

STEPHEN E. RANKIN

Curriculum Vitae

University of Kentucky
Chemical and Materials Engineering Department
177 Anderson Hall
Lexington, KY 40506-0046

Office: (859) 257-9799
Home: (859) 619-3475
Fax: (859) 323-1929
e-mail: srankin@engr.uky.edu

<http://www.engr.uky.edu/~srankin>

EDUCATION

Ph.D. Chemical Engineering, University of Minnesota, Minneapolis, 1998.
Thesis Title: "Kinetic, Structural, and Reaction Engineering Studies of Inorganic/Organic Sol-Gel Copolymers." Thesis advisors: Prof. A.V. McCormick and Prof. C.W. Macosko.
B.S. Chemical Engineering, Carnegie Mellon University, 1993 with University Honors and minor in Music.

PROFESSIONAL EXPERIENCE

Associate Professor, Chemical & Materials Engineering Dept., University of Kentucky, July 2006 – present
Assistant Professor, Chemical & Materials Engineering Dept., University of Kentucky, August 2000 – June 2006.
Postdoctoral Appointee, Sandia National Laboratories, September 1999 – August 2000
Modeled coupled reaction and drying in ordered and disordered porous inorganic coatings, fibers, and particles. Supervisor: Dr. A.J. Hurd.
Postdoctoral Research Associate, University of Minnesota / Dow Corning Corporation, January–August, 1999
Investigated silicone resin structure development from chlorosilanes in continuous reactors.
Supervisors: Dr. G.M. Wieber and Prof. A.V. McCormick.
Graduate Fellow / Research Assistant, Chemical Engineering and Materials Science Department, University of Minnesota, Minneapolis, MN, 1993-1998

TEACHING EXPERIENCE AND TRAINING

Developed & Taught *Computational Tools for Chemical Engineering* (UK EGR199) Spring 2004, Spring 2005, Spring 2006 and Spring 2007;
Developed & Taught *Advanced Materials* (UK CME 599 / CME 780) Fall 2007;
Developed & Taught *Computational Materials Science* (UK CME 599 / MSE 620) Spring 2001, Spring 2002, Fall 2006, and also offered remotely by ITV to University of Louisville in 2001 (ChE 694-76);
Instructor of *Chemical Reactor Design* (UK CME 550) Fall 2003, Fall 2004, Fall 2005;
Instructor of *Separation Processes* (UK CME 415) Fall 2000, Fall 2001, Fall 2002;
Instructor of chemical engineering *Seminar* course (UK CME 471) Spring 2007;
Team taught *Chemical Engineering Laboratory* (UK CME 433) Fall 2000, Fall 2002, Fall 2003;
Recitation Instructor for *Chemical Engineering Thermodynamics and Kinetics* (University of Minnesota (UMN)ChEn 5202, Spring 1997);
Teaching Assistant for *Process Evaluation and Design: Conceptual* (UMN ChEn 5501, Winter 1998);
Introduction to the Science of Materials (UMN MatSci 5011, Fall 1995); and *Unit Operations and Separation Processes* (UMN ChEn 5104, Fall 1994).

HONORS AND AWARDS

Gill Professor of Engineering, University of Kentucky, July 2007 – present
NSF CAREER Award for research regarding organic-inorganic hybrid materials, April 2004
U.S. Department of Energy Defense Programs Early Career Scientist and Engineer Award, "For the creation and use of innovative computer models which give fundamental scientific insights into the directed self-assembly of porous materials organized at the nanometer scale," October 2000
Outstanding Poster Award, Materials Research Society National Meeting, San Francisco, CA April 1998
Outstanding Teaching Assistant Award, University of Minnesota Department of Chemical Engineering and Materials Science, April 1998
Doctoral Dissertation Fellowship, University of Minnesota, 1996-1997
National Science Foundation Graduate Fellowship, 1993-1996
Fannie and John Hertz Foundation Scholarship, 1993
Olin Summer Research Program Award, 1993
AIChE Outstanding Junior Award, Carnegie Mellon University, 1991
R. K. Mellon National Merit Scholarship, 1989-1993

RESEARCH FUNDING

ACTIVE

CAREER: Kinetics and Engineering of Functional Nanoscale Organic-Inorganic Hybrids, National Science Foundation, 2004-2009, \$400,000 April 2004 – March 2009. PI.

- REU supplement, June 2007, \$5500

Interfacially Controlled Incorporation of Transition Metal Oxides within Ordered Mesoporous Ceramics, Kentucky Science and Engineering Foundation, January 2007 – December 2008, \$100,000, PI.

Functionalization and Characterization of Huber-Silica Materials for High Value Applications, Huber Corporation, April 2006 – March 2008, \$280,000, co-PI (~20% of effort) with D. Battacharyya (UK Chemical & Materials Engineering Department) PI.

Nanoscale Materials and Architectures for Energy Conversion, U.S. Department of Energy and Kentucky DOE EPSCoR, August 2007-July 2010, \$1,120,000 subcontract from University of Louisville, PI (~30% effort) with B. Hinds (UK Chemical & Materials Engineering Dept), M.P. Menguc (UK Mechanical Engineering Dept) and M. Menon (UK Center for Computational Sciences), co-PIs.

Kentucky Partnership for Nanoscale Electronics and Biotechnology, Kentucky NSF EPSCoR, July 2005 – June 2008, \$1,600,000 for UK, co-PI (~5% effort) with Z. Chen PI (UK Electrical Engineering Department) and 12 other co-PIs at UK.

Exploration of Nano-Scale Melting, Kentucky Science and Engineering Foundation, January 2007 – December 2008, \$100,000, co-PI (~10% effort) with Pinar Mengüç (UK Mechanical Engineering Department) PI.

COMPLETED

NIRT: Tailored Fluorinated Surfactant Templates for the Design of Ordered Nanoporous Ceramics, National Science Foundation, August 2002 – July 2007, \$1,100,000, PI (~35% effort) with co-PIs B.L. Knutson (University of Kentucky (UK) Chemical and Materials Engineering Department) and H.J. Lehmler (University of Iowa Department of Occupational and Environmental Health)

- REU supplement, July 2003, \$6000

Engineering the Evaporation-Driven Assembly of Nanostructured Ceramics, Department of Energy, February 2003-February 2007, \$422,915, PI.

Acquisition of X-Ray Diffraction Instrumentation for a Shared-Use Facility Serving the University and the Region, National Science Foundation, October 2005 – September 2006, \$289,000, co-PI with H.G. Rowe PI (UK Geology Department), and co-PIs S. Rimmer, (UK Geology), M. Arthur (UK Forestry Department), and T. Li (UK Pharmaceutical Sciences).

Postdoctoral Research in Nanostructured Materials Synthesis, University of Kentucky Vice President for Research Office, April 2004 – October 2005, \$46,000, PI.

Molecular Imprinting to Control Cell Responses, National Institutes of Health, September 2003 – March 2006, \$384,745 co-PI (10% effort) with D.A. Puleo PI (UK Biomedical Engineering Center), M.V. Thomas co-PI (UK College of Dentistry) and J.P. Williams co-PI (UK Department of Internal Medicine).

