

CURRICULUM VITAE
MICHAEL ANTHONY MATTHEWS
 Department of Chemical Engineering
 University of South Carolina
 Columbia, SC 29208

EDUCATION

<u>College/University</u>	<u>Major</u>	<u>Degree</u>	<u>Dates</u>
Texas A&M University	Chemical Engineering	Ph.D.	5/84-12/86
Texas A&M University	Chemical Engineering	M.S.	9/81-5/84
Texas A&M University	Chemical Engineering	B.S	9/75-5/79

PROFESSIONAL APPOINTMENTS

<u>Dates</u>	<u>Firm/Institution</u>	<u>Rank/Position</u>
5/2013-	College of Engineering & Computing University of South Carolina	Associate Dean for Research & Graduate Education
6/2011-5/2013	College of Engineering & Computing University of South Carolina	Associate Dean for Academic Planning (Interim)
9/06 to 12/2010	Chemical Engineering Department University of South Carolina	Chair
8/03 to 8/2013	Department of Orthopaedic Surgery University of South Carolina	Adjunct Professor
8/01 to 12/2010	Chemical Engineering Department University of South Carolina	Professor
8/00 to 8/02	Chemical Engineering Department University of South Carolina	Interim Chair
1/97 to 8/01	Chemical Engineering Department University of South Carolina	HRD Coordinator, State of SC DOE/EPSCoR Program
8/96 to 5/98	Chemical Engineering Department University of South Carolina	Assistant Chairman
8/96 to 8/01	Chemical Engineering Department University of South Carolina	Associate Professor
1/94 to 8/96	Chemical Engineering Department University of South Carolina	Assistant Professor
7/93 to 12/93	Chemical Engineering Department University of Wyoming	Associate Professor
8/86 to 7/93	Chemical Engineering Department University of Wyoming	Assistant Professor, Graduate Director
5/79 to 9/81	Texas Eastman Chemical Company Longview, TX	Engineer
Summer 1978	Exxon Company, USA Kingsville, TX.	Engineer
Summer 1977, 1978	Dow Chemical Company Freeport, TX	Engineer

PROFESSIONAL REGISTRATION

Registered Professional Engineer, Texas. License No. 77546

RESEARCH EXPERTISE

Applications of thermodynamics and mass transfer in green and sustainable chemical processing: Supercritical carbon dioxide technology; sterilization, disinfection, protein modification using supercritical CO₂; electrochemistry in ionic liquids; hydrogen generation from chemical hydrides.

Research based learning and communications skills.

PROFESSIONAL SOCIETIES

American Institute of Chemical Engineers (senior member since 1991), American Society for Engineering Education, American Chemical Society (Fellow, 2011 Class).

HONORS, AWARDS, & HONORARY SOCIETIES

American Chemical Society, Committee on Environmental Improvement. Affiliate member, 2012-.

Fellow of the American Chemical Society, 2011.

Sloan Faculty Mentor of the Year (one of five). The Compact for Faculty Diversity, 2011.

Visiting Professor, University of Trento (Italy), Department of Materials Engineering and Industrial Processes, May-June 2010.

ASEE/Chemical Engineering Division 2007 William Corcoran Award for Best Paper in *Chemical Engineering Education*

Golden Key Honor Society Award for Creative Integration of Research and Undergraduate Education at USC. May 2003.

SCRI Initializers Award, South Carolina Research Institute, July 1998.

University of Wyoming Mortar Board Society "Top Prof" Award, 1989.

Texas A&M Association of Former Students Outstanding Ph.D. Research Award, 1987.

Amoco Foundation Graduate Student Teaching Award, Texas A&M, 1983.

Lechner Graduate Fellowship, 1981.

University Undergraduate Fellow, 1979.

President's Endowed Scholar, 1975-79.

National Merit Scholar, 1975-79.

Tau Beta Pi, 1978.

Omega Chi Epsilon, 1979.

Phi Kappa Phi, 1979.

Phi Eta Sigma, 1975.

TEACHING EXPERIENCE

Introduction to chemical engineering (freshmen)
Professional Development and Ethics for Biomedical Engineers (undergraduate and graduate students)
Engineering and chemical engineering thermodynamics (undergraduate, graduate, and graduate elective)
Chemical engineering stoichiometry and energy balances (undergraduate)
Mass transfer and separations processes (undergraduate)
Distillation (graduate elective)
Chemical reaction kinetics and reactor design (undergraduate)
Chemical engineering unit operations laboratory (undergraduate)
Engineering research methods (SC Honors College elective)
Introduction to biomedical engineering (interdisciplinary elective)
Environmentally conscious manufacturing (interdisciplinary elective)
Graduate student as scholar (USC Graduate School)
Thermodynamics of Biological Systems (University of Trento)

SCHOLARLY AND PROFESSIONAL WRITINGS***Book Chapters or Books Edited***

7. Supercritical Fluid Pasteurization and Food Safety. Sara Spilimbergo, Michael A. Matthews, and Claudio Cinquemani. In "Alternatives to Conventional Food Processing." Andrew Proctor, Ed. Royal Society of Chemistry, Green Chemistry Series. 2010.
6. Innovations in Industrial and Engineering Chemistry. ACS Symposium Series No. 1000. W.H. Flank, M.A. Abraham, and M.A. Matthews, Eds. American Chemical Society, Washington D.C. 2008.
5. Electrochemically generated superoxide ion in ionic liquids: Applications to green chemistry. I.M. AlNashef, M.A. Matthews, and J.W. Weidner. In "Ionic Liquids as Green Solvents: Progress and Prospects." R.D. Rogers and K.R. Seddon, Eds. ACS Symposium Series 856. American Chemical Society. Washington D.C. 2003. (Reviewed.)
4. Green Chemistry and Green Chemical Engineering Technology. M.A. Matthews. In "Kirk-Othmer Online Encyclopedia of Chemical Technology." Wiley Interscience, published online February 2003.
3. Superoxide ion electrochemistry in ionic liquids. M. L. Leonard, M.C. Kittle, I.M. AlNashef, M.A. Matthews, and J.W. Weidner. In "Ionic Liquids. Industrial Applications for Green Chemistry." R.D. Rogers and K.R. Seddon, Eds. ACS Symposium Series 818. American Chemical Society. Washington D.C. 2002. (Reviewed.)
2. Diffusion in liquid and supercritical fluid mixtures. V. M. Shenai, B. L. Hamilton, and M. A. Matthews. In "Supercritical Fluid Engineering Science. Fundamentals and Applications." E. Kiran and J. F. Brenneke, Eds. ACS Symposium Series 514. American Chemical Society. Washington, D.C. 1993.
1. Continuous phase equilibrium thermodynamics for sequential operations. M.A. Matthews, K.C. Mani, and H.W. Haynes, Jr. In "Proceedings of the ACS Symposium on Kinetic and Thermodynamic Lumping of Multicomponent Mixtures." S.I. Sandler, Ed. Atlanta, GA. April 15, 1991. Elsevier Press, Amsterdam, 1991.

Refereed Journal Publications

69. Kinetic modeling of self-hydrolysis of aqueous NaBH_4 solutions by model-based isoconversional method. Rajasree Retnamma, A. Q Novais, Carmen M. Rangel, Lin Yu, Michael A Matthews. *Int. J. Hydrogen Energy* (to appear), 2014.
68. A reactor model for hydrogen generation from sodium borohydride and water vapor, L. Yu, M.A. Matthews, *Int. J. Hydrogen Energy*, **39**, 3830-3836, 2014.
67. Kinetic Models of Concentrated NaBH_4 Hydrolysis, L. Yu, Perry Pellechia, M.A. Matthews, *Int. J. Hydrogen Energy*, **39**, 442-448, 2014.
66. Deliquescence of NaBH_4 from Density Functional Theory and Experiments. Ping Li, Lin Yu, M.A. Matthews, Wissam A. Saidi, and J. Karl Johnson, *I&EC Research*, 13849-13861, **52(38)**, 2013.
65. Synthesis of Carbonyl Compounds from Alcohols Using Electrochemically Generated Superoxide Ions in RTILs, P. Sethupathy, I.M. Alnashef, J.R. Monnier, M.A. Matthews, J.W. Weidner, *Synthetic Commun*, **42**, 3632-3647, 2012.
64. Vapor phase batch hydrolysis of NaBH_4 at elevated temperature and pressure. Hong Liu, Christopher Boyd, Amy Beaird, and Michael A. Matthews. *Int. J. Hydrogen Energy*, **36(11)**, 6472-6477, 2011.
63. Hydrolysis of sodium borohydride in concentrated aqueous solution. Lin Yu and Michael A. Matthews, *Int. J. Hydrogen Energy*, **36(13)**, 7416-7422, 2011.
62. Thermal dehydration and vibrational spectra of hydrated sodium metaborates. Amy Beaird, Ping Li, Hilary Marsh, Wissam Al Saidi, Karl Johnson, Michael A. Matthews, and Christopher Williams. *I&EC Research*, **50(13)**, 7746-7753, 2011.
61. Phase equilibrium for surfactant Ls-54 in liquid CO_2 with water and solubility estimation using the Peng-Robinson equation of state. Pedro Tarafa and Michael A. Matthews, *Fluid Phase Equilibria*, **298**, 212-218, 2010.
60. Removing endotoxin from metallic biomaterials with carbon dioxide-based surfactant mixture. Pedro Tarafa, Eve Williams, Samir Panvelker, Jian Zhang, and Michael A. Matthews, *J. Supercritical Fluids*, **55**, 1052-1058, 2011.
59. Compressed carbon dioxide (CO_2) for decontamination of biomaterials and tissue scaffolds. Pedro J. Tarafa, Aidaris Jiménez, Jian Zhang, and Michael A. Matthews. *J. Supercritical Fluids*, **53**, 192-199, 2010.
58. Deliquescence in the hydrolysis of sodium borohydride by water vapor. Amy M. Beaird, Thomas A. Davis, Michael A. Matthews. *I&EC Research*, **49**, 9696-9599, 2010.
57. Hydrogen generation from chemical hydrides: A review. Eyma Y. Marrero-Alfonso, Amy Beaird, Michael A. Matthews and Thomas A. Davis. *I&EC Research*, **48(8)**, 3703-3712, 2009.
56. Evaluation of CO_2 -based cold sterilization of a model hydrogel. A. Jimenez, J. Zhang, and M.A. Matthews. *Biotech Bioeng.*, **101(6)**, 1344-1352, 2008.
55. Supercritical carbon dioxide and hydrogen peroxide cause mild changes in spore structures associated with high killing rate of *Bacillus anthracis*. Jian Zhang, Nishita Dalal, Michael A. Matthews, Lashanda N. Waller, Clint Saunders, Karen F. Fox, and Alvin Fox. *J. Microbiological Methods*, **70**, 442-451, 2007. PMID: 2084089
54. Minimizing water utilization in hydrolysis of sodium borohydride: The role of sodium metaborate hydrates. Eyma Y. Marrero-Alfonso, Joshua R. Gray, Michael A. Matthews, and Thomas A. Davis. *Int. J. Hydrogen Energy*, **32(18)**, 4723-4730, 2007.
53. Fostering an Active Learning Environment for Undergraduates: Peer-to-Peer Interactions in a Research Group. Christopher E. Long, Michael A. Matthews, and Nancy S. Thompson. *Chem. Eng. Education*, 41(3), 202-208, 2007.
52. Hydrolysis of Sodium Borohydride with Steam. Eyma Y. Marrero-Alfonso, Joshua R. Gray, Michael A. Matthews, and Thomas A. Davis. *Int. J. Hydrogen Energy*, **32(18)**, 4717-4722, 2007

