

## SAAD A. KHAN

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### Professional Preparation

Princeton University	Chemical Engineering ( <i>summa cum laude</i> )	B.S.E., 1980
Massachusetts Institute of Technology	Chemical Engineering	Ph.D., 1985
AT&T Bell Laboratories, NJ	Postdoctoral Member of Technical Staff	1985-1987

### Research Interests

Our research program focuses on fabrication, rheology and processing behavior of novel and complex materials. Various classes of polymeric, soft-solids, gels, colloidal, nanoparticulate and biological systems are of interest to us. We are also engaged in engineering and characterizing functional fibers, from macro to electrospun nanofibers. Our work, by nature, tends to be inter-disciplinary with strong collaboration both within and outside the university. A common binding thread in our work is the emphasis on unearthing relationships between material micro/molecular structure, chemistry, and macroscopic properties. Within this context, recent and/or ongoing projects in our group include:

- Functional electrospun nanofibers i) of associative- and bio- polymers, ii) with metal nanoparticles
- Enzymatic modification of water-soluble polymer and gels
- Polysaccharide-based oral drug delivery via enzymatic modification of gels and nanofibers
- Gelation of whey proteins through combined heat and enzyme treatment
- Gelation of cellulose acetate in mixed solvents
- Self-assembled nanoparticulate silica gels: interactions, microstructure, rheology and wall-slip
- Photo crosslinked polymers: gelation and crosslinking
- Synthesis and characterization of nanocomposite polymer electrolytes
- Rheology/interactions of self-assembled associative polymers with surfactants and cyclodextrins
- Depolymerization of polyethylene terephthalate using supercritical carbon dioxide
- Microstructure and rheology of polymer clay nanocomposites
- Supercritical carbon dioxide facilitated micro- and nano-cellular thin film foams, polymer melt rheology

### Appointments

Alumni Distinguished Graduate Professor	2006-
Professor, Chemical Engineering, North Carolina State University	2001-
Professor (associate appointment), Food Sci & Wood & Paper Sci., NCSU	2000-
Director of Graduate Program, Chemical Engineering, North Carolina State University	1998-
Associate Professor, Chemical Engineering, North Carolina State University	1993-2000
Member of Technical Staff, Bell Communications Research, Red Bank, NJ	1987-1992

### Scholarly and Professional Honors

Alumni Association Outstanding Research Award, 2009  
Member Scientific Board, International Symp. On Food Rheology & Structure, Zurich 2009  
Keynote Speaker: 3<sup>rd</sup> Int'l. Conf. on Engineering Sciences & Technologies, Cairo Egypt, March 2008: Functional Nanofibers via Electrospinning: Applications in Coatings, Drug Delivery and Biomedical Therapeutics  
Alumni Distinguished Graduate Professorship Award, 2006  
Alcoa Foundation Distinguished Engineering Research Award, 2002  
NC State University Academy of Outstanding Teachers, 2001  
Who's Who in the World, 1999  
Research concept featured on the cover of DOE's Annual Report on Exploratory Technology Research Program for Electrochemical Energy Storage (1998)

Invited Participant in DOE Workshops on Batteries and Fuel Cells, Aug, 1999, Oct 1997.  
Alcoa Engineering Research Achievement Award, NCSU, 1997  
Invited speaker and panelist, National Research Council (of the National Academy of Science & Eng'g.) Workshop on Aviation Fuels, 1996.  
Visiting Professor, University of Campinas, Campinas, SP Brazil, 1997.  
Who's Who in Science & Engineering, 1995.  
DuPont Young Faculty Award , 1994-1996  
United Nations Visiting Scientist to Bangladesh (Jan.'92)  
Phi Beta Kappa (1980), Tau Beta Pi (1979), AIChE Scholastic Award (1978)