Adsorption and Recovery of Dilute Fluorinated Surfactants for Nonaqueous Cleaning Applications, Kentucky Science and Engineering Foundation, April 2002 – March 2005, \$195,740, co-PI (50% effort) with B.L. Knutson PI

PH.D. THESES SUPERVISED

B. Tan, *Controlled Synthesis And Functionalization Of Nanoporous Sol-Gel Silica Particles And Gels*, Ph.D. in Chemical Engineering, July 2005.

V.R. Koganti, *Controlled Evaporation-Driven Synthesis of Ordered Nanoporous Ceramic Thin Films*, Ph.D. in Chemical Engineering, October 2006.

R. Xing, *In-situ Investigations of Surfactant Adsorption and Templating of Ordered Nanoporous Ceramic Synthesis*, Ph.D. May 2007.

J. Ambati, *Kinetics and Synthesis of Organic-Inorganic Hybrid Materials*, Ph.D. 2009 (anticipated)

X. Li, *Multiscale Modeling of Sol-Gel Dip Coating Processes*, Ph.D. 2008 (anticipated)

M.S. Rahman, *Molecular Imprinting of Porous Ceramics for Sensing Applications*, Ph.D. 2008 (anticipated)

Q. Wu, *Synthesis and Energy Applications of Oriented Metal Oxide Nanoporous Films and Membranes*, Ph.D. 2010 (anticipated)

M.S. THESES SUPERVISED

P.R. Elswick, *Molecular Imprinting of Silica with Glucose*, M.S. in Chemical Engineering, June 2004

UNDERGRADUATE AND K-12 RESEARCH MENTORING

Mentored the junior/senior year research project of a student from the Math, Science and Technology Center of Paul Laurence Dunbar High School in Lexington, KY, 2005-6
3 "Bucks for Brains" Summer Undergraduate Research Program participants, 2003-2004, 2007
2 NSF Research Experiences for Undergraduates (REU) summer researchers, 2003, 2007
1 University of Kentucky Undergraduate Research and Creativity Grant project, 2001
4 for-credit research projects at UK
5 paid undergraduate researchers for one or more semester at UK
Supervised (with A.V. McCormick as primary advisor) 1 Minority Scholars undergraduate researcher, 1 Minnesota Supercomputer Institute summer fellow, and 5 for-credit research projects at UMN

PROFESSIONAL SOCIETY MEMBERSHIPS

American Chemical Society, American Institute of Chemical Engineers, Materials Research Society, Society of Chemical Industry

PROFESSIONAL SERVICE ACTIVITIES

In last 5 years, served on panels and ad hoc reviews for National Science Foundation, ACS Petroleum Research Fund, U.S. Department of Energy, Air Force Office of Scientific Research, *Advanced Materials*, *Advanced Functional Materials*, *Analytical Chemistry*, *Applied Surface Science*, *Biotechnology Progress*, *Carbon*, *Chemical Communications*, *Chemistry Letters*, *Chemistry of Materials*, *Chemical Reviews*, *Environmental Science and Technology*, *European Journal of Inorganic Chemistry*, *Geochimica et Cosmochimica Acta*, *Inorganic Chemistry*, *Journal of the American Ceramic Society*, *Journal of the American Chemical Society*, *Journal of Biomedical Materials Research A*, *Journal of Colloid and Interface Science*, *Journal of Controlled Release*, *Journal of Materials Chemistry*, *Journal of Nanoscience and Nanotechnology*, *Journal of Non-Crystalline Solids*, *Journal of Physical Chemistry A & B*, *Langmuir*, *Macromolecules*, *Materials Chemistry and Physics*, *Materials Research Bulletin*, *Materials Research Society Symposium Proceedings*, *Microporous and Mesoporous Materials*, *Polymer Engineering and Science*, *Polymer International*, *Small*, *Synlett*, *Thin Solid Films*
National Program Vice-chair of American Institute of Chemical Engineers Area 8d (Ceramics) for 2007 Annual Meeting to be held in Salt Lake City, UT, November 2007.
National Program Chair of American Institute of Chemical Engineers Area 8d (Ceramics) for 2006 Annual Meeting held in San Francisco, CA, November 2006.
Chair, *Modeling of Inorganic Materials Synthesis and Properties and Advances in Porous Inorganic Materials I* sessions, 2006 AIChE Annual Meeting, San Francisco, CA, November 2006.
Vice chair, *Nanostructured Thin Films* session, 2006 AIChE Annual Meeting, San Francisco, CA, November 2006.
Chair, *Fluid/Particle Systems in Material Processing* session, 5th World Congress on Particle Technology, Orlando, FL, April 2006.
Vice chair, *Nanostructured Thin Films* session, 2005 AIChE Annual Meeting, Cincinnati, OH, November 2005.
Chair, *Control of Particulate Material Assembly Through Surface Chemistry* session, 2004 AIChE Annual Meeting, Austin, TX, 11/04
Vice-Chair, *Nanostructured Adsorbent Materials* session, 2004 AIChE Annual Meeting, Austin, TX, 11/04
Vice-chair, *Liquid Phase Synthesis of Nanomaterials and Particles* session, 2003 AIChE Annual Meeting, San Francisco, CA 11/03.
Chair, *Liquid Phase Synthesis of Nanomaterials and Particles* session, 2002 AIChE Annual Meeting, Indianapolis, IN 11/02.
Chair, *Cure and Degradation Kinetics of Network Forming Systems*, 2001 AIChE Annual Meeting, Reno, NV, 11/01.
Co-chair, *Membrane Transport Models I* session, 12th Annual North American Membrane Society meeting, Lexington, KY, 5/01.
Vice-chair, *Applications in Sol-Gel Derived Materials* session, 2000 AIChE Annual Meeting, Los Angeles, CA, 11/00
Member, University of Kentucky Chemical Safety Committee, 2006-present.
Member, Chemical & Materials Engineering Department Safety Committee, 2006-present.
Member, Chemical engineering graduate committee, Chemical & Materials Engineering, University of Kentucky, 2001-present.
Member, Chemical engineering alumni relations committee, Chemical & Materials Engineering, University of Kentucky, 2003-2005.

PUBLICATIONS

BOOK CHAPTER

S.E. Rankin, "Synthesis of Controlled Porosity Ceramics Using Bicontinuous Liquid Crystals", in M.L. Lynch and P.T. Spicer, eds. *Bicontinuous Liquid Crystals*, Taylor and Francis: Boca Raton, FL, 2005, pp. 243-284.