51. Compatibility of Medical-Grade Polymers with Dense CO₂. Jiménez A, Thompson G L, Matthews M A, Davis T A, Crocker K, Lyons J S Trapotsis A. *J. Supercritical Fluids*, **42**, 366-372, 2007. PMCID:
50. Sterilization of bacterial spores using supercritical carbon dioxide and hydrogen peroxide. J.D. Hemmer, M.D. Drews, M. LaBerge, and M.A. Matthews, *J. Biomed. Mater. Res. B: Applied Biomaterials*, **80B(2)**, 511-518, 2007. PMC Journal-In Progress
49. Sterilizing *Bacillus pumilus* spores using supercritical carbon dioxide. Jian Zhang, Sarah Burrows, Courtney Gleason, Michael A. Matthews, Michael J. Drews, Martine LaBerge, Yuehuei H. An. *J. Microbiological Methods*, **66(3)**, 479-485, 2006.
48. Biocompatibility of supercritical CO₂-treated titanium implants in a rat model. C.M. Hill, Q.K. Wang, Q.K., A. Jimenez, C. Wahl, M. Laberge, M.D. Drews, M.A. Matthews, Y.H. An. *Int. J. Artificial Organs*, **29(4)**, 430-433, 2006.
47. On the mechanisms of deactivation of *B. atrophaeus* spores using supercritical carbon dioxide. J. Zhang, N. Dalal, C. Gleason, M.A. Matthews, L. Waller, K. Fox, A. Fox, M. Drews, M. Laberge, and Y. An. *J. Supercritical Fluids*, **38(2)**, 268-273, 2006.
46. Sterilization using high-pressure carbon dioxide-A review. J. Zhang, T.A. Davis., M.A. Matthews, M.J. Drews, M. LaBerge, and Y. H. An. *J. Supercritical Fluids*, **38(3)**, 354-372 , 2006.
45. Effects of sterilization on implant mechanical property and biocompatibility—A concise review. Y.H. An, F.I. Alvi, Q. Kang, M.J. Drews, M. LaBerge, J. Zhang, M.A. Matthews, and C.R. Arciola. *Int. J. Artificial Organs*. **28**, 1126-1137, 2005.
44. Characterizing Discourse Among Undergraduate Researchers in an Inquiry-Based Community of Practice. L. Donath, R. Spray, N.S. Thompson, E.M. Alford, N. Craig, and M.A. Matthews. *J. Engineering Education*, **94(4)**, 403-417, 2005.
43. Integrating Undergraduate Research into Engineering Education: A Communications Approach to Holistic Education. N.S. Thompson, E.M. Alford, R. Johnson, C. Liao, and M.A. Matthews. *J. Engineering Education*, **94(3)**, 2005.
42. Identification of marker proteins for *B. anthracis* using MALDI-TOF MS and ion trap MS-MS after direct extraction of electrophoretic separation. M.J. Stump, G. Black, A. Fox, K.F. Fox, C.E. Turick, and M.A. Matthews. *J. Separation Science*, **28(14)**, 1642-1647, 2005.
41. Diffusion coefficients of methyl orange in dense carbon dioxide with the micelle-forming surfactant Dehypon LS-54. J.M. Becnel and M.A. Matthews. *J. Chem. Eng. Data*, **48(6)**, 1413-1417, 2003.
40. Equilibrium and kinetics properties of p-dichlorobenzene and toluene on silica gel in dense CO₂ by chromatography analysis. X. Yang and M.A. Matthews. *Chem. Eng. J.*, **93**, 163-172, 2003.
39. Supercritical fluid process for removal of polychlorinated biphenyl from DOE job control waste. J. Li, T.A. Davis, and M.A. Matthews. *Environmental Progress*, **22(1)**, 7-13, 2003.
38. Supercritical fluid extraction of 1,2,4-trichlorobenzene from job control waste. J. Li, T. Davis, and M.A. Matthews. *Sep. Science Tech.*, **38(12-13)**, 2979-2993, 2003.
37. Superoxide electrochemistry in an ionic liquid. I.M. AlNashef, M.L. Leonard, M.A. Matthews, and J.W. Weidner. *I&EC Research*, **41 (18)**, 4475-4478, 2002.
36. Green electrochemistry: Opportunities and challenges. M.A. Matthews. *Pure Appl. Chem.*, **73(8)**, 1305-1308, 2001.
35. Electrochemical generation of superoxide in ionic liquids. I. M. AlNashef, M.L. Leonard, M.C. Kittle, M.A. Matthews, and J.W. Weidner. *Electrochemical and Solid State Letters*, **4(11)**, D16-D18, 2001.
34. Role of attractive forces in self-diffusion and mutual diffusion in dense simple fluids and real substances. J.V. de Oliveira, F.W. Tavares, X.N. Yang, L.A.F. Coelho, and M.A. Matthews. *Fluid Phase Equilibria* , **194-197**, pp. 1131-1140, 2002.

33. Prevention of photoresist pattern collapse by using liquid carbon dioxide. Y. Jincao and M.A. Matthews. *I&EC Research*, **40(4)**, 5858-5860, 2001.
32. Diffusion of chelating agents in CO₂ and a predictive approach for diffusion coefficients. X. Yang and M.A. Matthews. *J. Chem. Eng. Data*, **46**, 588-595, 2001.
31. Effect of pressure on the static forces of particulate removal. J. Becnel and M. A. Matthews. *I&EC Research*, **39(12)**, 4481-4486, 2000.
30. Diffusion of organic solutes in aqueous surfactant solutions. X. Yang and M.A. Matthews. *J. Colloid Interface Sci*, **229**, 53-61, 2000.
29. Near-critical behavior of mutual diffusion coefficients for five solutes in supercritical carbon dioxide. X. Yang, L.A.F. Coelho, and M.A. Matthews. *I&EC Research*, **39(8)**, 3059-3068, 2000.
28. Diffusion coefficients of model contaminants in dense CO₂. H. Fu and M.A. Matthews, *J. Supercritical Fluids*, **18(2)**, 141-155, 2000.
27. Production of hydrogen from chemical hydrides via hydrolysis with steam. R. Aiello, J.H. Sharp, and M.A. Matthews. *Int. J. Hydrogen Energy*, **24(12)**, 1123-1130, 1999.
26. Separation processes for recovering alloy steels from grinding sludge: Supercritical carbon dioxide extraction and aqueous cleaning. H. Fu and M.A. Matthews. *Separation Sci. Tech.*, **34 (6&7)**, 1411-1427, 1999.
25. Production of hydrogen gas from novel chemical hydrides. R. Aiello, M.A. Matthews, D.L. Reger, and J. E. Collins. *Int. J. Hydrogen Energy*, **23(12)**, 1103-1108, 1998.
24. Thermodynamic considerations of the reversible potential for the nickel electrode. M. Jain, A.L. Elmore, M.A. Matthews, and J.W. Weidner. *Electrochimica Acta*, **43 (18)**, 2649-2660, 1998.
23. Comparison between supercritical carbon dioxide extraction and aqueous surfactant washing of an oily machining waste. H. Fu and M. A. Matthews. *J. Hazardous Material*, **B67**, 197-213, 1999.
22. The thermal characterization of novel complex hydrides. J. E. Stearns, M. A. Matthews, D. L. Reger, J. E. Collins, *Int. J. Hydrogen Energy*, **23(6)**, 469-474, 1998.
21. Recycling steel from grinding swarf. H. Fu, M.A. Matthews, and L.S. Warner. *Waste Management*, **18**, 321-329, 1998.
20. Stabilization of lithium borohydride with nitrogen donor chelate ligands. D.L. Reger, J.E. Collins, M.A. Matthews, A.L. Rheingold, L. M. Liable-Sands and L.A. Guzei. *Inorganic Chemistry*, **36**, 6266, 1997.
19. Influence of adsorption on the measurement of diffusion coefficient by Taylor dispersion. B. L. Hamilton, G. Madras, and M.A. Matthews. *Int. J. Thermophysics*, **17(2)**, 373-389, 1996.
18. Tracer diffusion in systems exhibiting enhanced local composition. S.A. Winters, C. Denault, L.T. Nguyen, and M.A. Matthews. *Fluid Phase Equilibria*, **117**, 373-377, 1996.
17. Effect of beef packaging method on volatile compounds developed by roasting or microwave cooking. M.-F. King, M.A. Matthews, D.C. Rule, and R.A. Field. *J. Ag. Food Chem.*, **43**, 773-778, 1995.
16. Vapor-liquid equilibrium measurements with semi-continuous mixtures. M.A. Matthews, F. Li, B.F. Towler, and D.A. Bell. *Fluid Phase Equilibria*, **111**, 101-111, 1995.
15. An equation-of-state based reservoir model incorporating continuous-mixture thermodynamics. D. S. Chakravarty and M. A. Matthews. *Ind. Eng. Chem. Res.*, **33(8)**, 1962-1970, 1994.
14. A unit on acid rain in a high school outreach program. M. A. Matthews and J. Marsh. *Chemical Engineering Education*, **27(3)**, 210-215, 1993.
13. Isolation and identification of volatiles in raw beef with supercritical carbon dioxide extraction. M.-F. King, B. L. Hamilton, M. A. Matthews, D. C. Rule, and R. A. Field. *J. Ag. Food Chem.*, **41**, 1974-1981, 1993.
12. Measurement and modeling of phase equilibria with synthetic multicomponent mixtures. C. P. Angelos, S. Bhagwat, and M. A. Matthews. *Fluid Phase Equilibria*, **72**, 189-209, 1992.

11. Continuous-mixture VLE computations based on true boiling point distillations. H.W. Haynes, Jr. and M.A. Matthews. *Ind. Eng. Chem. Res.*, **30(8)**, 1911-1915, 1991.
10. Diffusion in supercritical mixtures: CO₂ + cosolvent + solute. S. A. Smith, V. Shenai, and M.A. Matthews. *J. Supercritical Fluids*, **3(4)**, 175-179, 1991.
9. A comparison of three models for the diffusion of oxygen in electrolyte solutions. M.T. Holtzapple, P.T. Eubank, and M.A. Matthews. *Biotech. and Bioeng.*, **34**, 964-970, 1989.
8. Application of rough hard sphere theory to diffusion in n-alkanes. C. Erkey, J.B. Rodden, M.A. Matthews, and A. Akgerman. *Int. J. Thermophys.*, **10**, 953-962, 1989.
7. Diffusion coefficients for methanol and isopropanol in water. M.A. Matthews and A. Akgerman. *J. Chem. Eng. Data*, **33**, 122-123, 1988.
6. A new method for measuring fluid densities using the Taylor dispersion experiment. M.A. Matthews and A. Akgerman. *Int. J. Thermophys.*, **8**, 363-373, 1987.
5. Diffusion coefficients for binary alkane mixtures at temperatures to 573 K and pressures to 3.5 Mpa. M.A. Matthews and A. Akgerman. *AIChE J.*, **33**, 881-885, 1987.
4. High temperature diffusion, viscosity, and density measurements in n-hexadecane. M.A. Matthews, J.B. Rodden, and A. Akgerman. *J. Chem. Eng. Data*, **32**, 317-319, 1987.
3. High temperature diffusion of hydrogen, carbon monoxide, and carbon dioxide in n-heptane, n-dodecane, and n-hexadecane. M.A. Matthews, J.B. Rodden, and A. Akgerman. *J. Chem. Eng. Data*, **32**, 319-322, 1987.
2. Hard sphere theory for correlation of tracer diffusion of gases and liquids in n-alkanes. M. A. Matthews and A. Akgerman. *J. Chem. Phys.*, **87**, 2285-2291, 1987.
1. Activation of stainless steel for CO hydrogenation. M.A. Matthews and R.G. Anthony. *Chem. Eng. Comm.*, **52**, 53-60, 1987.

Abstracts and Non-refereed Publications

36. R. Retnamma, L. Yu, C.M. Rangel, A.Q. Novais, J.K. Johnson, and M.A. Matthews. Kinetics of self-hydrolysis of concentrated sodium borohydride solutions at high temperatures. Proceedings of the AIChE Annual Meeting, 2011. Topical Conference on Energy.
36. P. Li, J.K. Johnson, A.M. Beaird, and M.A. Matthews. First-principles study of sodium borohydride for hydrogen storage. Proceedings of the AIChE Annual Meeting, 2010. Topical Conference on Energy.
35. L. Yu, A.M. Beaird, P. Li, J.K. Johnson, R. Retnamma, and M.A. Matthews. An NMR Study of sodium borohydride hydrolysis in concentrated aqueous solution. Proceedings of the AIChE Annual Meeting, 2010. Topical Conference on Energy.
34. M.A. Matthews, P. Tarafa, and A. Jimenez. Supercritical CO₂ for Disinfection and Processing of Biomaterials and Tissue Scaffolds. Proceedings of the Ninth International Symposium on Supercritical Fluids, May 20-22, 2009. Arcachon, France.
33. P. Tarafa, J. Zhang, M.A. Matthews, Processing of contaminated medical surfaces with compressed carbon dioxide: Application to medical biomaterials. Proceedings of the AIChE Annual Meeting, Salt Lake City, 2007.
32. J. R. Gray, E. Y. Marrero-Alfonso, T. A. Davis and M. A. Matthews. "Steam Hydrolysis of Chemical Hydrides: Meeting the Challenge of Hydrogen Storage". *DoD Power Sources Conference*, Philadelphia. June 2006
31. Long, C., E. Alford, J. Brader, L. Donath, R. Johnson, C. Liao, T. McGarry, M. Matthews, R. Spray, N. Thompson, and E. Vilar. The Research Communications Studio as a Tool for Developing Undergraduate Researchers in Engineering. Proceedings of the American Society for Engineering Education Annual Conference. June 2004.

