CURRICULUM VITA
HOSSEIN TOGHIANI, Ph.D.

EDUCATION

B.S. Chemical Engineering	University of Missouri-Columbia	1977
M.S. Chemical Engineering	University of Missouri-Columbia	1980
Ph.D. Chemical Engineering	University of Missouri-Columbia	1988

EMPLOYMENT

8/94 - Present Associate Professor, Dave C. Swalm School of Chemical Engineering, Mississippi State University.
8/89 - 8/94 Assistant Professor, Department of Chemical Engineering, Mississippi State University.
3/89 - 6/89 Lecturer of Chemical Engineering, Department of Mechanical Engineering, University of Alabama in Huntsville.

PROFESSIONAL ACTIVITIES

American Institute of Chemical Engineers, Society of Plastics Engineers

AWARDS AND HONORS

Inducted into the Bagley College of Engineering ***Academy of Distinguished Teachers***, March 2007.
Selected as ***Professor of the Year*** by Chemical Engineering Seniors, 1995, 1997, 1998, 1999, 2000.
Selected as ***Outstanding Graduate Professor*** by the Chemical Engineering Graduate Student Association, 2004.
Co-author of ***1993 Outstanding Instructional Paper***, College of Engineering.

AREAS OF TEACHING AND RESEARCH SPECIALIZATION

Teaching: Dr. Toghiani has taught a variety of courses at both the graduate and undergraduate levels since arriving at Mississippi State University. Graduate courses taught include: Advanced Momentum, Heat and Mass Transfer, Advanced Chemical Engineering Thermodynamics, Advanced Transport Phenomena, Chemical Kinetics and Dynamics. Undergraduate courses taught include: Process Instrumentation and Automatic Control, Chemical Reactor Design, Chemical Engineering Thermodynamics, Engineering Materials, Unit Operations Laboratory, and Mass and Energy Balances.

Research: Dr. Toghiani is currently conducting research in the areas of graphene production and embedding nanoparticles in graphene for lithium ion battery applications; methanol and solid oxide fuel cells (MSU-Ultralife);

nanocomposites (with CAVS, Chemistry and Aerospace Engineering); carbon-based nano-materials and catalytic upgrading of pyrolysis vapor (Forest Products). Dr. Toghiani is also working on a DOD project focused on elastomer aging (CAVS). He has significant research expertise in the areas of gasification (with the Institute for Clean Energy Technology - ICET), biomass conversion (depolymerization, catalytic up-grading of bio-oil, production of gasoline from synthesis gas), microreactors for production of hydrogen and utilization in microfuel cells, recovery of lipids from sludge using supercritical fluid extraction, and biodiesel production from sewage sludge. Dr. Toghiani conducted pioneering research on the molten carbonate fuel cell for space applications for NASA during the late 70's and published the results of this work in *AIChE Journal.* Dr. Toghiani has also been involved with the Challenge X project, supervising the thesis research of Kyle Crawford, entitled "Impact of Urea Injection on NO_x Emissions for the MSU Challenge X Hybrid Electric Vehicle using a Green Fuel." More recently, Dr. Toghiani has been involved with the control of emissions from the MSU EcoCar and has also focused on cobalt and molybdenum based catalysts development for production syngas to gasoline. He has conducted research on the use of various underutilized carbon sources to produce synthesis gas including scrap tires and sawdust, pyrolysis of sawdust to produce bio-oil, production of ethanol via concentrated acid hydrolysis, and catalyst development for synthesis gas to methanol and higher alcohols in the early 1990's. Dr. Toghiani's collaboration with the Diagnostic Instrumentation and Analysis Laboratory (now ICET) led to a patent entitled "Multi-Component Process Analyzer and Controller (MPAC)." He also maintains a strong collaboration with Dr. Charles U. Pittman, Jr., (Chemistry Department) and Dr. Tom Lacy (Aerospace Engineering) at MSU in the area of nanocomposites and vapor grown carbon fiber composites, Dr. Jean-Luc Bouvard (CAVS) in the area of elastomer aging and Jilei Zhang (Forest Products) in production carbon-based nano materials.

Patents

Lindner, J.S., Toghiani, H., Hamilton, J.M., **Multi-Component Process Analyzer and Controller (MPAC)**, U.S. #6,294,764, Patent filed October 7, 1998, patent issued September 25, 2001.

