

Christopher Shawn Brazel, Ph.D., P.E.

Associate Professor of Chemical and Biological Engineering

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Ph.D., Chemical Engineering

Purdue University, Jan. 1997

M.S., Chemical Engineering

Purdue University, May 1994

B.S., Chemical Engineering

Texas A&M University, Aug. 1992,
magna cum laude

69 Publications

87 Conference Presentations

31 Invited Lectures

Research Advisor for

7 graduate students

41 undergraduate students

Professional Memberships

American Chemical Society,
Member-PMSE,AGFD,POLY

American Institute for
Chemical Engineers

Controlled Release Society

American Society for

Engineering Education

Materials Research Society

Biomedical Engineering Society

Society of Chemical Industry

Sigma Xi, Scientific Research

Honor Society

Tau Beta Pi, Engineering

Honor Society

Omega Chi Epsilon, Chemical

Engineering Honor Society

Journal and Book Reviewer

Biomaterials, J. Controlled Release, Macromolecules, J. Polymer Science: Polymer Chemistry, Biomaterials for Drug and Cell Delivery, Chemical Engineering Communication, Protein-Based Films and Coatings, Biotechnology & Bioengineering, ACS Symposium Series, European Polymer J., Eur. J. Pharmaceutical Sciences, J. Pharmaceutical Science, Mechanics of Materials, Polymeric Drugs and Drug Delivery Systems- R. Ottenbrite and S.W. Kim, eds., *Chemical Engineering Science, AIChE J., Vibrational Spectroscopy, J. Biomaterials Science: Polymer Edition, Biotechnology Progress, Biopolymers, Macromolecular Rapid Communications, Critical Reviews in Therapeutic Drug Carrier Systems, Angewandte Chemie, Drug Dev. and Ind. Pharm., J. Amer. Chem. Soc., Reflexive Polymers & Hydrogels: Understanding and Designing Fast Responsive Polymeric Systems* by N. Yui, R.J. Mrsny, and K. Park, eds., *Encyclopedia of Polymer Science and Technology*, 3rd ed., *Polymer, Simulation Modelling Practice and Theory, Acta Biomaterialia, Pocket Book of Technical Writing* by Finkelstein, *Encyclopedia of Biomaterials and Biomedical Engineering, J. Appl. Polym. Sci., J. Pharm. Sci., J. Polym. Sci. B: Polym. Phys., Langmuir, Soft Matter, J. Membr. Sci., Colloids and Surfaces B, Materials Chem. Phys.; Ind. Eng. Chem. Res., Eur. J. Pharm. Biopharm., IEEE Trans. Biomed. Engr.*

Professional Chronology:

Visiting Professor, May 2008-December 2008

Institute for Science and Technology in Medicine
Keele University, Stoke-on-Trent, UK

Associate Professor, August 2005 - present

Assistant Professor, Reichhold-Shumaker Chair,
June 1999 - August 2005

Department of Chemical and Biological Engineering,
The University of Alabama, Tuscaloosa, AL

Research Engineer, Encapsulation and Process Research

Southwest Research Institute, San Antonio, TX

February 1997- May 1999

Ph.D. Thesis: "Solute and Water Transport in Hydrogels
for Controlled Release," 1994-1997

Research Collaboration: Study of Swelling Stresses in
Hydrogels, Department of Pharmacy, University of Parma,
Italy, May 1995

Research Collaboration: Binding of Physiologically
Active Substances in Temperature- and pH-
Sensitive Hydrogels, Russian Academy of Science, Moscow,
Russia, June-July 1994

M.S. Thesis: "Synthesis and Characterization of pH- and
Temperature-Sensitive Hydrogels for Controlled
Release of Antithrombotic Agents," 1992-1994

Research Interests

Controlled Drug Delivery, Microencapsulation, Polymer
Synthesis/Analysis, Environmentally-Benign Processing,
Multicomponent Diffusion, Hydrogels, Biosensors, Cardiovascular
Biomaterials, Magnetic Biomaterials and Novel Ionic Liquid
Plasticizers

RESEARCH

Past and Current Research Grants

- “Proportional Control of Membrane Permeation Using Dual-Temperature Dependent Swellable Polymers,” funded by the University of Alabama Research Advisory Committee, April 2000-March 2002, \$4,790.
- “Development of a Separation and Purification Method for Zein,” funded by an industrial sponsor (Kellogg Company), June 2000-September 2000, \$10,000.
- “Investigation of Room Temperature Ionic Liquids as Environmentally Benign Solvents for Free Radical Polymerization,” National Science Foundation, New Technologies for the Environment, December 2000 - November 2003, PI is J. Mays (UAB/UT), co-PI is R. Rogers (UA), \$160,378 (UA portion).
- “Development of Undergraduate Bioprocess Laboratory to Offer Hands-On Experiences and Diverse Opportunities to Chemical Engineering Students,” the Camille and Henry Dreyfus Foundation, January 2001-December 2001, \$29,015
- “Use of Ionic Liquids in Polymer Processing: ILs as Plasticizing Agents in Polymers and Separation Methods for Polymer Recovery from ILs,” UA SOMED, April 2001 - May 2002, \$19,637
- “Development of Temperature Responsive Membranes with Multiple Thermal Transitions to Control Effective Porosity for Separations,” ACS Petroleum Research Fund, Type G Grant, June 2002-August 2005, \$35,000.
- “Development of Temperature-Sensitive Oligomers and Polymer Grafts for Use in Magnetothermal Drug Delivery Systems, UA Research Advisory Committee, \$5,000, 05/03 to 04/05, PI: C.S. Brazel.
- “Encapsulation Feasibility Study,” Sherwin-Williams, \$15,000, 10/03 to 04/04, PI: C.S. Brazel
- “Support of Travel for Foreign Speakers to Present at the ACS POLY Symposium “Ionic Liquids in Polymer Systems” at the 2004 Spring ACS Meeting (Anaheim, CA), \$3,600
- “Encapsulation Optimization and Scale-Up,” Sherwin-Williams, \$30,000, 09/04 to 02/05
- “E-MAP: Engineering-Math Advancement Program,” NSF, \$973,968, 01/05 to 12/08
- “Magnetic Biomaterials,” Alton Scott Memorial Research Grant, \$197,840, 03/06 to 09/08
- “REU: Fluid Mechanics with Analysis using Computations and Experiments,” NSF, \$300,000, 04/08 to 09/10, PI: Amy Lang
- Fulbright Grantee as a Distinguished Research Scholar to the United Kingdom, 09/08 to 07/09

Editor

1. Brazel, C.S. and R.D. Rogers, eds. Ionic Liquids in Polymer Systems: Solvents, Additives and Novel Applications, Washington, D.C.: American Chemical Society Symposium Series, vol. 913, 2005

Patents and Invention Disclosures

1. Dixon, H., N.K. Vail and C.S. Brazel, “Light Sensitive Reversible Barrier,” US, pending.
2. Brazel, C.S., M.P. Scott, M.G. Benton, M. Rahman, “Novel Class of Plasticizers based on Ionic Liquids,” invention disclosure submitted.

Honors and Awards

- University of Alabama National Alumni Association Outstanding Commitment to Teaching Award, 2008
- Tau Beta Pi College of Engineering Outstanding Faculty Award, 2006-2007
- Chemical and Engineering News* Feature Article on Research and ACS Symposium “Ionic Liquids in Polymer Systems,” May 4, 2004 issue
- NATO Graduate Research Travel Award, 1994-1995
- AIChE, Fall Meeting, 1995, Poster Paper Award, Food, Pharm. and Bioeng. Division
- Outstanding Laboratory Teaching Assistant Award, Purdue, 1995
- Sigma Xi Research Poster Paper Competition, 1st Prize, Engineering, Purdue, 1995
- Andrews Fellowship, Purdue University (1992-1994)

Research Publications

1. Brazel C.S. and N.A. Peppas. "Temperature- and pH- Sensitive Hydrogels for Controlled Release of Heparin and Streptokinase," in A.G. Mikos, R.M. Murphy, H. Bernstein and N.A. Peppas, eds. Biomaterials for Drug and Cell Delivery, Materials Research Society, Pittsburgh, (1994) 211-216.
2. Brazel, C.S. and N. A. Peppas. "Pulsatile Release of Antithrombotic Agents from pH- and Temperature-Sensitive Hydrogels," *Proceed. Intern. Symp. Rec. Adv. Drug Delivery Systems*, **7** (1995) 183-184.
3. Brazel C.S. and N.A. Peppas. "Transport in Hydrophilic Polymer Gels: Applications in Zero-Order Controlled Release," *Proceed. Intern. Symp. Control. Rel. Bioact. Mater.*, **22** (1995) 350-351.
4. Brazel, C.S. and N.A. Peppas. "Thermo- and Chemo- Mechanically Responsive Poly(N-isopropylacrylamide-co-methacrylic acid) Hydrogels," *Macromolecules*, **28** (1995) 8016-8020.
5. Peppas, N.A., S.K. Vakkalanka, C.S. Brazel, A.S. Luttrell and N.K. Mongia. "Controlled Release Systems Using Swellable Random and Block Copolymers and Terpolymers," in Okano, T., N. Ogata, J. Feijen and S.W. Kim, eds. Advances in Biomedical Polymers in Biomedical Engineering and Drug Delivery Systems, Springer, Tokyo, (1996) 3-7.
6. Brazel, C.S. and N.A. Peppas. "On the Mechanisms of Water Transport and Drug Release from Swellable Hydrogels," *Polym. Mater. Sci. Engin. Prepr.*, **74** (1996) 370-371.
7. Brazel, C.S. and N.A. Peppas. "Pulsatile Local Delivery of Thrombolytic and Antithrombotic Agents Using Poly(N-isopropylacrylamide-co-methacrylic acid) Hydrogels," *J. Controlled Release*, **39** (1996) 57-64.
8. Peppas, N.A., S.K. Vakkalanka, and C.S. Brazel. "Unique Swelling Controlled Release Systems Based on T- and pH- Sensitive Terpolymers for Fibrinolytic Enzyme Delivery," *Proceed. Intern. Symp. Control. Rel. Bioact. Mater.*, **23** (1996) 267-268.
9. Vakkalanka, S.K., C.S. Brazel and N.A. Peppas. "Temperature- and pH- Sensitive Terpolymers for Modulated Delivery of Streptokinase," *J. Biomater. Sci., Polym. Ed.*, **8** (1996) 119-129.
10. Hoffman, A.S., G. Chen, X. Wu, Z. Ding, B. Kabra, K. Randeri, M. Schiller, E.S. Ron, N.A. Peppas and C.S. Brazel. "Graft Copolymers of PEO-PPO-PEO Triblock Polyethers on Bioadhesive Polymer Backbones: Synthesis and Properties," *Polym. Preprints*, **38** (1997) 524-525.
11. Hoffman, A.S., G. Chen, X. Wu, Z. Ding, B. Kabra, K. Randeri, M. Schiller, E.S. Ron, N.A. Peppas and C.S. Brazel. "Graft Copolymers of PEO-PPO-PEO Triblock Polyethers on Bioadhesive Polymer Backbones for Use as Drug Delivery Carriers," *Polym. Mater. Sci. Engin. Prepr.*, **76** (1997) 271-272.
12. Peppas, N.A., A.M. Lowman, C.S. Brazel, and C.L. Bell-Huff, "Oral Drug Delivery Using Swellable and pH-Sensitive Systems," *Proceed. Controlled Release Soc.-Greek Chapter*, **1** (1997) 1-6.
13. Brazel, C.S. and N.A. Peppas. "Analysis of Swelling-Controlled Release Systems for Optimization of Drug Delivery," *Proceed. Intern. Symp. Control. Rel. Bioact. Mater.*, **24** (1997) 169-170.
14. Pabalan, R.T., M.S. Jarzempa, T.A. Abrajano, D.A. Pickett, S. Moulton, N. Sridhar, J. Weldy, C.S. Brazel and J.T. Persyn. "Hanford Tank Waste Remediation System High Level Water Chemistry Manual," Nuclear Regulatory Commission NRC 02-93-005, 1997.
15. Brazel, C.S. and N.A. Peppas. "Mechanisms of Solute and Drug Transport in Relaxing Swellable Hydrophilic Glassy Polymers," *Polymer*, **40** (1999) 3383-3398.
16. Brazel, C.S. and N.A. Peppas. "Dimensionless Analysis of Swelling of Hydrophilic Glassy Polymers with Subsequent Drug Release from Relaxing Structures," *Biomaterials*, **20** (1999) 721-732.
17. Brazel, C.S. "Microencapsulation: Offering Solutions in the Food Industry," *Cereal Foods World*, **44** (1999) 388-393.