IN PEER REVIEWED JOURNALS

- 39) V.R. Koganti and S.E. Rankin, "Synthesis and Transport Properties of Orthogonally Aligned Hexagonal Mesoporous Silica Nanofiltration Membranes on Macroporous Supports," *Micropor. Mesopor. Mater.* submitted (December 2006).*
- 38) R. Xing and S.E. Rankin, "Use of the Ternary Phase Diagram of a Mixed Cationic / Glucopyranoside Surfactant System to Predict Mesostructured Silica Synthesis," *J. Colloid Interface Sci.* **2007** in press.*
- 37) G. Osei-Prempeh, H.J. Lehmler, S.E. Rankin and B.L. Knutson, "Application of Fluoro-Functionalized Mesoporous Silica to Fluorous Separations," *Ind. Eng. Chem. Res.* **2007** in press.
- 36) R. Xing and S.E. Rankin, "Reactive Pore Expansion During Ammonia Vapor Post-Treatment of Ordered Mesoporous Silica Prepared with Mixed Glucopyranoside and Cationic Surfactants," *Micropor. Mesopor. Mater.* **2007** doi:10.1016/j.micromeso.2007.03.028.*
- 35) K. Ghosh, S.M. Vyas, H.J. Lehmler, S.E. Rankin and B.L. Knutson, "Tailoring Porous Silica Films through Supercritical Carbon Dioxide Processing of Fluorinated Surfactant Templates," *J. Phys. Chem. B* **2007** *111*: 363-370.
- 34) B. Tan, S.M. Vyas, H.J. Lehmler, B.L. Knutson and S.E. Rankin, "Synthesis of Inorganic and Organic-Inorganic Hybrid Hollow Particles Using a Cationic Surfactant with a Partially Fluorinated Tail," *Adv. Funct. Mater.* **2007** doi: 10.1002/adfm.200600635.*
- 33) V.R. Koganti, D. Dunphy, V. Gowrishankar, M.D. McGehee, X. Li, J. Wang and S.E. Rankin, "Generalized Coating Route to Silica and Titania Films with Orthogonally Aligned Cylindrical Nanopore Arrays," *Nano Lett.* **2006** *6*: 2567-2570.*
- 32) B. Tan and S.E. Rankin, "Study of the Effects of Progressive Changes in Alkoxysilane Structure on Sol-Gel Reactivity," *J. Phys. Chem. B* **2006** *110*:22353-22364.*
- 31) B. Tan and S.E. Rankin, "Effect of Progressive Changes in Organoalkoxysilane Structure on the Gelation and Pore Structure of Templated and Non-Templated Sol-Gel Materials," *J. Non-Crystalline Solids* **2006** *352*: 5453-5462.*
- 30) S.M. Vyas, J. Turánek, P. Knötigová, A. Kašná, V. Kvardová, V. Koganti, S.E. Rankin, B.L. Knutson and H.L. Lehmler, "Synthesis and Biocompatibility Evaluation of Partially Fluorinated Pyridinium Bromides," *New J. Chem.* **2006** *30*: 944-951.
- 29) R. Xing and S.E. Rankin, "Three Stage Multilayer Formation Kinetics During Adsorption of an Anionic Fluorinated Surfactant on Germanium 1. Concentration Effects" *J. Phys. Chem. B* **2006** *110*: 295-304.*
- 28) B. Tan, S.M. Vyas, H.J. Lehmler, B.L. Knutson and S.E. Rankin, "Unusual Dependence of Particle Architecture on Surfactant Concentration in Partially Fluorinated Decylpyridinium Templated Silica," *J. Phys. Chem. B* **2005** *109*: 23225-23232.*
- 27) B. Tan and S.E. Rankin, "Dual Latex/Surfactant Templating of Hollow Spherical Silica Particles with Ordered Mesoporous Shells," *Langmuir* **2005** *21*: 8180-8187.*
- 26) B. Tan, H.J. Lehmler, S.M. Vyas, B.L. Knutson and S.E. Rankin, "Fluorinated Surfactant-Templated Synthesis of Hollow Silica Particles with a Single Layer of Mesopores in their Shells," *Adv. Mater.* **2005** *17*: 2368-2371.*
- 25) G. Osei-Prempeh, H.J. Lehmler, B.L. Knutson and S.E. Rankin, "Fluorinated Surfactant Templating Of Vinyl-Functionalized Nanoporous Silica" *Micropor. Mesopor. Mater.* **2005** *85*: 16-24.*
- 24) K. Ghosh, H.J. Lehmler, S.E. Rankin and B.L. Knutson, "Supercritical Carbon Dioxide Processing of Fluorinated Surfactant Templated Mesoporous Silica Thin Films" *Langmuir* **2005** *21*: 6145-6149.
- 23) B. Tan, H.J. Lehmler, S.M. Vyas, B.L. Knutson, and S.E. Rankin, "Large- and Small-Nanopore Silica Prepared with a Short-Chain Cationic Fluorinated Surfactant," *Nanotechnology* **2005***16*: S502-S507.*
- 22) V.R. Koganti and S.E. Rankin, "Synthesis of Surfactant-Templated Silica Films with Orthogonally Aligned Hexagonal Mesophase," *J. Phys. Chem. B* **2005** *109*: 3279-3283.*
- 21) B. Tan, H.J. Lehmler, S.M. Vyas, B.L. Knutson and S.E. Rankin "Controlling Nanopore Size and Shape by Fluorosurfactant Templating of Silica," *Chem. Mater.* **2005** *17*: 916-925.*
- 20) B. Tan and S.E. Rankin, "Interfacial Alignment Mechanism of Forming Spherical Silica with Radially Oriented Nanopores," *J. Phys. Chem. B* **2004** *108*: 20122-20129.*

