.S., U.S. Department of Energy, NETL Reciprocating Engine Program Academic Advisory Board (2002-present).

Ozkan,U.S., 18th Biannual Meeting of the North American Catalysis Society, Scientific Committee, (2002-present).

Ozkan,U.S., Registered Professional Engineer in Ohio.

Tomasko,D.L., AIChE 1f (High Pressure)

Tomasko,D.L., Tri-State Supercritical Fluids Discussion Fluids-President

Yang,S.T., Served on review panels for National Science Foundation—SBIR Grant-Bioprocessing panel (4/2003); TSE Biotechnology and Biochemical Engineering panel (5/2003).

Yang,S.T., Served on review panels for US Department of Agriculture-NRI Value-Added Non-Food Products panel.

Yang,S.T., Served on the Natural Sciences and Engineering Research Council (NSERC, Canada) Site Visit Committee for reviewing Research Network application (1/2003).

Yang,S.T., Reviewed over 45 proposals for the National Science Foundation, US Dept. of Agriculture, Dept. of Energy, Hong Kong Research Grants Council, Canadian Research Council, ACS Petroleum Research Fund, etc. (2002).

Yang,S.T., Reviewed over 40 journals papers for Biotechnology & Bioengineering, Biotechnology Process, Chemical Engineering Science, Industrial & Engineering Chemistry Research, J. Food Science, J. Food Engineering, Canadian J. Chemical Engineering, AIChE Journal, Appl. Biochemistry & Biotechnology, J. Biotechnology, Adv. Environmental Research, Bioresource Technology, Separation Science and Technology, J. Chemical Technol. Biotechnol., Process Biochemistry, etc.

Zakin,J.L., Registered Professional Engineer in Ohio.

Zakin,J.L., Fulbright Selection Committee-Egypt and Israel.

Current Projects and Grants

$310,000	**Bakshi, B.R..** Data Rectification, Process Monitoring Fault Diagnosis, and their Integration Using Multiscale Empirical Modeling. *National Science Foundation.*	(1998-2004)
$310,000	**Bakshi, B.R.**. Data Rectification, Process Monitoring, Fault Diagnosis, and their Integration Using Multiscale Empirical Modeling. *National Science Foundation*	(1998-2004)
$267,382	**Bakshi, B.R..** A Systems Ecology Approach to Life-Cycle Product Assessment & Process Design. *National Science Foundation*	(2000-2004)
$100,000	**Bakshi, B.R..** Ecologically & Economically Conscious Manufacturing of Polymer Composites. *National Science Foundation*	(2002-2003)
$721,411,00	**Bakshi, B.R..** Chemical Genomics Discovery with Novel Informatics Method to Link Genes To Drugs. *Ohio Technology Action Fund*.	(2002-2004)
$70,000	**Brodkey,R.S.** Using Time-Dependent Mixing in Stirred Vessels to Optimize Processes and to Minimize Waste in Reactive Systems. *NSF Combined GOALI Environment & Equipment Grant*.	(1999-2002)
$481,121	**Chalmers,J.J.** The Development of Theoretical and Experimental Characterization of Magnetophoretic Mobility of Immunomatically Labeled Cells. *National Science Foundation*.	(7/01/02-6/31/05)

$289,207	**Chalmers,J.J.** Development of Quadrupole Magnetic Field-Flow Fractionation; Application to Characterization of Magnetic Colloids & Microparticles. *National Science Foundation.*	(3/1/02-2/28/05)
$150,000/year	**Chalmers,J.J.,** Comprehensive Cancer Center Support Grant**.** *National Cancer Institute.*	(7/01/97-11/30/04)
$1,440, 750	**Chalmers,J.J.** Cell Selection by Magnetic Flow Sorting,. *National Cancer Institute.*	(01/00-01/04)
$1,050,000	**Chalmers,J.J.** Rapid Rare Cancer Cell Isolation for Molecular Diagnosis. *National Cancer Institute.*	(4/99-3/02)
$100,000	**Chalmers,J.J.,** Nanocomposites Biocomposities for Use as Novel Films and Coatings**.** *National Cancer Institute.*	(2/00-1/02)
$90,000	**Chalmers,J.J.,** Dynamic Mixing in Stirred Vessels; An Application of Particle Tracking Velocimetry and Flow Visualization in a Convicted Frame of Reference**.** *National Cancer Institute.*	(9/99-12/2)
$295,000	**Fan,L.S.** High Pressure Three- Phase Fluidization. *National Science Foundation*	(7/99-6/02)
$170,000	**Fan,L.S.,** Flow Characterization of Bubble Columns. *U.S. DOE/Washington University*.	(8/99-7/02)
$150,00	**Fan,L.S.** Bubble Column Study, *Washington University Industrial Consortium.*	(8/99-7/02)

$8,536,469	**Fan,L.S.** Commercial Demonstration of Ohio State Carbonation Ash Reactivation (OSCAR) Process and Environmental Characterization. *Coal Development Office/Ohio State University*.	(1/00-6/03)
$558,229	**Ho,W.S.W.** Development of Novel Water-Gas-Shift Membrane Reactor. *H2fuel, LLC*.	(8/16/02-9/30/04)
$360,000	**Koelling,K.W.** Shear and Extensional Rheology of Nanoclays and Nanotubes in Polymer Melts and Solutions. *National Science Foundation*	(7/1/01-6/30/04)
$206,000	**Koelling,K.W.** Deairing Process for Automotive Windshield Lamination. *DuPont Automotive*	(1/1/99-10/31/03)
$100,000	**Koelling,K.W.** Support of Center for Advanced Polymer and Composite Engineering. *Ohio Department of Development*	(11/00-1/02)
$175,000	**Koelling,K.W.** Development of a Foam Co-injection Molding Machine. *Polyone Corporation*	(1/1/02-12/31/02)
$25,000	**Koelling,K.W.** Rheology and Processing of Paint Coatings *Honda of America*	(1/1/02-12/31/02)
$25,000	**Koelling,K.W.** Co-injection Molding of Polymer Foams *Polyone Corporation*	(1/1/02-12/31/02)
$25,000	**Koelling,K.W.** Polymer Nanocomposite Foams *Owens Corning*	(1/1/02-12/31/02)

$240,000	**Koelling,K.W. and Tomasko,D.L.** Polymer Nanocomposite Foams Prepared by Environmentally Benign Supercritical Fluids. *National Science Foundation*	(30/1/02-08/31/05)
$600,000	**Koelling,K.W.** Environmentally Benign Micro-Cellular Nano-Composite Foam for Structural and Insulation Market. *National Institute of Standards and Technology*	(12/1/02-12/30/05)
$22,296	**Kusaka,I**. Environmental Molecular Science Institute. *National Science Foundation*.	(9/1/02-8/31/03)
$500,000	**Lee,L.J. and Koelling,K.W.** Operating Grant for an Industry/University Cooperative Research Center for Advanced Polymer Engineering. *National Science Foundation.*	(10/1/97-9/30/07)
$300,000	**Lee,L.J.** Polymer and Composite Engineering**.** *Polymer and Composite Industry*.	(1/1/2002-12/31/2002)
$350,631	**Lee,L.J.** Development of a Solvent-less Process to Manufacture Prepregs and Copper-clad Laminates with Improved Dimensional Consistency for Electronic Applications. *National Science Foundation.*	(4/99-3/02)
$360,000	**Lee,L.J.** Enhanced Polymer-Polymer Blending and Polymer-Fiber/Filler Compounding Using Supercritical CO2. *National Science Foundation.*	(9/99-8/02)
$138,691	**Lee,L.J.** Biomimetic Detection Scheme on a Microcentrifuge Platform. *NASA-Ames Research Center.*	(12/1/99-11/30/02)