Research Publications (cont'd)

18. Marshall, M.C., S. Wellinghoff, C. Brazel, M. Alexander and S. Akatagawa, "Controlled Delivery of Pesticides through Synthetic Biodegradable Polymer Compositions", in H. Scher, ed. Controlled Release Delivery Systems for Pesticides, New York: Marcel Dekker, Inc., 1999, 363-394.
19. Pabalan, R.T., V. Jain, R.F. Vance, S. Ioannidis, D.A. Pickett, C.S. Brazel, J.T. Persyn, E.J. Taylor and M.E. Inman. "Hanford Tank Waste Remediation System Pretreatment Chemistry and Technology," Nuclear Regulatory Commission NRC 02-97-009, 1999.
20. Brazel, C.S. and N.A. Peppas. "Modeling of Drug Release from Swellable Polymers," *Eur. J. Pharm. and Biopharm.*, **49** (2000) 47-58.
21. Brazel, C.S. and N.A. Peppas, "Recent Studies and Molecular Analysis of Drug Release from Swelling-Controlled Devices," *STP Pharma Sci.* **9** (1999) 473-485.
22. Colombo, P., P. Santi, R. Bettini, C.S. Brazel, and N.A. Peppas, "Drug Release from Swelling-Controlled Systems," in D.L. Wise et al., eds. Handbook of Pharmaceutical Controlled Release Technology, New York: Marcel Dekker, Inc. (2000) 183-210.
23. Brazel, C.S. "Biomedical Sensing by the use of Intelligent Polymers," in M. Schwartz, ed. Encyclopedia of Smart Materials, New York: John Wiley and Sons, July 2002, 95-111.
24. Huang, X. and C.S. Brazel, "On the Importance and Mechanisms of Burst Release in Controlled Drug Delivery- A Review," *J. Control. Rel.*, **73** (2001) 121-136.
25. Thornton, A.M. and C.S. Brazel, "Design of pH Sensitive Materials for On/Off Release of Thrombolytic and Anticoagulant Drugs," in S. Mallapragada, M. Tracy, B. Narasimhan, E. Mathiowitz, and R. Kormeyer, eds., Biomaterials for Drug Delivery and Tissue Engineering, Warrendale, PA: Materials Research Society, Pittsburgh, **662** (2001) MM2.6.1-MM2.6.6.
26. Huang, X. and C.S. Brazel, "Analysis of Burst Release of Proxiphylline from Poly(vinyl alcohol) Hydrogels," *Chemical Engineering Communications*, **190** (2003) 519-532.
27. Benton, M.G. and C.S. Brazel, "Effect of Room Temperature Ionic Liquids as Replacements for Volatile Organic Solvents in Free Radical Polymerization," in Rogers, R.D. and K.R. Seddon, eds., Ionic Liquids: Industrial Applications for Green Chemistry, Washington, DC: American Chemical Society Symposium Series **818** (2002) 125-133.
28. Stoltz, M.J. and C.S. Brazel, "Novel Dual Temperature Sensitive Materials Based on Interpenetrating Polyalkylacrylamide Networks for Temperature-Proportional Controlled Release," *Proceed. Intern. Symp. Control. Rel. Bioact. Mater.*, **28** (2001) #0512.
29. Brazel, C.S. "Integrating Team Laboratory Experiments Into a Senior Biochemical Engineering Course," *Proceed. American Society for Engineering Education Annual Conference*, paper 194 (2002) 1-16.
30. Brazel, C.S., G.S. Maddox, M.F. Garcia, L.M. Savoy, M.G. Benton, and A.M. Thornton, "Fundamental Chemical Differences between Polyacidic and Polybasic Materials for the Design of pH-Responsive Systems," *Proceed. Intern. Symp. Control. Rel. Bioact. Mater.*, **29** (2002) #007
31. Huang, X. and C.S. Brazel, "Understanding the Burst Effect: Release in PVA Hydrogel Systems, Improvements in Modeling, and Approaches to Preventing Burst," *Proceed. Intern. Symp. Control. Rel. Bioact. Mater.*, **29** (2002) #236
32. Hong, K., H. Zhang, J.W. Mays, A.E. Visser, C.S. Brazel, J.D. Holbrey, W.M. Reichert, and R.D. Rogers, "Conventional Free Radical Polymerization in Room Temperature Ionic Liquids: A Green Approach to Commodity Polymers with Practical Advantages," *Chem. Comm.*, **2002** (2002) 1368-1369.
33. Huang, X., B.L. Chestang, and C.S. Brazel, "Minimization of Initial Burst in Poly(vinyl alcohol) Hydrogels by Surface Extraction and Surface-Preferential Crosslinking," *Int. J. Pharm.* **248** (2002) 183-192.

Research Publications (cont'd)

34. Stoltz, M.J. and C.S. Brazel, "Dual-LCST Polymer Networks Based on Block, Laminate, and

- Interpenetrating Network Structures Composed of N-Alkylacrylamides, and N,N-Dialkylaminoethyl Methacrylates,” *J. Appl. Polym. Sci.*, **88** (2003) 2974-2981.
35. Scott, M.P., C.S. Brazel, M.G. Benton, J.W. Mays, J. D. Holbrey, and R.D. Rogers, “Application of Ionic Liquids as Plasticizers for Poly(methyl methacrylate),” *Chem. Comm.*, **2002** (2002) 1370-1371.
 36. Brazel, C.S. and X. Huang, ”The Cost of Optimal Drug Delivery: Reducing and Preventing the Burst Effect in Matrix Systems,” Svenson, S., ed. *Carrier-Based Drug Delivery*, ACS Symposium Series, Washington, DC: American Chemical Society **879** (2004) 267-282.
 37. Brazel, C.S., A.N. Roberts, and X. Huang, “Surface-Preferential Crosslinking in Hydrogels to Minimize The Burst Effect and Design Tunable Lag Times for Drug Delivery,” *IEEE Trans. Biomed. Eng.*, **2** (2002) 496-497.
 38. Scott, M.P., M.G. Benton, M. Rahman, and C.S. Brazel, “Plasticizing Effects of Imidazolium Salts in PMMA: High Temperature Stable Flexible Engineering Materials,” in Rogers, R.D., and K.R. Seddon, eds. *Ionic Liquids as Green Solvents: Progress and Prospects*, Washington, DC: American Chemical Society Symposium Series, **856** (2003) 468-477.
 39. Benton, M.G. and C.S. Brazel, “Comparison of Kinetics For Solution Polymerization of Poly(methyl methacrylate) in Green Ionic Liquid Solvents Versus Traditional Volatile Solvents,” *Polym. Prepr.* **43** (2002) 881-882.
 40. Scott, M.P., M. Rahman and C.S. Brazel, “Application of Ionic Liquids as Low Volatility Plasticizers for PMMA,” *Eur. Polym. J.* **39** (2003) 1947-1953.
 41. Benton, M.G. and C.S. Brazel, “An Investigation of the Degree and Rate of Polymerization of Poly(methyl methacrylate) in the Ionic Liquid 1-Butyl-3-Methylimidazolium Hexafluorophosphate,” *Polymer International* **53** (2004) 1113-1117.
 42. Brazel, C.S. “Book Review: Polymeric Drugs and Drug Delivery Systems,” *J. Control. Rel.*, **89** (2003) 143.
 43. Carroll, K.S., J.B. McKinney, D.T. Johnson and C.S. Brazel, “Development of Magnetothermal Responsive Systems for Tumor Treatment,” *Proceed. Intern. Symp. Control. Rel. Bioact. Mater.*, **30** (2003), #082.
 44. Rahman, M., M.G. Benton, M.P. Scott and C.S. Brazel, “Room Temperature Ionic Liquids as Environmentally Benign Plasticizers and Reaction Media for Polymerization Reactions,” *Proceed. Green Chem. Eng. Conf.* **7** (2003) 180-183.
 45. Brazel, C.S., D.W. Arnold, G.C. April, A.M. Lane, J.M. Wiest, “Chemical Engineering at The University of Alabama,” *Chemical Engineering Education* **38** (2004) 8-13.
 46. Rahman, M. and C.S. Brazel, “Effectiveness of Phosphonium, Ammonium, and Imidazolium-Based Ionic Liquids as Plasticizers for Poly(vinyl chloride): Thermal and Ultraviolet Stability,” *Polym. Prepr.* **45-1** (2004) 301-302.
 47. Shoff, H.W., M. Rahman, and C.S. Brazel, “Leaching and Migration Resistance of Phosphonium-Based Ionic Liquids as PVC Plasticizers: A Comparative Study of Traditional Phthalate and Citrate Plasticizers with Ionic Liquids,” *Polym. Prepr.* **45-1** (2004) 295-296.
 48. Rahman, M. and C.S. Brazel, “Review: An Assessment of Traditional Plasticizers and Research Trends for Development of Novel Plasticizers,” *Prog. Polym. Sci.*, **29** (2004), 1223-1248.
 49. Rahman, M., H.W. Shoff and C.S. Brazel, “Ionic Liquids as Alternative Plasticizers for PVC: Flexibility and Stability in Thermal, Leaching and Ultraviolet Environments,” in Brazel, C.S. and R.D. Rogers, eds. *Ionic Liquids in Polymer Systems: Solvents, Additives, and Novel Applications*, Washington, D.C.: American Chemical Society Symposium Series, **913** (2005), 103-118.