* Rankin is corresponding author

- 19) B. Tan, A. Dozier, H.J. Lehmler, B.L. Knutson and S.E. Rankin, "Elongated Silica Nanoparticles with a Mesh Phase Mesopore Structure by Fluorosurfactant Templating," *Langmuir* **2004** 20: 6981-6984.*
- 18) S.E. Rankin, B. Tan, H.J. Lehmler, K.P. Hindman and B.L. Knutson, "Well-Ordered Mesoporous Silica Prepared by Fluorinated Surfactant Templating," *Micropor. Mesopor. Mater.* **2004** 73: 197-202.*
- 17) H. Huang, S.E. Rankin, L.S. Penn, R.P. Quirk and T.H. Cheong, "Transition from Mushroom to Brush During Formation of a Tethered Layer," *Langmuir* **2004** 20: 5770-5775.
- 16) J. Šeřčík and S.E. Rankin, "Monte Carlo Simulations of Size and Structure of Gel Precursors in Silica Polycondensation," *J. Phys. Chem. B* **2003** 107: 52-60.*
- 15) L.S. Penn, H. Huang, M.D. Sindkhedkar, S.E. Rankin, K. Chittenden, R.P. Quirk, R.T. Mathers and Y. Lee, "Formation of Tethered Nanolayers: Three Regimes of Kinetics," *Macromolecules* **2002** 35: 7054-7066.
- 14) S.E. Rankin and A.V. McCormick, "Reaction Engineering of Co-condensing (Methyl)ethoxysilane Mixtures: Kinetic Characterization and Modeling," *Macromolecules* **2000** 33: 7743-7750.
- 13) S.E. Rankin, L. J. Kasehagen, A.V. McCormick, and C.W. Macosko, "Dynamic Monte Carlo Simulation of Polycondensation with Extensive Cyclization," *Macromolecules* **2000** 33: 7639-7648.
- 12) S.E. Rankin and A.V. McCormick, "Hydrolysis Pseudoequilibrium: Challenges and Opportunities to Sol-Gel Silicate Kinetics," *Chem. Eng. Sci.* **2000** 55: 1955-1967.
- 11) S.E. Rankin and A.V. McCormick, "²⁹Si NMR Investigation of Base-Catalyzed Hydrolytic Polycondensation of Dimethyldiethoxysilane," *Magn. Reson. Chem.* **1999** 37: S27-S37.
- 10) J. Šeřčík, S.E. Rankin, S.K. Kirchner, and A.V. McCormick, "Esterification, Condensation, and Deprotonation Equilibria of Trimethylsilanol," *J. Non-Cryst. Solids* **1999** 258: 187-197.
- 9) S.E. Rankin, J. Šeřčík, and A.V. McCormick, "Similarities in the Hydrolysis Pseudoequilibrium Behavior of Methyl-Substituted Ethoxysilanes," *Ind. Eng. Chem. Res.* **1999** 38: 3191-3198.
- 8) S.E. Rankin, J. Šeřčík, and A.V. McCormick, "Trimethylethoxysilane Liquid-Phase Hydrolysis Equilibrium and Dimerization Kinetics: Catalyst, Nonideal Mixing, and the Condensation Route," *J. Phys. Chem. A* **1999** 103: 4233-4241.
- 7) S.E. Rankin, C.W. Macosko, and A.V. McCormick, "Importance of Cyclization during the Condensation of Hydrolyzed Alkoxysilanes," *Chem. Mater.* **1998** 10: 2037-2040.
- 6) S.E. Rankin, C.W. Macosko, and A.V. McCormick, "Sol-Gel Polycondensation Kinetic Modeling: Methylethoxysilanes," *AIChE J.* **1998** 44: 1141-1156.
- 5) L.J. Kasehagen, S.E. Rankin, A.V. McCormick, and C.W. Macosko, "Modeling of First Shell Substitution Effects and Preferred Cyclization in Sol-Gel Polymerization," *Macromolecules* **1997** 30: 3921-3929.
- 4) S.E. Rankin, C.W. Macosko, and A.V. McCormick, "Copolymerization Kinetics of a Model Siloxane System," *J. Polym. Sci. A: Polym. Chem.* **1997** 35: 1293-1302.
- 3) L.J. Kasehagen, S.E. Rankin, A.V. McCormick, and C.W. Macosko, "Modeling of Non-Idealities in Sol-Gel Polymerization," *Polym. Mater. Sci. Eng.* **1996** 37: 356-357.
- 2) J. Sanchez, S.E. Rankin, and A.V. McCormick, "²⁹Si NMR Kinetic Study of Tetraethoxysilane and Ethyl-substituted Ethoxysilane Polymerization in Acidic Conditions," *Ind. Eng. Chem. Res.* **1996** 35: 117-129.
- 1) J.B. Miller, S.E. Rankin, and E.I. Ko, "Strategies in Controlling the Homogeneity of Zirconia-Silica Aerogels: Effect of Preparation on Textural and Catalytic Properties," *J. Catal.* **1994** 148: 673-682.

PEER-REVIEWED CONFERENCE PROCEEDINGS

- 7) S.E. Rankin, B. Tan, R. Xing, S.M. Vyas, H.J. Lehmler and B.L. Knutson "Tuning The Mesopore Structure In The Shells Of Hollow Silica And Organosilica Particles Formed By Fluorosurfactant Templating," Proceedings, XXII Interamerican Congress of Chemical Engineering, Buenos Aires, Argentina, October 2006.
- 6) B.L. Knutson, K. Ghosh, S. Bashadi, S.E. Rankin and H.J. Lehmler, "Supercritical Carbon Dioxide Processing of Mesoporous Silica Templated by Fluorinated Surfactants," Proceedings, XXII Interamerican Congress of Chemical Engineering, Buenos Aires, Argentina, October, 2006
- 5) B. Tan, W. Xu, A. Dozier and S.E. Rankin, "Preparation of Highly Dispersed Iron Oxide Nanoparticles in Amine-Modified SBA-15," *Mater. Res. Soc. Symp. Proc.* **2005** 876E: R4.11. *
- 4) S.E. Rankin, B. Tan, H.J. Lehmler and B.L. Knutson, "Fluorinated Surfactant Templating of Ordered Nanoporous Silica," *Mater. Res. Soc. Symp. Proc.* **2003** 775: 47-52.*
- 3) S.E. Rankin, A.P. Malanoski and F. van Swol, Monte Carlo Simulation of Self-Assembly during Dip Coating, *Mater. Res. Soc. Symp. Proc.* **2001** 636: 121-126.*
- 2) S.E. Rankin and A.V. McCormick, Prospects for Chemical Control and Engineering of Organically Modified Ceramics, *Mater. Res. Soc. Symp. Proc.* **1999** 550: 243-248.

* Rankin is corresponding author.

- 1) S.E. Rankin, C.W. Macosko, and A.V. McCormick, Sol-Gel Kinetics for the Preparation of Inorganic/Organic Siloxane Copolymers, *Mat. Res. Soc. Symp. Proc.* **1996** 435: 113-118.

UNREVIEWED CONFERENCE PROCEEDINGS

- 8) J.R. Ambati and S.E. Rankin, ^{29}Si NMR Investigation of the Polymerization Kinetics of Bis(triethoxysilyl)ethane in Acidic Alcohol/water Solution, *Polym. Mater. Sci. Eng.* **2006**, 94: 610-611.
- 7) L.S. Penn, H. Huang, D. Sindkhedkar, S.E. Rankin, R.P. Quirk and R.T. Mathers, Tethered Polymers for Surface Tailoring: Kinetics of Layer Construction, Proceedings, 25th Annual Meeting of the Adhesion Society, Orlando, FL, February 2002.
- 6) G.M. Wieber, G.B. Gardner, S.A. Hansen, E.D. Lipp, A.V. McCormick, and S.E. Rankin, Early Structure Development in the Hydrolytic Polycondensation of Chlorosilanes, Proceedings, International Conference on Organic-Inorganic Hybrids, University of Surrey, Guilford, UK, June 2000.
- 5) J. Sefcik, S.E. Rankin and A.V. McCormick, Control of Oligomer Size in Silicate-Containing Sol-Gel Composites, Proceedings of the AIChE Annual Meeting, Los Angeles, CA, November 2000.
- 4) S.E. Rankin and A.V. McCormick, Cyclization in Sol-gel Silicate Coatings, Proceedings of the AIChE Annual Meeting, Dallas, TX, November, 1999.
- 3) S.E. Rankin and A.V. McCormick, Kinetics and Reaction Engineering of Siloxane Copolymers, Proceedings of the AIChE Annual Meeting, Dallas, TX, November, 1999.
- 2) S.E. Rankin, C.W. Macosko, and A.V. McCormick, Kinetic and Structural Modeling of Alkoxysilane Hydrolytic Polycondensation, proceedings, 18th International Congress on Glass, San Francisco, July 1998.
- 1) S.E. Rankin, L.J. Kasehagen, C.W. Macosko, A.V. McCormick, and G.M. Wieber, A Kinetic Monte Carlo Model with Extensive Cyclization for Inorganic/Organic Copolymerization, Proceedings of the Society of Plastics Engineers ANTEC Meeting, Toronto, Canada, Apr. 27 - May 1, 1997. p. 1821.