$384,763	**Lee,L.J.** with **Koelling,K.W.** Development of Advanced Molding Technology for Polymer Micro/Nano-Fabrication**.** *National Science Foundation*	(10/1/00-9/30/02)
$450,000	**Lee,L.J.** Chip RX. *Ohio Department of Development*	(10/1/00-9/30/02)
$100,000	**Lee,L.J.** Development of a Nano-lithography Based Manufacturing Protocol for Polymer Nanofluidic Platforms. *National Science Foundation*	(10/01-9/02)
$480,000	**Lee,L.J.** Polymer Nanocomposite Foams Prepared by Environmentally Benign Supercritical Fluids. *National Science Foundation*	(9/1/02-8/31/05)
$365,000	**Lee,L.J.** Operating Grant for an Industry/University Cooperative Research Center for Advanced Polymer Engineering, Phase II *National Science Foundation.*	(10/1/02-9/30/07)
$2,910,000	**Lee,L.J.** Integrated Graduate Education and Research Training: Molecular Engineering of Micro-Devices. (IGERT) *National Science Foundation*	(10/1/02-9/30/03)
$50,000	**Lee,L.J**. Effect of Carbon Fibers and Nano-particles on the Processibility, Surface Quality and Physical Properties of Fiber Reinforced Composite Materials for Transportation Applications. *HONDA Initiation Grant.*	(10/1/02-9/30/03)
$100,000	**Lee,L.J.,** PREMISE*:* Ecologically and Economically Conscious Manufacturing of Polymer Composites And Coating Process Selection. *National Science Foundation*	(10/1/02-9/30/03)

$600,000	**Lee,L.J.**, **Koelling,K.W.** and **Tomasko,D.L.** Environmentally Benign Micro-Cellular Nano-Composite Foam for Structural and Insulation Market. *National Institute of Standards and Technology-Advanced Technology Program.*	(12/1/02-11/30/05)
$575,600	**Ozkan,U.S.** Fundamental Studies of OXO Aldehyde Hydrogenation Reactions. *Exxon Chemical*.	(12/98-7/01/04)
$20,000	**Ozkan,U.S.** The Ohio State University Distinguished Scholar Award. *Ohio State University Office Research.*	(6/1/99-6/02)
$300,922	**Ozkan,U.S.** Preparation and Characterization of Sol-gel Derived Materials Fuel Cell Applications. *Honda of America Research.*	(10/1/00-10/31/03)
$79,929	**Ozkan,U.S**. Catalytic Reduction of NOx with Hydrocarbons. *Ohio Coal Development Office.*	(9/1/01-8/30/02)
$840,000	**Ozkan,U.S.** Acquisition of A X-Ray Photoelectron Spectrometer. *National Science Foundation and Ohio Board of Regents.*	(9/1/01-8/30/02)
$600,000	**Ozkan,U.S**. Two-stage Catalytic Reduction of NO with Methane from Lean-burn Natural Gas Reciprocating Engines. (plus $120,000 in cost share*)* *Ohio Coal Development Office.*	(10/1/02-9/30/05)
$79,929	**Ozkan,U.S.,** Hydrogen Production via Water Gas Shift Reaction. *Ohio Coal Development Office*.	(9/1/02-8/30/03)

$100,000	**Rathman,J.F.** Nanostructured Biocomposites for Use as Novel Films and coatings. *National Science Foundation.*	(4/15/00-3/31/02)
$60,000	**Rathman,J.F.** Nanostructured Organo-Silica Composite Films. *American Chemical Society Petroleum Research Fund.*	(7/01/00-8/31/02)
$95,860	**Rathman,J.F.** Sonochemical Treatment of Surfactants in Complex Mixtures. *U.S. Office of Naval Research.*	(3/7/01-3/6/03)
$721,411	**Rathman,J.F.** Chemical Genomics Discovery Platform with Novel Informatics Methods To Link Genes to Drugs. *Ohio Technology Action Fund.*	(7/01/02-6/30/04)
$360,000	**Tomasko,D.L.** Enhanced Polymer–Polymer Blending and Polymer-Fiber/Particle Compounding Using Supercritical Carbon Dioxide. *National Science Foundation.*	(10/99-9/03)
$90,000	**Tomasko,D.L.** Application of Supercritical or Subcritical CO_2 in Pharmaceutical Polymer Processing. *Janssen Pharmaceutica.*	(10/00-9/02)
$28,700	**Tomasko,D.L.** Supercritical Fluid Enhanced Polymer Processing. *CAPCE*	(10/00-9/03)
$14,400	**Tomasko,D.L.** Pressurized Propellant Densification System. *PHPK Industries (Sub contract NASA SBIR Program).*	(1/01-11/02)
$12,000	**Tomasko,D.L.** Enhanced Polymer–Polymer Blending and Polymer-Fiber/Particle Compounding using Supercritical Carbon Dioxide. *National Science Foundation.*	(10/01-9/03)

$15,000	**Tomasko,D.L.** Open-cell Foam Extrusion Technology for Absorbent Applications, *Kimberly Clark Corp.*	(10/01-9/03)
$365,000	**Tomasko,D.L.,Koelling,K.W**. and **Lee,L.J.** Renewing Industry/University Research Center for Advanced Polymer & Composite Engineering. *National Science Foundation.*	(10/02-9/07)
$140,000	**Yang,S.T.** Environmentally Benign Cellular Nanocomposite Foam for Structural and Insulation Market. *National Science Foundation.*	(12/01-11/30/03)
$140,000	**Yang,S.T.** A Spouted Bed Bioreactor for Solid State Fermentation for Production of Enzyme and Recombinant Protein from Plant Biomass. *USDA-CSREES.*	(12/1/00-11/30/03)
$70,000	**Yang,S.T.** Production of Galacto-Oligosaccharides from Lactose by Immobilized Enzyme on Cotton Cloth. *U.S. Dept of Agriculture.*	(07/1/01-06/30/03)
$500,000	**Yang,S.T.** Production Butuyric-Oligosaccharides from Lactose by Immobilized Enzyme on Cotton Cloth. *U.S. Dept of Agriculture.*	(07/1/01-06/30/03)
$28,000	**Yang,S.T.** Development of an Enzymatic Process For Production of GOS from Whey Lactose. *Midwest Advanced Food Manufacturing* *Alliance* (*MAFMA).*	(11/1/01-6/30/03)
$80,000	**Yang,S.T.** Extractive Fermentation for Production Of Lactic Acid from Corn Starch by Filamentous Fungi Immobilized in Fibrous Bed Bioreactor. *U.S. Dept of Agriculture.*	(7/1/02-9/30/03)

$20,000	**Yang,S.T.** A Novel Fermentation for Butyric Acid and Butanol Production from Plant Biomass. *The Consortium for Plant Biotechnology Research, Inc.*	(10/1/02-9/30/04)
$300,000	**Yang,S.T.** Production of Galacto-Oligosaccharides from Lactose by Immobilized Enzyme on Cotton Cloth. *U.S.. Dept of Agriculture, SBIR Phase II.*	(9/02-8/04)
$136,758	**Yang,S.T.** Production of Galacto-Oligosaccharides from Whey Lactose by Immobilized Enzyme on Cotton Cloth and Nanofiltration. *U.S. Dept of Agriculture-CSREES.*	(12/02-11/04)
$249,646	**Yang,S.T.** Development of ELISA Microfluidics Devices for Detection of Foodborne Toxins and Pathogens. *U.S. Dept of Agriculture-CSREES.*	(10/03-9/05)
$750,000	**Yang,S.T.** Sensors: Rapid Detection and Screening Of Foodborne Toxins and Pathogens. *National Science Foundation.*	(10/1/03-9/06)
$68,000	**Zakin,J.L.** Travel Grant for Second Mediterranean Chemical Engineering Conference for Collaborative Research. *National Science Foundation.*	(4/05/01-12/31/03)
$20,000	**Zakin,J.L.** Proposal for Undergraduate Research Scholars *Dreyfus Foundation.*	(2/01/02-1/31/04)
$68,804	**Zakin,J.L.** Development of Practical Drag Reduction Systems for District Cooling Systems. *NEDO (Japan).*	(9/01/02-3/31/05)

Graduate Students (by Advisor)

Bhavik Bakshi

Jorge Hau	Ph.D
Hongshu Chen	Ph.D
Nandan Ukidwe	Ph.D
Wen-Shiang Chen	Ph.D

Robert Brodkey

Mathew Nilsen	M.S.

