



University at Buffalo

State University of New York

School of Engineering and Applied Sciences

2006 Chemical and Biological Engineering Graduate Research Symposium

Graduate Student Poster Presentations

2nd floor, Furnas Hall, UB North Campus

Wednesday October 18, 2006

3:30 - 4:30 p.m.

Presenting research on:

- Bioengineering
 - Cell and Tissue Bioengineering
 - Gene Therapy
 - Cell Adhesion
 - Transport Processes in Biological Systems
- Nanoscale Materials Science and Engineering
 - Heterogeneous Catalysis
 - Surfactant and Block Copolymer Self-Assembly
 - Nanoparticle Synthesis and Characterization
- Molecular and Multiscale Modeling
 - Statistical Thermodynamics
 - Molecular Simulation
 - Applied Computational Quantum Chemistry

Symposium Organizing Committee:

Dr. Mattheos Koffas, 716-645-2911 x2221, mkoffas@eng.buffalo.edu

Dr. Sheldon Park, 716-645-2911 x2212, sjpark6@buffalo.edu

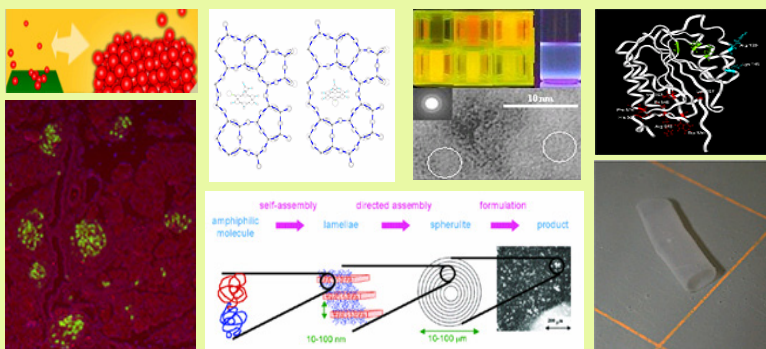
Dr. Manolis Tzanakakis, 716-645-2911 x2206, emtzan@eng.buffalo.edu

Department of Chemical and Biological Engineering
University at Buffalo (SUNY) Buffalo, NY 14260-4200



Chemical and Biological Engineering

*Integrative
Research at the
Frontiers of
Chemical and
Biological
Engineering*



Faculty

Paschalis Alexandridis (MIT) • *amphiphilic polymers, self-assembly, complex fluids, nanomaterials, interfacial phenomena*

Stelios T. Andreadis (Michigan) • *bioengineering, gene therapy, tissue engineering of genetically modified skin*

Jeffrey R. Errington (Cornell) • *molecular simulation, statistical thermodynamics, biopreservation*

Vladimir Hlavacek (ICT -Prague) • *reaction engineering, nanopowders, explosives and detonations, analysis of chemical plants*

Mattheos Koffas (MIT) • *metabolic engineering, bioinformatics*

David A. Kofke (Pennsylvania) • *molecular modeling and simulation, solid phase equilibria*

Carl R. F. Lund (Wisconsin) • *heterogeneous catalysis, chemical kinetics, reaction engineering*

Sriram Neelamegham (Rice) • *biomedical engineering, cell biomechanics, vascular engineering*

Johannes M. Nitsche (MIT) • *fluid mechanics, transport phenomena, bioactive surfaces, biological pores, transdermal transport*

Sheldon J. Park (Harvard) • *protein engineering, protein carbohydrate interaction, molecular dynamics*

Eli Ruckenstein (Bucharest) • *catalysis, surface phenomena, colloids and emulsions, biocompatible surfaces and materials*

Michael E. Ryan (McGill) • *polymer and ceramics processing, rheology, non-Newtonian fluid mechanics*

Mark T. Swihart (Minnesota) • *chemical kinetics, modeling of reactive flows, computational chemistry, nanoparticle formation*

E. (Manolis) S. Tzanakakis (Minnesota) • *cell and tissue engineering, stem cell biotechnology*

Adjunct Faculty

T. J. (Lakis) Mountziaris (Princeton) • *electronic and photonic materials, nanoparticles, biosensors, multiphase flows*

Athos Petrou (Purdue) • *spectroscopy, semiconductor nanostructures*

Carel Jan van Oss (Sorbonne) • *colloid and interface science*

Frederick Sachs (Upstate Med. Center, Syracuse) • *single molecule biophysics*

Emeritus Faculty in Residence

Robert J. Good (Michigan) • *adhesion and interface science, philosophy of science*

Thomas W. Weber (Cornell) • *process control*

Sol W. Weller (Chicago) • *catalysis, coal liquefaction, history of chemical engineering*

Chemical and Biological Engineering faculty participate in many interdisciplinary centers and initiatives, including The Center for Advanced Molecular Biology and Immunology, The Center for Computational Research, The Center for Advanced Photonic and Electronic Materials, The Institute for Lasers, Photonics, and Biophotonics, The Center of Excellence in Bioinformatics, and The Center for Advanced Technology for Biomedical Devices

ABSTRACTS

BIOLOGICAL ENGINEERING

1. IN SILICO SIMULATION OF GENOME-SCALE INTRACELLULAR FLUX MODELS FOR ENGINEERING PHENYLPROPANOID BIOSYNTHESIS IN *ESCHERICHIA COLI*

ZACHARY L. FOWLER, WILLIAM GIKANDI, AND MATTHEOS A.G. KOFFAS

2. ENGINEERING *ESCHERICHIA COLI* FOR PLANT PHARMACEUTICS PRODUCTION

EFFENDI LEONARD, AND MATTHEOS KOFFAS.

3. MUTASYNTHESIS OF NOVEL, UNNATURAL FLAVONOIDS

JOSEPH A CHEMLER, MATTHEOS KOFFAS

4. ENGINEERING THE E. COLI UDP-GLUCOSE SYNTHESIS PATHWAY FOR ANTHOCYANIN BIOSYNTHESIS

ZHEN LI, YAJUN YAN AND MATTHEOS KOFFAS

5. ENGINEERING PLANT PIGMENT BIOSYNTHESIS IN *ESCHERICHIA COLI*

YAJUN YAN, ZHEN LI AND MATTHEOS KOFFAS

6. EXPLORING METABOLONS FOR IMPROVEMENT IN PLANT-SPECIFIC FLAVANONE PRODUCTION FROM *ESCHERICHIA COLI*

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7. RECYCLING ACETATE FOR IMPROVEMENT OF FLAVONOID PRODUCTIONS FROM *ESCHERICHIA COLI*

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ERIC GRZELAK, JEFFERY R. ERRINGTON

38. ASSESSING CRYSTAL FREE ENERGY

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