30. A new sterilization method for application to orthopaedic materials. J. Zhang, C. Gleason, T.A. Davis, M.A. Matthews, and Y.H. An. *USC/PHR Orthopaedic Journal*, Vol. II, 69-74, July 2004.
29. Creating time for undergraduate research by facilitating communications. M.A. Matthews, E. Alford, N. Thompson, C. Long, and R. Spray. *Council for Undergraduate Research Quarterly*, June 2004.
28. Introducing Engineering Graduate Students to Learning Theory and Inquiry-Based Learning: A Collaborative, Interdisciplinary Approach. Alford, Elisabeth M., Nancy S. Thompson, John Brader, Beth Davidson, Sirena Hargrove-Leak, and Eric Vilar. Proceedings of the American Society for Engineering Education Annual Conference. June 2003.
27. Applications of liquid CO₂ in decontamination of semiconductor devices. M.A. Matthews. Final report to U.S. Environmental Protection Agency. December 2001.
26. Basic engineering research for D&D of R. reactor storage pond sludge: Electrokinetics, carbon dioxide extraction, and supercritical water oxidation. M.A. Matthews, T.A. Davis, D.A. Bruce, and M.C. Thies. Final report to DOE Environmental Management Science Program. April 2002.
25. Superoxide electrochemistry in environmentally friendly solvents. M.L. Leonard, I.M. AlNashef, M.A. Matthews, and J.W. Weidner. Proceedings of the 5th Green Chemistry and Engineering Conference, Washington, D.C. June 23-25, 2001.
24. Exploring the feasibility of using dense-phase carbon dioxide for sterilization. H. Kaiser, L. Warner, and M.A. Matthews. *Medical Device and Diagnostic Industry* p. 140. May 2001.
23. EPSE instructional modules: Fuel cells and engineering. R.M. La Cross and M.A. Matthews.
22. Role of attractive forces in self-diffusion and mutual diffusion in dense simple fluids and real substances. J.V. de Oliveira, F.W. Tavares, X.N. Yang, L.A.F. Coelho, and M.A. Matthews. Proceedings of ISSF 2000- The Fifth International Symposium on Supercritical Fluids, Atlanta, GA. April 10-13, 2000.
21. Application of near-critical CO₂ to cleaning of particulates from nano-devices. J. Becnel and M.A. Matthews. Proceedings of ISSF 2000- The Fifth International Symposium on Supercritical Fluids, Atlanta, GA. April 10-13, 2000.
20. Workshop on hydrogen storage and generation for medium-power and -energy applications. M.A. Matthews and P.S. Fedkiw. Final report of workshop sponsored by the U.S. Army Research Office and the CIA Office of Research and Development. Orlando, FL. April 8-10, 1997.
19. Hydrogen storage and generation for medium-power and medium-energy fuel cells. R. Aiello and M.A. Matthews. 38th Power Sources Conference, Cherry Hills, NJ. June 8-11, 1998.
18. Comparison between supercritical carbon dioxide extraction and aqueous surfactant washing for treating an oily solid waste. H. Fu and M.A. Matthews. Tenth Symposium on Separation Science and Technology for Energy Applications, Gatlinburg, TN. October 24-27, 1997.
17. Comparison between supercritical carbon dioxide extraction and aqueous surfactant washing of an oily machining waste. H. Fu and M.A. Matthews. I&EC Special Symposium on Emerging Technologies in Hazardous Waste Management VIII, American Chemical Society, Birmingham, AL. September 9-11, 1996.
16. Supercritical fluid extraction from model porous media. A.L. Elmore, H. Fu, M.A. Matthews, and K.E. Laintz. I&EC Special Symposium on Emerging Technologies in Hazardous Waste Management VII, American Chemical Society, Atlanta, GA. September 17-20, 1995.
15. Modeling the extraction of continuous mixtures from model porous media. A.L. Elmore, H. Fu, M.A. Matthews, and K.E. Laintz. I&EC Special Symposium on Emerging Technologies in Hazardous Waste Management VII, American Chemical Society, Atlanta, GA. September 17-20, 1995.
14. Effect of local composition on diffusion coefficients. S.A. Winters, C. Denault, L.T. Nguyen, and M.A. Matthews. Proceedings of the Seventh International Conference on Fluid Properties & Phase Equilibria for Chemical Process Design, Snowmass, CO. June 18-23, 1995.

13. Diffusion and adsorption in supercritical Taylor dispersion. M.A. Matthews, B.L. Hamilton, and G. Madras. Proceedings of the Third International Symposium on Supercritical Fluids, Strasbourg, France. October 1994.
12. Beef flavor chemistry. M.-F. King, M.A. Matthews, D.C. Rule, and R.A. Field. Investigation with SFE. Proceedings of the Third International Symposium on Supercritical Fluids, Strasbourg, France. October 1994.
11. Continuous thermodynamics for computational reservoir simulation. D.S. Chakravarty, M.A. Matthews, B.F. Towler, and X. Yang. Proceedings of the Seventh Enhanced Oil Recovery Symposium, Casper, WY. 1993.
10. Molecular thermodynamic models in an advanced computational framework for phase equilibria in continuous mixtures. M.A. Matthews. Final Report to Petroleum Research Fund of the American Chemical Society. September 1993.
9. Identification of flavor volatiles in beef: Effect of vacuum-packaging and microwave cooking. M.A. Matthews, D.C. Rule, and R.A. Field. Final Report to National Live Stock and Meat Board. August 1993.
8. Continuous approach optimizes vapor-liquid equilibrium calculations. K.C. Mani, H.W. Haynes, Jr., and M.A. Matthews. Oil and Gas Journal. February 15, 1993.
7. Acid rain and chemical engineering solutions. M. A. Matthews. Abstract in "What Engineers Do," published by the Women in Engineering Program Advocates Network. Susan Staffin Metz, Ed. Stevens Institute of Technology. January 1993.
6. Molecular thermodynamic models in an advanced computational framework for phase equilibria in continuous mixtures. M.A. Matthews. Annual Report to Petroleum Research Fund of the American Chemical Society. September 1992.
5. Phase equilibrium measurements and modeling in many-component mixtures. M.A. Matthews. Proceedings of the Seventh Enhanced Oil Recovery Symposium, Casper, WY. May 1-2, 1991.
4. Phase behavior of CO₂/hydrocarbon mixtures using a continuous thermodynamics approach. M.A. Matthews. Proceedings of the Fifth Enhanced Oil Recovery Symposium, Casper, WY. May 10-11, 1989.
3. Diffusivities of synthesis gas and Fischer-Tropsch products in n-alkanes. M.A. Matthews and A. Akgerman. Annual Report to DE/FE Indirect Liquefaction Contractors. December 1986.
2. A Taylor dispersion apparatus for measuring liquid phase diffusion coefficients at temperatures to 573 K and pressures to 35 Atm. M.A. Matthews, A. Agkerman. DE/FE Report, Project DE-AC-84PC70032. April 1985.
1. Measurement of liquid phase diffusion coefficients using the Taylor dispersion method. M.A. Matthews, A. Agkerman. DE/FE Report, DE-AC-84PC70032. January 1985.

PRESENTATIONS AND LECTURES

Presentations Contributed at Professional Meetings

120. Dominic Casali and Michael A. Matthews. Towards Decellularization of Tissue Matrices Using Dense-Phase Carbon Dioxide. Biomedical Engineering Society Annual Meeting, Seattle, WA. Sept. 25-28, 2013.
119. Ping Li, J. Karl Johnson, and Michael A. Matthews. First-principles Study of H₂O Adsorption on the NaBH₄(100) Surface. AIChE Annual Meeting, Pittsburgh, PA. 2012.
118. Lin Yu, Michael A. Matthews. Kinetics of Hydrolysis of Sodium Borohydride with Water Vapor. AIChE Annual Meeting, Pittsburgh, PA. 2012.
117. Hong Liu, Michael A. Matthews, Ping Li, Karl Johnson. Deliquescence Behavior of Sodium Borohydride and Steam. AIChE Annual Meeting, Minneapolis, MN. 2011.
116. R. Retnamma, L. Yu, C.M. Rangel, A.Q. Novais, J.K. Johnson, and M.A. Matthews. Kinetics of self-hydrolysis of concentrated sodium borohydride solutions at high temperatures. Proceedings of the AIChE Annual Meeting, Minneapolis, MN., 2011. Topical Conference on Energy.

115. Pedro J. Tarafa and Michael A. Matthews, Phase Equilibrium for Surfactant LS-54 in Liquid CO₂ and Solubility Estimation. AIChE Annual Meeting, Salt Lake City, UT. November 11, 2010.
114. Pedro J. Tarafa and Michael A. Matthews, Solubility of E. Coli Endotoxins and Removal from Metallic Biomaterials Using Water-in-CO₂ Mixtures. AIChE Annual Meeting, Salt Lake City, UT. November 11, 2010.
113. P. Li, J.K. Johnson, A.M. Beaird, and M.A. Matthews. First-principles study of sodium borohydride for hydrogen storage. Proceedings of the AIChE Annual Meeting, 2010. Topical Conference on Energy.
112. L. Yu, A.M. Beaird, P. Li, J.K. Johnson, R. Retnamma, and M.A. Matthews. An NMR Study of sodium borohydride hydrolysis in concentrated aqueous solution. Proceedings of the AIChE Annual Meeting, 2010. Topical Conference on Energy.
111. Amy M. Beaird, Lin Yu, and M.A. Matthews Deliquescence and Reaction Kinetics in the Steam Hydrolysis of Sodium Borohydride. AIChE 2009 Annual Meeting, Nashville TN. November 2009.
110. Aidaris Jimenez, Pedro Tarafa, Jian Zhang, and Michael A. Matthews. Supercritical CO₂ for Disinfection and Processing of Biomaterials and Tissue Scaffolds. Ninth International Symposium on Supercritical Fluids, May 20-22, 2009. Arcachon, France.
109. Eyma Y. Marrero-Alfonso, Amy Beaird, Thomas A. Davis, and Michael A. Matthews. New Insights into the Mechanism of Hydrolysis of Sodium Borohydride. AIChE 2008 Annual Meeting, Philadelphia, November 2008.
108. Eyma Y. Marrero-Alfonso, Amy Beaird, Thomas A. Davis, and Michael A. Matthews. Water Utilization in the Hydrolysis of Sodium Borohydride. Presented at "Materials Innovation in an Emerging Hydrogen Economy". American Ceramics Society, February 24-27, 2008
107. Aidaris Jimenez, Pedro J. Tarafa, Jian Zhang, Michael A. Matthews. Liquid and supercritical CO₂ for decontamination of biomedical materials. AIChE 2008 Annual Meeting, Philadelphia, November 2008.
106. P. Tarafa, J. Zhang, and Michael A. Matthews. Processing of Contaminated Metal Surfaces with Compressed Carbon Dioxide: Applications to Medical Biomaterials. AIChE 2007 Annual Meeting, Salt Lake City, November 2007.
105. A. Jimenez and Michael A. Matthews. Supercritical Carbon Dioxide and Sterilization Of Medical-Grade Polymers. AIChE 2007 Annual Meeting, Salt Lake City, November 2007.
104. [P. Sethupathy Kuppanacharry, I. Alnashef, M. Matthews, J. Monnier and J. Weidner. Kinetics of Homogeneous Reactions using Double Potential Step Chronoamperometry in Room Temperature Ionic Liquids.](#) 211th Meeting of the Electrochemical Society, Chicago IL. May 2007.
103. Elizabeth Stewart and Michael A. Matthews. Sterilization of *B. Atrophaeus* Cotton Threads and Polyester Sutures Using Supercritical Carbon Dioxide with Hydrogen Peroxide Additive. AIChE 2006 Annual Meeting, San Francisco. November 2006. (Student poster session, 2nd place).
102. Joshua R. Gray, Eyma Y. Marrero-Alfonso, Thomas A. Davis and Michael A. Matthews. Steam Hydrolysis of Chemical Hydrides: Meeting the Challenge of Hydrogen Storage. DoD Power Sources Conference, Philadelphia. June 2006.
101. Eyma Y. Marrero-Alfonso, Joshua R. Gray, Thomas A. Davis and Michael A. Matthews. Steam Hydrolysis of Chemical Hydrides. The Fourth Latin American and Caribbean Conference for Engineering and Technology, Puerto Rico. June 2006.
100. Thomas A. Davis et al. Hydrogen Production from Chemical Hydrides. Presented at the International Symposium on Materials Issues in Hydrogen Production and Storage, California. August 2006.
99. Amy M. Beaird, Joshua R. Gray, Eyma Y. Marrero-Alfonso, Michael A. Matthews and Thomas A. Davis. Characterization of the Gas Phase Hydrolysis of Sodium Borohydride. AIChE 2006 Annual Meeting, San Francisco. November 2006.