Jeffery Chalmers

Bhavya Mehta	Ph.D
Huading Zhang	Ph.D
Michael Mollet	Ph.D
Mei Shao	Ph.D
Ruben Godoy	Ph.D
Ying Jing	Ph.D
Weiwei Hu	Ph.D
Oscar Lara	Ph.D

Liang-Shih Fan

Ah-Hyung Park	Ph.D
Bartev Sakadjian	Ph.D
Bing Du	Ph.D
Khai Vuong	Ph.D
Luis Velazquez-Vargas	Ph.D
Mahesh Iyer	Ph.D
Puneet Gupta	Ph.D
Wai Man Lau	Ph.D
Yang Ge	Ph.D
Wildon Peng	Ph.D
Zhe Cui	Ph.D

Martin Feinberg

Thomas Abraham	Ph.D
Yangzhong Tang	Ph.D

Winsotn Ho

Bai He	Ph.D
Biobele Braide	Ph.D
Jian Zou	Ph.D

Kurt Koelling

Guojun Xu	Ph.D
Jianhua Xu	Ph.D
Kai Kang	Ph.D
Liyong Yu	Ph.D
Michael Boehm	Ph.D
Sharath Kumar Nirmal Kumar	Ph.D
Shunahshep Shukla	Ph.D
Jacqueline Heggs	Ph.D

Isamu Kusaka

Pankaj Apte	Ph.D

L. James Lee

Changchun Zeng	Ph.D
Chunmeng Lu	Ph.D
Gang Zhou	Ph.D
Jiong Shen	Ph.D
Liqun Xu	Ph.D
Maxwell Wingert	Ph.D
Siyi Lai	Ph.D
Shengnian Wang	Ph.D
Nan-Rong Chiou	Ph.D
Tiffany Schofield	Ph.D
Yong Yang	Ph.D

Umit Ozkan

Chang Liu	Ph.D
Erik Holmgreen	Ph.D
John Kuhn	Ph.D
Mathew Yung	Ph.D
Paul Matter	Ph.D
Sittichai Natesakhawat	Ph.D

James Rathman

Clayton Drees	Ph.D
Jared Archer	Ph.D
Jeffrey Clogston	Ph.D
Michael Triplett	Ph.D
Pei Sun	Ph.D
Poonam Nigam	Ph.D

David.L. Tomasko

Dehua Liu	Ph.D
Hongbo Li	Ph.D
Weihong Gao	Ph.D

Shang-Tian Yang

Clayt Robinson	Ph.D
Juan Sanz-Valero	Ph.D
Nuttha Thongchul	Ph.D
Shubhayu Basu	Ph.D
Supaporn Suwannakham	Ph.D
Suwattana Pruksasri	Ph.D
Yunling Bai	Ph.D
Xioguang Liu	Ph.D

Jacques L. Zakin

Ying Zhang	Ph.D
Yunying Qi	Ph.D

CAPCE Microfabrication Laboratory

Fellowship and Scholarship Students

Scholarship

Paul E. Bates
Peter Davis
Tulani Marcus
Tiffany Mason
Sylena Smith
Aaron Walker

Dorothy & Herbert Fenburr
Martha Gordon
Miguel Garcia
Erica Jones
Jun Lee
Julie Makutonin
Sheetal Pai
Timothy Price
Zachary Schank
Robert Walters
Meghan Ward
Man-Leung Wong
Abdullahi Yusuf
Ling Zhang
Matthew Ziegler

David H. George
Gabriel Berg
Chad Bernard
Evan Cluggish
Sarah Hufft
Emily Jordan
Marcus Leatherberry
Imogen Pryce
Diana Snelling
Joshua Terflinger
Christopher Wakefield
Scott Wendell
Christopher Williams

Allan I. Gordon
Nathan Deutsch
Gary Koenig
Andrew Loth
Philip Wollenberg

Raymond D. Hammond
Alaina Schmidt
Aaron Walker
Christopher Williams

Todd Davis Harris Memorial
Chanel David
Nicole Florea
Sylena Smith
Sonya Ward

William & Dorris Harris
Charles Benore
Nicole Florea
Zachary Friedrick
Raymond Newlin
C.J. Roebuck
Mary Shea
Stefanie Sparks
Ee Hui Tan
Mark Tornow
Jack Witt
Caroline Yang
Amanda Yowler
Abdullahi Yusuf

Smith Howland
Michael Leesburg
Andrew Maynard
Scott Wendell

M&K Karen Hendricks
Shelly Buchholz
Joe Ott
Imogen Pryce
Robert Walters

S&G Hook/ Johnston
Man-Leung Wong
Howard Steele
Brian Chapman
Patrick Rensing
Samantha Ticchi
Jeremy Wilneff

Webster Kay
Andrew Loge
Angela Sparks

Lubrizol
Ashley Fotheringham
Shannon Quinn
Jiapeng Xu

Aldrich Syverson
Robert Harman
Jessica Huber
Nzinga Turner
Scott Turner
Dieter Von Deak
Todd Warnock

H. Richard Unkel
Nathan Coons
Philips Deis
Elizabeth Fanton
Jonathan Halter

Harry Warner
Susan Fleming
Todd Longendelpher

William H. Whirl
Nicholas Brunelli

James Withrow
Andrea Barger
Emily Jorda
Shawn Freer

Fellowships

Department Fellowship
Pankaj Arvind Apte
Poonam Nigam
Matthew Nilsen
Pei Sun
Yangzhong Tang

Presidential Fellowship
Yunying Qi
Yin Zhu

University Fellowship
He Bai
Hongshu Chen
Clayton Drees
Jacqueline William
Weiwei Hu
Xin Hu
John Norber Kuhn
Anli Ouyang
Tiffany Schofield
Changchun Zeng

Doug Moss presents the Chemical Engineering Alumni Society *Outstanding Senior Award for Academic Excellence* to Nicholas Brunelli

2002 Chemical Engineering Graduates

Doctor of Philosophy			**Employment Information**
Winter 2002			
Yan	Li	Ph.D	Geron Biotechnology
Spring 2002			
Ningning	Ma	Ph.D	Pharmacia
Summer 2002			
Jun	Luo	Ph.D	Roche Biotechnology
Autumn 2002			
Xia	Cao	Ph.D	Post Doctoral Researcher, OSU
Yunying	Qi	Ph.D	Shell Oil Company
Master of Science			
Winter 2002			
Dong	Zhang	M.S.	N/A
Spring 2002			
Raluca.V.	Munteanu	M.S.	N/A
Summer 2002			
Srinivasan	Ganesan	M.S.	N/A
Aaron	Richardson	M.S.	Battelle
Autumn 2002			
Nan-Rong	Chiou	M.S.	Graduate Student, Ohio State University