Research Publications (cont'd)

50. Brazel, C.S. and R.D. Rogers, "Preface: Ionic Liquids in Polymer Systems," in Brazel, C.S. and R.D. Rogers, eds. Ionic Liquids in Polymer Systems: Solvents, Additives, and Novel Applications, Washington, D.C.: American Chemical Society Symposium Series, **913** (2005) ix-x.
51. Brazel, C.S., "Review of Reflexive Polymers & Hydrogels: Understanding and Designing Fast Responsive Polymeric Systems by N. Yui, R.J. Mrsny, and K. Park, Boca Raton, FL: CRC Press" *J.ACS*, **127** (2005) 1590.
52. Saini, V., V.P. Zharov, C.S. Brazel, D.E. Nikles, D.T. Johnson and M. Everts, "Combination of Viral Biology and Nanotechnology: New Applications in Nanomedicine," *Nanomedicine: Nanotechnology, Biology and Medicine* **2** (2006) 200-206.
53. Rahman, M. and C.S. Brazel, "Ionic Liquids: New Generation Stable Plasticizers for Poly(vinyl chloride)," *Polymer Degradation and Stability* **91** (2006) 3371-3382.
54. Brazel, C.S., P.E. Clark, T.M. Klein, A.M. Lane, and S.M.C. Ritchie, "Renovation and Upgrades of Chemical and Biological Engineering Unit Operations Lab to Teach Technical Skills in Emerging Engineering Fields," ASEE-Southeast Regional Meeting (2006), paper # 37.
55. Wu, L.F. and C.S. Brazel, "Extending Surface Crosslinking Technique to Prevent the Burst Effect to Controlled Release Systems Based on Poly(vinyl alcohol), Poly(2-hydroxyethyl methacrylate), and Gelatin," *Control. Rel. Soc. Trans.*, **33** (2006), #234.
56. Brazel, C.S., I. Ankareddi, M.L. Hampel, H. Bagaria, D.T. Johnson, and D.E. Nikles, "Development of Magnetothermal-Responsive Delivery Systems Using FePt Nanoparticles Imbedded in Poly(N-isopropylacrylamide)-Based Hydrogels," *Control. Rel. Soc. Trans.*, **33** (2006), #762.
57. Ankareddi, I. and C.S. Brazel, "Synthesis and Characterization of Grafted Thermosensitive Hydrogels for Heating Activated Controlled Release," *Int. J. Pharm.*, **336** (2007) 241-247.
58. Ankareddi, I., M.L. Hampel, M.K. Sewell, D.-H. Kim, and C.S. Brazel, "Temperature Controlled Grafted Polymer Network Incorporated with Magnetic Nanoparticles to Control Drug Release Induced by an External Magnetothermal Trigger", *NSTI Nanotech 2* (2007) 431-434.
59. Wu, L. and C.S. Brazel, "Modifying the release of proxyphylline from PVA hydrogels using surface crosslinking," *Int. J. Pharm.* **349** (2008) 144-151.
60. Wu, L. and C.S. Brazel, "Surface Crosslinking for delayed release of proxyphylline from PHEMA hydrogels," *Int. J. Pharm.* **349** (2008) 1-10.
61. Kim, D.H., D.E. Nikles, D.T. Johnson and C.S. Brazel, "Investigation of Hyperthermia Response of Cobalt Ferrite Nanoparticles to an Alternating Current Magnetic Field," *J. Magn. Magn. Matls.* (2008) *in press*.
62. Ankareddi, I., A. Ponta, A. Shamsuzzoha, and C.S. Brazel, "Positive thermoresponsive grafted hydrogels for heating-activated drug delivery," *PMSE Preprints* **98** (2008) 759-760.
63. Kim, D.-H., I. Ankareddi, D.E. Nikles and C.S. Brazel, "Synthesis and Characterization of Multifunctional Chitosan-coated MnFe₂O₄ for Magnetic Hyperthermia," *PMSE Preprints* **98** (2008) 296-298.
64. Rahman, M. and C.S. Brazel, "Advances in Plasticizers: Using Ionic Liquids in PMMA and PVC Systems- a Combined Experimental and Thermodynamic Modeling Approach," *PMSE Preprints* **98** (2008) 788-789.
65. Sewell, M.K., K.D. Fugit, I. Ankareddi, C. Zhang, M.L. Hampel, D.-H. Kim and C.S. Brazel, "Magnetothermally-Triggered Drug Delivery Using Hydrogels with Imbedded Cobalt Ferrite, Iron Platinum or Manganese Ferrite Nanoparticles," *PMSE Preprints* **98** (2008) 694-695.
66. Ankareddi, I., M.M. Bailey, C.S. Brazel, J.F. Rasco, and R.D. Hood, "Developmental Toxicity Assessment of Thermoresponsive Poly(N-isopropylacrylamide-co-acrylamide) Oligomers in CD-1 Mice" *Birth Defects Research B* **783** (2008) 112-116.
67. Wu, L. and C.S. Brazel, "A Mathematical Model to Predict Drug Release, including the Early-Time Burst Effect, from Swellable Homogeneous Hydrogels," *Industrial and Engineering Chemistry Research* **47** (2008) 1518-1526.
68. Wu, L. and C.S. Brazel, "Theoretical Verification of Surface Crosslinking as an Effective Method

- to Reduce Initial Burst Release from Swellable Hydrogels,” submitted to *Industrial and Engineering Chemistry Research*, 2008, in review.
69. Kim, D.-H. and C.S. Brazel, “Synthesis and Characterization of Multifunctional Chitosan-MnFe₂O₄ Nanoparticles for Magnetic Hyperthermia Including Heating, Drug Delivery and Imaging,” to be submitted to *IEEE Trans. Biomedical Engineering*, 2008.
70. Zhang, C., D.T. Johnson and C.S. Brazel, “Theoretical Study on the Multi-Region Bio-heat Equation to Model Magnetic Fluid Hyperthermia (MFH) using Low Curie Temperature Nanoparticles,” submitted to *IEEE Trans. Nanobioscience*, 2008, in review.

Research Publications in Preparation

71. Davis, Jr., J.H., C.S. Brazel, M. Rahman, “Docosate-Based Ionic Liquids: Synthesis and Potential Applications,” *Chem. Comm.*, 2007, in preparation.
72. Sewell, M.K., I. Ankareddi, M.L. Hampel, J.B. McKinney, D.T. Johnson, D.E. Nikles and C.S. Brazel, “Magnetic Nanoparticles Dispersed in Hydrogels: Applications in Controlled Drug Delivery,” in preparation, to be submitted to the *Journal of Controlled Release*.
73. Brazel, C.S., A.M. Thornton and X. Huang, “Dependence of Burst Release on pH of Medium for Release of Streptokinase from Poly(diethylaminoethyl methacrylate-co-2-hydroxyethyl methacrylate) Hydrogels,” in preparation, to be submitted to *J. Biomed. Mater. Res.*
74. Brazel, C.S., A.M. Thornton, M. Garcia, M.G. Benton and M.J. Stoltz, “Unique Solution Behavior of Hydrogels based on Diethylaminoethyl Methacrylate,” in preparation, to be submitted to *Polymer*.
75. Kim, D.-H., Y. Thai, D.E. Nikles and C.S. Brazel, “Optimized Heat Generation of MnFe₂O₄ Nanoparticles for Magnetic Hyperthermia using Multifunctional Nanoparticles,” to be submitted to *J. Magn. Magn. Matls.*, 2008.
76. Ankareddi, I., A. Ponta, C.S. Brazel, “Grafted Thermoresponsive Hydrogels: Analysis of Structure and Diffusion for Heating-Activated Controlled Release,” in preparation, to be submitted to *J. Applied Polymer Science*.
77. Zhang, C. and C.S. Brazel, “Modeling Hyperthermia Treatment with Different Sized Magnetic Nanoparticles,” in preparation, to be submitted to *Int. J. Hyperthermia*.
78. Fugit, K.D. and C.S. Brazel, “Fluorescently-Tagged Magnetic Nanoparticles for Tracking in Cell Culture,” in preparation, to be submitted to *Nanobioscience*.

Student Publications (through UA’s *Journal of Science and Health at UA*)

1. Y.T. Thai, D.-H. Kim, C.S. Brazel, “Heat Generation in Manganese Ferrite (MnFe₂O₄) Nanoparticles for Localized Hyperthermia Treatment of Cancer,” *Journal of Science and Health at the University of Alabama (JOSHUA)*, 2008.
2. M.K. Sewell and C.S. Brazel, “Improving Cancer Therapy: Triggering Chemotherapy Using Temperature Responsive Polymers,” *Journal of Science and Health at the University of Alabama (JOSHUA)*, 2008.