98. Joshua R. Gray, Eyma Y. Marrero-Alfonso, Amy M. Beaird, Casey Campbell, Thomas A. Davis and Michael A. Matthews. The Application of Steam Hydrolysis of Chemical Hydrides to Facilitate Hydrogen Storage and Generation. AIChE 2006 Annual Meeting, San Francisco. November 2006.
97. Eyma Y. Marrero-Alfonso, Joshua R. Gray, Amy M. Beaird, Thomas A. Davis and Michael A. Matthews. Reaction Pathways in the Gas/Solid Hydrolysis of Chemical Hydrides as a Novel Approach to Hydrogen Storage and Generation. AIChE 2006 Annual Meeting, San Francisco. November 2006.
96. Incorporating Complexity into Undergraduate Engineering Development through the Research Communications Studio. N. Craig, L. Donath, M.A. Matthews, N.S. Thompson. 4th Global Colloquium on Engineering Education, Sydney, Australia. Sept. 26-29, 2005.
95. Steam Hydrolysis of Chemical Hydrides: Meeting the Challenge of Hydrogen Storage. E.Y. Marrero-Alfonso, J.R. Gray, M.A. Matthews, T.A. Davis. 230th ACS National Meeting, Washington, DC, Aug 28-Sept 1, 2005.
94. New method for hydrolysis of chemical hydrides. E.Y. Marrero-Alfonso, J.R. Gray, T.A. Davis, and M.A. Matthews. Second International Conference on Green and Sustainable Chemistry, and Ninth Annual Green Chemistry and Engineering Conference, Washington D.C. June 20-24, 2005.
93. Kinetics of homogeneous reactions in ionic liquids using double potential step chronoamperometry. J.W. Weidner, I.M. AlNashef, and M.A. Matthews. Second International Conference on Green and Sustainable Chemistry, and Ninth Annual Green Chemistry and Engineering Conference, Washington D.C. June 20-24, 2005.
92. Effects of dense gas carbon dioxide sterilization on the mechanical properties of polymers. J. Hemmer, N. Destrube, D.R. Weinbrenner, M.J. Drews, M.A. Matthews, and M. LaBerge. Society for Biomaterials, Memphis, TN. April 37-30, 2005.
91. Compatibility of medical grade polymers with liquid carbon dioxide solvent. A. Jimenez, T.R. Thomas, T.A. Davis, M.A. Matthews, K. Crocker, J. Lyons, and A. Trapotsis. Society for Biomaterials, Memphis, TN. April 37-30, 2005.
90. Compatibility of medical grade polymers with liquid carbon dioxide solvent. A. Jimenez, G.L. Thompson, T.A. Davis, M.A. Matthews, K. Crocker, J. Lyons, and A. Trapotsis, A. International Symposium on Supercritical Fluids, Orlando, FL. May 1-5, 2005.
89. Dense carbon dioxide for medical cleaning applications: Removing *Staphylococcus aureus* from titanium surfaces. C.L. Wahl, Y.H. An, M.A. Matthews, R. Price, J. Davis, and E. Jablonka. Society for Biomaterials, Memphis, TN. April 37-30, 2005.
88. Dense carbon dioxide for medical cleaning applications: Removing *Staphylococcus aureus* from titanium surfaces. C.L. Wahl, Y.H. An, M.A. Matthews, R. Price, J. Davis, and E. Jablonka. International Symposium on Supercritical Fluids, Orlando, FL. May 1-5, 2005.
87. Mechanisms of supercritical carbon dioxide sterilization of bacterial spores. J. Zhang, C.N. Gleason, S. Burrows, N. Dalal, M.A. Matthews, A. Fox, K. Fox, R. Price, J. Davis, J., Hemmer, M. LaBerge, and M.J. Drews. International Symposium on Supercritical Fluids, Orlando, FL. May 1-5, 2005.
86. Exploring the mechanisms of dense gas carbon dioxide sterilization. J. Hemmer, D.R. Weinbrenner, M.J. Drews, M.A. Matthews, and M. LaBerge. Society for Biomaterials: Biomaterials in Regenerative Medicine: The Advent of Combination Products, Philadelphia, PA. October 16-18, 2004.
85. Dense gas CO₂ as an alternative sterilization method for vascular implant materials. D.R. Weinbrenner, S. Hequembourg, M.A. Matthews, E.M. Langan III, M. LaBerge, M. and M.J. Drews. Society for Biomaterials: Biomaterials in Regenerative Medicine: The Advent of Combination Products, Philadelphia, PA. October 16-18, 2004.
84. The Research Communications Studio as a Tool for Developing Undergraduate Researchers in Engineering. C.E. Long, E. Alford, J. Brader, L. Donath, R. Johnson, C. Liao, T. McGarry, M.A. Matthews, R. Spray, N. Thompson, and E. Vilar. American Society for Engineering Education Annual Conference. June 2004.

83. Distributed cognition and metacognition in the Research Communications Studio. M.A. Matthews, E. Alford, and N. Thompson. AIChE Annual Meeting, Austin, TX. Nov. 7-11, 2004.
82. Supercritical carbon dioxide for sterilization of biomaterials. M.A. Matthews, T.A. Davis, J. Zhang, and C. Gleason. AIChE Annual Meeting, Austin, TX. Nov. 7-11, 2004.
81. Mechanisms of high pressure carbon dioxide sterilization of bacterial spores. J. Zhang, M.A. Matthews, C. Gleason, S. Burrows, R. Price, J. Davis, N. Dalal, A. Fox, K. Fox, and L. Waller. AIChE Annual Meeting, Austin, TX. Nov. 7-11, 2004.
80. Applications of supercritical carbon dioxide for biomedical cleaning. C. Wahl, A. Jimenez, M.A. Matthews, and E. Jablonka. AIChE Annual Meeting, Austin, TX. Nov. 7-11, 2004.
79. Production of hydrogen from chemical hydrides via hydrolysis with steam. E. Y. Marrero-Alfonso, M.A. Matthews, T.A. Davis, and J. Manasco. AIChE Annual Meeting, Austin, TX. Nov. 7-11, 2004.
78. Hydrogen storage in chemical hydrides., E. Marrero-Alfonso, M.A. Matthews, and T.A. Davis. ACS Annual Meeting, Philadelphia, PA. August 22-26, 2004.
77. Kinetics of homogeneous reactions in ionic liquids. M.A. Matthews, I.M. AlNashef, and J. W. Weidner. ACS Annual Meeting, Anaheim, CA. March 28-April 1, 2004.
76. A novel electrochemical reactor utilizing ionic liquids. M.A. Matthews, I.M. Al-Nashef, and J.W. Weidner. AIChE Annual Meeting, San Francisco. November 16-21, 2003.
75. Undergraduate research: Enhancing education with the research communications studio. M.A. Matthews, E. Alford, N. Thompson, and C.T. Williams. AIChE Annual Meeting, San Francisco. November 16-21, 2003.
74. A fiber optic spectrometer for analytical chemistry in ionic liquids. J.N. Pressley and M.A. Matthews. AIChE Annual Meeting, San Francisco. November 16-21, 2003.
73. Correlating solid solubility in pure or cosolvent-modified supercritical carbon dioxide using regular solution theory. J. Li, J. Zhang, and M.A. Matthews. AIChE Annual Meeting, San Francisco. November 16-21, 2003.
72. Electrochemical synthesis in ionic liquids. M.A. Matthews, I.M. AlNashef, and J.W. Weidner. AIChE Annual Meeting, San Francisco. November 16-21, 2003.
71. Sterilization of bacterial spores with high density carbon dioxide. J. Zhang, T.R. Thomas, M.A. Matthews, and T.A. Davis. AIChE Annual Meeting, San Francisco. November 16-21, 2003.
70. Dense carbon dioxide for cleaning biomaterials. J. Li, G.L. Thompson, M.A. Matthews, T.A. Davis, and L. Broadney. AIChE Annual Meeting, San Francisco. November 16-21, 2003.
69. Electrochemically generated superoxide in ionic liquids: Applications to Green Chemistry. I.M. AlNashef, M.A. Matthews, and J.W. Weidner. 226th ACS National Meeting, New York. September 2003.
68. Solubility model based on regular solution theory for correlating solid solubility in supercritical carbon dioxide. J. Li and M.A. Matthews. AIChE Spring Meeting, New Orleans. March 30-April 3, 2003.
67. Fuel cells, hydrogen power, and sustainable energy. M.A. Matthews, L. Hutahaen, T. Davis, and J. Weidner. ACS Spring Meeting, New Orleans. March 23-28, 2003.
66. Steam hydrolysis of classical chemical hydrides for hydrogen generation. M.A. Matthews, J. Sharp, and T. Davis. ACS Spring Meeting, New Orleans. March 23-28, 2003.
65. Technical and economic feasibility of a novel, low-energy sterilization process. M.A. Matthews, J. Zhang, J. Li, H. Kaiser, G.L. Thomson, T. Thomas, T. Davis. ACS Spring Meeting, New Orleans. March 23-28, 2003.
64. Fundamentals of Fixed Bed Adsorption Processes: Analysis of Adsorption Breakthrough and Desorption Elution Curves. J.M. Becnel, C.E. Holland, J. McIntyre, M.A. Matthews, and J.A. Ritter. Proceedings of the 2002 American Society for Engineering Education Annual Conference.
63. Electrochemically generated superoxide ion in ionic liquids: Application to Green Chemistry. M. A. Matthews, J. W. Weidner, and I. M. AlNashef. ACS Fall Meeting, Boston. August 18 - 22, 2002.

62. Selected chemical reactions for the electrochemically generated superoxide ion in room temperature ionic liquids. M.A. Matthews, J.W. Weidner, and I.M. AlNashef. AIChE Annual Meeting, Indianapolis, IN. Nov 3-8, 2002.
61. Applications of the electrochemically generated superoxide ion in room temperature ionic liquids. J.W. Weidner, M.A. Matthews, and I.M. AlNashef. Spring National AIChE Meeting, New Orleans. March 2002.
60. Novel process for treatment of PCB-contaminated MLLW: Part 2. Analysis of process options. J. Li, H.M. McWilliams, T.A. Davis, and M.A. Matthews. Spring ACS Meeting, Orlando, FL. April 2002.
59. Novel process for treatment of PCB-contaminated MLLW: Part 1. Supercritical CO₂ extraction of model compounds from job control waste. J. Li and M.A. Matthews. Spring ACS Meeting, Orlando, FL. April 2002.
58. Electrochemically generated superoxide ion in ionic liquids: Applications to Green Chemistry. I.M. AlNashef, M.A. Matthews, and J.W. Weidner. Spring ACS Meeting, Orlando, FL. April 2002.
57. Development of an ultraviolet fiber optic spectrometer detection system for monitoring supercritical carbon dioxide extraction press. H.M. McWilliams and M.A. Matthews. Spring ACS Meeting, Orlando, FL. April 2002.
56. Applications for electrochemically generated superoxide ion in room temperature ionic liquids. I.M. AlNashef, J.W. Weidner, and M.A. Matthews. AIChE National Meeting, New Orleans. March 10-14, 2002.
55. Electrochemical generation of superoxide in ionic liquids: Potential for sustainable chemical synthesis. I.M. AlNashef, J.W. Weidner, and M.A. Matthews. AIChE Annual Meeting, Reno, NV. November 2001.
54. Micron-scale particle removal in dense phase carbon dioxide. J. Becnel and M.A. Matthews. AIChE Annual Meeting, Reno, NV. November 2001.
53. Superoxide electrochemistry in environmentally friendly solvents. M.L. Leonard, L. T. Johnson, I. M. Alnashef, M.A. Matthews, and J.W. Weidner. 5th Annual Green Chemistry and Engineering Conference, Washington, D.C. June 26-28, 2001.
52. Supercritical CO₂ extraction of PCBs from DOE job control wastes. J. Li and M.A. Matthews. DOE Efficient Separations Conference, Gatlinburg, TN. October 2001.
51. Supercritical fluid extraction of 1,2,4-trichlorobenzene from job control waste. J. Li, T.A. Davis, and M.A. Matthews. 222nd ACS National Meeting, Chicago, IL. August 26-30, 2001.
50. Extraction and oxidation of PCBs from mixed low-level solid waste at DOE sites. J. Li, M.A. Matthews, J.W. Weidner, D. Bruce, M. Thies, J. Pickett, L. Oji, N. Lowry, and E. Hamilton. 222nd ACS National Meeting, Chicago, IL. August 26-30, 2001.
49. Role of attractive forces in self-diffusion and mutual diffusion in dense simple fluids and real substances. J. V. de Oliveira, F. W. Tavares, X. N. Yang, L.A. F. Coelho, and M. A. Matthews. Ninth International Conference on Properties and Phase Equilibria for Product and Process Design, Kurashiki, Japan. May 20-25, 2001.
48. Superoxide electrochemistry in ionic liquids. M.L. Leonard, M.C. Kittle, M.A. Matthews, and J.W. Weidner. 221st ACS National Meeting, San Diego, CA. April 2001.
47. Electrochemical reactions in supercritical carbon dioxide. J.W. Weidner, M.L. Leonard, and M.A. Matthews. 51st Annual Meeting of the International Society of Electrochemistry, Warsaw, Poland. September 4-8, 2000.
46. Prevention of photoresist pattern collapse by using liquid carbon dioxide. J. Ye and M.A. Matthews. 220th ACS National Meeting, Washington, DC. August 20-28, 2000.
45. Supercritical CO₂ extraction of chlorinated aromatics from job control waste. L. Jun and M.A. Matthews. 220th ACS National Meeting, Washington, D.C. August 20-24, 2000.
44. Decontamination and decommissioning of PCB wastes at DOE sites. M.A. Matthews, J.W. Weidner, R.E. White, M.C. Thies, D.A. Bruce, and E.A. Hamilton. DOE/EMSP National Workshop, Atlanta, GA. April 23-27, 2000.