PRESENTATIONS

(Presenter is underlined)

Invited

- 12) S.E. Rankin, Interfacial Engineering for the Synthesis of Porous Ceramic Materials, University of Louisville, Louisville, KY, 09/05.
- 11) S.E. Rankin, Interfacial Engineering for Designing Porous Ceramics, Vanderbilt University, Nashville, TN, 03/05.
- 10) S.E. Rankin, Design of Porous Ceramic Materials Through Interfacial Engineering, 3M, St. Paul, MN, 10/04.
- 9) S.E. Rankin, B. Tan, B.L. Knutson and H.J. Lehmler, Surfactant Templating Of Ordered Nanoporous Silica, Tristate Catalysis Society Meeting, Lexington, KY, 5/03.
- 8) L.S. Penn, H. Huang, S. Rankin, M. Sindkhedkar, R.P. Quirk, R. Mathers and Y. Lee, Construction of Tethered Nanolayers from Polymer Chains, Bryn Mawr College, Chemistry Department, 2/02.
- 7) S.E. Rankin, Modeling Aspects of Nanostructured Silicate Synthesis, University of Tennessee, Chemical Engineering Department, Knoxville, TN, 4/01.
- 6) S.E. Rankin, Kinetic Modeling of Siloxane-Containing Materials Synthesis, Georgia Institute of Technology, Materials Science and Engineering Department, Atlanta, GA, 2/01.
- 5) S.E. Rankin, Dynamic Monte Carlo Simulation of Silica Polycondensation, University of Louisville, Chemical Engineering Department, Louisville, KY, 2/01.
- 4) S.E. Rankin and A.V. McCormick, Alkoxysilane vs. Chlorosilane Network Formation, International Chemical Congress of Pacific Basin Societies, Honolulu, HI, 12/00.
- 3) S.E. Rankin and A.V. McCormick, Comparison Between NMR and Simulation of Formation of and Sorption in Silicate Networks, Symposium on Magnetic Resonance of Zeolites and Related Materials, University of Leipzig, 7/98.
- 2) S.E. Rankin, C.W. Macosko, and A.V. McCormick, Kinetic and Structural Modeling of Alkoxysilane Hydrolytic Polycondensation, 18th International Congress on Glass, San Francisco, CA, 7/98.
- 1) S.E. Rankin, L.J. Kasehagen, G.M. Wieber, C.W. Macosko, and A.V. McCormick, A Kinetic Monte Carlo Study of Cyclization in Inorganic/Organic Copolymers, Society of Plastics Engineers ANTEC meeting, Toronto, 4/97.

Contributed Papers

- 94) B.L. Knutson, K. Ghosh, S.E. Rankin and H.J. Lehmler, "Carbon dioxide processing of surfactant templated nano-structured silica probed by in-situ spectroscopy," 81st ACS Colloid and Surface Science Symposium, Newark, DE, June 24-27, 2007.
- 93) S.E. Rankin, R. Xing, B.L. Knutson and H.J. Lehmler, "Controlling demixed micelle architectures in silica particles templated with combined fluorinated and hydrogenated cationic surfactants," 81st ACS Colloid and Surface Science Symposium, Newark, DE, June 24-27, 2007.
- 92) J. Ambati and S.E. Rankin, "The Early-Time Polymerization Kinetics in Acidic Water/Alcohol Solutions of Bis(Trialkoxysilyl) Alkanes with Short Bridging Chains," American Institute of Chemical Engineers 2006 Annual Meeting, San Francisco, CA, November 12-17, 2006.
- 91) X. Li and S.E. Rankin, "Multiscale Modeling of Coupled Drying and Nonideal Polymerization in Sol-Gel Silica Films," American Institute of Chemical Engineers 2006 Annual Meeting, San Francisco, CA, November 12-17, 2006.
- 90) G. Osei-Prempeh, B.L. Knutson, S.E. Rankin, and H.J. Lehmler, "Synthesis and Application of Fluorocarbon Functionalized Mesoporous Silica," American Institute of Chemical Engineers 2006 Annual Meeting, San Francisco, CA, November 12-17, 2006.
- 89) R. Xing, H.J. Lehmler, B.L. Knutson and S.E. Rankin, "One Pot Synthesis of Ordered Biphasic Mesoporous Silica with 2D Hexagonal and Mesh Structure and Its Use for Controlled Deposition of Metal Oxides," American Institute of Chemical Engineers 2006 Annual Meeting, San Francisco, CA, November 12-17, 2006.
- 88) M.S. Rahman and S.E. Rankin, "Ternary Phase Diagram of Cationic and Maltoside Surfactants in Water, and Its Use for Predictive Synthesis of Ordered Mesoporous Silica," American Institute of Chemical Engineers 2006 Annual Meeting, San Francisco, CA, November 12-17, 2006.
- 87) V.R. Koganti and S.E. Rankin, "Synthesis and Crystallization of Titania Films with Orthogonally Aligned Hexagonal Close Packed Cylindrical Nanopores," American Institute of Chemical Engineers 2006 Annual Meeting, San Francisco, CA, November 12-17, 2006.
- 86) K. Ghosh, S.E. Rankin, B.L. Knutson and H.J. Lehmler, "Pore Expansion in Fluorinated and Hydrocarbon Surfactant Templated Silica Thin Films Due to Supercritical Carbon Dioxide Processing," poster at American Institute of Chemical Engineers 2006 Annual Meeting, San Francisco, CA, November 12-17, 2006.
- 85) V.R. Koganti and S.E. Rankin, "Synthesis and Applications of Thin Ceramic Films with Oriented Nanopores Formed by Evaporation-Driven Self-Assembly," poster at American Institute of Chemical Engineers 2006 Annual Meeting, San Francisco, CA, November 12-17, 2006.
- 84) K. Ghosh, S.E. Rankin, B.L. Knutson and H.J. Lehmler, "In-Situ Fluorescence Spectroscopy Investigation of Supercritical Carbon Dioxide Swelling of Surfactant Templates in Porous Silica Thin Films," American Institute of Chemical Engineers 2006 Annual Meeting, San Francisco, CA, November 12-17, 2006.
- 83) S.E. Rankin and V.R. Koganti, "General Dip Coating Approach to Ceramic Films with Orthogonal Pore Arrays," XXII Interamerican Congress of Chemical Engineering, Buenos Aires, Argentina, October 1-4, 2006.
- 82) S.E. Rankin, B. Tan, R. Xing, H.J. Lehmler, S.M. Vyas and B.L. Knutson, "Tuning the Mesopore Structure in the Shells of Hollow Silica and Organosilica Particles Formed by Fluorosurfactant Templating," XXII Interamerican Congress of Chemical Engineering, Buenos Aires, Argentina, October 1-4, 2006.
- 81) B.L. Knutson, K. Ghosh, S. Bashadi, S.E. Rankin and H.J. Lehmler, "Supercritical Carbon Dioxide Processing of Mesoporous Silica Templated by Fluorinated Surfactants," XXII Interamerican Congress of Chemical Engineering, Buenos Aires, Argentina, October 1-4, 2006.
- 80) V.R. Koganti and S.E. Rankin, "Polycondensation kinetics of silicates in self-assembled mesostructured films," 80th ACS Colloid & Surface Science Symposium, Boulder, CO, June 18-21, 2006.
- 79) R. Xing and S.E. Rankin, "Unusual Three Stage Multilayer Adsorption of Anionic Fluorinated Surfactant onto Germanium: The Effects of Solution concentration, pH and Ionic Strength," 80th ACS Colloid & Surface Science Symposium, Boulder, CO, June 18-21, 2006.
- 78) R. Xing, H.J. Lehmler and S.E. Rankin, "Mixing and Demixing in Combined Hydrocarbon/Fluorocarbon Cationic Surfactant Templating of Mesoporous Silica," 80th ACS Colloid & Surface Science Symposium, Boulder, CO, June 18-21, 2006.
- 77) V.R. Koganti and S.E. Rankin, "Nano-crystalline titania films with orthogonally aligned nanopore arrays," Paper COLL0050 presented at 231st ACS National Meeting, Atlanta, GA, March 26-30, 2006.
- 76) S.E. Rankin, V.R. Koganti, F. van Swol and A.P. Malanoski, "Lattice Monte Carlo simulations of confinement effects on lyotropic surfactant liquid crystals," Paper COLL0396 presented at 231st ACS National Meeting, Atlanta, GA, March 26-30, 2006.
- 75) M.S. Rahman and S.E. Rankin, "Lyotropic phase behavior of aqueous cationic/maltoside surfactant mixtures and predictive synthesis of ordered mesoporous silica using these surfactants," Poster COLL0195 presented at 231st ACS National Meeting, Atlanta, GA, March 26-30, 2006.