Bachelor of Science			**Employment Information**
Winter 2002			
Harris	James	B.S	N/A
Rollins	Adina	B.S.	Procter & Gamble, Cincinnati, OH
Soehnlen	Bill	B.S.	Anheuser Busch, Columbus, OH
Spring 2002			
Baxter	Adam	B.S.	MPR Services, Inc, Houston, TX
Boehm	Michael	B.S.	Graduate School, Ohio State University
Bordner	Jason	B.S.	International Control Services, Decatur, IL
Breedlove	Roxanne	B.S.	RMT, Inc, Dublin, OH
Cameron	Charles	B.S.	Graduate School, U of Minnesota
Cheblak	Samer	B.S.	N/A
Cummings	Stephan	B.S.	Campus Crusade Christ
Dalley	Kevin	B.S.	Procter & Gamble, Baltimore, MD
Dannemiller	Christine	B.S.	Graduate School, Montana State University
Catauro (Defenbaugh)	Lisa	B.S.	Exxon Mobil, Denver, CO
DeMora	Melissa	B.S.	N/A
Di Frango	Brian	B.S	PICA USA
Edmunds	Thomas	B.S.	N/A
Halim	Jenny	B.S.	Graduate School, Ohio State University
Harker	Lindsay	B.S.	Dow Chemical, Midland, MI
Hudiono	Yeny	B.S.	Graduate School, Georgia Institute of Technology
Johnston	Joni	B.S.	N/A
Kiprovska	Anita	B.S.	Ross Labs, Columbus, OH
Knitt	Jeffrey	B.S.	Teaching English, Bakal Azerbaijan
Laksmono	Hartawan	B.S.	Graduate School, U of Illinois at Urbana Champaign
Lal	Vivek	B.S.	Graduate School, Ohio State University
Lenz	Richard	B.S	Graduate School, U. of Minnesota
Lynch	Regina	B.S.	Battelle Memorial Institue, Columbus, OH
Maag	Elizabeth	B.S.	N/A
Matz	Suzanne	B.S.	Anheuser Busch

McCrillis	Scott	B.S.	N/A
Michalski	David	B.S.	Cargill, Hutchinson, KS
Ng	Cheau Lan	B.S.	Malaysia
Nilsen	Matthew	B.S.	Graduate School, Ohio State University
Osborn	Douglas	B.S.	Graduate School, Ohio State University
Partee	Austin	B.S.	United Parcel Service
Patel	Nihar	B.S.	Sherwin Williams, Cleveland, OH
Rahne	Renata	B.S.	Sherwin-Williams, Cleveland, OH
Riddle	Jeffrey	B.S.	Britsh Petroleum, Alaska
Rathburn (Ringler)	Lisa	B.S.	Eli Lilly & Co., Indianapolis, IN
Sakadjian	Bartev	B.S.	Graduate School, Ohio State University
Sherer	Anthony	B.S.	Cargill
Shipta	Timothy	B.S.	N/A
Simmons	Robert	B.S.	Lincoln Electric
Sugiarto	Haswitha	B.S.	N/A
Villarreal	Brian	B.S.	Owens-Illinois, Toledo, OH
Wenning	Brian	B.S.	Dupont, Newark, DE
Wentling	Richard	B.S.	Dupont, Newark, DE

Summer 2002

Adams	Jennifer	B.S.	General Mills, Minneapolis, MN
Beachy	Michael	B.S.	Nextech Materials, Columbus, OH
Graessle	Marc	B.S.	N/A
Hamilton	Mark	B.S.	Pilkington, Toledo, OH
Kimble	Hillarie	B.S.	Battelle Memorial, Columbus, OH
Lynch	Elizabeth	B.S.	Johns Mansville, Wilkes-Barre, PA
Coutant (Reinhold)	Christine	B.S.	Electric Boat, Mystic Connecticut
Rogers	Martha	B.S.	Battelle Memorial, Columbus, OH
Smith	Renee	B.S.	Medina Plating Co., Medina, OH
Somnitz (Firlik)	Kathleen	B.S.	Johns Mansville, Toledo, OH
Wadia	Shernaz	B.S.	Medical School, U of Cincinnati
Wollenberg	Philip	B.S.	Shell, New Orleans, LA

Autumn 2002

Arkenberg	Gene	B.S.	International Paper, Cincinnati, OH
Dunhan	Joyce	B.S.	N/A
Fischer	Katie	B.S.	Dow Chemical, Houston, TX
Latif	Angela	B.S.	N/A
Loth	Andrew	B.S.	Cargill, Memphis, TN
McCoy	Aaron	B.S.	N/A

Nellet	Justin	B.S.	Graduate School, OSU
Platenak	Stephen	B.S.	Dow Chemical Co., South Charleston, WV
Price	Timothy	B.S.	Marathon Ashland Petroleum, St. Paul, MN
Smith	Josiah	B.S.	Graduate School, Ohio State University
Soja	Edward	B.S.	N/A

CLASS OF 2003

Row 1: Derrick Butler, Jeff Ellis, Ling Zhang, Shelley Buchholz, Gregory Kagannovich, Donna Magbag, Kai Kang.

Row 2: Nathan Deutsch, Megan Cavanaugh, Paul Hobson.

Row 3: Sheetal Pai, Jeff Chalmers, L.S. Fan, Jack Zakin, Chanel David, Abhijeet Konduskar.

Row 4: Shona Patel, Keith Clouston, Mike Bloss, Brian Walker, Jeremy Dolan, Chris Wakefield.

Row 5: Guojun Xu, Jason Ankumah-Saikoom, Hirem Patel, Jun Alex Lee, Robert S. Brodkey, Swaroop Chatterjee, Mike Leesburg.

2002-2003 Academic and Industrial Awards and Recognition

AIChE STUDENT AWARD

AIChE Central Ohio Section Outstanding Student Award

Awardee: Paul Hobson

Donald F. Othmer AIChE Sophomore Academic Excellence Award

Awardee: Kurt Frey

Kurt Koelling presented the AIChE Outstanding Student Award to Paul Hobson

DOW CHEMICAL

Dow Outstanding Junior Award

Awardee: Matthew Ducay

OSU CHEMICAL ENGINEERING DEPARTMENT AWARDS

Department of Chemical Engineering Co-Op Award

Awardee: Gary Seto

Outstanding Undergraduate Award for Research Excellence

Awardee: Swaroop Chatterjee
Awardee: Shona Patel
Awardee: Ling Zhang

Outstanding Graduate Award for Academic Excellence

Awardee: Erik Holmgreen
Awardee: Alissa Park
Awardee: Changchun Zeng
Awardee: Ying Zhang

Outstanding Postdoctoral Award for Research Excellence

Awardee: Xia Cao
Awardee: Himanshu Gupta
Awardee: Xiangmin Han
Awardee: Yi-Je Juang
Awardee: Konrad Koeltzsch
Awardee: Nuray Oktar
Awardee: Okan Oktar

Dave Tomasko presented the Dow Chemical Award to Matthew Ducay

CHEMICAL ENGINEERING ALUMNI SOCIETY AWARDS

Outstanding Senior Award for Academic Excellence

Awardee: Nicholas Brunelli

Outstanding Sophomore Award for Academic Excellence

Awardee: Robert Walters

ENVIRONMENTAL OPTION TECHNICAL ELECTIVE PROGRAM CERTIFICATES

Awardee: Jessica Marie Clark
Awardee: Keith Clouston
Awardee: Jeremy M. Dolan
Awardee: Jeremy Miller

2002 Course Enrollment

Winter 2002

ChE 200	ChE & Process Calculations	21
ChE 201	ChE & Process Calculations II	46
ChE 489	Professional Practices in Industry	0
ChE 509	ChE Thermodynamics	47
ChE 522	Transport Phenomena III	48
ChE 693	Individual Studies	3
ChE 764	ChE Process Design	75
ChE 766	Principles of Biochemical Engr	33
ChE 776	Principles of Polymer Conversion Ops	25
ChE H783	Undergraduate Honor's Research	3
ChE 808	Advanced Special Problems in ChE	19
ChE 813	Advanced ChE Kinetics II	13
ChE 815.01	Advanced Momentum Transfer II	20
ChE 981	Research Seminar	5
ChE 899	Teaching Practicum in ChE.	9
ChE 999	Graduate Research	68
ChE 999F	Graduate Research	71