### **Synergistic Activities**

Mtg. co-organizer, Annual Mtg. of the Society of Rheology, Santa Fe NM, Oct. 2010  
Mtg. co-organizer, Engineering Foundation Conf.: Associations in Solutions II, Portugal, Jul. 2009  
Mtg. Organizer (w/ R.K. Prud'homme), Engineering Foundation Conference: Associations in Solutions, June 2007 (Tuscany, Italy)  
Developed (w/ Genzer) MS Program in Chemical Engineering via Distance Learning, NCSU, 2003  
Patents – 15 issued and 5 pending  
Technical Program Organizer (w/ G. McKinley), 72<sup>nd</sup> Ann. Mtg of Society of Rheology, Hilton Head SC, Feb 2001.  
Symposium Organizer, AIChE Annual Mtgs, Nov. 1990-1996, 2001  
Symposium Organizer (w/ R.K. Prud'homme), PACIFICHEM 2000, Honolulu HA, Dec. 2000  
Local Arrangements Committee, 5<sup>th</sup> International Conf. On Hydrocolloids, Raleigh NC, Sep. 2000.  
Co-editor (w/ R.K. Prud'homme), Foams: Theory, Measurements & Applications, Marcel Dekker, ISBN 0-8247-9395-1, 1996

### **Graduate & Postdoctoral Advisors**

Robert C. Armstrong (MIT, PhD); Ronald G. Larson (U. Michigan, postdoctoral)

### **Thesis Advisor & Postgraduate-Scholar Sponsor**

Graduate (34 total, 4 MS, 30 Ph.Ds, 8 current Ph.Ds): Adeola Adeokambi (MS 2002, Columbia Law School), Ruchi Gupta (MS 2003, State Gov. of NC), Chinmay Bhatt (MS 1997, Becton Dickinson), Joanna Roberts (MS 1995, Clariant Chemicals)

Ph.Ds: Christina Tang (Ph.D. current), Chris Bonino (Ph.D. current), Sara Arvidson (Ph.D., current), Annie Chu (Ph.D. current), Josh Manasco (Ph.D, current), Amit Gupta (PhD, current), William Barnes (Ph.D current), Stephanie Sullivan (Ph.D, current), Sachin Talwar (Ph.D, 2008 DuPont), Joan Patterson (Ph.D. 2007, Dow Corning), Angelica Sanchez (Ph.D. 2006, Cabot), Shamsheer Mohammad (Ph.D. 2006, Johns Manville), David Frankowski (Ph.D. 2006, Dow), Collins Appaw (Ph.D. 2005, post-doc NCSU), Ahmed Eissa (Ph.D. 2005; faculty Cairo University), Mike Riley (Ph.D 2002, Microcell), Jeremy Walls (Ph.D 2002, RTI), Ahmed Abdala (Ph.D 2003, faculty, Petroleum Institute, UAE), Julie McCormick (Ph.D 2002, Michelin), Jeff Yerian (Ph.D 2003, Exxon-Mobil), Teri Walker (Ph.D 2003, RTI), Srinivas Siripurapu (Ph.D 2003, GE Plastics), Matt Burke (Ph.D., 2001, Glaxo Wellcome), Vandita Pai (Ph.D., 2001, GE Plastics), Joe Royer, (Ph.D 2000, Milliken), Jenny Shay (Ph.D 1999, Coca Cola), Bor-Sen Chiou (Ph.D 1998, USDA), Srinivasa Raghavan (Ph.D 1998, faculty U. Maryland), Nirupama Kenkare (Ph.D 1998, Lucent), Akash Tayal (Ph.D 1997, National Starch).

Postgraduate-Scholars: Mark Marten (U. Maryland BC), Rob English (North East Wales Institute, UK); Yvon Gay (Elf Atochem, France); Qizhou Dai (UBC Canada); Yanxing Li (FMC), Lauriane Scanu (Kraft Foods), Masataka Sugimoto (Yamagata University, Japan), Carl Saquing (current)

### **Collaborators**

NCSU: Robert M. Kelly, Jan Genzer, George Roberts, Joe DeSimone, Ruben Carbonell, Peter Fedkiw, E. Allen Foegeding, Carol Hall, Richard Spontak, Benham Pourdeyhimi

Outside: Robert K. Prud'homme (Princeton), Mohan Srinivasarao (Georgia Tech), Robert English (Northeast Wales Institute, UK), John Kadla (University of British Columbia), Gregory L. Baker (Michigan State), Tony Andradý (Research Triangle Institute), Juan Hinestroza (Cornell)

## Publications

### Books

**Foams: Theory, Measurements & Applications**, eds. R.K. Prud'homme and S.A. Khan, Marcel-Dekker, ISBN 0-8247-9395-1, 1996.