- 74) X. Li and S.E. Rankin, "Multiscale modeling of coupled curing and drying in sol-gel silica films," Poster IEC0094 presented at 231st ACS National Meeting, Atlanta, GA, March 26-30, 2006.
- 73) G. Osei-Prempeh, B.L. Knutson, S.E. Rankin and H.J. Lehmler, "Bi-functionalized mesoporous silica synthesized using fluorinated surfactants as template," American Institute of Chemical Engineers Annual Meeting, Cincinnati, OH, October 31-November 4, 2005.
- 72) V.R. Koganti and S.E. Rankin, "Investigation of the curing kinetics in dip coated surfactant / sol-gel silica films," American Institute of Chemical Engineers Annual Meeting, Cincinnati, OH, October 31-November 4, 2005.
- 71) V.R. Koganti and S.E. Rankin, "Preparation and characterization of silica films with aligned cylindrical mesopores on porous substrates," American Institute of Chemical Engineers Annual Meeting, Cincinnati, OH, October 31-November 4, 2005.
- 70) R. Xing and S.E. Rankin, "ATR-FTIR study of adsorption kinetics and structural arrangement of an anionic fluorinated surfactant at germanium/water interface," American Institute of Chemical Engineers Annual Meeting, Cincinnati, OH, October 31-November 4, 2005.
- 69) R. Xing and S.E. Rankin, "The ternary phase diagram of a mixed cationic/glycoside surfactant/water system and its use for predictive synthesis of mesoporous materials," American Institute of Chemical Engineers Annual Meeting, Cincinnati, OH, October 31-November 4, 2005.
- 68) S.E. Rankin and X. Li, "Multiscale modeling of solvent-cast sol-gel ceramic films," American Institute of Chemical Engineers Annual Meeting, Cincinnati, OH, October 31-November 4, 2005.
- 67) S.E. Rankin, V.R. Koganti, W. Li, F. van Swol and A.P. Malanoski, "Monte Carlo simulations of the influence of nanoscale confinement on surfactant mesophases," American Institute of Chemical Engineers Annual Meeting, Cincinnati, OH, October 31-November 4, 2005.
- 66) J. Ambati and S.E. Rankin, "Comparison of the polymerization kinetics of bis(triethoxysilyl)ethane and methyltriethoxysilane under acidic conditions," American Institute of Chemical Engineers Annual Meeting, Cincinnati, OH, October 31-November 4, 2005.
- 65) K. Ghosh, H.J. Lehmler, S.E. Rankin and B.L. Knutson, "Pore Expansion in Cationic Fluorinated Surfactant Templated Porous Silica Thin Films through Supercritical Carbon Dioxide Processing," American Institute of Chemical Engineers Annual Meeting, Cincinnati, OH, October 31-November 4, 2005.
- 64) B. Tan, S.M. Vyas, H.J. Lehmler, B.L. Knutson and S.E. Rankin, "Synthesis and Characterization of Vesicular Nanoparticles Formed by Fluorinated Surfactant Templating," American Institute of Chemical Engineers Annual Meeting, Cincinnati, OH, October 31-November 4, 2005.
- 63) S.E. Rankin and R. Xing, "Influence of Ammonia Vapor Post-Treatment on the Structure of Mesoporous Silica Prepared with Mixed Cationic and Glycoside Surfactants," American Institute of Chemical Engineers Annual Meeting, Cincinnati, OH, October 31-November 4, 2005.
- 62) H. Huang, S.E. Rankin, A. Cammers, and L.S. Penn, "Penetration and tethering behavior of free chains into polymer brushes," 230th ACS National Meeting, Washington, DC, August 28-September 1, 2005.
- 61) K. Ghosh, H.J. Lehmler, S.E. Rankin, and B.L. Knutson, "Pore Expansion in Fluorinated Surfactant Templated Porous Silica Thin Films through Supercritical Carbon Dioxide Processing," 79th ACS Colloid and Surface Science Symposium, Potsdam, NY, June 12-15, 2005.
- 60) G. Osei-Prempeh, B.L. Knutson, S.E. Rankin and H.J. Lehmler, "Synthesis of Fluorocarbon Functionalized Mesoporous Silica Using Fluorinated Surfactant Templates," 79th ACS Colloid and Surface Science Symposium, Potsdam, NY, June 12-15, 2005.
- 59) B. Tan, S.E. Rankin, S.M. Vyas, H.J. Lehmler and B.L. Knutson, "Opportunities Brought by Cationic Fluorinated Surfactants in Tuning the Mesoporous Silica Particle Architecture," 79th ACS Colloid and Surface Science Symposium, Potsdam, NY, June 12 - June 15, 2005.
- 58) B. Tan and S.E. Rankin, "Interfacial alignment of micelles in surfactant-silica aggregates as a general approach to materials with oriented mesopores," 79th ACS Colloid and Surface Science Symposium, Potsdam, NY, June 12 - June 15, 2005.
- 57) R. Xing and S.E. Rankin, "ATR-FTIR study of adsorption and structural arrangement of an Anionic Fluorinated Surfactant at Germanium/Water interface," 79th ACS Colloid and Surface Science Symposium, Potsdam, NY, June 12 - June 15, 2005.
- 56) R. Xing and S.E. Rankin, "Influence of ammonia vapor post-treatment on the porosity of mesoporous silica prepared with mixed cationic and glycoside surfactant via nanocasting," 79th ACS Colloid and Surface Science Symposium, Potsdam, NY, June 12 - June 15, 2005.
- 55) R. Xing and S.E. Rankin, "Mixed cationic and glycoside surfactants: Investigation of ternary phase diagram and predictive mesoporous materials synthesis," 79th ACS Colloid and Surface Science Symposium, Potsdam, NY, June 12 - June 15, 2005.

