

PUBLICATIONS & CONFERENCE PRESENTATIONS

Refereed Journal Publications

S. Ghafoori, M. Mehrvar and P.K. Chan, "Photoreactor Scale-up for Degradation of Aqueous Poly(vinyl alcohol) using UV/H₂O₂ Process", Chemical Engineering Journal (accepted January 19, 2014).

S. Ghafoori, K.K. Shah, M. Mehrvar and P.K. Chan, "Pharmaceutical Wastewater Treatment using Granular Activated Carbon and UV/H₂O₂ Processes: Experimental Analysis and Modeling, The Canadian Journal of Chemical Engineering (accepted October 7, 2013).

S. Ghafoori, M. Mehrvar and P. Chan, "Optimization of Photo-Fenton-like Degradation of Aqueous Polyacrylic Acid using Box-Behnken Experimental Design", The Canadian Journal of Chemical Engineering, **92**, 97-108 (2014).

S. Ghafoori, M. Mehrvar and P.K. Chan, "Photo-assisted Fenton-like Degradation of Aqueous Poly(acrylic acid): From Mechanistic Kinetic Model to CFD Modeling", Chemical Engineering Research and Design, **91**, 2617-2629 (2013).

S. Ghafoori, M. Mehrvar and P. Chan, "Kinetic Study of Photodegradation of Water Soluble Polymers", Iranian Polymer Journal, **12**, 869-876 (2012).

S. Ghafoori, M. Mehrvar and P. Chan, "Free-Radical-Induced Degradation of Aqueous Polyethylene Oxide by UV/H₂O₂: Experimental Design, Reaction Mechanisms, and Kinetic Modeling", Industrial & Engineering Chemistry Research, **51**, 14980-14993 (2012).

D. Patel, J. Wu, P. Chan, S. Upreti, G. Turcotte, and T. Ye, "Surface Modification of Low Density Polyethylene Film by Homogeneous Catalytic Ozonation", Chemical Engineering Research and Design, **90**, 1800-1806 (2012).

H. Gu, J. Wu, P. Chan, G. Turcotte and T. Ye, "Hydrophilicity Modification of Polypropylene Microfiltration Membrane by Ozonation", Chemical Engineering Research and Design, **90**, 229-237 (2012).

S. Hong and P.K. Chan, "Simultaneous Use of Temperature and Concentration Gradients to Control Polymer Solution Morphology Development during Thermal-Induced Phase Separation", Modelling and Simulation in Materials Science and Engineering, **18**, 025013 (2010).

K.-W.D. Lee, M.R. Kamal and P.K. Chan, "Thermally-Induced Phase Separation in Liquid Crystalline Polymer/Polycarbonate Blends", Journal of Applied Polymer Science, **117**, 2651-2668 (2010).

V. Akbarzadeh, A. Lohi, P.K. Chan and S.R. Upreti, "Behavior of Nematic Bipolar Droplet in PDLC Films: An Optimization Study", Macromolecular Theory and Simulations, **19**, 81-87 (2010).

K.-W.D. Lee, M.R. Kamal and P.K. Chan, "Phase Separation under Shear in Liquid Crystalline Polymer/Polycarbonate Blends", International Polymer Processing, **XXIV**, 83-89 (2009).

S.B. Kukadiya, P.K. Chan and M. Mehrvar, "A Computational Study of the Ludwig-Soret Effect on the Thermal-Induced Phase Separation Process in Polymer Solutions", *Macromolecular Theory and Simulation*, **18**, 97-107 (2009).

L. Pakzad, F. Ein-Mozaffari and P.K. Chan, "Measuring Mixing Time in the Agitation of Non-Newtonian Fluids through Electrical Resistance Tomography", *Chemical Engineering and Technology*, **31**, 1838-1845 (2008).

K.-W.D. Lee, M.R. Kamal and P.K. Chan, "Determination of the Phase Diagram of HBA-HNA Liquid Crystalline Polymer/Polycarbonate Blends", *Journal of Applied Polymer Science*, **111**, 396-407 (2008).

S. Jagoo, C. Ravindran, P. Chan, D. Nolan and A. McLean, "Novel Polystyrene Composite Beads for the Lost Foam Cast Process", *AFS Transactions*, **116**, 943-954 (2008).