### Invited Book Chapters

4. Stephanie Sullivan, Ahmed Eissa, Saad A. Khan, "Rheology of Low pH whey protein concentrates", in **Whey Processing, Functionality and Health Benefits**, ed. Charles Onwulata, Blackwell Publishing (2008) in press.
3. A.Tayal, V.B. Pai, S.A. Khan, "Enzymatic Modification of Guar Solutions: Viscosity – Molecular Weight Relationship" in **Water Soluble Polymers: Solution Properties and Applications**, ed. Z. Amjad, Plenum Press (1998) 41-49.
2. S.A. Khan, J. Royer, S.R. Raghavan, "Rheology: Tools & Methods", in **Aviation Fuel Safety With Improved Fire Safety**, National Academy Press (1997) 31-46.
1. R.K. Prud'homme, S.A. Khan, "Experimental Results on Foam Rheology", in **Foams: Theory, Measurements & Applications**, Marcel Dekker, New York (1996) 217-242.

### Refereed Publications

132. C.D. Saquing, J.L. Manasco, S.A. Khan, "Electrospun Nanoparticle-Nanofiber Composites *via* a Novel One-Step Synthesis", **Small** (2009) 5, 944-951.
131. Q.Peng, X-Y. Sun, J.C. Spagnola, C.D. Saquing, S.A. Khan, R.J. Spontak, G.N. Parsons, "Bi-Directional Kirkendall Effect in Coaxial Microtube Assemblies Fabricated by Atomic Layer Deposition", **ACS Nano** (2009) 3, 546-554.
130. A. Gupta, C.D. Saquing, M. Afshari, R. Kotek, S.A. Khan, "Porous Nylon 6 Fibers *via* a Novel Salt-Induced Electrospinning Method," **Macromolecules** (2009) 42, 709-715.
129. S. Talwar, J. Harding, S.A. Khan, "Surfactant-mediated Modulation of Hydrophobic Interactions in Associative Polymer Solutions Containing Cyclodextrin, **Langmuir** (2009) 25(2), 794-802.
128. S. Talwar, J.P. Hinstroza, B. Pourdeyhimi, S.A. Khan, "Associative Polymer Facilitated Electrospinning of Nanofibers," **Macromolecules** (2008), 41, 4275-4283.
127. S. Talwar, L. Scanu, S.R. Raghavan, S.A. Khan, "Influence of Binary Surfactant Mixtures on the Rheology of Associative Polymer Solutions," **Langmuir** (2008) 24, 7797-7802.
126. L. Ji, C. Saquing, S. A Khan and X. Zhang, "Synthesis and characterization of silica nanoparticulate-polyacrylonitrile composite and porous nanofibers" **Nanotechnology** 19 (2008), web release February 1
125. L.M. Bronstein, R.L. Karlinsey, Z. Yi, J. Carini, U. Werner-Zwanziger, P.V. Konarev, D.I. Svergun, A. Sanchez, S. Khan, "Composite solid polymer electrolytes based on pluronic: Does ordering matter?", **Chemistry of Materials** (2007) 25, 6258-6265.
124. C. Appaw, J.F. Kadla, S.A. Khan, "Viscoelastic Behavior of Cellulose Acetate in a Mixed Solvent", **Biomacromolecules** (2007) 8, 1541-1547.
123. Frankowski, D. J.; Capracotta, M. D.; Martin, J. D.; Khan, S. A. and Spontak, R. J., "Stability of Organically-Modified Montmorillonites and Their Polystyrene Nanocomposites after Prolonged Thermal Treatment," **Chemistry of Materials**, (2007) 19(11) 2757-2767.
122. D.J. Frankowski, S.A. Khan, R.J. Spontak, "Chain Scission-induced Intercalation as a Facile Route to Polymer Nanocomposites, **Advanced Materials**, (2007) 19(9), 949-956.
121. M. Shamsheer, D.A. Comfort, R.M. Kelly, S.A. Khan, "Rheological Properties of Guar Galactomannan Solutions During Hydrolysis with Galactomannanases and  $\alpha$ -galactosidase Enzyme Mixtures", **Biomacromolecules** (2007) 949-956.
120. M. Shamsheer, G.W. Roberts, S.A. Khan, "Cyclodextrin-Hydrophobe Complexation in Associative Polymers", **Soft Matter** (2007) 1185-1193.
119. Y. Li, J.A. Yerian, P.S. Fedkiw, S.A. Khan, "Crosslinkable Fumed Silica-based Nanocomposite Electrolytes for Rechargeable Lithium Batteries, **J. Power Sources** (2006) 1288-1296.