Spring 2002

ChE 201	ChE & Process Calculations II	20
ChE 420	Elements of ChE Transport Phenomena I	65
ChE 489	Professional Practices in Industry	0
ChE 520	Transport Phenomena	4
ChE 523	ChE Operations	44
ChE 610	ChE Kinetics	47
ChE 693	Individual Studies	4
ChE 750	Profession of Chemical Engineering	58
ChE 762	ChE Process Development	76
ChE 771	Air Pollution	27
ChE 775	Rheology of Fluids	19
ChE 783H	Undergraduate Honors Program Research	3
ChE 694E	Industrial Ecology:Chemical Engineering	17
ChE 694K	Chemical Engineering Kinetics Supplement	56
ChE 999	Graduate Research	71
ChE 999F	Graduate Research	63

Summer 2002

First Term		
ChE 630	Unit Operations	58
Second Term		
ChE 733	Experimental Design	18
Full Term		
ChE 489	Professional Practices in Industry	1
ChE 693	Individual Studies	0
ChE 899	Teaching Practicum in ChE	9
ChE 981	Research Seminar	1
ChE 999	Graduate Research	45

Autumn 2002

ChE 200	ChE & Process Calculations	45
ChE 489	Professional Practices in Industry	1
ChE 508	ChE Thermodynamics	59
ChE 521	Transport Phenomena II	61
ChE 624	Chemical Process Dynamics & Control	42
ChE 693	Individual Studies	5
ChE 694	Chemical and Biological Informatics for Engineers	26
ChE 760	ChE Economy & Strategy	44
ChE 761	ChE Processes	17
ChE 765	Principles of Biochemical Engineering	25
ChE 773	Intro to High Polymer Engineering	35
ChE 783H	Undergraduate Honors Program in ChE	9
ChE 801	Advanced Special Problems in ChE	23
ChE 815.08	Advanced Momentum Transfer I	21
ChE 899	Teaching Practicum in Chemical Engr	7
ChE 999	Graduate Research	69
ChE 999F	Graduate Research	77

Units Operations 2002

2002-2003 Department Seminar Speakers

Autumn 2002

September 26	**Michael W. Deem**, John W. Cox Professor, Rice University Chemical Engineering, *"Searching of Sequence Space in the Laboratory, Nature, and the Immune System."*
October 03	**Dennis W. Hess**, Professor, Georgia Institute of Technology School of Chemical Engineering, *"Surface Cleaning in the Fabrication of Microelectronic Devices."*
October 10	**Benjamin J. Glasser,** Assistant Professor, Rutgers, The State University of New Jersey Department of Chemical and Biochemical Engineering, *"Granular Flow Instabilities: From Playing in the Sandbox to Pharmaceutical Operations."*
October 17	**Andrea Chow**, Director of Microfluidics, Caliper Technologies Corporation, *"Lab-on-a-Chip: Development and Applications*."
October 31	Graduate Research Initiative Program (GRIP) - preparation for the AIChE meeting.
November 7	Orientation, The Ohio State University Science and Engineering Library. Attendance required of all Spring, Summer and Autumn Quarter 2002 incoming students.
November 14	**Jay L. Zweier,** Director, The Ohio State University Dorothy M. Davis Heart and Lung Research Institute, "*Electron Paramagnetic Resonance (EPR) Imaging of Free Radicals and Oxygen in Biological Systems."*
November 21	**Stephen C. Lee,** The Ohio State University Biomedical Engineering, "*Biological Molecules in Nanotechnology: Opportunities & Challenges*."
November 28	Thanksgiving Holiday.
December 5	**Vassily Hatzimanikatis**, Northwestern University Chemical Engineering Department, "*Systems Analysis and Design of Complex Cellular Processes."*

Winter 20030

January 9	**Chia-Chi Ho,** Assistant Professor, University of Cincinnati Department of Chemical Engineering, "*Microsystems for Studying Biology.*"
January 16	None
January 23	**John L. Anderson**, Dean and Professor, Carnegie Mellon University Department of Chemical Engineering and Center for Complex Fluids Engineering, "*Dancing on Surfaces: Self-Assembly of Particles using Electric Fields."*
January 30	**Shi-Qing Wang**, Professor, University of Akron Polymer Science Program, *"Entanglements in Polymer Rheology: From Wall Slip to Reptation and Chain Diffusion."*
February 6	**J. Richard Elliot, Jr.,** Professor, University of Akron Chemical Engineering Department, *"Step Potentials for Equilibrium and Dynamic Properties in Chemical Engineering Desig*n."
February 27	Patrick C. Cirino, California Institute of Technology Division of Chemistry and Chemical Engineering, "*Laboratory Evolution of Cytochrome P450 Peroxygenase activity".*
March 6	**Gad Hetsroni,** The Danciger Professor of Engineering, Technion – Israel Institute of Technology, *" The Effect of Surfactants on Bubble Growth and Heat Transfer in Pool Boiling.*"
March 13	**Dr. John L. Klepeis**, Department of Chemical Engineering Princeton University, *"Systems Approaches in Computational Biology, "Exploring the Frontier of Structural and Functional Genomics."*
March 20	**Barbara Wyslouzil**, Associate Professor, Worcester Polytechnic Institute, Department of Chemical Engineering "*Probing the Structure of Nanodroplet Aerosols."*

Spring 2003

April 3	**Susan J. Muller**, Professor, University of California-Berkeley, Department of Chemical Engineering "*Flow of Macromolecules: Hydrodynamic Stability, Modeling Challenges, and Opportunities at the Microscale."*

April10	**William S. Hammack**, Professor, University of Illinois-Urbana, Department of Chemical & Biomolecular Engineering, "*Teaching the Public about Engineering and Technology."*
April 17	***Martin Okos**, Professor Biochemical and Food Process Engineering, Department of Agriculture and Biological Engineering, School of Chemical Engineering, Purdue ,University-Indiana, "*An Engineering Approach to Cereal Product Development."*
April 24	Centennial Seminars
May 1	***Derrick Rollins,** Professor, Department of Chemical Engineering and Statistics, Iowa State University*, "Issues of Experimental Design and Accurate Modeling in Dynamic Block-Oriented Nonlinear Systems*."
May 8	***Michael H. Peters**, Elvin J. Dantin Professor and Director Program, Department of Biomedical Engineering, *"Rational Proteonomics and Computational Approaches to Small Molecule Drug Design"*
May 15	***Linda J. Broadbelt,** Associate Professor and Graduate Program Director, Department of Chemical Engineering, Northwestern University, "*Building Complex Reaction Networks*."
May 22	***Michael Cutlip,** Professor, Department of Chemical Engineering, University of Connecticut, "*Understanding and Modeling the Porous Gas Diffusion Electrodes Utilized in Fuel Cells*."
May 29	***Thomas Hanratty,** Professor, Department of Chemical Engineering, University of Illinois-Urbana–Champaign, "*Computer Experiments in Turbulence and Multiphase Flow."*
May 5	***Keith Wisecarver,** Associate Professor, Department of Chemical Engineering, University of Tulsa, "*Understanding Delayed Coking.*"*

*: Alumni Centennial Lectures

2002 Alumni & Friends Who Contributed to the Department

1927
James L. Collins

1930
Parker S. Dunn

1932
Harry J. Green, Jr.

1934
Edward E. Slowter

1935
Linton E. Simerl

1936
Richard A. Miller
Joseph G. Mravec

1937
Frederick R. Pullen
Daniel W. Duncan
Nicholas Fatica
John P. Haughton
John E. Myers
Frederick R. Pullen
George H. Sheets
Andrew E. Shute

1939
Dillard W. Kuhlman
Ralph E. Quigley
Howard G. Rohrer
Charles A. Rohrmann

1940
Charles Boardman III
Loren F. Grandey
Henry J. Jacoby
John H. Miller
Walter C. Wendschuh

1941
Earl G. Anderson
George L. Meyers, Jr.
David Thomas

1942
Donald S. Arnold
Randal E. Bailey
Dale B. Baker
R. Richard Midlam
Richard R. Whiston

1943
Halvor S. Christianson
Walter E. Craw
Dalton F. Drake
Leonard A. Harris
Roy E. Schneider
Carlyle E. Shoemaker
Wade Wolfe, Jr.
James C. Wynd
Hong T. Yee

1944
Wallace L. Bostwick
Carlence A. Haverly, Jr.
Marshall C. Kidd
Edward W. Powell
Edwin E. Smith
Grover C. Strickler, Jr.