Publications

81. Nouranian, S., Jang, C., Lacy, T.E., Jr., Gwaltney, S.R., Toghiani, H., Pittman, C.U., Jr., **Molecular dynamics simulations of vinyl ester resin monomer interactions with a pristine vapor-grown carbon nanofiber and their implications for composite interphase formation**, *Carbon*, 49(10), 3219-3232, (2011).
80. Liang, K., Toghiani, H., Pittman, C.U., Jr., **Synthesis, Morphology, and Viscoelastic Properties of Epoxy/Polyhedral Oligomeric Silsesquioxane (POSS)**

and Epoxy/Cyanate Ester/POSS Nanocomposites, *Journal of Inorganic and Organometallic Polymers and Materials*, 21(1),128-142, (2011).

79. Du, Y., Zhang, J., Yu, J., Lacy, T.E., Jr., Xue, Y., Toghiani, H., Horstemeyer, M.F., Pittman, C.U., Jr., **Kenaf bast fiber bundle-reinforced unsaturated polyester composites. IV: Effects of fiber loadings and aspect ratios on composite tensile properties**, *Forest Products Journal*, 60(7/8), 582-591, (2010).
78. Du, Y., Wang, C., Toghiani, H., Cai, Z., Liu, X., Zhang, J., Yan, Q., **Synthesis of carbon-encapsulated metal nanoparticles from wood char**, *Forest Products Journal*, 60(6), 527-533, (2010).
77. Du, Y., Zhang, J., Xue, Y., Lacy, T.E., Jr., Toghiani, H., Horstemeyer, M.F., Pittman, C.U., Jr., **Kenaf bast fiber bundle-reinforced unsaturated polyester composites. III: statistical strength characteristics and cost-performance analyses**, *Forest Products Journal*, 60(6), 514-521, (2010).
76. Du, Y., Zhang, J., Xue, Y., Lacy, T.E., Jr., Toghiani, H., Horstemeyer, M.F., Pittman, C.U., Jr., **Kenaf bast fiber bundle-reinforced unsaturated polyester composites. II: water resistance and composite mechanical properties improvement**, *Forest Products Journal*, 60(4), 366-372, (2010).
75. Du, Y., Zhang, J., Xue, Y., Lacy, T.E., Jr., Toghiani, H., Horstemeyer, M.F., Pittman, C.U., Jr., **Kenaf bast fiber bundle-reinforced unsaturated polyester composites. I: processing techniques for high kenaf fiber loading**, *Forest Products Journal*, 60(3), 289-295, (2010).
74. Zhang, Z., Ye, G., Toghiani, H., Pittman, C.U., Jr., **Morphology and Thermal Stability of Novalac Phenolic Resin/Clay Nanocomposites Prepared via Solution High-Shear Mixing**, *Macromolecular Materials and Engineering*, 295(10), 923-933, (2010).
73. Toghiani, R.K., Toghiani, H., Boddu, V.M., Maloney, S.W., **Prediction of Physicochemical Properties of Energetic Materials**, book chapter in Energetic Materials: Thermophysical Properties, Predictions and Experimental Measurements, (CRC Press, 2010).
72. Boddu, V.M., Toghiani, R.K., Toghiani, H., **Prediction of Solubility and Phase Behaviorof e-CL20 in Supercritical Carbon Dioxide**, book chapter in Energetic Materials: Thermophysical Properties, Predictions and Experimental Measurements, (CRC Press, 2010).
71. Nouranian, S., Toghiani, H., Lacy, T.., Pittman, C.U., Jr., **Response surface study of vapor-grown carbon nanofiber/vinyl ester nanocomposites fabricated using high-shear mixing**, *Proceedings of the American Society for Composites, 24th Technical Conference,* noura1/1-noura1/18, (2009).
70. Nouranian, S., Toghiani, H., Lacy, T.E., Jr., Pittman, C.U., Jr., **Viscoelastic properties of vapor-grown carbon nanofiber/vinyl ester nanocomposites**, *SAMPE Conference Proceedings*, 54, noura1/1-noura1/25, (2009).
69. Zhang, Y., Xue, Y., Toghiani, H., Zhang, J., Pittman, C.U., Jr., **Modification of wood flour surfaces by esterification with acid chlorides: use in HDPE/wood flour composites**, *Composite Interfaces*, 16(7-9), 671-686, (2009).
68. Gujar, A.C., Guda, V.K., Nolan, M., Yan, Q., Toghiani, H., White, M.G., **Reactions of methanol and higher alcohols over H-ZSM-5**, *Applied Catalysis A: General*, 363(1-2), 115-121, (2009).