118. S. Talwar, L. F. Scanu, S.A. Khan, "Hydrophobic Interactions in Associative Polymer/Nonionic Surfactant Systems: Effects of Surfactant Architecture and System Parameters, **Journal of Rheology** (2006) 831-847.
117. S. Mahammad, R.K. Prud'homme, G.W. Roberts, G. W., S. A. Khan; "Kinetics of Enzymatic Depolymerization of Guar Galactomannan", **Biomacromolecules** (2006), 2583-2590.
116. Q. Dai, Qizhou. S.A. Khan, J.F. Kadla, "Rheological Behaviour of Lyotropic (Acetyl) (Ethyl)Cellulose Solutions with Different Chiroptical Properties" **Cellulose** (2006) 213-223.
115. A.S. Eissa, C. Puhl, J.F. Kadla, and S.A. Khan, "Enzymatic Crosslinking of  $\beta$ -lactoglobulin: Conformational Properties Using FTIR Spectroscopy", **Biomacromolecules** (2006), 1707-1713.
114. X.Guo, A.A. Abdala, B.L. May, S.F. Lincoln, S.A. Khan, R.K. Prud'homme, "Rheology Control by modulating hydrophobic inclusion associations in modified poly(acrylic acid) solutions", **Polymer** 47 (2006) 2976-2983.
113. A.S. Eissa and S.A. Khan, "Modulation of Hydrophobic Interactions in Denatured Whey Proteins by Transglutaminase Enzyme", **Food Hydrocolloids** 20(4) (2006) 543-547.
112. A.S. Eissa and S.A.. Khan, "Acid-induced Gelation of Enzymatically Modified, Preheated Whey Protein, **J. Agricultural and Food Chemistry** 53 (2005) 5010-5017.
111. S. Siripurapu, J. M. DeSimone, S. A. Khan and R. J. Spontak, "Controlled Foaming of Polymer Films through Restricted Surface Diffusion and the Addition of a Nanoscale Filler or CO<sub>2</sub>-philic Surfactants", **Macromolecules** 38 (2005) 2271-2280.
110. A. Veleva, S.A. Khan, S. Cooper, "Oxidative and Hydrolytic Stability of a Novel Acrylic Terpolymer for Biomedical Applications", **J. Biomedical Materials Research: Part A**. 74A (2005) 117-123.
109. M.D. Burke and S.A. Khan, "A Novel Enzymatic Technique for Limiting Drug Mobility in a Hydrogel Matrix," **J. Controlled Release** 104 (2005) 141-153.
108. X. Guo, A.A. Abdala, B.L. May, S.F. Lincoln, and S.A.Khan, and R.K. Prud'homme, "Novel Associative Polymer Networks Based on Cyclodextrin Inclusion Compounds," **Macromolecules** 38 (2005) 3037-3040.
107. D.J. Frankowski, S. Fournier-Bidoz, I. Manners, G.A. Ozin, S.A. Khan and R. J. Spontak, "Tunable Microcellular Morphologies from Polyferrocenylsilane Ceramic Precursors Foamed in Supercritical CO<sub>2</sub>", **Macromolecular Chemistry & Physics** 205 (2004) 2398-2408.
106. S.Siripurapu, J.A. Coughlan, R.J. Spontak and S.A. Khan, "Surface-Constrained Foaming of Polymer Thin Films with Supercritical Carbon Dioxide", **Macromolecules** 37 (2004) 9872-9879.
105. A.A. Abdala, W. Wu, K.R.Olesen, R.D. Jenkins, A.E. Tonelli, S.A. Khan, Solution Rheology of Comb-like Associative Polymers: Effects of Backbone Composition and Hydrophobe Concentration, **J. Rheology** 48 (2004) 9304-9314.
104. A.S. Eissa, S. Bissram, S.A. Khan, "Polymerization and Gelation of Whey Protein Isolates at low pH using Transglutaminase Enzyme", **J. Agricultural and Food Chemistry** 52 (2004) 4465-4464.
103. S. Siripurapu, J. M. DeSimone, S. A. Khan and R. J. Spontak, "Low-Temperature, Surface-Mediated Foaming of Polymer Films", **Advanced Materials** 16 (2004) 989-994.
102. J.A Yerian, P.S. Fedkiw, S.A. Khan, "Crosslinkable Fumed Silica-based Nanocomposite Electrolytes: Role of Methacrylate Monomer in Formation of Crosslinked Silica Network", **J. Power Sources** 135 (2004) 232-239.
101. Yangxing Li, Xiang-Wu Zhang, Saad A. Khan and Peter S. Fedkiw, "Attenuation of Aluminum Current Collector Corrosion in LiTFSI Electrolytes Containing Fumed Silica Nanoparticles", **Electrochemical and Solid-State Letters** 7 (2004) A228-A230.
100. Xiang-Wu Zhang, Saad A. Khan, and Peter S. Fedkiw, "Novel Nanocomposite Electrolytes Using Single-Ion Conducting Fumed Silica", **Electrochemical and Solid-State Letters** 7 (2004) A361-A364.
99. Xiang-Wu Zhang, Yangxing Li, Saad A. Khan, and Peter S. Fedkiw, "Inhibition of Lithium Dendrites by Fumed Silica-Based Composite Electrolytes", **J. Electrochem. Soc.** 151 (2004) A1257-A1263.
98. D. J. Frankowski, J.Raez, I. Manners, M.A. Winnik, S.A. Khan and R. J. Spontak, "Formation of Dispersed Nanostructures from Poly(ferrocenyldimethylsilane-*b*-dimethylsiloxane) Nanotubes Upon Exposure to Supercritical Carbon Dioxide", **Langmuir** 20 (2004) 9304-9314.