- 54) B. Tan and S.E. Rankin, Preparation and Characterization of Highly Dispersed Catalytic Metal Oxide Nanoparticles by Localized Deposition in Mesoporous Silica, Materials Research Society Spring 2005 Meeting, San Francisco, CA, March 28 – April 1, 2005.
- 53) B. Tan and S.E. Rankin, How Cationic Fluorinated Surfactant Structure Influences Mesoporous Silica Particle Architecture, Materials Research Society Spring 2005 Meeting, San Francisco, CA, March 28 – April 1, 2005.
- 52) V.R. Koganti and S.E. Rankin, Synthesis of Silica Films with Orthogonally Aligned Ordered Nanopore Arrays by Controlling Surface Chemistry, Materials Research Society Spring 2005 Meeting, San Francisco, CA, March 28 – April 1, 2005.
- 51) S.M. Vyas, V. Koganti, K.P. Murphy, S.E. Rankin, B.L. Knutson, H.-J. Lehmler, Novel fluorinated pyridinium surfactants: Synthesis and determination of Critical Aggregate Concentration (CAC), 229th ACS National Meeting, San Diego, CA, March 13-17, 2005.
- 50) V.R. Koganti and S.E. Rankin, Substrate surface effects on the pore orientation in mesoporous thin films: Perpendicular orientation of cylindrical pore channels using surface chemistry, AIChE National Meeting, Austin, TX 11/04.
- 49) P. Elswick and S.E. Rankin, Molecularly Imprinted Silica for Enhanced Glucose Adsorption, AIChE National Meeting, Austin, TX 11/04.
- 48) K. Ghosh, H.J. Lehmler, S.E. Rankin and B.L. Knutson, Supercritical Carbon Dioxide Processing of Thin Mesoporous Silica Films, AIChE National Meeting, Austin, TX 11/04.
- 47) B. Tan, H.J. Hemler, S.M. Vyas, B.L. Knutson and S.E. Rankin, Effects of Fluorinated Surfactant Structure on Nanopore Architecture in Templated Silica Particles, AIChE National Meeting, Austin, TX 11/04.
- 46) G. Osei-Prempeh, H.J. Lehmler, S.M. Vyas, S.E. Rankin and B.L. Knutson, Synthesis of Fluorocarbon Functionalized Mesoporous Silica Using Fluorinated Surfactant Templates AIChE National Meeting, Austin, TX 11/04.
- 45) B. Tan and S.E. Rankin, Synthesis of Porous Organic-Inorganic Hybrids: Effects of the Precursor Structure on Reaction Kinetics and Product Properties, AIChE National Meeting, Austin, TX 11/04.
- 44) B. Tan and S.E. Rankin, Amine-Functionalized Silica Spheres as a pH-Responsive Delivery System, AIChE National Meeting, Austin, TX 11/04.
- 43) B. Tan and S.E. Rankin, Re-Examination of the Mechanism to Form Spherical Silica Particles with Radially Oriented Mesopores, AIChE National Meeting, Austin, TX 11/04.
- 42) R. Xing, B.L. Knutson and S.E. Rankin, In Situ Analysis of Fluorinated Surfactant Adsorption at the Ge/Aqueous Solution Interface, AIChE National Meeting, Austin, TX 11/04.
- 41) W. Li and S.E. Rankin, Fine Lattice Monte Carlo Simulations of Self-Assembly, AIChE National Meeting, Austin, TX 11/04.
- 40) V. Koganti and S.E. Rankin, A New Synthetic Approach to Ceramic Thin Films Containing Ordered Arrays of Nanopores, Kentucky Nanomaterials Workshop, Lexington, KY 9/04.
- 39) B. Tan, A. Dozier and S.E. Rankin, Preparation of Highly Dispersed Iron Oxide Nanoparticles on Mesoporous Silica, Kentucky Nanomaterials Workshop, Lexington, KY 9/04.
- 38) K. Ghosh, H.J. Lehmler, S.E. Rankin and B.L. Knutson, Modification of the Pore Structure of Surfactant-Templated Thin Ceramic Films by CO₂ Processing, Kentucky Nanomaterials Workshop, Lexington, KY 9/04.
- 37) V. Koganti and S.E. Rankin, Orthogonal Alignment of Close-packed Channels in Dip-Coated Silica Films by Surface Chemistry Control, 78th ACS Colloid and Surface Science Symposium, New Haven, CT 6/04.
- 36) R. Xing, S.E. Rankin and B.L. Knutson, Adsorption of Fluorinated Surfactants at the Solid-Liquid Interface Mediated by Alkylammonium Cations, 78th ACS Colloid and Surface Science Symposium, New Haven, CT 6/04.
- 35) V. Koganti and S.E. Rankin, Controlled Orientation Of Surfactant-Templated Nanochannels In Silica Thin Films On Glass Substrates Using Surface Chemistry, ACS National Meeting, Anaheim, CA, 3/04.
- 34) B. Tan, S.E. Rankin, B.L. Knutson and H.J. Lehmler, Fluorinated Surfactants as Templates for Ordered Nanoporous Silica, AIChE Annual Meeting, San Francisco, CA, 11/03.
- 33) W. Li, S.E. Rankin, F. van Swol and A.P. Malanoski, Monte Carlo Simulations of Surface Texture Effects on a Confined Surfactant Mesophase, AIChE Annual Meeting, San Francisco, CA, 11/03.
- 32) G. Osei-Prempeh, B.L. Knutson, S.E. Rankin and H.J. Lehmler, Synthesis and Functionalization of Mesoporous Silica Materials Using Fluorinated Surfactant Templates, AIChE Annual Meeting, San Francisco, CA, 11/03
- 31) V. Koganti and S.E. Rankin, Using Surface Chemistry to Control Orientation of Surfactant-Templated Nanochannels in Silica Thin Films, Kentucky Nanomaterials Workshop (poster), Louisville, Kentucky, 9/03
- 30) B. Tan, H.J. Lehmler, B.L. Knutson and S.E. Rankin, Controlling Nanopore Size and Shape by Fluorosurfactant Templating of Silica, Kentucky Nanomaterials Workshop (poster), Louisville, Kentucky, 9/03