L. Pakzad, F. Ein-Mozaffari and P.K. Chan, "Using Computational Fluid Dynamics Modeling to Study the Cavern Formation in Mixing of Pseudoplastic Fluids with a Scaba 6SRGT Impeller", *Chemical Engineering and Processing*, **47**, 2218-2227 (2008).

L. Pakzad, F. Ein-Mozaffari and P. Chan, "Using Electrical Resistance Tomography and Computational Fluid Dynamics Modeling to Study the Formation of Cavern in the Mixing of Pseudoplastic Fluids Possessing Yield Stress", *Chemical Engineering Science*, **63**, 2508-2522 (2008).

B.T. Jiang and P.K. Chan, "Effect of Concentration Gradient on the Morphology Development in Polymer Solutions undergoing Thermal-induced Phase Separation", *Macromolecular Theory and Simulations*, **16**, 690-702 (2007).

T.L. Tran, P.K. Chan and D. Rousseau, "Morphology Control in Symmetric Polymer Blends Using Two-step Phase Separation", *Computational Materials Science*, **37**, 328-335 (2006).

P.K. Chan, "Effect of Concentration Gradient on the Thermal-Induced Phase Separation Phenomenon in Polymer Solutions", *Modelling and Simulation in Materials Science and Engineering*, **14**, 41-51 (2006).

S. Hong and P.K. Chan, "Computational Study of the Texture Formation in Mesophase Pitch Based Carbon Fibers", *Liquid Crystals*, **33**, 295-306 (2006).

S. Hong and P.K. Chan, "Structure Development and Texture Formation in Carbonaceous Mesophase Fibers", *Computational Materials Science*, **36**, 310-318 (2006).

T.L. Tran, P.K. Chan and D. Rousseau, "Morphology Control in Symmetric Polymer Blends Using Spinodal Decomposition", *Chemical Engineering Science*, **60**, 7153-7159 (2005).

K.-W.D. Lee, P.K. Chan and X. Feng, "Morphology Development and Characterization of the Phase-Separated Structure Resulting from the Thermal-Induced Phase Separation Phenomenon in Polymer Solutions under a Temperature Gradient", *Chemical Engineering Science*, **59**, 1491-1504 (2004).

K.-W.D. Lee, P.K. Chan and X. Feng, "A Computational Study of the Polymerization-Induced Phase Separation Phenomenon in Polymer Solutions under a Temperature Gradient", *Macromolecular Theory and Simulations*, **12**, 413-424 (2003).

G. Huang, P.K. Chan and M.R. Kamal, "Phase Diagram for Liquid Crystalline Polymer/Polycarbonate Blends", *The Canadian Journal of Chemical Engineering*, **81**, 243-257 (2003).

K.-W.D. Lee, P.K. Chan and X. Feng, "A Computational Study of the Thermal-Induced Phase Separation Phenomenon in Polymer Solutions under a Temperature Gradient", *Macromolecular Theory and Simulations*, **11**, 996-1005 (2002).

P.K. Chan, K.-W.D. Lee and T.L. Tran, "The Effects of Elongated Nematic Bipolar Droplet Orientation on the Performance of Polymer-Dispersed Liquid Crystal Films", *Computational Materials Science*, **21**, 329-338 (2001).

P.K. Chan, "Computer Simulation of Elongated Bipolar Nematic Droplets: 2. External Field Aligned Normal to the Droplet Axis of Symmetry", *Liquid Crystals*, **28**, 207-215 (2001).

P.K. Chan, "Computer Simulation of Elongated Bipolar Nematic Droplets: 1. External Field Aligned Parallel to the Droplet Axis of Symmetry", *Liquid Crystals*, **26**, 1777-1786 (1999).

P.K. Chan and A.D. Rey, "Simulation of Reorientation Dynamics in Bipolar Nematic Droplets", *Liquid Crystals*, **23**, 677-688 (1997).

P.K. Chan and A.D. Rey, "Polymerization-Induced Phase Separation. 2. Morphological Analysis", *Macromolecules*, **30**, 2135-2143 (1997).

P.K. Chan and A.D. Rey, "Polymerization-Induced Phase Separation. 1. Droplet Size Selection Mechanism", *Macromolecules*, **29**, 8934-8941 (1996).