43. Effect of pressure on the static forces of particulate adhesion. J. Becnel and M.A. Matthews. ISSF 2000-The Fifth International Symposium on Supercritical Fluids, Atlanta, GA. April 10-13, 2000.
42. Electrochemical reactions in supercritical carbon dioxide. M.A. Matthews, M.L. Leonard, J.W. Weidner, and R.E. White. United Engineering Foundation Symposium on Supercritical Fluids in Materials Processing and Synthesis, Davos, Switzerland. September 26-October 1, 1999.
41. Realizing the environmental benefits of supercritical fluids: Opportunities and challenges. M.A. Matthews and L.S. Warner. AIChE Annual Meeting, Dallas, TX. October 31-November 5, 1999.
40. Experimental and molecular dynamics studies of the anomalous behavior of the mutual diffusion coefficient near the critical point. X. Yang, L.A. F. Coelho, P.B. Balbuena, and M.A. Matthews. AIChE Annual Meeting, Dallas, TX. October 31-November 5, 1999.
39. Mutual diffusion coefficients for five solutes in carbon dioxide near the critical point. X. Yang, L.A. F. Coelho, and M.A. Matthews. AIChE Annual Meeting, Dallas, TX. October 31-November 5, 1999.
38. Diffusion coefficients of model organic contaminants in dense CO₂. H. Fu and M.A. Matthews. AIChE Annual Meeting, Dallas, TX. October 31-November 5, 1999.
37. Teaching chemical manufacturing: An integrated set of laboratory experiments on synthesis and characterization of poly (methyl methacrylate). M. Vougo-Zanda, J.L. Dennis, and M.A. Matthews. Meeting of the ASCE Southeastern Section, Clemson University, SC. April 11-13, 1999.
36. Diffusion and mass transfer in dense carbon dioxide modified with selective separation agents. J. Becnel, H. Fu, and M.A. Matthews. 1998 AIChE Annual Meeting, Miami Beach, FL. November 15-20, 1998.
35. Two processes for removing oily contaminants from porous solid matrix: Dense phase carbon dioxide cleaning and aqueous cleaning. H. Fu, M.A. Matthews. Second Annual Green Chemistry and Engineering Conference, Washington, D.C. June 30-July 2, 1998.
34. Hydrogen storage and generation for medium-power and medium-energy fuel cells. R. Aiello and M.A. Matthews. 38th Power Sources Conference, Cherry Hills, NJ. June 8-11, 1998.
33. Recycling an oily machining waste using either supercritical carbon dioxide extraction or aqueous surfactant washing. H. Fu and M.A. Matthews. AIChE Annual Meeting, Los Angeles, CA. November 1997.
32. Hydrogen extraction from the reaction of sodium borohydride and steam. J. Sharp and M.A. Matthews. AIChE Annual Meeting, Los Angeles, CA. November 1997.
31. Comparison between supercritical carbon dioxide extraction and aqueous surfactant washing for treating an oily solid waste. H. Fu and M.A. Matthews. Tenth Symposium on Separation Science and Technology for Energy Applications, Gatlinburg, TN. October 24-27, 1997.
30. Comparison between supercritical carbon dioxide extraction and aqueous surfactant washing of an oily machining waste. H. Fu and M.A. Matthews. SC Environmental Law and Technology Conference, Greenville, SC. May 28-30, 1997.
29. Novel hydrides for chemical storage of hydrogen. R. Aiello, J.E. Stearns, M.A. Matthews, D.L. Reger, and J.E. Collins. 191st meeting, Electrochemical Society, Montreal, Canada. May 4-9, 1997.
28. Study of chemical interactions in supercritical fluid extraction of contaminants from model porous media. A.L. Elmore, H. Fu, and M.A. Matthews. AIChE Annual Meeting, Chicago, IL. November 10-15, 1996.
27. Process development for recycling an oily solid waste. H. Fu, R. Orzechowski, and M.A. Matthews. SC Environmental Symposium, Myrtle Beach, SC. October 2-4, 1996.
26. Comparison between supercritical carbon dioxide extraction and aqueous surfactant washing of an oily machining waste. H. Fu and M.A. Matthews. I&EC Special Symposium on Emerging Technologies in Hazardous Waste Management VIII. American Chemical Society, Birmingham, AL. September 9-11, 1996.
25. Recovery and recycle of alloy metals from grinding swarf. H. Fu, R. Orzechowski, A.L. Elmore, and M.A. Matthews. SC Environmental Law and Technology Conference, Greenville, SC. May 23-24, 1996.

24. Supercritical fluid extraction from model porous media. A.L. Elmore, H. Fu, and M.A. Matthews. ACS I&EC Special Symposium on Emerging Technologies in Hazardous Waste Management, Atlanta, GA. September 17-20, 1995.
23. Effect of local composition on diffusion coefficients. S.A. Winters, C. Denault, L.T. Nguyen, and M.A. Matthews. 7th International Conference on Fluid Properties and Phase Equilibrium for the Process Industries, Snowmass, CO. June 1995.
22. Diffusion and adsorption in supercritical Taylor dispersion. M.A. Matthews, B. L. Hamilton, and G. Madras. Third International Symposium on Supercritical Fluids, Strasbourg, France. October 1994.
21. Beef flavor chemistry: Investigation with SFE. M.A. Matthews, M.-F. King, D.C. Rule, and R.A. Field. Third International Symposium on Supercritical Fluids, Strasbourg, France. October 1994.
20. Phase equilibrium measurements for a semicontinuous oil. D. Chakravarti and M.A. Matthews. AIChE Annual Meeting, San Francisco, CA. November 1994.
19. Observing dynamic adsorption and desorption in supercritical carbon dioxide using the Taylor dispersion method. M.A. Matthews and B.L. Hamilton. 1993 AIChE Annual Meeting, St. Louis, MO. November 7-12, 1993.
18. A continuous thermodynamics model for multistage, miscible reservoir modeling. M.A. Matthews, D.S. Chakravarty, and B.F. Towler. AIChE Annual Meeting, St. Louis, MO. November 7-12, 1993.
17. Isolation of flavor volatiles in raw beef with supercritical carbon dioxide extraction. M.A. Matthews, M.-F. King, B.L. Hamilton, D.C. Rule, and R.A. Field. Conference of the Institute of Food Technologists, Chicago, IL. July 1993.
16. Continuous thermodynamics for computational reservoir simulation. M.A. Matthews, D.S. Chakravarty, B.F. Towler, and X. Yang. Seventh Enhanced Oil Recovery Symposium, Casper, WY. 1993.
15. Diffusion in liquid and supercritical fluid mixtures. M.A. Matthews, V.M. Shenai and B.L. Hamilton. AIChE Fall National Meeting, Los Angeles, CA. November 17-22, 1991.
14. Phase equilibria in many-component mixtures. M.A. Matthews. Seventh Wyoming EOR Symposium, Casper, WY. May 1-2, 1991.
13. Measurement and modeling of phase equilibria in polydisperse mixtures. M.A. Matthews, C.P. Angelos, S.V. Bhagwat, and H.W. Haynes, Jr. AIChE Spring National Meeting, Houston, TX. April 7-11, 1991.
12. Continuous phase equilibrium calculations for sequential equilibrium operations. M.A. Matthews, K.C. Mani and H.W. Haynes. Spring ACS Meeting, Atlanta, GA. April 14-16, 1991.
11. Diffusion in supercritical mixtures: CO₂ + co-solvent + solute. M.A. Matthews, V. Shenai and S.A. Smith. AIChE Spring National Meeting, Orlando, FL. March 18-22, 1990.
10. Phase behavior of CO₂/hydrocarbon mixtures using a continuous thermodynamics approach. M.A. Matthews. Fifth Wyoming Enhanced Oil Recovery Symposium, Casper, WY. May 10-11, 1989.

Contributed from Texas A&M University

9. Application of rough hard sphere theory to diffusion in n-alkanes. M.A. Matthews, C. Erkey, J.B. Rodden, and A. Akgerman. Tenth Symposium on Thermophysical Properties, Gaithersburg, MD. June 20-23, 1988.
8. A new method for measuring fluid densities using the Taylor dispersion experiment. M.A. Matthews, D. Balister and A. Akgerman. AIChE National Meeting, Houston, TX. March 29-April 2, 1987.
7. Parameter estimation from Taylor dispersion. M.A. Matthews and A. Akgerman. AIChE National Meeting, Houston, TX. March 29-April 2, 1987.
6. Diffusion coefficients for binary alkane mixtures at temperatures to 573 K and pressures to 3.5 MPa. M.A. Matthews and A. Akgerman. AIChE Annual Meeting, Miami Beach, FL. November 1986.

5. Diffusion coefficients for alkane solutes in the solvent heptane. M.A. Matthews and A. Akgerman. AIChE National Meeting, New Orleans. April 1986.
4. Diffusivities of synthesis gas and Fischer-Tropsch products in slurry media. A. Akgerman and M.A. Matthews. DE/FE Indirect Liquefaction Contractors' Review Meeting, Houston, TX. December 1986.
3. Reaction of methanol to hydrocarbons on silicalite and comparison with ZSM-5. M.A. Matthews and R.G. Anthony. Industry/University Cooperative Chemistry Program, Texas A&M University. April 1984.
2. Mechanism and kinetics of methanol conversion to hydrocarbons. M.A. Matthews, K.W. McLaughlin, and R.G. Anthony. ACS Spring Meeting, Atlanta. April 1984.
1. Kinetic models for methanol synthesis from kinetic data. M.A. Matthews, K.W. McLaughlin, and R.G. Anthony. International Workshop on Kinetic Model Development, AIChE National Meeting, Denver. August 1983.

Invited Seminars and Lectures

41. Michael A. Matthews. Supercritical and Liquid Carbon Dioxide for Biomedical Applications. 247th ACS meeting, Dallas, TX, March 16-19, 2014.
40. Michael A. Matthews, Lin Yu, Rajasree Retnamma, Augusto Q. Novais, Carmen M. Rangel. Modeling the Kinetics of Sodium Borohydride Hydrolysis in Concentrated Aqueous Solutions. 245th ACS meeting, New Orleans, LA, April 7-11, 2013.
39. Christopher E. Long, Michael A. Matthews, and Nancy S. Thompson. Fostering Active Learning and Peer-to-Peer Interactions Among Undergraduates. Invited for "Best Papers, AIChE Educational Division." AIChE Annual Meeting, Pittsburgh, PA. 2012.
38. Hydrogen storage in chemical hydrides: A convoluted engineering challenge. Invited speaker for 246th Meeting of the American Chemical Society, Symposium in Honor of ACS Fellows, Industrial and Engineering Chemistry Division. Sept. 8-12, 2013.
37. Invited speaker for "International Conference on Tissue Science & Engineering" (Tissue Science-2012) October 1-3, 2012. (Invitation declined).
36. Invited speaker for 2011 Low Carbon Earth Summit-2011, Dalian, China. Section HE-4: Hydrogen Production Technologies of the Forum 7-5 Hydrogen Energy (HE). (Invitation declined).
35. Invited speaker for 2012 ACS Spring National Meeting, March 25-29, San Diego, CA. Symposium on *Hydrogen Production and Application*. (Invitation declined).
34. Invited speaker for 2012 World Hydrogen Energy Conference (WHEC) June 3-7, 2012, Toronto, Canada. Session on *Hydrogen Storage Materials and Systems* (invitation declined).
33. New Insights into the Mechanism of Hydrolysis of Sodium Borohydride. University of Pittsburgh, October 1, 2010.
32. New Insights into the Mechanism of Hydrolysis of Sodium Borohydride. University of Trento, June 28, 2010.
31. Compressed CO₂ for Biomedical Applications: Sterilization, Disinfection and Endotoxin Removal. University of Padova (Italy), June 23, 2010.
30. New Insights into the Mechanism of Hydrolysis of Sodium Borohydride. South Carolina State University, January 29, 2010.
29. New Insights into the Mechanism of Hydrolysis of Sodium Borohydride. University of Houston, December 4, 2009.
28. Development of a New Cool Sterilization Method and Application to Biomedical Materials. University of Trento (Trento, Italy) May 22, 2009.
27. Supporting Others: Students and Society. AIChE Leadership Development Conference, August GA. June 13, 2009.