Research Presentations

1. Hamaker, K.H., C.S. Brazel, B.J. Bunker, J.D. Jones, et al. "ASEE Student Chapters: An Engineering Pipeline for Higher Education," American Society for Engineering Education National Convention. Champaign, IL, June 1993.
2. Brazel, C.S. and N.A. Peppas. "Temperature- and pH- Sensitive Hydrogels for Controlled Release of Heparin and Streptokinase," Materials Research Society National Convention-Biomaterials Symposium. Boston, MA, November 1993.
3. Peppas, N.A., C.L. Bell, C.S. Brazel and S. Teague. "Mechanochemical Behavior of pH- and Temperature- Sensitive Gels," Frontiers in Biomedical Engineering, Biomedical Engineering Society Fall Convention. Tempe, AZ, October 1994.
4. Brazel, C.S. and N.A. Peppas. "P(NIPAAm-co-MAA) Hydrogels for Temperature- and pH- Responsive Release of Antithrombotic Agents," American Institute for Chemical Engineering National Conference- Targeted Drug Delivery Symposium. San Francisco, CA, November 1994.
5. Brazel, C.S. and N.A. Peppas. "Pulsatile Release of Antithrombotic Agents from pH- and Temperature- Sensitive Hydrogels," International Symposium on Recent Advances in Drug Delivery Systems, Salt Lake City, UT, February 1995.
6. Brazel, C.S., S.K. Vakkalanka and N.A. Peppas. "Temperature- and pH- Sensitive Hydrogels for Controlled Drug Delivery and Control of Enzyme Activity," Invited Speaker, University of Rome, La Sapienza, Department of Pharmacy. Rome, Italy, May 1995.
7. Brazel, C.S. and N.A. Peppas. "Transport in Hydrophilic Polymer Gels: Application in Controlled Release," International Symposium on Controlled Release of Bioactive Materials, Seattle, WA, July 1995.
8. Brazel, C.S. and N.A. Peppas. "Transport in Swellable Polymer Systems for Controlled Drug Release," American Institute for Chemical Engineers National Conference, Miami, FL, November 1995.
9. Brazel, C.S. and N.A. Peppas. "Drug Diffusion and Polymer Relaxation in Swelling-Controlled Release Systems," poster, Sigma Xi, Purdue University Chapter, Graduate Research Competition, West Lafayette, IN, March, 1996.
10. Brazel, C.S. and N.A. Peppas. "On the Mechanisms of Water Transport and Drug Release from Swellable Hydrogels," American Chemical Society Spring Convention, PMSE Division, New Orleans, LA, March 1996.
11. Peppas, N.A., S.K. Vakkalanka, and C.S. Brazel. "Unique Swelling-Controlled Release Systems Based on T- and pH- Sensitive Terpolymers for Fibrinolytic Enzyme Delivery," 22nd International Symposium on Controlled Release of Bioactive Materials, Kyoto, Japan, July 1996.
12. Brazel, C.S. and N.A. Peppas. "Intelligent Polymers for Biomedical Sensing," Purdue Graduate Student Organization Fall Symposium, West Lafayette, IN, August 1996.
13. Brazel, C.S. and N.A. Peppas. "Prediction of Drug Delivery Profiles from Swelling-Controlled Release Hydrogel Systems," American Institute for Chemical Engineers National Conference, Chicago, IL, November 1996.
14. Hoffman, A.S., G. Chen, X. Wu, Z. Ding, B. Kabra, K. Randeri, M. Schiller, E.S. Ron, N.A. Peppas and C.S. Brazel. "Graft Copolymers of PEO-PPO-PEO Triblock Polyethers on Bioadhesive Polymer Backbones: Synthesis and Properties," American Chemical Society Spring Convention, POLY Division, San Francisco, CA, April 1997.
15. Hoffman, A.S., G. Chen, X. Wu, Z. Ding, B. Kabra, K. Randeri, M. Schiller, E.S. Ron, N.A. Peppas and C.S. Brazel. "Graft Copolymers of PEO-PPO-PEO Triblock Polyethers on Bioadhesive Polymer Backbones for Use as Drug Delivery American Chemical Society Spring Convention, PMSE Division, San Francisco, CA, April 1997.
16. Peppas, N.A., A.M. Lowman, C.S. Brazel and C.L. Bell-Huff. "Oral Drug Delivery Using Swellable and pH-Sensitive Systems," Greek Local Chapter Controlled Release Society Meeting, Athens, Greece, May 1997.

Research Presentations (cont'd)

17. Brazel, C.S. and N.A. Peppas. "Analysis of Swelling-Controlled Release Systems for

- Optimization of Drug Delivery," 24th International Symposium on Controlled Release of Bioactive Materials, Stockholm, Sweden, June 1997.
18. Brazel, C.S. "Coating Materials for Encapsulation Applications: Microcapsules as Delivery Vehicles for Food Ingredients," International Food Technologist Chicago Section Suppliers' Night, Chicago, IL, November 1998.
 19. Brazel, C.S., A.L. Orvis and N. Vasishta. "Suspension Polymerization of Acrylate Monomer Particulates Using Microwave Energy," American Institute for Chemical Engineers National Conference- Polymerization Kinetics Symposium, Dallas, TX, November 1999.
 20. Huang, X. and C.S. Brazel. "Analysis of Burst Release of Small Molecular Weight Drugs from Poly(vinyl alcohol) Hydrogels," National Graduate Research Polymer Conference, Hattiesburg, MS, June 2000.
 21. Thornton, A.M. and C.S. Brazel. "pH-Sensitive Permeability of Polymer Membranes for Controlled Delivery of Streptokinase to Blood Clots," National Graduate Research Polymer Conference, Hattiesburg, MS, June 2000.
 22. Huang, X. and C.S. Brazel, "An Investigation of Burst Release of Low Molecular Weight Drugs from Poly(vinyl alcohol) Hydrogels," American Institute for Chemical Engineers National Conference- Drug Delivery Symposium, Los Angeles, CA, November 2000.
 23. Benton, M.G. and C.S. Brazel, "Effect of Immobilized Proteins on Polymer Gel Structures Used as Drug Delivery Vehicles," American Institute for Chemical Engineers National Conference- Biomimetic Materials Symposium, Los Angeles, CA, November 2000.
 24. Thornton, A.M. and C.S. Brazel, "Design of pH Sensitive Materials for On/Off Release of Thrombolytic and Anticoagulant Drugs," Materials Research Society, Boston, MA, November 2000.
 25. Benton, M.G. and C.S. Brazel, "Effectiveness of Room Temperature Ionic Liquids as Solvents for Free Radical Addition Polymerization," American Chemical Society, San Diego, CA, April 2001.
 26. Stoltz, M.J. and C.S. Brazel, "Investigation of Temperature-Sensitive Interpenetrating Polymer Networks as Separation Membranes," AIChE Southern Region Student Chapter Conference, Clemson, SC, April 2001.
 27. Brazel, C.S. and M.J. Stoltz, "Novel Dual Temperature Sensitive Materials Based on Interpenetrating Polyacrylamide Networks for Temperature-Proportional Controlled Release," 28th International Symposium on Controlled Release of Bioactive Materials, San Diego, CA, June 2001.
 28. Benton, M.G. and C.S. Brazel, "Use of Room Temperature Ionic Liquids As Environmentally Benign Solvents for Free Radical Polymerizations," Air and Waste Management Association National Conference, Orlando, FL, June 2001.
 29. Benton, M.G., M.P. Scott, J.D. Holbrey, R.D. Rogers, and C.S. Brazel, "A New Class of Plasticizing Agents: Room Temperature Ionic Liquids in Poly(methyl methacrylate) and Polystyrene," American Institute for Chemical Engineers National Conference, Structure and Properties of Polymers II (Crystals and Glasses) Session, Reno, NV, November 2001.
 30. Stoltz, M.J. and C.S. Brazel, "Temperature-Sensitive Interpenetrating Polymer Networks of Two LCST Polymers for Membrane Separations and Drug Delivery," American Institute for Chemical Engineers National Conference, Advances in Membrane Materials Session, Reno, NV, November 2001.
 31. Huang, X., B. Chestang, and C.S. Brazel, "On the Minimization of the Burst Release of Small Molecular Weight Solutes from PVA Hydrogels: Surface Extraction and Surface-preferential Crosslinking Techniques," American Institute for Chemical Engineers National Conference, Reno, NV, November 2001.

Research Presentations (cont'd)

32. Huang, X., and C.S. Brazel, "Modeling of Burst Release of Small Molecular Weight Solutes from Hydrogels Based on a Diffusion-convection Model Coupled with Surface Desorption," American

- Institute for Chemical Engineers National Conference, Reno, NV, November 2001.
33. Benton, M.G. and C.S. Brazel, "The Feasibility of Room Temperature Ionic Liquids as Replacement Solvents in Free Radical Polymerization Reactions," American Institute for Chemical Engineers National Conference, Reno, NV, November 2001.
 34. Scott, M.P., M.G. Benton, C.S. Brazel, and R.D. Rogers, "Ionic Liquids in Polymer Processing: Greener Solvent-Based Polymerizations and Improved Lifetime of Plasticized Materials," American Institute for Chemical Engineers National Conference, Reno, NV, November 2001, 1st Prize, Student Poster Presentations, Environmental Division.
 35. Brazel, C.S. and X. Huang, "The Cost of Optimal Drug Delivery: Reducing and Preventing the Burst Effect in Matrix Systems," American Chemical Society Spring National Conference, Orlando, FL, April 2002.
 36. Brazel, C.S. "Integrating Team Laboratory Experiments Into a Senior Biochemical Engineering Course," American Society for Engineering Education Annual Conference, Montreal, Canada, June 2002.
 37. Brazel, C.S., G.S. Maddox, M.F. Garcia, L.M. Savoy, M.G. Benton, and A.M. Thornton [invited]. "Fundamental Chemical Differences between Polyacidic and Polybasic Materials for the Design of pH-Responsive Systems," 29th International Symposium on Controlled Release of Bioactive Materials, Seoul, South Korea, July 2002.
 38. Huang, X. and C.S. Brazel, "Understanding the Burst Effect: Release in PVA Hydrogel Systems, Improvements in Modeling, and Approaches to Preventing Burst," 29th International Symposium on Controlled Release of Bioactive Materials, Seoul, South Korea, July 2002.
 39. Scott, M.P., M. Rahman, M.G. Benton, and C.S. Brazel, "Plasticizing Effects of Imidazolium Salts in PMMA: High and Low Temperature Stable Flexible Engineering Materials," invited talk, Ionic Liquids as Green Solvents: Progress and Prospects Session, Industrial and Engineering Chemistry Division, American Chemical Society Fall National Conference, Boston, MA, August 2002.
 40. Benton, M.G. and C.S. Brazel, "Comparison of Kinetics for Solution Polymerization of PMMA in Green Ionic Liquid Solvents Versus Traditional Volatile Solvents," Green Polymer Chemistry Session, Polymer Chemistry Division, American Chemical Society Fall National Conference, Boston, MA, August 2002.
 41. Benton, M.G., J.D. Holbrey, R.D. Rogers, J.W. Mays, and C.S. Brazel, "Ionic Liquids as Environmentally-Benign Solvents for Synthesis of PMMA in [bmim][PF₆]: Kinetic, Thermal and Mechanical Analysis," AIChE Annual Meeting, Indianapolis, IN, November 2002.
 42. Huang, X. and C.S. Brazel, "Development of a Convection-Diffusion Model to Account for the Burst Effect in Hydrogel Systems," AIChE Annual Meeting, Indianapolis, IN, November 2002.
 43. Rahman, M. and M.P. Scott, and C.S. Brazel, "High Temperature-Stability of Ionic Liquid Plasticizers in PVC and PMMA," AIChE Annual Meeting, Indianapolis, IN, November 2002.
 44. C.S. Brazel, A.N. Roberts and X. Huang, "Surface-Preferential Crosslinking in Hydrogels to Minimize Burst Effect and Design Tunable Lag Times for Drug Delivery," BMES/IEEE Fall Meeting, Houston, TX, October 2002.
 45. J.B. McKinney, D.T. Johnson and C.S. Brazel, "Magnetic Controlled Release using Using Aqueous CoFe Dispersions in Poly(vinyl alcohol) Hydrogels," AIChE Annual Meeting, Indianapolis, IN, November 2002.
 46. Rahman, M., M.G. Benton, M.P. Scott and C.S. Brazel, "Room Temperature Ionic Liquids as Environmentally Benign Plasticizers and Reaction Media for Polymerization Reactions," Green Chemistry and Engineering Conference, Washington, DC, June 2003.