97. R.G. Singhal, M.D. Capracotta, J.D. Martin, S.A. Khan, P.S. Fedkiw, "Transport Properties of Hectorite-based Nanocomposite Single Ion Conductors", **J. Power Sources** 128 (2004) 247-255.
96. A.A. Abdala, A.E. Tonelli, S.A. Khan, "Modulating Hydrophobic Interactions in Associative Polymers Through Inclusion Compounds and Surfactants," **Macromolecules** 36 (2003) 7833-7841.
95. H.J. Walls, M.W. Riley, P.S. Fedkiw, R.J. Spontak, S.A. Khan, Composite Electrolytes from Self-assembled Colloidal Networks", **Electrochimica Acta** 48 (2003) 2071-2077.
94. Wilder, E.A., Hall, C.K., Khan, S.A., and Spontak, R.J., "Effects of Composition and Matrix Polarity on Network Development in Organogels of Poly(ethylene glycol) and Dibenzylidene Sorbitol," **Langmuir** 19(15) (2003) 6004-6013.
93. H.J. Walls, M.W. Riley, R.R. Gupta, R.J. Spontak, P.S. Fedkiw, S.A. Khan, "Nanocomposite Electrolytes from Fumed Silica and Hectorite Clays: Passive vs. Active Fillers", **Advanced Functional Materials** 13 (2003) 710-717.
92. M.W. Riley, P.S. Fedkiw, S.A. Khan, "Lithium Hectorite Clay as the Ionic Conductor in LiCoO<sub>2</sub> Cathodes" **J. Electrochem. Soc.** 150(7) (2003) A933-A941.
91. H.J. Walls, S.B. Caines, A. M. Sanchez, S.A. Khan, "Yield Stress and Wall Slip Phenomena in Colloidal Silica Gels", **J. Rheology** 47 (2003) 847-864.
90. H.J. Walls, T.A. Zawodzinski, P.S. Fedkiw, S.A. Khan, "Ion transport in Nanocomposite Electrolytes", **J. Electrochem. Soc.** 150(3) (2003) E165-E174.
89. R.J. English, J. Laurer, R. J. Spontak, S.A. Khan, "Rheology and Microstructure of Associative Polymers: Effects of Nonionic Surfactants", **Ind. Eng'g. Chem. Res.** 41 (2002) 6425-6435.
88. M.D. Burke, S.Y. Ha, M.A. Pysz, S.A. Khan, "Rheology of Protein Gels Synthesized through a Combined Enzymatic and Heat Treatment Method", **Int'l. J. Biological Macromolecules** 31 (2002) 37-44.
87. Wilder, E.A., Hall, C.K., Khan, S.A., and Spontak, R.J., "Molecular Self-Organization and Gelation Efficacy of Dibenzylidene Sorbitol: An Overview," **Rec. Res. Develop. Mater. Sci.**, 3, 93 (2002).