1945
Robert S. Atkinson

1946
Kenneth A. Brandstetter

1947
Charles C. Ballard
Dallas D. Dupre III
William K. Fell
Lewis C. Hullinger
John M. Kolbas
J. Bruce Martin
Bryce H. McMullen
Aloysius M. Sebian
Leroy P. Streett

1948
Richard A. Arnold
Lee B. Fosdick
Donald E. Garrett
John G. Gerlach
Earl W. Goodman
William L. Gray
William L. Hammond
Robert E. Kraus
Robert H. Miller
George R. Secrist
Jack C. Stewart
Robert M. Tarr
F. Morgan Warzel

1949
Paul E. Bates
Franklin J. Conrad
Gordon G. Cross
Lee B. Fosdick
Raymond D. Hammond
J. Howard Kerstetter, Jr.
Rine Kruger, Jr.
Frederick A. MacDougall
Donald R. Roberts
Glen D. Schaaf
Charles R. Shepherd
Roland I. Spencer

1950

Robert M. Allen
Russell F. Dubes
Ellis L. Hawk, Jr.
Franklin A. Retzke
Verne R. Rinehart
Richard L. Scott
Robert E. Thompson
David W. Wilson

1951
James H. Hoorman
John R. Parkinson
Merle H. Ruff
David B. Speed
David A. Strang
Bruce W. Wilkinson
Robert M. Yarrington

1952
James F. Froning
Donald E. Haupt
M. Frank Rummel
Charles J. Schmitz
David G. Stephan

1953
Robert A. Bates
Robert L. Briggs
Donald E. Findlay
Wilfred C. Ling
Kenneth E. Whitehead
James L. Wilson

1954
Richard E. Dudley

1955
John H. Hoge
Phillip J. McAteer

1956
Robert A. Cody
William D. Coe
Frank J. Schuh

1957
Walter R. Andrews, Jr.
A. Leo Carter
Walter A. Flack
Jon D. Helms
Paul J. Kienholz

1958
Edward H. Bollinger
John J. Connelly
James R. Facer
Dan M. Hayes, Jr.
John R. Kearns
Werner Lichtenstein
Valdis E. Petritis
Richard M. Smith
Harold A. Sorgenti
James W. Stark
Lawrence R. Steele

1959
James O. Albery
James R. Goodwin
James H. Laughlin
Darryl J. Von Lehmden
Gerald A. Wilcox

1960
Guy A. Crossley
Edgar W. Fasig, Jr.
Gordon R. Howard
Warren E. McAdams
Lee R. Stewart
Irwin Weinstock
Russell L. Wilt

1961
Paul R. Bigley
Thomas Cattarin
Richard B. Cooper
David A. Fichtner
Ronald D. Harris
Donald I. King
Larry E. Woodworth

1962
David E. Bidstrup
James C. Opatrny
C. David Osbun

1963
Myers G. Hammond
John P. Henry, Jr.
Robert P. Kasper
James C. Opatrny
Fred A. Shaffstall
Kay Logan Snider

1964
Alkis Constantinides
Michael B. Cutlip
Michael F. Dague
William R. Ferris
James B. Sapp
William V. Whitmer

1965
Oliver L. Davies
Kiu H. Lee
Frederick J. Rerko
Michael C. Royer
Gary L. Street
Eugene N. Wheeler

1966
William F. Deerhake
Thomas E. Fitz
William G. Lowrie
Glenn L. McKee
John H. Miller

1967
John W. Bradshaw
Frank W. Hauschildt, Jr.
Martin R. Okos
Graham F. Painter

1968
Joseph A. Cotruvo
Gerald M. Lehmann
Ronald R. Remick
John M. Salladay

1969
Robert D. Litt
M. Anandha Rao
Steven E. Russell
John W. Toussant

1970
David R. Grove
John D. Rensel
Richard B. Strait
Rosa Uy

1971
Jeffrey L. Kosch
Kerry G. Hertenstein
Steven Zakanycs

1972
Michael J. Clark
David G. McCluskey

1973
John C. Bost
John A. Douglas
Norman F. Lucas, Jr.
Johnny O. Wright

1974
Steven M. Brown
John E. Myers
Michael A. Patterson

1975
Charles T. Burwell
John T. Erikson
Stephen L. Grant

1976
Larry D. Zeagler

1977
Douglas J. Hallenburg

1978
David W. Sass
Neil P. Stuber
Thomas E. Winkler

1979
Darice M. Davis
Julie M. Ockajik
David M. Schilling

1980
Frederick T. Clark
Carol Ehrman
Fred D. Ehrman
Matthew J. Galosi
Gary R. Prok

1981
Nancy Coultrip Dawes
James A. Telljohann

1982
Terry S. Chern
Debra Denio
Funderburg
Sumner M. Saeks

1983
Cheryl Kennedy Alfieri
Mark D. Dieringer
Keith R. Nowak
Jeffrey W. Patterson

1984
Mark S. Bitto
John A. Bohlmann
Gregory M. Masica
Jagannadh V. Satyavolu

1985
Douglas J. Ball
Roger G. Facer
Timothy A. Johnson
David J. Moonay

1986
Rajeev L. Gorowara
Brian A. Yanok

1987
Jeffrey D. Adams
Karen G. Johnson
Martin D. Legg
D. Brian Noe
Timothy A. Rash

1988
Milfred Douglas Dale
Eric S. Delligatti
Amy S. Doty
M. Alison Jabbour
J. Wesley Oren
Paula Fulk Oren
Thomas E. Reardon
Michael R. Reed
Keith M. Russ
Craig L. Shoemaker

1989
Stuart F. Doty

1990
Craig M. Kehres
Darrin L. Lacheta
James V. Lombardi
Kara Blachowski Long
Alex C. Woravka

1991
Kristan Kissell Latham
Richard L. Wright

1992
Pamela Jean Archer
Julie Vander Meer Joehlin
Scott A. Joehlin

1993
Frank E. Seipel

1994
John D. Clay

1995

Paul A. Clark

1996
Mark E. Buzek
Timothy R. Johnson
Bradley D. McDonel
Liping Zhang

1998
David L. Evans
Erin Colleen Bennett
Julia Bednarcik Farroni
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Richard J. Mathes
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Marcin J. Telko

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Bonnie Thompson
Betty French Unkel
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Eva Weber
Dorothy R. Williams
L. Stanton Williams
Chih J. Yeh
Barbara Janecke
Jacques L. Zakin

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1923
Joseph F. Gorman
Albert Schwensen

1928
Kenneth E. Steele
Eduardo Urueta

1933
Ralph E. Cramer
Robert E. Elliott
Albert L. Fishback
Kermith K. Fligor
Donald H. Gardner
Harry M. Louden
Yi Ou-Yang
John A. Purinton
Roy E. Smith
George E. Wiegert

1938
Gerald L. Benson
Thomas A. Boyd
Norman C. Cammerer
Carl S. Casto
Jefferson C. Cole
Mayhard E. Coller
Robert W. Conaway
Frank J. Cservenyak
Paul F. Cunningham
Daniel W. Duncan
Louis F. Guentert
David C. Hale
Victor J. Harris
Frederick Eastman Levy
Adolph S. Miller
Frederick E. Miller
Alexander Newhouse
Wayne L. Oberlin
James R. O'Roark
Donald E. Powell
Woodrow W. Portz
Louis E. Ruidisch
Robert L. Savage
Richard D. Schafer
Charles E. Spencer
John E. Teagarden
Garrett L. Wander
Tse Kao Wu
John T. Wilson