Research Presentations (cont'd)

47. Carroll, K.S., J.B. McKinney, D.T. Johnson and C.S. Brazel, "Development of Magnetothermal Responsive Systems for Tumor Treatment," 30th International Symposium on Controlled Release of Bioactive Materials, Glasgow, Scotland, July 2003.

48. Rahman, M. and C.S. Brazel, "Development and Testing of PVC Plasticized by Low Volatility Ionic Liquids," AIChE Annual Meeting, San Francisco, CA, November 2003.
49. Carroll, K.S., W.D. Reynolds, and C.S. Brazel, "Temperature-Sensitive Graft Copolymer Gels for Proportional Control of Membrane Diffusion," AIChE Annual Meeting, San Francisco, CA, November 2003.
50. Rahman, M. and C.S. Brazel, "Effectiveness of Phosphonium, Ammonium, and Imidazolium-Based Ionic Liquids as Plasticizers for Poly(vinyl chloride): Thermal and Ultraviolet Stability," ACS National Meeting, Anaheim, CA, April 2004.
51. Shoff, H.W., M. Rahman, and C.S. Brazel, "Leaching and Migration Resistance of Phosphonium-Based Ionic Liquids as PVC Plasticizers: A Comparative Study of Traditional Phthalate and Citrate Plasticizers with Ionic Liquids," ACS National Meeting, Anaheim, CA, April 2004.
52. Shoff, H.W., and C.S. Brazel, "Development of Novel Plasticizers to Replace Phthalates in Medical Plastics," AIChE Spring Regional Student Conference, Georgia Tech University, 2nd place, March 2004.
53. Brazel, C.S., "Novel Polymer Structures for Thermosensitive Drug Delivery," DOE/NSF EPSCoR Conference 2004, Argonne National Laboratory, Argonne, IL, June 2004.
54. Shoff, H.W., M. Rahman, and C.S. Brazel, "Evaluation of Novel Plasticizers to Replace Phthalates in Medical Plastics: A Study of Mechanical, Leaching and Cytotoxic Behavior," AIChE Annual Meeting, Austin, TX, November 2004.
55. Ankareddi, I. and C.S. Brazel, "Development of Thermally Responsive Graft Copolymers for High Temperature-Activated Drug Delivery", AIChE Annual Meeting, Cincinnati, OH, November 2005
56. Rahman, M. and C.S. Brazel, "Extending Thermodynamic Plasticizer Models to Ionic Liquids", AIChE Annual Meeting, Cincinnati, OH, November 2005
57. Rahman, M. and C.S. Brazel, "Ionic Liquids Based on Phosphonium, Imidazolium and Ammonium Cations as PVC Plasticizers: Liquid Leaching, Solid Migration and Cytotoxicity Studies," AIChE Annual Meeting, Cincinnati, OH, November 2005.
58. Hampel, M.L. and C.S. Brazel, "Magnetothermal Matrices for Controlled Drug Release," AIChE Annual Meeting, Cincinnati, OH, October 2005.
59. Brazel, C.S., M. Rahman, and H.W. Shoff, "Ionic liquids as polymer additives: alternatives to phthalates in poly(vinyl chloride)," Pacificchem, Honolulu, HI, December 2005.
60. Brazel, C.S., I. Ankareddi, H.G. Bagaria, D.T. Johnson and D.E. Nikles, "Design of thermally responsive grafted hydrogels with imbedded magnetic FePt and Co- γ Fe₂O₃ nanoparticles for magnetically-triggered drug release," Pacificchem, Honolulu, HI, December 2005.
61. Brazel, C.S., P.E. Clark, T.M. Klein, A.M. Lane, and S.M.C. Ritchie, "Renovation and Upgrades of Chemical and Biological Engineering Unit Operations Lab to Teach Technical Skills in Emerging Engineering Fields," ASEE-Southeast Regional Meeting, Tuscaloosa, AL, April 2006.
62. Hampel, M.L. and C.S. Brazel, "Magnetothermal Matrices for Controlled Drug Release," ASEE-Southeast Regional Meeting, Tuscaloosa, AL, April 2006.
63. Brazel, C.S., "Choosing a Career Path in Chemical and Biological Engineering," Howard Hughes Medical Institute, The University of Alabama, May 2006.
64. Wu, L.F. and C.S. Brazel, "Extending Surface Crosslinking Technique to Prevent the Burst Effect to Controlled Release Systems Based on Poly(vinyl alcohol), Poly(2-hydroxyethyl methacrylate), and Gelatin," 33rd International Symposium on Controlled Release of Bioactive Materials, Vienna, Austria, July 2006.

Research Presentations (cont'd)

65. Brazel, C.S., I. Ankareddi, M.L. Hampel, H. Bagaria, D.T. Johnson, and D.E. Nikles, "Development of Magnetothermal-Responsive Delivery Systems Using FePt Nanoparticles Imbedded in Poly(N-isopropylacrylamide)-Based Hydrogels," 33rd International Symposium on Controlled Release of Bioactive Materials, Vienna, Austria, July 2006.

66. I. Ankareddi, M.L. Hampel, K.S. Carroll, J.B. McKinney and C.S. Brazel, "Magnetothermally-Triggered Drug Delivery: Combining FePt and Co- γ Fe₂O₃ Nanoparticles with Thermosensitive Polymers," Materials for Information Technology NSF-MRSEC Review, Tuscaloosa, AL, October 2006.
67. Brazel, C.S. "Magnetic Materials in Biological Applications: Future Plans for Work in Cancer Imaging and Therapy, Biomaterial Design, and Drug Delivery," Materials for Information Technology NSF-MRSEC Review, Tuscaloosa, AL, October 2006.
68. Ankareddi, I., and C.S. Brazel, "Development and Characterization of a Grafted Polymeric System Incorporated with Magnetic Nanoparticles for Magnetothermal Drug Delivery," 10th Annual Graduate Student Association Research and Thesis Conference, Tuscaloosa, AL, February 2007.
69. Ankareddi, I., M.L. Hampel, M.K. Sewell, D.-H. Kim, and C.S. Brazel, "Development of a Magnetically Triggered Drug Delivery System using Thermoresponsive Grafted Polymer Networks with Magnetic Nanoparticles," NSTI Nanotech 2007, Santa Clara, CA, May 2007.
70. Sewell, M.K. and C.S. Brazel, "Thermally Responsive Hydrogels with Nanomagnets for Delivery of Anti-Cancer Agents with Localized Hyperthermia", AIChE Regional Student Conference, Columbia, SC, March 2007, 2nd place oral presentation.
71. Sewell, M.K. and C.S. Brazel, "Thermally Responsive Hydrogels with Nanomagnets for Delivery of Anti-Cancer Agents with Localized Hyperthermia", Honors Research Competition, University of Alabama in Huntsville, Huntsville, AL, April 2007.
72. Jernigan, P.L., I. Ankareddi, M.M. Bailey, J.F. Rasco, C.S. Brazel, and R.D. Hood, "Effects of Poly(N-isopropylacrylamide-co-acrylamide) on Fetal Development in Mice," the University of Alabama Research and Creativity Competition, College of Arts and Sciences, Tuscaloosa, AL, April 2007.
73. Jernigan, P.L., I. Ankareddi, M.M. Bailey, J.F. Rasco, C.S. Brazel, and R.D. Hood, "Effects of Poly(N-isopropylacrylamide-co-acrylamide) on Fetal Development in Mice," Teratology Society Annual Meeting, Pittsburgh, PA, June 2007.
74. Wu, L. and C.S. Brazel, "Surface crosslinking as an effective method to tune drug release from hydrogels", ACS National Polymer Graduate Research Conference, Knoxville, TN, June 2007.
75. Ankareddi, I., and C.S. Brazel, "Design of a Polymeric System with Thermoresponsive Grafts and Magnetic Nanoparticles Which Facilitate Temperature Triggered Release – A Novel Approach to Treat Cancers," ACS National Polymer Graduate Research Conference, Knoxville, TN, June 2007.
76. Nikles, D.E., C.S. Brazel, D.T. Curiel, M. Everts, J.N. Glasgow, D.T. Johnson, T.C. Ng, and J.A. Nikles "Toward a Multifunctional Nanoplatfrom for Cancer Targeting, Imaging and Therapy," American Chemical Society National Conference, Boston, MA, August 2007.
77. Sewell, M.K., I. Ankareddi, D.-H. Kim, D.E. Nikles and C.S. Brazel, "Multifunctional Magnetic and Thermally Sensitive Hydrogels for Drug Delivery," AIChE Annual Meeting, Salt Lake City, UT, November 2007.
78. Ponta, A., I. Ankareddi, and C.S. Brazel, "Mechanical Analysis of Thermosensitive Hydrogels for Drug Delivery," AIChE Annual Meeting, Salt Lake City, UT, November 2007.
79. Fugit, Kyle, I. Ankareddi, D.-H. Kim and C.S. Brazel, "Cell Ablation via Magnetic Nanoparticles and Their Inherent Toxicity," AIChE Annual Meeting, Salt Lake City, UT, November 2007.
80. Shamsuzzoha, A., I. Ankareddi, and C.S. Brazel, "Thermosensitive Hydrogels: Design and Characterization of Phase-Separating Materials," AIChE Annual Meeting, Salt Lake City, UT, November 2007.
81. Brazel, C.S., "Nanomedicine: Design of Magnetically-Triggered System for Combined Hyperthermia and Chemotherapy," Unither Nanomedical and Telemedical Technology Conference, Magog, Quebec, Canada, April 2008.
82. Ankareddi, I., A. Ponta, A. Shamsuzzoha, and C.S. Brazel, "Positive thermoresponsive grafted hydrogels for heating-activated drug delivery," ACS Spring National Meeting, New Orleans, LA, April 2008.