67. Zhang, Y., Zhang, J., Shi, J., Toghiani, H., Xue, Y., Pittman, C.U., Jr., **Flexural properties and micromorphologies of wood flour/carbon nanofiber/maleated polypropylene/polypropylene composites**, *Composites, Part A: Applied Science and Manufacturing*, 40A(6-7), 948-953, (2009).
66. Lee, S.H., Mathews, M., Toghiani, H., Wipf, D.O., Pittman, C.U., Jr., **Fabrication of Carbon-Encapsulated Mono- and Bimetallic (Sn and Sn/Sb Alloy) Nanorods. Potential Lithium-Ion Battery Anode Materials**, *Chemistry of Materials*, 21(11), 2306-2314, (2009).
65. Zhang, Y., Toghiani, H., Zhang, J., Xue, Y., Pittman, C.U., Jr., **Studies of surface-modified wood flour/polypropylene composites**, *Journal of Materials Science*, 44(8), 2143-2151, (2009).
64. Liu, S., Gujar, A.C., Thomas, P., Toghiani, H., White, M.G., **Synthesis of gasoline-range hydrocarbons over Mo/HZSM-5 catalysts**, *Applied Catalysis A: General*, 357(1), 18-25, (2009).
63. Yan, Q., Tao, S., Toghiani, H., **Optical fiber evanescenet wave absorption spectrometry of nanocrystalline tin oxide thin films for selective hydrogen sensing in high temperature gas samples**, *Talenta*, 77(3), 953-961, (2009).
62. Mondala, A., Liang, K., Toghiani, H., Hernandez, R., French, T., **Biodiesel production by in-situ transesterification of municipal primary and secondary sludges**, *Bioresource Technology*, 100(3), 1203-1210, (2009).
61. Shi, J., Zhang, J., Pittman, C.U., Jr., Toghiani, H., Zue, Y., **Preliminary study of the stiffness enhancement of wood plastic composites using carbon nanofibers**, *Holz als Roh-und Werkstoff*, 66(5), 313-322, (2008).
60. Yan, Q., Doan, P.T., Toghiani, H., Gujar, A.C., White, M.G., **Synthesis Gas to Hydrocarbons over CuO-CoO-Cr_2O_3/H+-ZSM-5 Bifunctional Catalysts**, *J. Physical Chemistry C*, 112(31), 11847-11858, (2008).
59. Yoonessi, M., Toghiani, H., Wheeler, R., Porcar, L., Kline, S., Pittman, C.U., Jr., **Neutron scattering, electron microscopy and dynamical mechanical studies of carbon nanofiber/phenolics resin composites**, *Carbon*, 46(4), 577-588, (2008).
58. Toghiani, R.K., Toghiani, H., Maloney, S.W., Boddu, V.M., **Prediction of physicochemical properties of energetic materials**, *Fluid Phase Equilibria*, 264(1-2), 86-92, (2008).
57. Yoonessi, M., Toghiani, H., Wheeler, R., Porcar, L., Kline, S., Pittman, C.U., Jr., **Neutron scattering, electron microscopy and dynamic mechanical studies of carbon nanofiber/phenolic resin composites**, *Carbon*, 46(4), 577-588, (2008).
56. Yan, Q., Toghiani, H., White, M.G., **Combined Temperature-Programmed Processes, Pulse Reactions, and On-Line Mass Spectroscopy Study of CH4, CO and H2 Interaction with Ni/Al2O3 Catalysts**, *J. Phys. Chem. C*, 111(50), 18646-18662, (2007).
55. Zhang, J., Toghiani, H., Mohan, D., Pittman, C.U., Jr., Toghiani, R.K., **Product Analysis and Thermodynamic Simulations from the Pyrolysis of Several Biomass Feedstocks**, *Energy & Fuels*, 21(4), 2373-2385, (2007).
54. Zhang, Y., Lee, S.H., Yoonessi, M., Toghiani, H., Pittman, C.U., Jr., **Phenolic Resin/Octa(aminophenyl)-T8-Polyhedral Oligomeric Silsesquioxane (POSS) Hybrid Nanocomposites: Synthesis, Morphology, Thermal and Mechanical**

Properties, *J. Inorganic and Organometallic Polymers and Materials*, 17(1), 159-171, (2007).