1943
C. Dixon Arrick
Louis C. Beale
Richard Bengston
Thomas E. Bieterman
Robert L. Brehmer, Jr.
Melvin Browning
Lloyd J. Breidenbach
Dayle R. Buchanan
James R. Cameron
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Constantine L. Chase
Halver S. Christianson
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Howard S. Dannemiller
Robert E. Farison
Richard M. Garrett
Jack A. Gerster
Glenn L. Gifford
Dean C. Glass
Mac F. Grandey
Harry J. Green, Jr.
Gabriel Grushcow
Dean F. Haberkost
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Leonard Harris
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Bryce D. Inman
Gordon C. Inskeep
John Kekich
Robert Lange
Thomas Lavery
Alexis W. Lemmon
Walter S. Lodge
Richard E. Loftfield
Walter Luce
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William C. McConnell
Kenneth Mercer
Charles W. Miller
Donald E. Morgan
Jack R. Oldenburg
James R. Randall
Charles J. Schmidt
Roy E. Schneider
Vernon C. Seguin
Carlyle E. Shoemaker
John K. Siddle
Leonard Skolnik
Ralph O. Tribolet
Augustus R. Van Kleeck
William J. Verross
Richard A. Walther
Thomas A. Weisz
Edward E. White
Wade Wolfe, Jr.
Gerald V. Wootton
James C. Wynd
Hong T. Yee

1948
Richard A. Arnold
Dale B. Baker
Paul W. Baker
Charles C. Ballard
Saul Barron
Frank Bauman
Jack Berger
William C. Blackwood
Kenneth Brandstetter
John A. Burgbacher
Robert V. Carlisle
Lawrence A. Carlson
Irving B. Chang
John C. Cobb
Arthur L. Cocherell
Charles W. Conklin
Norman R. Cox
Donald E. Darr
Donald Dewey
Marc Dunnam
George Epstein
Franklin M. Ernest
Walter S. Fagley, Jr.
William Fell
Herbert Fisch
Lee B. Fosdick
Paul A. Fritsche
John R. Galloway
Donald Garrett
John G. Gerlach
Earl W. Goodman
William L. Gray
Herbert L. Green
John B. Griffith
Davaid Grove
Hanford L. Gunnerson
Allen C. Guy
William L. Hammond
Abdul Mahdi Hassan
John R. Hill
Rollin Hoelscher

Richard Hoffman
Dale S. Holl
Arthur R. Horsburgh
Max H. Humphrey
Daniel Hyman
David E. James
Hugo C. Johnson
Jeanne H. Johnson
Lewis Jones
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Charles M. Kincaid
Lucille D. King
William A. Klink, Jr.
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Ju Luan Ma
F. Robert Mayforth
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Clement McLain
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Robert H. Miller
Robert N. Miller
Enze T. Min
Ralph Montello
Milton E. Nathan
Leonard H. Ogan
Douglas Ordahl
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John Purdom
Joseph Quattlebaum
Manuel Ramos
Cloyd Reeg
Douglas O. Robinette
Harold Robinson
Robert T. Scharenberg
Karl Scheller
Arthur C. Secrest
Carl Setzer
Dale B. Shull
Allan L. Sluizer
Alexander Stern
Jack C. Stewart
Richard O. Stucker
Robert Tarr
Ohn Tin
William Tomlinson
Donald E. Walker
Leroy Wallace
John M. Wallen
Fred Warzel
Earl L. White
Robert G. Wilkinson
Myron Wilson
Jack Wunderle

1953
Lee F. Athearn
Robert A. Bates
Graydon C. Bazell
Richard N. Beals
Robert L. Bighouse
John V. Bishop
Roger L. Briggs
David E. Buskirk
William H. Casto
Felice Celli
Walter E. Donham
Chris C. Elenniss
Louis Elsaesser
Donald E. Findlay
Robert T. Hewitt, Jr.
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George E. Koch
Herbert G. Krane
Paul R. Kumler
Wilfred C. Ling
William L. Maag
Donald A. MacDougall
John G. Mahoney
Leo C. Peoples
Willard H. Potter, Jr.
Ernest Reinmuller
Manojkumar Sanghvi
Thomas F. Sashihara
Geoffrey R. Snelling
Harold L. Stelzer, Jr.
Michael A. Tallarico
John Van Sise
Y. F. Venkatesham
Kenneth E. Whitehead
James L. Wilson
Robert Wiseman
William H. Wiseman

1958
Donald D. Baker
Charles N. Carpenter
John J. Connelly
Clifton W. Cooke, Jr.
Victor A. Crainich
Kenneth E. Davis
George W. Ditrick
James R. Facer
Thomas E. Ferris
Edward J. Freeh
Phillip H. Gifford, II
Barry C. Hartley
Dan M. Hayes, Jr.
Thomas E. Hedge
James D. Jackson
David W. Jones
Donald S. Kerrigan
Richard P. Kistler
Albert W. Krock
Phasook Kullavanijaya
Jon H. Lee
James C. Leslie
William T. Leslie
Werner S. Lichtenstein
Tommy R. Loy
James McCaffrey, III
Frank J. Nagy
Valdis E. Petritis
Charles D. Ruff
Robert G. Savageau
William H. Seaton
Steve Simecek
Richard M. Smith
Mitchell J. Somers
Harold A. Sorgenti
James W. Stark
Lawrence R. Steele
Mard D. Tawney
John D. Turner
John M. Uncapher
Wolf R. Vieth
Richard Y. Walter
Donald J. Wilhelm
Bruce W. Wilkinson

1963
Jawad N. Al-Sheik
Nelson W. Barnhill
Keith E. Bazaire
Gary L. Beeler
John D. Birle
James Chin
Jon E. Fletcher
Donald L. Furry
Scott C. Gordon
Myers G. Hammond
John P. Henry, Jr.
Robert P. Kasper
Alan L. Keller
Heung T. Kim
Isabel K. Logan
James C. Meck
Ajitkumar V. Mehta
Stanley A. Metelko
James F. Nester
James S. Outland

Phillip F. Pflaumer
Joseph H. Reitberger
Fred A. Shaffstall
Wilbur H. Sidner
William D. Staten
Bruce G. Strickland
Elwoodo D. Traylor

1968
Jerry R. Barber
Arthur D. Bare
Sushil K. Bhalla
William E. Ferguson
James M. Flerchinger
Neil K. Goldwein
Lawrence H. Green
Richard D. Haberkost
Edward M. Halko
Richard F. Havlice
Douglas W. Hissong
Roy R. Huddleston
Lloyd G. Jones
Modupeola O. Kasim
Frederick C. Kerscher
Ronald M. Kovach
Ahmet Z. Kutlu
Gerald M. Lehmann
William e. Lewis
Richard T. Linak
David L. Lull
Arun V. Mandlekar
Kenneth N. McKelvey
Paul R. Michl
Merrill L. Minges
Faramarz Nazem
Herbert A. Newhouse
Sung C. Pak
William C. Pontius
Dean H. Reber
Dudly K. Reese
Ronald R. Remick
Michael C. Rominger
John M. Salladay
James W. Sebert
Douglas E. Smith
Allan W. Strong
Joseph E. Suhrie
Joseph L. Taraba
Arthur W. Thornton
David J. Walters
Gerald A. Wilcox
James E. Williamson
Larry E. Wing
John M. Yacher
Hugh J. Zeller