83. Ankareddi, I., M.L. Hampel, M.K. Sewell, D.-H. Kim, and C.S. Brazel, "Design of magnetically responsive materials by incorporating magnetic nanoparticles into thermally responsive Poly(N-isopropylacrylamide-co-acrylamide) hydrogels," ACS Spring National Meeting, New Orleans, LA, April 2008.
84. Kim, D.-H., I. Ankareddi, D.E. Nikles and C.S. Brazel, "Synthesis and Characterization of Multifunctional Chitosan-coated $MnFe_2O_4$ for Magnetic Hyperthermia," ACS Spring National Meeting, New Orleans, LA, April 2008.
85. Rahman, M. and C.S. Brazel, "Advances in Plasticizers: Using Ionic Liquids in PMMA and PVC Systems- a Combined Experimental and Thermodynamic Modeling Approach," ACS Spring National Meeting, New Orleans, LA, April 2008.
86. Sewell, M.K., K.D. Fugit, I. Ankareddi, C. Zhang, M.L. Hampel, D.-H. Kim and C.S. Brazel, "Magnetothermally-Triggered Drug Delivery Using Hydrogels with Imbedded Cobalt Ferrite, Iron Platinum or Manganese Ferrite Nanoparticles," ACS Spring National Meeting, New Orleans, LA, April 2008.
87. Kim, D.-H., Y.T. Thai, D.E. Nikles and C.S. Brazel, "Optimized Heat Generation of Mn-Ferrite Nanoparticles by AC Magnetic Field for Magnetic Hyperthermia Using Multifunctional Particles," ACS Spring National Meeting, New Orleans, LA, April 2008.
88. Brazel, C.S., "Developing Materials for Cancer Therapy," Emerging Technologies Conference, College of Arts & Sciences, The University of Alabama, Tuscaloosa, AL, February 2008.
89. Fugit, K.D., C.S. Brazel, D.-H. Kim and I. Ankareddi, "Cellular Responses to Magnetic Nanoparticles," AIChE Regional Student Chapter Meeting, Auburn, AL, April 2008.
90. Blue, L.M., D.-H. Kim and C.S. Brazel, "Cobalt Ferrite and P(NIPAAm-co-AAm) Hydrogel Composite Material Development and Characterization for Hyperthermia and Chemotherapy Combination Cancer Therapy," AIChE Regional Student Chapter Meeting, Auburn, AL, April 2008.
91. Sewell, M.K. and C.S. Brazel, "Multifunctional Magnetic and Thermally Responsive Hydrogels for Anti-Cancer Drug Delivery," AIChE Regional Student Chapter Meeting, Auburn, AL, April 2008.
92. Ponta, A., I. Ankareddi, and C.S. Brazel, "Mechanical Analysis of Thermosensitive Hydrogels for Drug Delivery," AIChE Regional Student Chapter Meeting, Auburn, AL, April 2008.
93. Thai, Y.T., D.-H. Kim and C.S. Brazel, "Manganese Ferrite Nanoparticles - Heat Generation Study for Magnetic Hyperthermia Cancer Therapy," AIChE Regional Student Chapter Meeting, Auburn, AL, April 2008.
94. Blue, L.M., D.-H. Kim and C.S. Brazel, "Development of Cobalt Ferrite/P(NIPAAm-co-AAm) Hydrogel Composite Material for Combined Hyperthermia and Chemotherapy Cancer treatment", UA System Honors Research Conference, Birmingham, AL, April 2008.
95. Sewell, M.K. and C.S. Brazel, "Multifunctional Magnetic and Thermally Sensitive Hydrogels for Drug Delivery," University of Alabama Undergraduate Research Symposium, Tuscaloosa, AL, April 2008.
96. Sewell, M.K. and C.S. Brazel, "Thermal and Magnetically Sensitive Hydrogels with Nanoparticles for Combination Cancer Therapy," UA System Honors Research Conference, Birmingham, AL, April 2008.
97. Fugit, K.D., C.S. Brazel, J. Harris, D.-H. Kim, and I. Ankareddi, "Cellular Responses to Magnetic Nanoparticles and Subsequent Hyperthermia Treatment," UA System Honors Research Conference, Birmingham, AL, April 2008.

Abstracts

1. Peppas, N.A., C.L. Bell, C.S. Brazel and S. Teague. "Future Directions in the Development of Biomaterials," *Ann. Biomed. Engin.*, 22, Suppl. 1, 1994, 2.
2. Peppas, N.A., C.L. Bell, C.S. Brazel and S. Teague. "Mechanochemical Behavior of pH- and Temperature- Sensitive Gels," *Ann. Biomed. Engin.*, 22, Suppl. 1, 1994, 74.
3. Brazel, C.S. and N.A. Peppas. "P(NIPAAm-co-MAA) Hydrogels for Temperature- and pH-Responsive Release of Antithrombotic Agents," *Extended Abstracts AIChE 1994 Annual Meeting*, AIChE, New York, NY, 1994, 51.
4. Brazel, C.S. and N.A. Peppas. "Transport in Swellable Polymer Systems for Controlled Drug Release," *Extended Abstracts AIChE 1995 Annual Meeting*, AIChE, New York, NY, 1995, 547.
5. Brazel, C.S. and N.A. Peppas. "Prediction of Drug Delivery Profiles from Swelling-Controlled Release Hydrogel Systems," *Extended Abstracts AIChE 1996 Annual Meeting*, AIChE, New York, NY, 1996.
6. Brazel, C.S., A.L. Orvis and N. Vasishtha. "Suspension Polymerization of Acrylate Monomer Particulates Using Microwave Energy," *Extended Abstracts AIChE 1999 Annual Meeting*, AIChE, New York, NY, 1999.
7. Huang, X. and C.S. Brazel, "An Investigation of Burst Release of Low Molecular Weight Drugs from Poly(vinyl alcohol) Hydrogels," *Extended Abstracts AIChE 2000 Annual Meeting*, AIChE, New York, NY, 2000.
8. Brazel, C.S. and M.G. Benton, "Effect of Immobilized Proteins on Polymer gel Structures Used as Drug Delivery Vehicles," *Extended Abstracts AIChE 2000 Annual Meeting*, AIChE, New York, NY, 2000.
9. Benton, M.G., M.P. Scott, J.D. Holbrey, R.D. Rogers, and C.S. Brazel, "A New Class of Plasticizing Agents: Room Temperature Ionic Liquids in Poly(methyl methacrylate) and Polystyrene," *Extended Abstracts AIChE 2001 Annual Meeting*, AIChE, New York, NY, 2001.
10. Stoltz, M.J. and C.S. Brazel, "Temperature-Sensitive Interpenetrating Polymer Networks of Two LCST Polymers for Membrane Separations and Drug Delivery," *Extended Abstracts AIChE 2001 Annual Meeting*, AIChE, New York, NY, 2001.
11. Huang, X., B. Chestang, and C.S. Brazel, "On the Minimization of the Burst Release of Small Molecular Weight Solutes from PVA Hydrogels: Surface Extraction and Surface-preferential Crosslinking Techniques," *Extended Abstracts AIChE 2001 Annual Meeting*, AIChE, New York, NY, 2001.
12. Huang, X., and C.S. Brazel, "Modeling of Burst Release of Small Molecular Weight Solutes from Hydrogels Based on a Diffusion-convection Model Coupled with Surface Desorption," *Extended Abstracts AIChE 2001 Annual Meeting*, AIChE, New York, NY, 2001.
13. Benton, M.G. and C.S. Brazel, "The Feasibility of Room Temperature Ionic Liquids as Replacement Solvents in Free Radical Polymerization Reactions," *Extended Abstracts AIChE 2001 Annual Meeting*, AIChE, New York, NY, 2001.
14. Scott, M.P., M.G. Benton, C.S. Brazel, and R.D. Rogers, "Ionic Liquids in Polymer Processing: Greener Solvent-Based Polymerizations and Improved Lifetime of Plasticized Materials," *Extended Abstracts AIChE 2001 Annual Meeting*, AIChE, New York, NY, 2001.
15. Benton, M.G., J.D. Holbrey, R.D. Rogers, J.W. Mays, and C.S. Brazel, "Ionic Liquids as Environmentally-Benign Solvents for Synthesis of PMMA in [bmim][PF₆]: Kinetic, Thermal and Mechanical Analysis," *Extended Abstracts AIChE 2002 Annual Meeting*, AIChE, New York, NY, 2002.
16. Huang, X. and C.S. Brazel, "Development of a Convection-Diffusion Model to Account for the Burst Effect in Hydrogel Systems," *Extended Abstracts AIChE 2002 Annual Meeting*, AIChE, New York, NY, 2002.

Abstracts (cont'd)

17. Rahman, M. and M.P. Scott, and C.S. Brazel, "High Temperature-Stability of Ionic Liquid

- Plasticizers in PVC and PMMA,” *Extended Abstracts AIChE 2002 Annual Meeting*, AIChE, New York, NY, 2002.
18. J.B. McKinney, D.T. Johnson and C.S. Brazel, “Magnetic Controlled Release using Aqueous CoFe Dispersions in Poly(vinyl alcohol) Hydrogels,” *Extended Abstracts AIChE 2002 Annual Meeting*, AIChE, New York, NY, 2002.
 19. Rahman, M. and C.S. Brazel, “Development and Testing of PVC Plasticized by Low Volatility Ionic Liquids,” *Extended Abstracts AIChE 2003 Annual Meeting*, AIChE, New York, NY, 2003.
 20. Carroll, K.S., P.S. McCarty, and C.S. Brazel, “Temperature-Sensitive Graft Copolymer Gels for Proportional Control of Membrane Diffusion,” *Extended Abstracts AIChE 2003 Annual Meeting*, AIChE, New York, NY, 2003.
 21. Shoff, H.W., M. Rahman, and C.S. Brazel, “Evaluation of Novel Plasticizers to Replace Phthalates in Medical Plastics: A Study of Mechanical, Leaching and Cytotoxic Behavior,” *Extended Abstracts AIChE 2004 Annual Meeting*, AIChE, New York, NY, 2004.
 22. Brazel, C.S., M. Rahman, and H.W. Shoff, “Ionic Liquids as Polymer Additives: Alternative Plasticizers to Phthalates in Poly(vinyl chloride),” Program No. 884. 2005 Abstract Viewer. Honolulu, HI: International Chemical Congress of Pacific Basin Societies.
 23. Brazel, C.S., I. Ankareddi, H.G. Bagaria, D.T. Johnson, and D.E. Nikles, “Design of Thermally Responsive Grafted Hydrogels with Imbedded Magnetic FePt and Co-gamma-Fe₂O₃ Nanoparticles for Magnetically-Triggered Drug Release,” Program No. 494. 2005 Abstract Viewer. Honolulu, HI: International Chemical Congress of Pacific Basin Societies.