53. Yoonessi, M., Toghiani, H., Pittman, C.U., Jr., **Orientation of montmorillonite clay in dicyclopentadiene/organically modified clay dispersions and nanocomposites**, *Journal of Applied Polymer Science*, 102(3), 2743-2751, (2006).
52. Yan, Q., Toghiani, H., Causey, H., **Steady state and dynamic performance of proton exchange membrane fuel cells (PEMFCs) under various operating conditions and load changes**, *Journal of Power Sources*, 161(1), 492-502, (2006).
51. Yan, Q., Toghiani, H., Lee, Y.W., Liang, K., Causey, H., **Effect of sub-freezing temperatures on a PEM fuel cell performance, startup and fuel cell components**, *Journal of Power Sources*, 160(2), 1242-1250, (2006).
50. Yan, Q., Toghiani, H., Wu, J., **Investigation of water transport through membrane in a PEM fuel cell by water balance experiments**, *Journal of Power Sources*, 158(1), 316-325, (2006).
49. Yan, Q.G., Toghiani, H., Liu, Q.Y., Wu, J.X., **Experiments toward fundamental validation of PEM fuel cell models**, *ECS Transactions*, 1(6, Proton Exchange Membrane Fuel Cells V, in Honor of Supramaniam Srinivasan), 389-397, (2006).
48. Liang, K., Li, G., Toghiani, H., Koo, J.H., Pittman, C.U., Jr., **Cyanate ester/polyhedral oligomeric silsesquioxane (POSS) nanocomposites: synthesis and characterization**, *Chemistry of Materials*, 18(2), 301-312, (2006).
47. Liang, K., Toghiani, H., Li, G., Pittman, C.U., Jr., **Synthesis, morphology, and viscoelastic properties of cyanate ester/polyhedral oligomeric silsesquioxane nanocomposites**, *Journal of Polymer Science, Part A: Polymer Chemistry*, 43(17), 3887-3898, (2005).
46. Yoonessi, M., Toghiani, H., Daulton, T.L., Lin, Y.S., Pittman, C.U., Jr., **Clay Delamination in Clay/Poly(Dicyclopentadiene) Nanocomposites Quantified by Small Angle Neutron Scattering and High-Resolution Transmission Electron Microscopy**, *Macromolecules*, 38(3), 818-831, (2005).
45. Yan, Q.G., Liu, Q.Y., Toghiani, H., Wu, J.X., **Experiments toward fundamental validation of PEM fuel cell models**, *International conference on Fuel Cell Science, Engineering and Technology, Proceedings, 3rd* (2005).
44. Li, G.Z., Cho, H., Wang, L., Toghiani, H., Pittman, C.U., Jr., **Synthesis and properties of poly(isobutyl)methacrylate-co-butanediol dimethacrylate-co-methacryl polyhedral oligomeric silsesquioxane) nanocomposites**, *Journal of Polymer Science, Part A: Polymer Chemistry*, 43(2), 355-372, (2004).
43. Lakshminarayanan, P.V., Toghiani, H., Pittman, C.U., Jr., **Nitric acid oxidation of vapor grown carbon nanofibers**, *Carbon*, 42(12-13), 2433-2442, (2004).
42. Yan, Q.G., Wu, T.H., Weng, W.Z., Toghiani, H., Toghiani, R.K., Wan, H.L., Pittman, C.U., Jr., **Partial oxidation of methane to H_2 and CO over Rh/SiO_2 and Ru/SiO_2 catalysts**, *Journal of Catalysis*, 226(2), 247-259, (2004).
41. Yoonessi, M., Toghiani, H., Kingery, W.L., Pittman, C.U., Jr., **Preparation, Characterization, and Properties of Exfoliated/Delaminated Organically Modified Clay/Dicyclopentadiene Resin Nanocomposites**, *Macromolecules*, 37(7), 2511-2518, (2004).