26. Trends in Energy Research in the United States. Special Symposium on Energy and the Environment. Sophia University (Tokyo, Japan). March 13, 2009.
25. Developing a New Sterilization Technology: Working Between Engineering and Medicine. South Carolina State University, January 23, 2009.
23. Development of a New Cool Sterilization Method and Application to Biomedical Materials. University of Virginia Department of Orthopaedic Surgery and Biomedical Engineering, July 17, 2007.
22. Workshop on How to Mentor Undergraduate Students. SEAGEP Program videoconference, June 2006.
21. Professional Development Workshop for SEAGEP Graduate Students. Clemson University SEAGEP Mentoring Workshop, April 18, 2006.
20. Deactivation of microbial spores using compressed carbon dioxide. Toward a new sterilization technology. Department of Chemical Engineering, Virginia Polytechnic Institute and State University. February 28, 2005.
19. Developing a Bioengineering Research Partnership: Sterilization with carbon dioxide. (Invited speaker and workshop panelist). Major Research and Development Center Workshop, Louisiana Tech University, Ruston, LA. August 9-10, 2005.
18. Energy efficiency and the hydrogen economy. 2004 Gordon Conference on Green Chemistry, Roger Williams College. July 4-9, 2004.
17. Supercritical carbon dioxide technology for sterilizing and processing biomedical devices. Symposium in Honor of Professor Aydin Akgerman, Texas A&M University. November 7, 2003.
16. An innovative approach for the sterilization of biomaterials. Bioengineering and Biomedical Sciences Institute Annual Symposium, Clemson University. August 8, 2003.
15. CO₂ solvent technology: Recent developments in cleaning and sterilizing. Southwest Research Institute, San Antonio, TX. July 31, 2002.
14. Green Electrochemistry: Opportunities and challenges. CHEMRAWN XIV World Conference, Boulder, CO. June 9-13, 2001.
13. Use of carbon dioxide for sterilization and cleaning of biomaterials. University of Kansas, Department of Chemical Engineering. March 14, 2001.
12. Technical and market feasibility of using dense phase carbon dioxide for Sterilization in Hospitals. Medical University of South Carolina. November 2000.
11. Applications of dense phase CO₂ technology in South Carolina industry. University of South Carolina. March 22, 2000.
10. Fundamentals and applications of dense phase carbon dioxide technology. Roche Carolina Inc., Florence, SC. August 10, 1999.
9. Current status of hydrogen storage and generation technologies. NASA Johnson Space Center, Houston, TX. January 28, 1999.
8. Results from the workshop on hydrogen storage and generation for medium-power and -energy applications. Prospector X Workshop, Park City, UT. March 31-April 3, 1998.
7. DOE/EPSCoR Research and Human Resources Development Programs. Claflin College and SC State University. April 4, 1997.
6. Diffusion in supercritical fluids: Cosolvent effects. University of South Carolina. April 15, 1993.
5. Continuous thermodynamics for stagewise equilibrium operations. Auburn University, November 1992, Colorado School of Mines, April 2, 1992, and University of Tulsa, October 4, 1991.
4. Phase equilibria in continuous mixtures. University of Nebraska-Lincoln. September 28, 1990.

3. Application of rough hard sphere theory to diffusion in n-alkanes. Colorado State University. October 21, 1988.
2. Research in supercritical fluids at the University of Wyoming. Northwest Conference on Supercritical Fluids, Moscow, ID. April 7, 1988.
1. An experimental and theoretical study of mutual diffusion and density in n-alkane solvents. National Bureau of Standards (now the National Institute for Standards and Technology), Boulder, CO. October 27, 1987.

PROFESSIONAL SERVICE:***Membership and Service to Professional Societies:***

American Institute of Chemical Engineers

AICHE Divisions/Area Memberships: 1f (High Pressure Area), 9 (Environmental Division)
AIChE Service: Area 1f Chair, 1997-1999. National Programming Committee, 1997-1999.
Multiple sessions organized, 1987-present including Department Chairs Forum (2008-2010).

American Chemical Society

Committee on Environmental Improvement, Affiliate member, 2012-present.
Editorial Advisory Board, *Industrial & Engineering Chemistry Research*, 2008-2010
Division & subdivision membership: Industrial & Engineering Chemistry Division; Green Chemistry & Engineering Subdivision
Offices held: GC&E Subdivision Chair, 1999-2004. I&EC Division chair succession (2006-2008)
Session organizer, Ninth Annual Green Chemistry & Engineering Conference/ 2nd International Conference on Green & Sustainable Chemistry, Washington DC June 2005.
IEC Centennial Planning Committee (with W. Flank and M. Abraham), 2006-2008

Department of Energy

DOE Service: National Programming Committee, Environmental Management Science Program
National Workshop, April 2000. Human Resources Development Coordinator, State of South Carolina
DOE/EPSCoR Research Cluster, 1/97 to 8/01.

Department of Defense

DoD Service: Workshop Chairman and Conference Organizer, Army Research Office Workshop on Hydrogen Storage and Generation, 1997.

Book Reviews

American Chemical Society; Oxford University Press; Taylor & Francis; Prentice Hall

Proposal Reviews

National Institutes of Health GO (ARRA) grants, September 2009.

National Institutes of Health/Special Emphasis Panel for Orthopedics SBIR/STTR, July 2009, November 2008, February 2008, July 2006 and July 2003.

National Institutes of Health/NIAMS. Special panel reviewing Centers of Research Translation, December 2005.

National Institutes of Health. Special emphasis panel on SBIRs for biotechnology and bioterrorism (2004).

American Chemical Society/Environmental Protection Agency Green Chemistry Challenge Awards.

National Science Foundation, including ILI and CCLD panel reviews.

Environmental Protection Agency, including SBIR panel review.

Department of Energy, including University Coal Research panel review.

U.S. Civilian Research & Development Foundation

Villanova University

Petroleum Research Fund of the American Chemical Society

Air Force Office of Scientific Research

Natural Sciences and Engineering Research Council of Canada

Journal Reviews

Catalysis Today
Applied Surface Science
Science
Industrial & Engineering Chemistry Research
AIChE Journal
Fluid Phase Equilibria
Journal of Colloid and Interface Science
International Journal of Thermophysics
Journal of Non-Crystalline Solids
Journal of Chromatography A
Journal of Supercritical Fluids
Journal of Chemical and Engineering Data
Separation Science and Technology
Canadian Journal of Chemical Engineering
Journal of Chemical and Engineering Data
Journal of Agricultural and Food Chemistry
International Journal of Hydrogen Energy
Journal of the Electrochemical Society
Journal of Power Sources
Catalysis Communications
Applied Catalysis A.
Chemical Engineering Science
Chemical Engineering Education
Chemical Engineering Communications
Journal of Biomedical Materials Research B
Journal of Microbiological Methods
Journal of Cluster Science

UNIVERSITY, COLLEGE, AND DEPARTMENT SERVICE

Member, Savannah River National Laboratory Collaboration Steering Committee, 11/2013-
Member, University Intellectual Property Committee, 9/2013-
Member, National Science Foundation Graduate Research Fellowships Committee, 9/2010-
Campus representative to the National GEM Consortium, August 2011-
Member, USC Graduate School Ad Hoc committee on student recruitment, October 2012-
Member, USC Committee on Conflict of Interest, October 2012-
Chair, Search Committee for Chair of the Department of Electrical Engineering, February 2012-May 2012.

Co-chair, Search Committee for Chair of the Department of Computer Science and Engineering, September 2009-May 2010.

Faculty co-Chair, USC Carolina Core (General Education) Committee, February 2009-May 2011.

Member, COEIT Dean Search Committee, June 2005-May 2006

Member, Scientific Advisory Committee of Claflin University College of Natural Sciences and Math, 2004-present.

Chair, Department Tenure and Promotion Committee, August 2003-May 2006

Member, University Environmental Advisory Committee, August 2003-May 2008. Co-chair of this committee, September 2006-May 2007.

Member, Biomedical Research Infrastructure Steering Committee, and chair, Working Group on Developmental Biology and Bioengineering, May 2003-May 2005.

Member, Search Committee for Chair of the Department of Mechanical Engineering, October 2003-June 2005.

Member, Chemical Engineering Department Faculty Search Committee, 2003-2004 and prior years also.

Department Representative, USC United Way Campaign, 2003-2004.

Department Representative and Speaker, USC Scholars Day, April 2008, March 2004, March 2006, March 2007.

Judge, Region II Science Fair, 2005, 2003, 2001, 1999

Tenure and promotion referee: Clemson University, University of Nebraska-Lincoln, Oregon State University

Mentor, USC African-American Professors Program, 1998-2003.

HISTORY OF FUNDING FOR RESEARCH AND EDUCATION

Federal, competitive funding \$4,866,720 (70, 69, 68, 61, 55, 51, 50, 47, 40, 39, 36, 33, 28, 27, 22, 20, 15, 3)

External equipment grants & donations \$628,961 (45, 26, 17)

NSF EPSCoR & NIH IDEA/INBRE for research & education \$812,331 (44, 29, 23, 16, 5, 4)

NSF EPSCoR & NIH IDEA/INBRE in administrative role \$4,085,195 (69, 65, 58, 52, 35)

Industry \$172,916 (63, 57, 48, 41, 37, 25, 19, 6, 2)

Internal & local \$479,579 (67, 66, 64, 62, 60, 59, 53, 46, 43, 38, 34, 32, 31, 30, 21, 18, 14, 13, 12, 11, 10, 9, 8, 7, 1)

Federal Earmark \$897,821 (54, 49, 42, 24)

SC Research Centers of Economic Excellence/Industry, \$10,000,000 (56)

70. SC INBRE Project-College of Engineering and Computing. \$451,222 (cumulative, 5 years). M.A. Matthews, P.I. U.S National Institutes of Health, via the SC EPSCoR/IDEA Office. First Award 9/2005.

69. SC IDEA Network of Biomedical Research Excellence (Alterations and Renovations). M.A. Matthews, P.I. \$218,616. U.S. National Institutes of Health, via the SC EPSCoR/IDEA Office. Awarded 9/2009.

68. Abatement of Indoor Allergens that Exacerbate Asthma. \$29,406. M.A. Matthews, P.I. U.S. National Institutes of Health (NIEHS) via subcontract from CarboNix LLC. Awarded Jan 2011.

67. Interactions of Collagen Matrix Materials with Near- and Supercritical Solvents. \$14,579. M.A. Matthews. USC Office of the Vice President for Research. Awarded May 2013.

66. Fuel Cell Challenge: Sodium Borohydride Canister Characterization. \$25,000. M.A. Matthews, P.I. USC-Columbia Fuel Cell Collaborative. Awarded January, 2013.

65. National GEM Consortium Network at the University of South Carolina. \$8,750. SC EPSCoR-IDEA Office. M.A. Matthews, PI. Awarded 9/1013.

64. Trulite Product Testing. \$47,629. M.A. Matthews, P.I. U.S. Department of Housing and Urban Development, via Engenuity SC. Awarded July 2013.

63. Evaluation of Case Medical Disinfection Protocol. \$5,117. M.A. Matthews, P.I. Case Medical, Inc. Awarded 12/2011.

62. MGS: Vapor Hydrolysis of NaBH₄ at Elevated Pressure. \$3,000 for Chris Boyd. USC Office of Research/Magellan Scholars Program. M.A. Matthews, PI. Awarded 1/10.

61. GOALI: Collaborative Research: Phase Behavior and Reactivity of a Strongly Hygroscopic System. Submitted September 2007. Michael A. Matthews, PI. NSF, \$335,694/3 years.

60. Cold Sterilization of Scaffolds for Tissue Engineering. SC EPSCoR/IDEA Program Competitive Centers Development Grant. \$20,000. M.A. Matthews, (PI). Awarded November 2007.

59. MGS: Math Modeling of Vapor NaBH₄ Hydrolysis Reactor System. \$3,000 for Casey Campbell. USC Office of Research/Magellan Scholars Program. M.A. Matthews, PI. Awarded 8/07.

58. INBRE Target Faculty in Engineering. NIH/NCRR and SC EPSCoR/IDEA Program. \$451,222. M.A. Matthews, (PI). 5/04-9/09.

57. Pegasus Biologics. Material Testing for Pegasus Biologics Wound Dressing Product. \$3,720. Michael A. Matthews, PI. 7/30-12/31/2007.