Research Proposal Workshops

NSF Materials Division Workshop, University of Louisville, December 2000

Quality Circle Reviews for Proposal Construction, David G. Bauer, Univ of Alabama, June 2007

TEACHING

Teaching Experience

Courses Taught at the University of Alabama:

ChE 445/545	Biochemical Engineering
ChE 306	Heat Transfer Operations
ChE 412/512	Polymer Materials Engineering
ChE 319	Undergraduate ChE Laboratory
ChE 491/492	Undergraduate Research
ChE 498/499	Honors Undergraduate Research
ChE 591	Biomaterials
ChE 305	Chemical Separation Processes
ChE 325/425	Junior/Senior Honors Forum "Engineered Medicine"
ChE 225	Sophomore Honors Forum "Engineered Medicine"
ChE 591	Introduction to Graduate Research Skills
ChE 325	Honors Forum "Medical Nanotechnology"

Teaching Awards

Tau Beta Pi Outstanding Engineering Faculty of the Year (College of Engineering) April 2007
 University of Alabama National Alumni Association Outstanding Commitment to Teaching Award, 2008

Teaching Workshop Participation

- “Teaching Engineering, Workshop 1” January 4, 2000, led by Russell Pimmell, Jim Richardson and Giovanni Zangari, Univ of Alabama, 6 hours
- “Teaching Engineering, Workshop 2: Writing Objectives and Assessment Tools,” February 16, 2000, led by Russell Pimmell, Joey Parker, Giovanni Zangari, Univ of Alabama, 3 hours
- “Teaching Workshop 3: Active and Cooperative Learning,” August 21, 2000, led by Russell Pimmell, Gary April, Joey Parker, David Cordes, and Jim Richardson, Univ of Alabama, 6 hours.
- “Active/Collaborative Learning and Teaming in the College Classroom,” August 16, 2001, led by P.K. Imbrie, Purdue University, and J. Morgan, Texas A&M University, 8 hrs.
- “Teaching EC2000 Skills: Integrating Student Outcomes a-k into Engineering Courses,” January 6, 2003, led by Russell Pimmell, Univ of Alabama, 3 hours
- “National Effective Teaching Institute,” June 2004 (with ASEE meeting), led by Rebecca Brent (NC State), Richard M. Felder (NC State), James E. Stice (Texas) and Gary Huvad (Virginia Commonwealth), Salt Lake City, UT, 3 days
- “Pursuit of Excellence in Teaching Summit,” August 2005, organized by Provost Judy Bonner, led by Susan Lucas (U. Alabama), Cheaha State Park, AL, 3 days

Thesis Advisor for Graduate Students and Postdoctoral Research Associates

- Angela M. Thornton, M.S. ChE, "Synthesis and Characterization of pH-Sensitive Hydrogels for their Potential Use in the Targeted Delivery of Cardiovascular Drugs" January 2000 - August 2001.
- Xiao Huang, Ph.D. ChE, "Analysis of the Burst Effect for the Release of Small Molecular Weight Solutes from Poly(vinyl alcohol) Hydrogels," September 1999 - August 2002.
- Michael G. Benton, M.S. ChE, "Room Temperature Ionic Liquids as Novel Reaction Media for Free Radical Polymerizations," August 2000 - August 2002.
- Stacy W. Bailey, M.S. student ChE, "Flexible Engineering Polymers using Ionic Liquids as Plasticizers," January 2001-May 2001 (incomplete)
- Mustafizur Rahman, M.S. and Ph.D., January 2002- December 2007.
M.S. (2004): "Effectiveness of Imidazolium, Ammonium, and Phosphonium Based Ionic Liquids as Plasticizers for Poly(vinyl chloride) and Poly(methyl methacrylate)"
PhD (2006) "Ionic Liquids as Plasticizers: Material Properties, Thermodynamic Parameters, Cytotoxicity and Mammalian Toxicological Studies"
- Induvadana Ankareddi, M.S. and Ph.D. Candidate, September 2003 - May 2008
M.S. (2005) "Development of Thermally Responsive Graft Copolymers for High Temperature-Activated Drug Delivery"
Ph.D. (2008) **ADD TITLE**
- Linfeng Wu, Ph.D. "Extending Surface Crosslinking as a Method to Control the Burst Effect in Polymer Systems: An Experimental and Theoretical Study," July 2005 - July 2007.
- Dong-Hyun Kim, Postdoctoral Research Associate, "Materials for Magnetic Hyperthermia and Magnetothermal Drug Delivery"
- Chuanqian Zhang, M.S. (2008), "Modeling the Bioheat Equation to Approximate Hyperthermia- Induced Heating in a Tumor Model"
- John Melnyczuk, M.S. candidate, "Thermoresponsive Hydroxypropyl Cellulose Gels for Squeezing-Activated Release of Chemotherapy Agents"
- Mary Kathryn Sewell, M.S. candidate, "Magnetic Nanoparticle Colocalization in Cell Systems"

Invited Lectures and Seminars

- The University of Pavia, Italy, May 1995
- The University of Parma, Italy, May 1995
- The University of Modena, Italy, May 1995
- The University of Rome, La Sapienza, Italy, May 1995
- The University of Bologna, Italy, May 1995
- Southwest Research Institute, Dec., 1995
- The University of Alabama, Department of Biology, Tuscaloosa, AL, Sept. 1999
- Auburn University Department of Chemical Engineering, Oct. 1999
- The University of Alabama, Department of Chemistry, Tuscaloosa, AL, Oct. 1999
- The University of Alabama, NSF Materials Science Program to Introduce Science Faculty from HBCUs to Materials Science Engineering, "Introduction to Polymer Chemistry and Physics," June 2000.
- University of Alabama, NSF Materials Science Program to Introduce Science Faculty from HBCUs to Materials Science Engineering, "Fundamentals of Biomaterials," June 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007. (8 times)
- UAH, Materials Science and Engineering Department, Huntsville, AL, Oct., 2000, Effect of Polymer Structure on Diffusion in Controlled Release Systems: Burst Release, Cardiovascular Delivery and Self-Responsive Biosensors"
- UAB, Department of Biomedical Engineering, Birmingham, AL, Jan. 2002, "Advances in Controlled Release technologies: Understanding the Burst Effect, and Development of pH- and Temperature- Responsive Polymers for Triggered Delivery"

Invited Lectures and Seminars (cont'd)

- Controlled Release Society, International Symposium on the Controlled Release of Bioactive Agents, Seoul, South Korea, July 2002, "Fundamental Chemical Differences between Polyacidic and Polybasic Materials for the Design of pH- Responsive Systems"
- American Chemical Society Spring National Conference, Orlando, FL, April 2002, "The Cost of Optimal Drug Delivery: Reducing and Preventing the Burst Effect in Matrix Systems"
- Birmingham Polymer/Southern Biosystems, Birmingham, AL, March 2002, "Drug Delivery Using Hydrogels: The Role of the Burst Effect and Novel Responsive Systems"
- American Chemical Society Fall National Conference, Boston, MA, August 2002, "Plasticizing Effects of Imidazolium Salts in PMMA: High and Low Temperature Stable Flexible Engineering Materials"
- Vanderbilt University, Department of Biomedical Engineering, Nashville, TN, March 2004, "Triggered Drug Delivery: Using Smart Materials to Develop pH-, Temperature-, and Magnetically-Responsive Systems for Pharmaceuticals"
- The University of Memphis, Departments of Chemistry and Biomedical Engineering, Memphis, TN, March 2005, "Design of Magnetic and Magnetothermal Responsive Systems for Drug Delivery"
- National Starch, ICI, Bridgewater, NJ, March-April 2005, "Design of Magnetic and Magnetothermal Responsive Systems for Actives Delivery"
- The University of Alabama in Birmingham, Department of Materials Science Engineering, "Thermally and Magnetically Activated Polymers for Triggered Release of Medicine", September 2005.
- The University of South Carolina, Department of Chemical Engineering, "Development of a Grafted Polymer System Containing Magnetic Nanoparticles for Thermally and Magnetically Triggered Cancer Therapy," Fall 2005.
- The University of Kansas, Department of Chemical and Petroleum Engineering, "Development of Magnetothermally-Triggered Controlled Release Devices", April 2006.
- Ionic Liquids Workshop: Background, State-of-the-Art, and Academic/Industrial Applications, "Ionic Liquids as Plasticizers" Tuscaloosa, AL, March 2006.
- Clemson University, Department of Chemical and Biomolecular Engineering, "Ionic Liquids as High-Performance Plasticizers," Clemson, SC, November 2006.
- United Therapeutics (Unither) Nanomedical and Telemedical Technology Conference: The Next Decade's Approach to Medicine, "Nanomedicine for Diagnosis and Treatment of Cancer: Development of a Nanoplatfom to Target Cancer Cells and Provide Magnetically-Triggered Combination Chemotherapy and Hyperthermia Therapy," Magog, Quebec, Canada, April 2008.