40. Iranmahboob, J., Gardner, S.D., Toghiani, H., Hill, D.O., **XPS study of molybdenum sulfide catalyst exposed to CO and H_2**, *Journal of Colloid and Interface Science*, 270(1), 123-126, (2004).
39. Iranmahboob, J., Gardner, S.D., Toghiani, H., Hill, D.., **Dispersion of alkali on the surface of a Co-MoS2/clay catalyst: a comparison of K and Cs as a promoter for the synthesis of alcohol,** *Applied Catalysis, A: General*, 247(2), 207-218, (2003).
38. Yan, Q.G., Weng, W.Z., Wan, H.L., Toghiani, H., Toghiani, R.K., Pittman Jr., C.U., **Activation of Methane to Syngas over a Ni/TiO_2 Catalyst**, *Applied Catalysis A*, 239 (1-2), 43, (2003).
37. Iranmahboob, J., Hill, D., Toghiani, H., **K_2CO_3/Co-MoS_2/Clay Catalyst for Synthesis of Alcohol: Influence of Potassium and Cobalt**, *Applied Catalysis A:* 231 (1-2), 99, (2002).
36. Iranmahboob, J., Toghiani, H., Hill, D.O., Nadim, F., **The Influence of Clay on K_2CO_3/Co-MoS_2 Catalyst in the Production of Higher Alcohol Fuel**, *Fuel Processing Technology*, 79(1), 71, (2002).
35. Li, G.Z., Wang, L.C., Toghiani, H., Dalton, T.L., Pittman, C.U., Jr., **Viscoelastic and Mechanical Properties of Vinyl Ester (VE)/Multifunctional Polyhedral Oligomeric Silsesquioxane (POSS) Nanocomposites and Multifunctional POSS-Styrene Copolymers**, *Polymer,* 43(15), 4167-4176, (2002).
34. Li, G.Z., Wang, L.C., Toghiani, H., Daulton, T.L., Loyama, K., Pittman, C.U., Jr., **Viscoelastic and Mechanical Properties of Epoxy/Multifunctional Polyhedral Oligomeric Silsesquioxane Nanocomposites and Epoxy/Ladderlike Polyphenylsilsesquioxane Blends**, *Macromolecules*, 34(25), 8686-8693, (2001).
33. Iranmahboob, J., Hill, D.O., Toghiani, H., **Characterization of K_2CO_3/Co-MoS_2 Catalyst by XRD, XPS, SEM, and EDS**, *Applied Surface Science*, 185(1-2), 72-78, (2001).
32. Xu, X., Toghiani, H., Pittman, C.U., Jr., **Modeling Domain Mixing in Semi-Interpenetrating Polymer Networks Composed of Poly(Vinyl Chloride) and 5% to 15% of Crosslinked Thermosets**, *Polymer Engineering and Science*, 40(9), 2027-2035, (2000).
31. Xu, X., Wang, L., Toghiani, H., Pittman, C.U., Jr., **Effect of Crosslinking on Mechanical and Viscoelastic Properties of Semi-interpenetrating Polymer Networks Composed of Poly(Vinyl Chloride) and Isocyanate Crosslinked Networks**, *Journal of Applied Polymer Science*, 78, 1402-1411 (2000).
30. Pittman, C.U., Jr., Xu, X., Wang, L., Toghiani, H., **Characterizing Semi-Interpenetrating Polymer Networks Composed of Poly(Vinyl Chloride) and 5 - 15 % of Oligomeric MDI Isocyanate Cross-Linked Networks**, *Polymer*, 41, 5405-5413, (2000).
29. Pittman, C.U., Jr., Xu, X., Wang, L., Toghiani, H., **Mechanical and Viscoelastic Properties of Semi-Interpenetrating Polymer Networks of Poly(Vinyl Chloride)/Thermosetting Resin Blends**, *Polymer Engineering and Science*, 40(6), 1405-1413, (2000).
29. Toghiani, H., Toghiani, R.K., Hill, D.O., Wierenga, C., **Enhancement of Instrumentation and Process Control Studies at the Undergraduate Level**, *2000 ASEE Annual Conference Proceedings*, (published on CD-ROM).