- 29) G. Osei-Prempeh, B.L. Knutson, S.E. Rankin and H.J. Lehmler, Synthesis And Functionalization Of Porous Silica Using Fluorinated Surfactant As Templates, Kentucky Nanomaterials Workshop (poster), Louisville, Kentucky, 9/03.
- 28) B. Tan, S.E. Rankin, H.J. Lehmler and B.L. Knutson, Fluorinated Surfactant Templating of Ordered Nanoporous Silica, 77th ACS Colloid and Surface Science Symposium, Atlanta, GA, 6/03.
- 27) W. Li, S.E. Rankin, A.P. Malanoski and F. van Swol, Monte Carlo Simulation of Wall Texture Effects on Confined Surfactant Mesophases, 77th ACS Colloid and Surface Science Symposium, Atlanta, GA, 6/03.
- 26) S.E. Rankin, B. Tan, H.J. Lehmler and B.L. Knutson, Fluorinated Surfactant Templating of Ordered Nanoporous Silica, Materials Research Society Spring Meeting, San Francisco, CA, 4/03.
- 25) L.S. Penn, H. Huang and S. Rankin, How Polymer Chains Become Tethered to Solid Surfaces, Symposium in Memory of Dr. Bernie Miller, TRI/Princeton, Princeton, NJ, 11/02.
- 24) B. Tan and S.E. Rankin, Kinetics of Bridged and Non-Bridged Amine-functional Silsesquioxane Synthesis, AIChE Annual Meeting, Indianapolis, IN, 11/02.
- 23) S.E. Rankin and L.S. Penn, Mesoscopic Simulations of the Kinetics of Polymer Nanolayer Tethering, AIChE Annual Meeting, Indianapolis, IN, 11/02.
- 22) L.S. Penn, H. Huang, M.D. Sindkhedkar, S.E. Rankin, R.P. Quirk, and R.T. Mathers, Tethered Polymers for Surface Tailoring: Kinetics of Layer Construction, 25th Annual Mtg. of the Adhesion Society, Feb. 10-14, 2002, Orlando, FL.
- 21) S.E. Rankin, A.P. Malanoski and F. van Swol, Interfacial Influence on Evaporation-Driven Amphiphile Assembly, AIChE Annual Meeting, Reno, NV, 11/01.
- 20) S.E. Rankin, Coupling Continuum Models and Monte Carlo Simulations for Drying Sol-Gel Films, AIChE Annual Meeting, Reno, NV, 11/01.
- 19) S.E. Rankin and B. Tan, Gelation and Structure Development in Bridged Silsesquioxanes, AIChE Annual Meeting, Reno, NV, 11/01.
- 18) S.E. Rankin, A.P. Malanoski, and F. van Swol, Monte Carlo Simulation of Interfacial Effects on Surfactant Mesophases, 75th ACS Colloid and Surface Science Symposium, Pittsburgh, PA, 6/01.
- 17) S.E. Rankin, A.P. Malanoski and F. van Swol, Modeling Aspects of Ordered Mesoporous Silicate Synthesis (poster), United Engineering Foundation meeting on *Refocusing Chemical Engineering*, Barga, Italy, 5/01.
- 16) S.E. Rankin, A.P. Malanoski, and F. van Swol, Simulation of Evaporation-Driven Self-Assembly, Materials Research Society Fall Meeting, Boston, MA, 11/00.
- 15) S.E. Rankin, A.P. Malanoski, and F. van Swol, Monte Carlo Simulation of Evaporation-Driven Self-Assembly, AIChE Annual Meeting, Los Angeles, CA, 11/00.
- 14) S.E. Rankin, P.R. Schunk and A.J. Hurd, Advected Ensemble Monte Carlo Approach to Sol-Gel Dip Coating, AIChE Annual Meeting, Los Angeles, CA, 11/00.
- 13) J. Sefcik, S.E. Rankin and A.V. McCormick, Control of Oligomer Size in Silicate-Containing Sol-Gel Composites, AIChE Annual Meeting, Los Angeles, CA, November 11/00.
- 12) S.E. Rankin, G.M. Wieber, S.A. Hansen, E.D. Lipp, and A.V. McCormick, Comparison of Chlorosilane and Ethoxysilane Polycondensation Kinetics (poster), AIChE Annual Meeting, Los Angeles, CA, 11/00.
- 11) G.M. Wieber, G.B. Gardner, S.A. Hansen, E.D. Lipp, A.V. McCormick, and S.E. Rankin, Early Structure Development in the Hydrolytic Polycondensation of Chlorosilanes, International Conference on Organic-Inorganic Hybrids, University of Surrey, Guilford, UK, 6/00.
- 10) S.E. Rankin and A.V. McCormick, Kinetics and Reaction Engineering of Siloxane Copolymers, AIChE Annual Meeting, Dallas, TX, 11/99.
- 9) S.E. Rankin and A.V. McCormick, Cyclization in Sol-Gel Silicate Coatings, AIChE Annual Meeting, Dallas, TX, 11/99.
- 8) S.E. Rankin, A.V. McCormick, and C.W. Macosko, Monte Carlo Simulation of Sol-Gel Silicate Fabrication (poster), Materials Research Society Fall Meeting, Boston, MA, 12/98.
- 7) S.E. Rankin and A.V. McCormick, Prospects for Chemical Control and Engineering of Organically Modified Ceramics, Materials Research Society Fall Meeting, Boston, MA, 12/98.
- 6) S.E. Rankin and A.V. McCormick, Reaction Engineering Approach to Bicomponent Alkoxysilane Cocondensation (poster), Materials Research Society Spring Meeting, San Francisco, CA, 4/98.
- 5) S.E. Rankin, L.J. Kasehagen, A.V. McCormick, and C.W. Macosko, Kinetic Monte Carlo Simulation of the Sol-Gel Process, AIChE Annual Meeting, Los Angeles, 11/97.
- 4) L.J. Kasehagen, S.E. Rankin, A.V. McCormick, and C.W. Macosko, Modeling of Non-Idealities in Sol-Gel Polymerization, ACS National Meeting, Orlando, FL, 8/96.
- 3) S.E. Rankin, C.W. Macosko, and A.V. McCormick, Sol-Gel Kinetics for the Preparation of Inorganic/Organic Siloxane Copolymers, MRS Spring Meeting, San Francisco, CA, 4/96.
- 2) E.I. Ko, J.B. Miller, and S.E. Rankin, Effect of Preparation Parameters on the Homogeneity of Zirconia/Silica Aerogels, AIChE Annual Meeting, St. Louis, MO, 11/93.

- 1) D.W. Ward, S.E. Rankin, and E.I. Ko, Effect of Gel Time on the Properties of Aerogels of Zirconia and Zirconia/Silica, 6th USA/Japan/China Trilateral Symposium on Catalysis, Beijing, China, 6/93.