56. South Carolina Commission on Higher Education. Center of Economic Excellence in Rehabilitation and Reconstruction Sciences. \$10,000,000. M.A. Matthews, PI. L Durstine and J.L. Vena, co-PIs. Submitted October 2006. Awarded May 2007.

55. NSF SBIR Phase 1, Subcontract from Millennium Cell Inc. \$30,000. Michael A. Matthews. July-December 2006.

54. DOE. Clean Energy Program Part II. \$195,000. Michael A. Matthews, Project 3 P.I. Ralph E. White, Program PI (total project \$2M). Start date 12/15/2005
53. USC Graduate School. Graduate Faculty Fellow. Professional Development Graduate Seminar. \$5,000. M.A. Matthews, PI. Funded September 2005.
52. NSF EPSCoR Research Infrastructure Improvement Program. Biological Engineering Program. \$2,302,966. M.D. Amiridis, PI. M.A. Matthews, A. Bayoumi, co-PIs. Submitted 7/19/2004. Funded June 2005.
51. NSF. Effect of Structure of Room Temperature of Ionic Liquids on Organic Reactions Involving Electrochemically Generated Superoxide Ion. \$459,359. 4/15/2005 to 4/14/2008. J.W. Weidner, PI. M.A. Matthews, co-PI.
50. NSF Engineering Education and Centers. Enhanced Learning in Undergraduate Engineering: A Research Communications Studio Model. Supplement for \$63,000 for the period August 2005-May 2006. See project 39 below for details on the parent grant. M.A. Matthews, PI. N. Thompson, co-PI. 8/15/02-8/15/06. Funded June 2005.
49. Department of Energy. Clean Energy Research. Hydrogen Production by Steam Hydrolysis of Chemical Hydrides. \$365,000. Michael A. Matthews, Task 3 PI. (Ralph E. White, Program PI, \$2M total budget) 7/1/2004-12/31/2005.
48. DaimlerChrysler. Phase I of Research on Powder Sodium Borohydride. \$13,729. Michael A. Matthews, PI. 9/1/2003-12/31/2004.
47. NIH/NIBIB. Research Supplement for Underrepresented Minorities. \$52,218. Michael A. Matthews, PI. Aidaris Jimenez, trainee. Supplement to R01 EB 055201 (proposal # 40, below). 5/15/2004-7/14/2005.
46. USC Vice President for Research. Differential Scanning Calorimeter and Thermogravimetric Analyzer. \$15,000. Michael A. Matthews, PI. 1/1/04-12/31/04.
45. NIH NCRR Shared Instrument Grant. Zeiss LSM 510 META for the USC School of Medicine. \$417,894. R.L. Price, PI. M.A. Matthews, co-PI (one of 10). 4/10/04-3/31/05.
44. South Carolina BRIN/EPSCoR Program. Biomedical Industry Student Traineeships. \$20,000. M.A. Matthews, PI. 3/1/04-6/30/04.
43. USC Vice President for Research. Phase Equilibrium Equipment for Research on Biomedical Applications of Carbon Dioxide. \$37,500. M.A. Matthews, PI. 4/4/03-6/30-04.
42. DoD. Hybrid Advanced Power Systems. Subtask: Hydrogen generation by steam hydrolysis of chemical hydrides. \$107,625. R.E. White and R.A. Dougal, PIs. M.A. Matthews, lead investigator. 5/1/03-7/21/04.
41. Consolidated Systems, Inc. Material Compatibility with Liquid CO₂. \$20,000. M.A. Matthews, PI. J. Lyons, co-PI. 12/02-5/03.
40. NIH Bioengineering Research Partnership. Novel Processing of Materials for Improved Biocompatibility. \$1,415,856. M. A. Matthews, PI. H. An (MUSC), and Martine LaBerge and M.D. Drews (Clemson), co-PIs. 1/02-1/05.
39. NSF Engineering Education and Centers. Enhanced Learning in Undergraduate Engineering: A Research Communications Studio Model. \$387,000 (including \$12,000 REU supplement). M.A. Matthews, PI. E. Alford and N. Thompson, co-PIs. 8/15/02-8/15/06.
38. South Carolina Honors College. Sustainable Chemical Engineering. Proposal for Research-Based Learning Team. \$5,000. M.A. Matthews, PI.
37. ExxonMobil Foundation. Enhancing Elementary and Secondary Science Education and Undergraduate Engineering Education: An Integrated Approach. \$15,000. J.S. Lyons, PI. M.A. Matthews, co-PI. 8/01-7/02.
36. NSF. Electrochemical Oxidation in Room Temperature Ionic Liquids. \$112,000. M.A. Matthews, PI. J.W. Weidner, co-PI. 1/01-12/02.

35. NSF. GK-12 Engineering Fellowships to Enhance Science Education in South Carolina Schools. \$1,103,641. J. Lyons and C. Ebert (College of Education), co-PIs. M.A. Matthews, Faculty Participant/Mentor. 4/01-3/04.
34. Hazardous Waste Management Research Fund. Green Engineering 101: An Industrial Outreach Program for the Dense Phase Fluids Laboratory. \$30,000. M.A. Matthews and L.S. Warner, co-PIs. 6/00-5/01.
33. U.S. EPA and IBM. Applications of Liquid CO₂ in Decontamination of Semi-Conductor Devices. \$75,000 (EPA), \$15,000 (Industry Cost-Share). 9/99-8/01. M.A. Matthews, PI.
32. Hazardous Waste Management Research Fund. Introducing an Environmentally Friendly Technology to South Carolina Industry: The International Engineering Center for Dense Phase Fluids. \$48,480. M.A. Matthews and L.S. Warner, co-PIs. 3/99-6/00.
31. Rasmussen Foundation Sustainable Universities Initiative Research Mini-grants Program. Opportunities for Introducing Dense Phase Carbon Dioxide Based Technology Into A Major University Based Hospital Complex. \$15,694. M.A. Matthews and L.S. Warner, co-PIs. 9/99-8/00.
30. Hazardous Waste Management Research Fund. Economic Factors that Bring Environmentally Friendly Technology to the Market Place: Cleaning and Coating of Materials and Devices Using Dense CO₂ Solvent. \$14,554. M.A. Matthews, L.S. Warner, and K. Karwan, co-PIs. 1/99-9/99.
29. DOE and South Carolina EPSCoR Program. Electrochemical Power Sources. Human Resources Development Program. \$400,000. M.A. Matthews, HRD Coordinator. 9/97-8/01.
28. DOE EM Science Program. Decontamination and Decommissioning of PCB Sites at DOE: Extraction, Electrokinetics, and Hydrothermal Oxidation. \$779,100. M.A. Matthews, PI. R.E. White, M.C. Thies (Clemson) and D.A. Bruce (Clemson), co-PIs. 9/98-12/01.
27. DOE/Los Alamos National Laboratory Green Chemistry Program. Graduate and Post-Graduate Research and Education. \$29,000. M.A. Matthews, PI. 1/98-12/99.
26. Hughes (Raytheon) Environmental Systems. Equipment Donation: SuperScrub Precision Cleaning Apparatus. \$200,000. M.A. Matthews, PI. 9/98.
25. Hughes (Raytheon) Environmental Systems. Graduate Research Fellowship Support. \$12,100. M.A. Matthews, PI. 1/98-12/98.
24. DOE. USC Center for Water Research and Policy. Task 11: Carbon Dioxide Technology for Decontamination, Decommissioning, and Remediation. \$230,196. M.A. Matthews, PI. 10/97-9/01.
23. DOE and South Carolina EPSCoR Program. Electrochemical Power Sources Research Cluster. Project 2, Novel Chemical Hydrides for Hydrogen Storage. \$110,000. M.A. Matthews, HRD Coordinator. M.A. Matthews and D.L. Reger, co-PIs on Task 2. 9/97-8/99.
22. Army Research Office. Workshop on Hydrogen Storage and Generation for Medium-Power and -Energy Applications. \$35,500. M.A. Matthews, PI. 12/96 to 8/97.
21. SC Department of Health and Environmental Control. Graduate Assistantship for Waste Minimization Assessment. \$3,200. M.A. Matthews, PI. 1/96 to 6/96.
20. National Science Foundation. A Laboratory Course to Teach Chemical Manufacturing. \$31,865. M.A. Matthews, PI. J.A. Ritter, F. Gadala-Maria, co-PIs. 5/96 to 4/98.
19. Analytic Power/U.S. ARO. Chemical Hydride Reactor System. \$25,000. M.A. Matthews, PI. 10/95- 1/96.
18. South Carolina Hazardous Waste Management Research Fund and various industries. Recycling Steel from Swarf, Part I. Feasibility test. \$80,000. M.A. Matthews, PI. 4/96-4/97.
17. Hoescht-Celanes Corporation. Membrane Contactor Apparatus. \$11,067. M.A. Matthews, PI. 6/95- 5/96.
16. DOE/EPSCoR. Research Cluster in Electrochemical Power Sources. Task 2. Novel Chemical Hydrides for Hydrogen Storage. \$178,188. R.E. White, Research Cluster PI and Director. M.A. Matthews and D.L. Reger, co-PIs on Task 2. 9/95- 8/97.

15. National Science Foundation. Graduate Research Traineeships in Environmentally Conscious Manufacturing. \$562,500. W.H. Peters, PI. M.A. Matthews, J. Kahn, J. A. Ritter, and C.L. Bolton, co-PIs. 9/95-8/00.
14. South Carolina Honors College. Sustainable Chemical Engineering. Proposal for Research-Based Learning Team. \$5,000. M.A. Matthews, PI.
13. Rasmussen Foundation/Sustainable Universities Research Minigrants Program. Hydrogen Fuel Cell Power as a Sustainable Resource at USC. \$10,000. T. A. Davis, PI. M. A. Matthews, co-PI. 5/01-4/02.
12. SC Research Institute. Image Analysis System for the Quantitative Study of Composite and Biomedical Surfaces. \$24,000. T.D. Papathanasiou, PI. M.A. Matthews, co-PI. 1/01.
11. USC Office of Research. Toward a Center for Biomaterials Research. \$30,000. M.A. Matthews, PI. 1/01-12/01.
10. Rasmussen Foundation/ Sustainable Universities Initiative Research Mini-grants Program. Opportunities for Introducing Dense Phase Carbon Dioxide Based Technology Into A Major University Based Hospital Complex. \$15,694. M.A. Matthews and L. Warner, co-PIs. 1/99-9/00.
9. USC Instructional Innovation Grant, the Office of the Provost. An Interdisciplinary Course in Environmentally Conscious Manufacturing. \$3,000. M.A. Matthews, C.L. Bolton, and J. Kahn, co-PIs. 6/94-12/94.
8. USC Research and Productive Scholarship Fund. Adsorption and Extraction Kinetics in Supercritical Fluid Solvents. \$2,900. M.A. Matthews, PI. 2/94.
7. USC Venture Fund. New Process Technology for Remediating Metal-Contaminated Soil. \$17,754. M.A. Matthews, PI. 1/94.
6. E.I. Dupont Co. Diffusivities in Methyl Methacrylate and Oligomers. \$9,500. M.A. Matthews, PI. 7/92-6/93.
5. National Science Foundation and Wyoming Department of Economic and Community Development. Experimental Evaluation and Correlation of Interchange Coefficients in Fluidized Beds. \$47,775. M.A. Matthews, H.W. Haynes, co-PIs. 3/92-2/93.
4. National Science Foundation and Wyoming Department of Economic and Community Development. Characterization and Molecular Thermodynamics for Mixtures of Very Many Components. \$56,368. M.A. Matthews and B.F. Towler, co-PIs. 3/92-2/93.
3. Petroleum Research Fund. Molecular Thermodynamic Models in an Advanced Computational Framework for Phase Equilibrium in Continuous Mixtures. \$18,000. M.A. Matthews, PI. 1/91-12/93.
2. National Live Stock and Meat Board. Identification of Flavor Volatiles in Beef: Effect of Vacuum Packaging and Microwave Cooking. \$68,750. M.A. Matthews, D.C. Rule, and R. Field, co-PIs. 1/91-6/93.
1. U.W. Major Equipment Committee, Engineering Faculty Development Committee. Purchase of a High Precision Pressure Transducer. \$3,595. M.A. Matthews, PI. 5/93.

STUDENTS SUPERVISION

Student Awards

Hilary Marsh (Undergraduate REU student from the University of Akron). Second place, AIChE student poster competition in the Reaction Engineering division, 2008.

Elizabeth Stewart (Undergraduate REU student from Worcester Polytechnic), Third place, AIChE student poster competition in the Food, Pharmaceutical, and Biotechnology division, 2006. NSF GRF Recipient.