28. Yue, Z.R., Jiang, W., Wang, L., Toghiani, H., Gardner, S.D., Pittman, C.U. Jr., **Adsorption of Precious Metal Ions onto Electrochemically Oxidized Carbon Fibers**, *Carbon*, 37, 1607-1618 (1999).
27. Pittman, C.U. Jr., Jiang, W., Yue, Z.R., Gardner, S.D., Wang, L., Toghiani, H., **Surface Properties of Electrochemically Oxidized Carbon Fibers**, *Carbon*, 37, 1797-1807, (1999).
26. Hamilton, J.M., Toghiani, H., Lindner, J.S., **Implementation of an Advanced Process Control Strategy Employing FTIR Spectroscopy**, Pittcon '99, Orlando, FL, March 1999.
25. Hamilton, J.M., Toghiani, H., Lindner, J.S., **Application of FTIR Spectroscopy to Process Control**, 37th ORNL/DOE Conference on Analytical Chemistry in Energy Technology, October 1997.
24. Zhou, C., Hamilton, J., Toghiani, H., **GC/MS Analysis of Indoor VOC's**, Pittcon '98, New Orleans, LA, March 1998.
23. Toghiani, R., Toghiani, H., Venkateswarlu, G., **Vapor-Liquid Equilibria for Methyl *tert*-Butyl Ether + Methanol and *tert*-Amyl Methyl Ether + Methanol,** *Fluid Phase Equilibria*, 122, 157-168, 1996.
22. Toghiani, R.K., Toghiani, H., Jones, J., **Supercritical Fluid Extraction in the Undergraduate Laboratory**, *1996 ASEE Annual Conference Proceedings* (published on CD-ROM).
21. Toghiani, R.K., Wierenga, C., Toghiani, H., **Introduction of Novel Instrumentation and Control Topics Using an Industrial Style Control System**, *Advances in Instrumentation and Control*, 50(3), 1541-1548, (1995).
20. Toghiani, H., **Excess Gibbs energy. Methanol-thiophene system**, *International DATA Series, Selected Data on Mixtures, Series A: Thermodynamic Properties of Non-Reacting Binary Systems of Organic Substances*, 23(3), 241, (1995).
19. Toghiani, H., **Liquid-vapor equilibrium. Methanol-thiopene system**, *International DATA Series, Selected Data on Mixtures, Series A: Thermodynamic Properties of Non-Reacting Binary Systems of Organic Substances*, 23(3), 240, (1995).
18. Toghiani, H., **Liquid-vapor equilibrium. Methanol-thiopene system**, *International DATA Series, Selected Data on Mixtures, Series A: Thermodynamic Properties of Non-Reacting Binary Systems of Organic Substances*, 23(3), 239, (1995).
17. Toghiani, H., **Liquid-vapor equilibrium. Methanol-thiopene system**, *International DATA Series, Selected Data on Mixtures, Series A: Thermodynamic Properties of Non-Reacting Binary Systems of Organic Substances*, 23(3), 238, (1995).
16. Toghiani, H., **Liquid-vapor equilibrium. Methanol-thiopene system**, *International DATA Series, Selected Data on Mixtures, Series A: Thermodynamic Properties of Non-Reacting Binary Systems of Organic Substances*, 23(3), 237, (1995).
15. Toghiani, H., **Liquid-vapor equilibrium. Methanol-benzene system**, *International DATA Series, Selected Data on Mixtures, Series A: Thermodynamic Properties of Non-Reacting Binary Systems of Organic Substances*, 23(3), 235, (1995).