Mentoring

- ACS Mentor to Cherrish L. Foger, Alabama State University
- HHMI Mentor to Alandria Fox, "Development of Externally-Triggered "Pharmaceutical Drug Delivery Systems: Analysis of Hydrogels with Imbedded Magnetic Nanospheres- Material Properties and Cytotoxicity", UA, 2006.
- University Fellows Program, mentor to D.J. Outlaw, UA, 2008-

Undergraduate Student Research Supervision

Kyle Kollias, "Thermal Analysis of Temperature-Sensitive Polymers," Purdue U.
 Sarah K. Vakkalanka, "Drug Release from Environmentally-Sensitive Materials," Purdue U.
 Kyle Kollias, "Synthesis and Characterization of Poly(Vinyl Alcohol) Hydrogels," Purdue U.
 Rebecca Hays, "Transport Behavior in Hydrophobically-Modified Hydrogels," Purdue U.
 Ryan Frank, "Drug Release from Hydrophobically- and Hydrophilically- Modified Gels," Purdue U.
 Melanie Pogue, "Binding pH-Indicating Dyes into Hydrogels," Our Lady of the Lake U., San Antonio
 Joshua Staggs, "Absorptivity Rates in Psyllium- and Inorganic Salt-Loaded Poly(acrylic acid) Gels" UA
 Jonna Todd, "The Effect of Bound Enzymes on Polymer Network Structure," UA
 Angela M. Thornton, "Adhesion of Gel Microparticles to Fibrin Matrices for Targeted Delivery," UA
 Aimee B. Sanders, "Improving Bioavailability of Vitamins using Burst Release," U. of Alabama

Michael G. Benton, "Immobilization of Trypsin in pH-Sensitive Gels," U. of Alabama
 Lee M. Morris, "Spectroscopic and Chromatographic Methods for Biopolymer Analysis," U. of Alabama
 Michael J. Stoltz, "Dual-Temperature Sensitive Interpenetrating Networks," UA, McWane Fellow
 Michael Hallman, "Computer Modeling of Drug Release from Monoliths," UA, Comp-Based Honors
 Matthew F. Garcia, "Effect of Ionic Strength, pH and Counterions on Polybasic Hydrogels," UA
 Brigitta Chestang, "Minimization of Burst Release in PVA Hydrogels," UA
 J.Brent Jones, "Development of Biochemical Engineering Experiments for ChE 491," UA
 Mark P. Scott, "Room Temperature Ionic Liquids as Plasticizing Agents in Polymers," UA
 G. Sean Maddox, "Investigation of Ionic Polymers," UA
 Kimberly R. Brooks, "Strategies to Prevent Thrombus Formation in Long-Term Catheters," UA

Laurie M. Savoy, "Pulsatile Behavior of Cationic Polymers for Controlled Release," UA
 J. Brad McKinney, "Magnetically-Controlled Drug Delivery," UA
 Adria N. Roberts, "Minimization of the Burst Effect by Surface-Preferential Crosslinking," UA
 R. Scott Smith, "Investigation of PMMA using Ionic Liquids as Solvents," UA
 Kristin S. Carroll, "Development of Block Temperature-Sensitive Copolymers," UA
 Patrick S. McCarty, "Development of Delayed Crosslinking Photopolymerization System," UA
 Kelly M. Coleman, "Microencapsulation of Dyes," UA
 Wesley D. Reynolds, "Thermal Sensitive Membranes and Cell Culture Toxicity Testing," UA
 Ashley A. Armstrong, "Biomaterial Depots for Targeted Drug Delivery" UA
 Hugh W. Shoff, "Development of Medical Grade Plasticizers Based on Ionic Liquids," UA

Amy E. Armstrong, "pH-Rupturable Microcapsules" UA
 Sharon C. Cody, "Imprinted Polymers for Targeted Drug Delivery and Antimicrobial Surfaces" UA
 Phillip D. Bates, "Preventing the Burst Effect in Poly(vinyl alcohol) Hydrogels" UA
 Jessica L. Robertson, "Microencapsulation Optimization and Scale-Up" UA
 M.L. Marla Hampel, "Incorporation of Magnetic Nanoparticles in Thermosensitive Hydrogels" UA
 Chris F. Cater, "Leaching of Plasticizers and Antibacterial Properties of Plasticized PVC" UA
 Aundrea Lollar, "Simulation of Heat Transfer in Saline Basins for Medical Operating Rooms," CBH UA
 Alandria Fox, "Reproductive Toxicity Studies on Thermosensitive Polymers" Stillman College, HHMI
 Mary Kathryn Sewell, "Design Parameters for Magnetothermal Response in FePt-loaded Gels" UA
 Rachel Jones, "Magnetic Targeting to Solid Biomaterial Surfaces: Flow Effects" UA

Alston Pike, "Development of a Database for Magnetic Nanoparticle Cancer Platform," CBH UA
 Kyle Fugit, "Biological Effectiveness, Localization and Toxicity of a Nanocancer Therapy System" UA
 Ynhi Thai, "Investigation of Manganese Ferrite Magnetic Systems for Hyperthermia Therapy" UA
 Andrei Ponta "Studying Mechanical Behavior of Hydrated Hydrogels in Isothermal Bath" UA
 Arefeen Shamsuzzoha "Thermoresponsive Polymer Characterization" UA
 Lauren Blue "Cobalt Ferrite Magnetic Nanoparticles: Synthesis and Characterization" UA
 Johnathan Harris "Magnetic Induction Heating using Hyperthermia Chamber" UA

SERVICE

College of Engineering Service

Web Committee
 Distance Learning Committee
 Faculty Search, Chemical Engineering Department, Spring 2001
 Faculty Search, Chemical Engineering Department, Fall 2003
 Faculty Search, Biological Science Department, Fall 2004 - Spring 2005
 Departmental/College Honors Committee, Spring 2005-
 Faculty Search, Chemical and Biological Engineering Department, Spring 2006
 Chair, Faculty Search Committee, Chemical and Biological Engineering Department, 2006-07

Research Service

National Space Science Technology Center Biotechnology Program, Point of Contact, 2001-

Department of Chemical and Biological Engineering Service

co-advisor, AIChE student chapter, 2000-2005
 Academic advisor for undergraduate students (fall, spring and summer registration)
 Facilities Committee (responsible for \$250,000 lab and classroom upgrades, 2003-2004)
 Chair, 2004 -
 ChE Honors Program Chair, 2003- (responsible for developing and implementing new program)
 ChE Curriculum Revision (responsible for incorporation of biology into ChE curriculum)
 Frontiers in Chemical Engineering Education Workshop, Departmental Representative

Thesis Committees

Maithili Iyer, UA-Huntsville PhD (Doug Hayes)
 Jacob McGee, UA Chemistry MS (Silas Blackstock)
 Ashish Kasangottuwar, UA Chemical Engineering MS (John Wiest)
 Yanxi Zhang, UA-Birmingham/Univ of Tennessee PhD (Jimmy Mays)
 Tapan Shah, UA Chemical and Biological Engineering MS, PhD (Steve Ritchie)
 Marc Klingshirn, UA- Chemistry PhD (Robin Rogers)
 Lucas Moore, UA- Chemistry MS, PhD (Kevin Shaughnessy)
 Simone Cowan, UA- Chemical and Biological Engineering MS, PhD (Steve Ritchie)
 Hitesh Bagaria, UA- Chemical and Biological Engineering PhD (Duane Johnson)
 Qiang Luo, UA- Chemical and Biological Engineering PhD (Steve Ritchie)
 Yizhou Zhang, UA - Mechanical Engineering MS (Kevin Chou)
 Ning Sun, UA - Chemistry MS (Robin Rogers)
 Mirela Maxim, UA - Chemistry MS (Robin Rogers)
 Whitney Hough, UA - Chemistry PhD (Robin Rogers)
 Jeremy Pritchett, UA - Chemistry PhD (Dave Nikles)
 Mingming Zhang, UA - Metallurgical and Materials Engineering (Ramana Reddy)
 Vijay Ranganathan, Monash University (Australia) - Chemistry (Doug MacFarlane)
 Kamesh Narasmihan - Aerospace Engineering and Mechanics PhD

University of Alabama Center Memberships

- Center for Green Manufacturing
- Coalition for Biomolecular Products
- Materials for Information Technology

University of Alabama White Paper Initiatives

- Developing Center for Applied Biological Engineering Research
- Focused Enhancement at the Interface of Biological Sciences and Chemical and Biological Engineering
- Magnetic Biomaterials Research Working Group (Group Leader)

Service to Professional Societies

Session Chair at AIChE (American Institute for Chemical Engineers) Annual Meetings:

- “Separations in the Food and Pharmaceutical Industries,” Los Angeles, CA, November 2000
- “Biomembranes and Biosensors II: Materials in Biosensor Design,” Reno, NV, November 2001
- “Biomimetic Materials: Applications,” Reno, NV, November 2001
- “Novel Carriers for Drug and Cell Delivery,” Indianapolis, IN, November 2002.
- “Modeling in Drug Delivery Systems,” Indianapolis, IN, November 2002.
- “Membranes in Controlled Release,” Indianapolis, IN, November 2002.
- “Biomembranes and Biosensors,” San Francisco, CA, November 2003.
- “Smart/Conducting Biomaterials,” Austin, TX, November 2004.
- “Advances in Biomaterials, Bionanotechnology, Biomimetic Systems and Tissue Engineering: Tutorial Session I,” Austin, TX, November 2004.
- “Smart and Conducting Biomaterials,” Cincinnati, OH, November 2005.
- “Application of Magnetic Nanoparticles in Biotechnology and Biomedicine,” Cincinnati, OH, November 2005.

Session Chair at ASEE (American Society for Engineering Education) Annual Meetings:

- “Innovative Courses for Chemical Engineering Students,” Montreal, Quebec, Canada, June 2002.

Session Chair at IEEE/EMBS/BMES (Biomedical Engineering Society) National Conference

- “Novel Biomaterials for Drug Delivery,” Houston, TX, October 2002.

Program Chair at ACS (American Chemical Society) National Conference

- “Ionic Liquids in Polymer Applications,” Spring National Meeting, Anaheim, CA, March-April 2004, 3 oral sessions; 1 poster session

Scientific Review Panel Service for Research Proposals

Department of Defense, EPSCoR	August 1999
NSF, Biomedical Engineering and Research to Aid Persons with Disabilities	March 2000
NSF, Bioengineering Sciences Program	December 2001
NSF, Nanotechnology Panel	March 2002
NSF, Bioengineering Sciences Program	January 2003
NSF, Nanotechnology Panel	February 2003
NSF, Bioengineering Small Teams	June 2003
DHS, Dept of Homeland Security Graduate Fellowship Program	June 2003
ACS, Petroleum Research Fund (Type AC)	August 2003
NSF, Nanotechnology Panel	January 2004
CRDF, U.S. Civilian Research and Development Foundation (Former Soviet Union Countries Research)	April 2004
Auburn University Bio-Grant Research Proposals	October 2004
NSF, Nanotechnology Panel	January 2005
DHS, Dept of Homeland Security Graduate and Undergraduate Fellowships	April 2005
USDA, US Dept of Agriculture, SBIR Proposal	May 2005
University of Kentucky Research Fund	May 2005
CRDF, U.S. Civilian Research and Development Foundation (Former Soviet Union Countries Research)	January 2006
ORAU, Oak Ridge Associated Universities Young Faculty Research Proposals	March 2006
DHS, Dept. of Homeland Security Graduate and Undergraduate Fellowships	March 2006
NSF, Bioengineering Sciences Proposal Review	April 2006
USDA, US Dept of Agriculture, SBIR Proposal	May 2006
ACS, Petroleum Research Fund	August 2006
ACS, Petroleum Research Fund	October 2006
USDA, CREES	January 2007
Auburn University Bio-Grant Research Proposals	February 2007

Scientific Review Panel Service for Research Proposals (continued)

NSF, Nanotechnology Panel	February 2007
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ACS, Petroleum Research Fund
ACS, Petroleum Research Fund
Kentucky Science and Engineering Foundation

March 2007
June 2007
July 2007