Nishita Dalal (Undergraduate student). Second Place (2005) and First Place (2004) AIChE student poster competition in the Food, Pharmaceutical, and Biotechnology division. Outstanding Undergraduate Student, Department of Chemical Engineering, 2006.

Inas AlNashef (Ph.D. student, co-advised with John W. Weidner). 2004 Student Achievement Award, IEEE Division, The Electrochemical Society.

Sarah Burrows (Undergraduate student). First place, 2003 AIChE student poster competition in the Food, Pharmaceutical, and Biotechnology division. Second place, 2004 USC Undergraduate Student Discovery Day competition.

Halle McWilliams (MEERM student). Outstanding Master's thesis, Physical Sciences, Math, and Engineering. USC Graduate Student Day, 2004.

Rita Aiello (Ph.D. student). Novel hydrides for chemical storage of hydrogen. First Place, Graduate Student Poster Paper. Electrochemical Society 191st Meeting, May 4-9, 1997. Montreal, Canada.

James Sharp (Undergraduate student). Steam hydrolysis of chemical hydrides to produce hydrogen. Third place, AIChE Southeastern Regional Conference Student Paper Competition, April 1997.

Tameika Johnson (Undergraduate Student). Electrochemical superoxide chemistry. First place, 1st Annual Voorhees College Research Conference, March 2001. Second Place, Southeast Regional AIChE Student Chapters Meeting, April 2001.

Post-doctoral students:

Jian Zhang, Michael Stump, Joshua Gray, Xiao-ning Yang, Ghiridhar Madras, Luiz A.F. Coelho, Mei-Fong King.

Ph.D. students graduated (and last known position)

Lin Yu (2013)

Amy Beaird (2010) Self-employed in e-commerce, Atlanta GA.

Pedro Tarafa (2010, faculty at University of Puerto Rico)

Eyma Marrero (2009, Instructor, Midlands Tech)

Aidaris Jimenez (2009, Currently mother & homemaker)

Jennifer Amos (Lecturer, Biomedical Program, University of Illinois-UC)

Jian Zhang (Engineer, Allergan Pharmaceuticals)

Rita Aiello (Engineer, Johnson-Matthey)

Hong Fu (Conoco-Phillips)

James Becnel (Engineer, Savannah River National Lab)

Li Jun (Engineer, Lexmark Corp, Kentucky)

Inas AlNashef (Faculty, King Saud University)

PhD Students In progress

Dominic Casali

Odell Glenn

M.S. Students:

Hong Liu Dec 2010

Jing Yu Dec 2010

Matthew Leonard (Evangelist)

James Stearns

Feng Li

Dwarkaprasad Chakravarti

Barry Hamilton

Karthik Mani

Vinai Shenai

Satish Bhagwat.

Master of Engineering Students

Amanda Elmore (Faculty, Tri-County Technical College)

Christa Wahl (Formulation scientist, Emerson Resources)

Master of Earth and Environmental Resources Management Students

Heinz Kaiser (SC DHEC)

Halle McWilliams (Environmental Engineer, BMW Americas)

Visiting (Diplomate) Student

Gaël Brulé (June-November 2006, from the Royal Institute of Technology, Stockholm Sweden)

USC Undergraduates Supervised

45. Shelby Raines, Analysis and sampling of indoor bio-aerosols (11/2013-; ECHE 499)

44. Katie Henderson, MRSA and other community-acquired infections (11/2013- ;ECHE 499)

43. Peter Rassolov, CarboNix intern

42. Jackie Tolomeo, CarboNix intern

41. James Foster, CarboNix Intern

41. Jeanny Nguyen, CarboNix Intern

40. Eric Frankforter, CarboNix intern

39. Eve Williams Endotoxin removal with supercritical CO₂. 1/09-5/09.

38. Christopher Boyd (Magellan Scholar; SCHC), Deliquescence phenomena in the NaBH₄/H₂O vapor/liquid/solid system. 5/08-5/11.

37. Samir Panvelker, Removal of endotoxins using compressed CO₂ technology. USC SOM Summer program, 2007.

36. Nyssa Fox, Deactivation of allergenic proteins using compressed CO₂ technology. 9/07-9/08.

35. Casey Campbell (Magellan Scholar), Steam hydrolysis of chemical hydrides, 2/06-8-06.

34. Kevin Brotherton. Steam hydrolysis of chemical hydrides. 10/05-1/06

33. Ashley Rhoderick. Steam hydrolysis of chemical hydrides. 1/05- 5/06

32. Katie Camp. Removing bacterial from biomedical surfaces with supercritical carbon dioxide. 9/03-5/04.

31. Nishita Dalal. Phase equilibrium with supercritical carbon dioxide mixtures, and application to sterilization. 9/03-9/04.
30. Sarah Burrows. Sterilization with supercritical carbon dioxide. 5/03-5/04.
29. Gary Lee Thompson. Removing endotoxins with supercritical carbon dioxide. 9/02-5/04.
28. Terra Thomas. Sterilization with supercritical carbon dioxide. 9/02-5/03.
27. Christine Schier. UV fluorescence microscopy for assessing bacterial adhesion. 1/02-5/02.
26. Andrew Strickland. High pressure view cell for supercritical carbon dioxide research. 4/02-5/03.
25. Jonathan Pressley. Electrochemistry in ionic liquids: Development of a fiber optic spectrometer. 1/02-5/03.
24. Patrick Cavin. Small business development. Co-advised with Dr. Tom Davis. 10/01-5/02.
23. Sean Rayman. Materials processing with carbon dioxide. Co-advised with Dr. Tom Davis. 3/01-5/03.
22. Rob Riggelman. Sterilization with carbon dioxide. 9/00-4/01.
21. Lisa Barnard. Extraction of polychlorinated biphenyls with carbon dioxide. 9/00-5/01.
20. Paul Rogerson. Sterile coating technology. 9/99-5/00.
18. Karen Mabry. Design of web page for research group. 6/99-5/00.
17. Jennifer Garvon Dennis. NSF ILI Grant Development and polymer cloud point determination. Utilization of dense CO₂ in manufacturing processes and potential for use in South Carolina. 5/98-5/99.
16. Bradford Shokes. Supercritical carbon dioxide extraction. 5/98-8/98.
15. Jess Jur. Design and construction of an electrochemical reactor for PCB destruction in dense carbon dioxide. Microelectronics processing with dense CO₂. 9/98-8/99.
14. Katie Dara Bartholomew. Dense CO₂ processes and clean room development. 4/99-5/01.
13. Leigh Wasserman. Development of standards-based teaching modules based on electrochemical power sources. DOE/EPSCoR HRD. 4/99-12/99.
- 12.*James Sharp. Steam hydrolysis of chemical hydrides to produce hydrogen. 9/97-5/98.
19. Tameika Johnson. Electrochemical superoxide chemistry. 5/00-5/01.
11. Gita Chakrabarti. NSF ILI grant development. 3/97-12/97.
10. Emily Williamson. Economics of CO₂ cleaning of HSS grinding swarf. Summer 1997. Apparatus for measurement of liquid-phase diffusion coefficients. 1/98-5/98.
9. Rozena Byrd. Thermal characterization of chemical hydrides. 1/96-5/97.
8. David Anderson. Process development for swarf recycling. 1/96-12/96.
7. Jerry Stamps. Process development for swarf recycling. 10/95-12/96.
6. Win Holcombe. Liquid chromatography for polymer characterization. 1/97-5/97.
5. Stacey Winters. Non-ideal solution thermodynamics and effects upon the diffusion coefficient at infinite dilution. 1/95-8/95.
4. Michael Thompson. Research and Productive Scholarship Program: Flame ionization detection for supercritical fluid extraction. 1/95-8/95.
3. James Kirlin. SCF antisolvent for treating aqueous waste streams. 5/94-1/95.
2. Christine Denault. Supercritical fluid diffusion. 5/94-7/95.
1. Lynh Nguyen. Diffusion in non-ideal liquid mixtures. 5/94-6/95.

Undergraduates Supervised at the University of Wyoming

6. Jeffrey C. Wallace, Jr. Diffusion and extraction with supercritical and ordinary solvents. 5/92-12/93.
5. Jon Cooney. Diffusion in non-ideal liquid mixtures. 5/93-8/93.
4. Katherine Hitchcock. University of Wyoming ESP/HiSTEP Outreach Project: Acid rain. 5/93-8/93.
3. Troy Gill. Continuous thermodynamics. 1/92-12/92.
2. Barry L. Hamilton. Diffusion in supercritical fluids. 5/90-5/91.
1. Scott Smith. Supercritical fluid extraction. 5/89-12/89.

Other Research Supervision

28. Summer York, SC Governor's School for Science and Mathematics, 2013. Detecting allergenic proteins that trigger asthma in indoor environments.
27. John Rosenmeyer, SC Governor's School for Science and Mathematics, 2011. Cold surface sterilization of *S. Aureus* with a cold carbon dioxide spray.
26. Dainius Gaska, Georgia Tech. Removal of endotoxin using compressed CO₂. Visiting student, summer 2008.
25. Hilary Marsh, University of Dayton. Raman spectroscopy of H₂O/NaBH₄ surface adsorption. NSF REU participant, summer 2008.
24. Michael Mojica, University of Florida. Crystallization and conductivity in NaBO₂ aqueous solutions. NSF REU participant, Summer 2007.
23. Emily Stewart, Worcester Polytechnic University. Sterilization of medical materials. NSF REU participant, Summer 2006.
22. Krystal Garringer, Iowa State University. Steam hydrolysis of chemical hydrides. NSF REU participant, Summer 2005.
21. Eric Jablonka, Syracuse University. Bacterial removal with supercritical carbon dioxide. NSF REU participant. Summer 2004.
20. Leonitia Broadney, North Carolina A&T State University. Bacterial removal with supercritical carbon dioxide. NSF REU participant. Summer 2003.
19. Alicia Sleighter, University of Maryland-Baltimore County. Sterilization with supercritical carbon dioxide. NSF REU participant. Summer 2002.
18. Rebecca Corder, University of Louisville. Electrochemistry of superoxide ion. NSF REU participant. Co-advised with Dr. John Weidner. Summer 2001.
17. Jacquelyn Tellez, New Mexico State University. Fiber optic spectrometer for detection of chlorinated aromatics. NSF REU participant. Summer 2001.
16. Cesar Torres, University of Puerto Rico. Sterilization with carbon dioxide. NSF REU participant. Summer 2001.
15. Kari Woods, University of Missouri-Rolla. Fiber optic UV spectrometer for high pressure applications. NSF REU participant. Summer 2000.
14. Pamela Garner, North Carolina A&T State University. Sterilization using dense phase carbon dioxide. NSF REU participant. Summer 2000.
13. Matthew Kittle, University of Michigan. Electrochemistry in ionic liquids. NSF REU participant. Co-advised with Dr. John Weidner. Summer 2000.
12. Adam Weaver. Diffusion in aqueous surfactant solutions. GSSM/DOE Water Center summer intern. 1999.

11. Patrick Crosby. Applications of dense phase carbon dioxide to particulate removal in mixed wastes. GSSM/DOE Water Center summer intern. 2000.
10. Ryan Ward, University of Colorado. Diffusion in SCF CO₂. NSF REU participant. Summer 1999.
9. Aaron Lazor, University of Virginia. Simulation of SCF Extraction Processes. NSF REU participant. Summer 1999.
8. James Patch, Northwestern University. Electrochemistry in dense carbon dioxide. NSF REU participant. Co-advised with Dr. John Weidner. Summer 1998.
7. Evelyn Tseng, University of Delaware. Electrochemical reactor for dense carbon dioxide. NSF REU participant. Summer 1998.
6. Miranda Lau, Michigan State University. Electrolytes for dense carbon dioxide. NSF REU participant. Summer 1998.
5. Wilson White. Determination of diffusion coefficients of chemicals in aqueous solutions. GSSM/DOE Water Center summer intern. 1998.
4. Martina Leschinski. ILI Grant Development. Summer high school student. 1997.
3. Chris Edmonds, N.C. State University. Summer intern. 1997.
2. Eric Heape. GSSM/EPSCoR summer intern. 1996.
1. Emily Williamson. GSSM/EPSCoR summer intern. 1995.

Post-B.S. Research Technicians or Visiting Students Supervised at USC

4. Courtney Gleason. Biology Research Technician. Sterilization with supercritical carbon dioxide. 9/03-8/04.
3. Luiz Coelho. Diffusion measurements in supercritical CO₂. Visiting Ph.D. student from Brazil. Co-supervised with Dr. Perla B. Balbuena. 10/98-12/99.
2. Kiki Benich. Engineering Research technician, dense phase carbon dioxide research. 9/98-3/00.
1. Ray Orzechowski. Engineering Research technician, hydrogen generation and grinding swarf recycling. 10/95-12/96.