14. Toghiani, H., **Liquid-vapor equilibrium. Methanol-benzene system**, *International DATA Series, Selected Data on Mixtures, Series A: Thermodynamic Properties of Non-Reacting Binary Systems of Organic Substances*, 23(3), 234, (1995).
13. Toghiani, H., **Liquid-vapor equilibrium. Methanol-benzene system**, *International DATA Series, Selected Data on Mixtures, Series A: Thermodynamic Properties of Non-Reacting Binary Systems of Organic Substances*, 23(3), 233, (1995).
12. Toghiani, H., **Liquid-vapor equilibrium. Methanol-benzene system**, *International DATA Series, Selected Data on Mixtures, Series A: Thermodynamic Properties of Non-Reacting Binary Systems of Organic Substances*, 23(3), 232, (1995).
11. Toghiani, H., Toghiani, R.K., Viswanath, D.S., **Vapor-liquid equilibria for the methanol-benzene and methanol-thiophene systems**, *J. Chem. Engr. Data*, 39(1), 63-67, (1994).
10. Toghiani, H., Toghiani, R.K., Hill, D.O., **Advanced Process Control Using a PC-Based Digital Controller**, *Proceedings of the Second International Symposium on Environmental and Chemical Engineering*, Dalian, PRC, 178-192, (Dalian University of Technology Press: 1994).
9. Krishnaiah, A., Viswanath, D.S., Toghiani, H., **Isothermal vapor-liquid equilibria of the system isopropyl acetate + cyclohexane**, DIPPR Data Series, 2 (Experimental Results for DIPPR 1990-1991 Projects on Phase Equilibria and Pure Component Properties), 1-10, (1994).
8. Krishnaiah, A., Viswanath, D.S., Toghiani, H., **Isothermal vapor-liquid equilibria of the system isopropyl ether + dichloromethane**, DIPPR Data Series, 2 (Experimental Results for DIPPR 1990-1991 Projects on Phase Equilibria and Pure Component Properties), 11-17, (1994).
7. dos Santos, E.N., Pittman, C.U., Jr., Toghiani, H., **Hydroformylation of a- and b-pinene catalyzed by rhodium and cobalt carbonyls**, *J. Molecular Catalysis*, 83(1-2), 51-65, (1993).
6. Toghiani, H., Toghiani, R.K., Wierenga, C., **Automated Process Control in the Undergraduate Laboratory: Utilization of the CAMILE Data Acquisition and Control System**, *Advances in Instrumentation and Control*, 48(3), 2151-2168, (1993).
5. Toghiani, R.K., Toghiani, H., King, R., Kosgi, M., **An On-Line Advisor for the Distillation Experiment: Expert Systems in the Chemical Engineering Laboratory**, *1993 ASEE Annual Conference Proceedings*, 1141-1147, (1993).
4. Toghiani, R.K., Toghiani, H., Wierenga, C., **Laboratory Automation with CAMILE**, *1991 ASEE Annual Conference Proceedings*, 1745-1750, (1991).
3. Toghiani, H., Viswanath, D.S., **A Cubic Equation of State for Polar and Apolar Fluids**, *Ind. Eng. Chem. Proc. Des. Dev.*, 25(2), 531-536, (1986).
2. Viswanath, D.S., Toghiani, H., Storvick, T.S., **A modified van der Waals equation of state**, *Fluid Phase Equilibria*, 13, 203-211, (1983).
1. Winnick, J., Toghiani, H., Quattrone, P.D., **Carbon dioxide concentration for manned spacecraft using a molten carbonate electrochemical cell**, *AIChE J.*, 28(1), 103-111, (1982).

Institutional and Professional Service

Faculty advisor, Society of Plastics Engineers student chapter (since 2001)
AIChE, session moderator, annual conference, 2003- present
ASME International Conference of Fuel Cell Science, Engineering and Technology, Scientific Organizing Committee
Materials Working Group, Bagley College of Engineering
University Familiarization Program for Minorities in Engineering 'UFPME' (1990-2007)
Increase Minority Access to Graduate Education 'IMAGE' (1995-2007)
Departmental Graduate Affairs Committee

Thesis Advisor and Postgraduate-Scholar Sponsor

11 M.S. Graduates, 5 Ph.D. Graduates, 3 Post-doctoral Associates

M.S. Advisor for:

- Yan, Qiangu, Synthesis, "Characterization and Catalytic Studies of Carbon-based Nano Materials", May 2011.
- Crawford, Kyle E., "Impact of urea injection on nitrogen oxide emissions for MSU Challenge X hybrid electric vehicle using a green fuel", May 2007.
- Doan, Phuong Thanh, "Characterization of copper-cobalt-chromium-potassium catalysts", May 2001.
- Shen, Yueyi, "Synthesis of higher alcohols from syngas over molybdenum disulfide based catalysts", May 1997.
- Zhang, Jieling, "Pyrolysis of biomass", May 1996.

Ph.D. Advisor for:

- Nouranian, Sasan, "Vapor-Grown Carbon Nanofiber/Vinyl Ester Nanocomposites: Design Experimental Studies and Molecular Dynamics Simulations", May 2011.
- Pearson, Larry E., "The characterization and scale-up parameters for a steam gasification process using wood as feed", May 2008.
- Liang, Kai-wen, "Cyanate ester, epoxy and epoxy/cyanate ester matrix polyhedral oligomeric silsesquioxane , May 2005.
- Yoonessi, Mitra, "Experimental and modeling studies of clay/polydicyclopentadiene resin nanocomposites," May 2004.
- Iranmahboob, Jamshid, "Formation of ethanol and higher alcohols from syngas", May 1999. (co-director of dissertation)