86. S.Siripurapu, Y.J. Gay, J.R. Royer, J.M. DeSimone, R.J. Spontak, S.A. Khan, "Generation of Microcellular Foams of PVDF and its Blends using Supercritical Carbon Dioxide in a Continuous Process", **Polymer** 43 (2002) 5511-5520.
85. J.A. McCormick, C.K. Hall, S.A. Khan, "Entanglement relaxation and release in hard chain fluids during molecular dynamics simulations", **Macromolecules** 35 (2002) 6005-6019.
84. J.A. McCormick, C.K. Hall, and S.A. Khan, "The effect of position along the chain on the dynamic properties of hard chain segments," **The Journal of Chem. Physics** 117 (2002) 944-957.
83. M.W. Riley, P.S. Fedkiw, S.A. Khan, "Transport Properties of Lithium Hectorite-Based Composite Electrolytes" **J. Electrochem. Soc.** 149 (2002) A667-A674.
82. Y.Li, P.S. Fedkiw, S.A. Khan, "Lithium/V<sub>6</sub>O<sub>13</sub> Cells Using Silica Nanoparticle-based Composite Electrolytes", **Electrochimica Acta** 47 (2002) 3853.
81. V.B. Pai, S.A. Khan, "Gelation and Rheology of Enzyme-modified Guar/Xanthan Blends" **Carbohydrate Polymers** 49 (2002) 207-216.
80. J.D. Martinache, J.R. Royer, S. Siripurapu, F.E. Henon, J. Genzer, S.A. Khan, R.G. Carbonell, "Processing of Polyamide 11 with Supercritical Carbon Dioxide", **Ind. Eng'g Chem. Res.** 40 (2002) 5570-5577.
79. V.B. Pai, M. Srinivasarao, S.A. Khan, "Evolution of Microstructure and Rheology in Mixed Polysaccharide Systems" **Macromolecules** 35 (2002) 1699-1707
78. J.R. Royer, Y.J. Gay, M. Adams, J.M. DeSimone, S.A. Khan, "Polymer Melt Rheology with High-Pressure CO<sub>2</sub> Using a Novel Magnetically Levitated Sphere Rheometer", **Polymer** 43 (2002) 2375-2383.
77. J.R. Royer, J. M. DeSimone, S.A. Khan, "High Pressure Rheology and Viscoelastic Scaling Predictions of Polymer Melts in Liquid and Supercritical CO<sub>2</sub>" **J. Poly. Sci. Polym. Phys.** 39 (2001) 3055-3066.
76. B.S. Chiou, S.R. Raghavan, S.A. Khan, "Effect of Colloidal Fillers on the Rheology of UV Curable Polymers: Gel Point Rheology & the Winter-Chambon Criteria" **Macromolecules** 34 (2001) 4526-4533.
75. J.S. Shay. S.R. Raghavan, S.A. Khan, "Thermoreversible Gelation in Aqueous Dispersions of Colloidal Particles Bearing Grafted Poly(ethylene oxide) Chains, **J. Rheology** 45 (2001) 913-928.