1973
Mazen Y. Anastas
Steve M. Benner
Patrick L. Berry
John S. Biersteker
Vernon G. Bolender, Jr.
John C. Bost
Sidney E. Bowers
John R. Cameron
Charles N. Carpenter
Sun-I Chen
John D. Chmielewski
William B. Clark
Thomas E. Claugus
Terry L. Collett
David A. Dargan
John A. Douglas
Raul E. Fajardo
William M. Fugel
Arthur E. Garavaglia
Clyde R. Garrett, Jr.
John C. Groves
Jorge A. Guzman
Gary L. Hahn
Craig A. Heselton
Carl A. Hofmann
Michael J. Katila
Edward K. King
Philip G. Knowles
William C. Kraft
John P. Kuch
Alan P. Lawrence
Eric J. Linak
Donald G. Lorentz
Norman F. Lucas, Jr.
Bobby J. Lumpkins
Arthur N. Maupin
Luther J. Mills, III
Paul B. Mount, III
Larry S. Moyer
John A. Osterhage
Seong Ho Rhee
Harvey S. Rosenberg
Bruce A. Scamoffa
Richard T. Schwarz
Dale G. Serian
David M. Sliva
Thomas E. Spriggs
Paul W. Springer
Gary R. Strickler
Allan W. Strong
Samuel S.J. Tam
Larry D. Tanner
Dennis D. Terry
Timothy J. Thomas
Sutrisno B. Tirtawidjaja
David P. Turtle
Mark D. Westbrook
Donald L. Weaver
Johnny O. Wright
Paul J. Zerella

1978
John A. Albers, Jr.
Joseph Arar
Brian W. Baird
David M. Bantz
Debra L. Beran
Douglas T. Brown
Jay N. Bruggeman
Timothy L. Burns
James R. Cominsky
Daniel M. Coombs
Christopher T. Cunningham
James H. Etherton
Leslie S. Fishler
Dale W. Folsom
Kurt R. Hanushek
James W. Hartings
Janet L. Inkrott
Mannsik Kang
Chinkoo M. Kim
Donna R. Kniss
Edward J. Levine
Jeffrey T. Lowry
John C. Loy
Gerald E. Markley
Donald L. McDowell
Bronko P. Mitevski
Michael P. Moore
Ronald J. Morin
David W. Murphy
Nghia T. Nguyen
Marc P. Papai
Elbano J. Parades
Ronald E. Perez
Daniel Rusyniak, Jr.
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Joe W. Sayre
Rad V. Scott, III
Jack A. Sigan
Glen M. Singer
David P. Steinmetz
Elizabeth P. Stuber
Neil P. Stuber
Cheryl A. Sugar
Joseph L. Taraba
Stephen B. Traicoff
Robert H. Valentin

Paul W. Vance, Jr.
Arthur X. Vurgaropulos
John M. Weeman
Brian K. Weider
Thomas E. Winkler
Johnny O. Wright
Sin-Hoi Yam
Richard J. Yoch

1983
Hashim B. Ahmad
Robert M. Andes
Joanne K. Appoy
Yousef G. Aouad
Barbara M. Bacskai
Lamont E. Beaver
Michael B. Begland
Joseph H. Bishel
James V. Blackwell
Charles D. Bond
Richard H. Brandon
Thomas D. Burns
Lee S. Burroughs
Stephen R. Cammarn
D. Scott Carter
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Harold E. Flinn
Tracy L. Flora
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Robert F. Gaus, Jr.
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Stephen M. Graf
David J. Grigger
Clarice J. Hanusz
Thomas G. Heeb
David B. Henninger
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Ronald A. Howdyshell
Michael C.K. Hu
Yan-Jyl Huang
Jack R. Hughes, Jr.
Laurence A. Ice
Paul A. Jarasek
Sudir S. Jindal
Cherly L. Kennedy
Bamin Khomami
Walid S. Khouri
James Konuch
Sank Hak Lee
James A. Leonard
Elliot L. Levine
Robert L. Levine
Carolyn M. Lin
Shew-fen Lin
Dan D. Lindley
Jim F.S. Liu
Thomas M. Maloney
Frank T. Marriott
Kim H. Maza
Michael R. Melick
Anne E. Meyers
A. Dickerson Mitchell
Elizabeth A. Mulvaney
Julie G. Murphy
Martindale Nelson
Robert L. Newman
Carl Norman
Keith R. Nowak
Julie M. Ockajik
Jeffrey W. Patterson
John P. Paulos
Crystal D. Penn
Lananh T. Pham
Lee Anne Raymond
Morad Razmiafshari
Thomas A. Regrut
Robert A. Richard
Christopher R. Richied
N. Richard Ricks, Jr.
Timothy H. Robison
Cora b. Rogerson
Eric L. Rohr
Ariel A. Sanmartin
James M. Sauer
Steven M. Schlasner
David J. Sebold
Gwo-Chyau Shen
Hani K. Silwani
Susan J. Slane
Alan H. Smith
Gordon D. Smith
Stephen L. Spanoudis
Ronald J. Stapleton
Christopher P. Stolarski
Ralph w. Tyree
David G. Vanek
Clark B. Wade
Christina M. Warner
Jeffrey A. Watson
Kevin M. Weithman
Ben Weinstein
David L. White
Karen S. Wilson
Keith D. Wisecarver
Bruce K. Wishon
Leonore C. Witchey
Tatsuji Yamashita
James B. Young
Robert E. Young
Robert E. Zimmerman

1988
Mohammed S. Alhindal
Lofti Ben-Said
Talivaldis V. Berzins
David A. Boerner
John A. Bohlmann
Annette L. Brough
Jonathan J. Calderas
Garret D. Cawthon
Tai-Wai David Chan
Chinyuan Cheng
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Julia M. Courts
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Eric S. DelliGatti
Laertis Economikos
Joseph F. Ennis
Jyh-Dar Fan
Rogelio Figueroa
Cathy A. Finafrock
Joseph A. Franz
Paula A. Fulk
Murthy S. Gandikota
Rajeev L. Gorowara
Mary A. Grady
Mei-Ning Guo
Susan N. Hanusz
Ronald R. Hill, Jr.
Christopher A. Holbrook
William M. Irvin IV
Rongher Jean
Maher T. Karadsheh
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Steven R. Lang
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Davaid W. Miller
John A. Molnar, Jr.
Dianne M. Monnin
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Michael J. Nodianos
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John W. Oren
Ali Tayfun Ozkan
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Marianne B. Smith
Wen-Tzung Tang
Marshall L. VanDeWalle
Ronald B. Villanueva
Hung-Chen Wen
Susanne T. Woodlan
Yeong-Show Yang
Craig E. Yussen

1993
Scott D. Blatter
Adam J. Brand
Yeping Cai
Ying-Cheng Chou
Cora M.-Y. Chu
Abhijit G. Dastidar
Jasper N. DeChristopher
Paul DeRoussel
Maurice R. DeVries
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Brad A. Fuller
Richard Gaines, Jr.
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Timothy T. Harker
Jill K. Hrn
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Arkadiusz P. Jaszcz
Ronald C. Kaminski
Jeffrey H. Kanel
Tiffany J. Kennedy
Salomeh Keyhani
Jong-Hyun Kim
Mark R. Kinkelaar
Samir Kumar
Alan W. K. Kwok
Lance A. LaRue
Rhonda J. Lee
Angela M. LeFevre
Chia-Jui Linn
Max P. Macesich
Andrew W. Mauk
Melissa A. Miller
Stephanie S. Murphy
Tyler T. Newsom
Sinh N. Nguyen
Shuangyao Ni
Clement Opoku
Illam Park
Mark J. Perry
Prasad P. Ramanathan
Randall S. Reynolds
David K. Roberts
Shannon P. Savage
Duane D. Schroeder
David C. Seaman
Frank E. Seipel
Ellen M. Silva
James G. Skipworth
Saurabh Thapliyal
Jennifer L. Topoly
James J. Toth
Len Trem
Kim K. Trinh
Chung-Min Wang
Rebecca A. Wirtz
Brian S. Wright
Yeric L. Yarrington
Linda D. Yeoman

1998
Yani Angsani
Aravind R. Asthagiri
Matthew G. Aubert
Dora Babai
Kristina M. Bailey
Gregory B. Bass
Julia A. Bednarcik
Erin C. Bennett
David M. Bressler
Amy N. Bridges
Abdu Y. Bunch
Carrie E. Chambers
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