74. D.J. Mercurio, S.A. Khan, R.J. Spontak, "Dynamic Rheological Behavior of DBS-Induced Poly(propylene glycol) Physical Gels", **Rheologica Acta** 40 (2001) 23-29.
73. M.D. Burke and S.A. Khan, "Triggered Enzymatic Degradation of a Water-soluble Polymer Using a Novel Inhibitor: A Viscometric Study", **Biomacromolecules** 1 (2000) 688-695.
72. M.D. Burke, J.O. Park, M. Srinivasarao and S.A. Khan "Diffusion of Macromolecules in Polymer Solutions and Gels: A Laser Scanning Confocal Microscopy Study" **Macromolecules** 33(20) (2000) 7500-7507.
71. J.R. Royer, J.M. DeSimone, S.A. Khan, "High Pressure Rheology of Polystyrene Melts Plasticized with CO<sub>2</sub>: Experimental Measurements & Viscoelastic Scaling Predictions", **J. Poly. Sci. Polym. Phys.** 38 (2000) 3168-3180.
70. J. McCormick, J.R. Royer, H.R. Hwang and S.A. Khan, "Tailored Rheology of a Metallocene Polyolefin Through Silane Grafting and Subsequent Silane Crosslinking", **J. Poly. Sci. Polym. Phys.** 38 (2000) 2468-2479.
69. A.Tayal, S.A. Khan, "Degradation of a Water-soluble Polymer: Molecular Weight Changes and Chain Scission Characteristics", **Macromolecules** 33 (2000) 9488-9493
68. S.R. Raghavan, H.J. Walls, S.A. Khan, "Rheology of Silica Dispersions in Organic Liquids: New Evidence for Solvation Forces Dictated by Hydrogen-Bonding", 16(21) **Langmuir** (2000) 7920-7930.
67. J.S. Shay, R.J. English, R.J. Spontak, S.A. Khan, "Dispersion Polymerization of Polystyrene Stabilized with Novel Grafted Poly(ethylene glycol) Macromers in n-Propanol/Water", **Macromolecules** 33 (2000) 6664-6671.
66. N.R. Kenkare, C.K. Hall, S.A. Khan, "Theory and Simulation of Polymer Gels", **J. Chem. Phys.** 113 (2000) 404-418.
65. H.J. Walls, J. Zhou, J.A. Yerian, M.K. Stowe, G.L. Baker, P.S. Fedkiw, S.A. Khan, "Fumed Silica-based Composite Polymer Electrolytes: Synthesis, Rheology and Electrochemistry", **J. Power Sources** 89(2) (2000) 156-162.
64. R.J. English, R.D. Jenkins, S.A. Khan, "Rheology of a HASE Associative Polymer and Its Interaction with Non-ionic Surfactants", in *Associative Polymers in Aqueous Media*, ACS Symposium Series 765 J.E. Glass ed. (2000) 369-380.
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62. C.M. Nunez, B.S. Chiou, A.L. Andraday, S.A. Khan, "Solution Rheology of Hyperbranched Polyesters and their Blends with Linear Polymers", **Macromolecules** 33 (2000) 1720-1726.
61. J.S. Shay, R.J. English, S.A. Khan, " Rheological Behavior of a Polymerically Stabilized Latex for Use in Water-borne Coatings" **Polym. Eng. Sci.** 40(6) (2000) 1271-1282.
60. J.R. Royer, J.M. DeSimone, S.A. Khan, "Carbon Dioxide-Induced Swelling of Poly(dimethylsiloxane)", **Macromolecules** 32 (1999) 8965-8973.
59. A.Tayal, V.B. Pai, S.A. Khan, "Rheology and Microstructural Changes during Enzymatic Degradation of a Guar-Borax Hydrogel", **Macromolecules** 32 (1999) 5567-5574.
58. R.J. English, S.R. Raghavan, R.D. Jenkins, S.A. Khan, "Associative Polymers Bearing n-Alkyl Hydrophobes: Rheological Evidence of Microgel-like Behavior", **J. Rheology** 43 (1999) 1175-1194.
57. Walker, T.A., Raghavan, S.R., Royer, J.R., Smith, S.D., Wignall, G.D., Melnichenko, Y., Khan, S.A., and Spontak, R.J., "Enhanced Miscibility of Low-Molecular-Weight Polystyrene/ Polyisoprene Blends in Supercritical CO<sub>2</sub>," **J. Phys. Chem. B** 103 (1999) 5472-5476.
56. J.H Laurer, S.A. Khan, R.J. Spontak, M.M. Satkowski, J.T. Grothaus, S.D. Smith, J.S. Lin, "Morphology and Rheology of SIS and SEPS Triblock Copolymers in the Presence of a Midblock-Selective Solvent," **Langmuir** 15 (1999) 7947.
55. R.Y. Ryu, R.D. Gilbert, S.A. Khan, "The Influence of Cationic Additives on the Rheological, Optical and Printing Properties of an Ink-Jet Coating", **TAPPI Journal** 82(11) (1999) 128-134.
54. A.Tayal, R.M. Kelly, S.A. Khan, "Rheology and Molecular Weight Changes during Enzymatic Degradation of a Water-soluble Polymer", **Macromolecules** 32 (2) (1999) 294-300.

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