P.K. Chan and A.D. Rey, "Computational Analysis of Spinodal Decomposition Dynamics in Polymer Solutions", *Macromolecular Theory and Simulations*, **4**, 873-899 (1995).

P.K. Chan and A.D. Rey, "A Numerical Method for the Nonlinear Cahn-Hilliard Equation with Nonperiodic Boundary Conditions", *Computational Materials Science*, **3**, 377-392 (1995).

P.K. Chan and A.D. Rey, "A Study on the Relaxation Phenomena of Nematic Polymers after Cessation of Shear Flow", *Liquid Crystals*, **13**, 775-795 (1993).

P.K. Chan and A.D. Rey, "Simulation of Transient Banded Textures of Sheared Nematic Polymers", *Liquid Crystals*, **12**, 1025-1028 (1992).

Refereed Conference Proceedings

S. Ghafoori, M. Mehrvar and P. Chan, "Mechanism and Kinetic Modeling of Photodegradation of Polymer-based Composites in Aqueous Solution", *Proceedings of the 2nd International Conference on Composites: Characterization, Fabrication and Application*, Kish Island, Iran (December 27-30, 2010).

L. Pakzad, F. Ein-Mozaffari and P.K. Chan, "Simulation of the Mixing of Highly Viscous Fluids with a Scaba 6SRGT Impeller using CFD", in CANCAM 2007 Conference Proceedings, 416-417 (2007).

K.-W.D. Lee, M.R. Kamal and P.K. Chan, "Phase Separation in Thermotropic Liquid Crystalline Polymer/Polycarbonate Blends under Shear", in ANTEC 2007 Conference Proceedings, 342-346 (2007).

K.-W.D. Lee, M.R. Kamal and P.K. Chan, "Effect of Shear on the Phase Diagram and Morphology of PC/LCP Blends", in ANTEC 2006 Conference Proceedings, 776-781 (2006).

P.K. Chan, "Comparison of Mobility Modes in Polymer Solutions undergoing Thermal-Induced Phase Separation", in: Materials Research Society Symposium Proceedings (Polymer Interface and Thin Films), **710**, DD4.6.1-DD4.6.6 (2002).

Conference Presentations

S. Ghafoori, M. Mehrvar, P. Chan, "Determination of Intrinsic Kinetic Constants for Scaling-up a Photoreactor for Degradation of Poly(vinyl alcohol) using UV/H₂O₂ Process", 7th IWA Specialised Membrane Technology Conference and Exhibition for Water and Wastewater Treatment and Reuse, Toronto, Canada (August 25-29, 2013).

S. Ghafoori, M. Mehrvar, P. Chan, "Photoreactor Scale-Up for the Degradation of Aqueous Poly(ethylene oxide)", 5th Canadian Wastewater Management Conference & 48th Central Canadian Symposium on Water Quality Research, Hamilton, Canada, Presentation C3 4:00 pm (March 6-8, 2013).

S. Ghafoori, M. Mehrvar, P. Chan, "A Statistical Experiment Approach for the Photo-fenton-like Degradation of Poly(acrylic acid)", 62nd Canadian Chemical Engineering Conference, Vancouver, Canada, Abstract 50 (October 14-17, 2012).

S. Ghafoori, M. Mehrvar, P. Chan, "Kinetic Study and CFD Modeling of Poly(acrylic acid) Degradation by Photo-Fenton-like Process", 62nd Canadian Chemical Engineering Conference, Vancouver, Canada, Abstract 745 (October 14-17, 2012).

M. Tabatabaieyazdi, P.K. Chan and J. Wu, "Effect of Temperature and Multiple Surface Potentials on Morphology Evolution in Symmetric Polymer Blends", 62nd Canadian Chemical Engineering Conference, Vancouver, Canada, Abstract 266 (October 14-17, 2012).

M. Mehrvar, S. Ghafoori and P.K. Chan, "Optimization of Aqueous Polyethylene Oxide Photodegradation using Response Surface Morphology", 47th Central Canadian Symposium on Water Quality Research, Burlington, Canada (February 21-22, 2012).

M. Tabatabaieyazdi, P.K. Chan and J. Wu, "Effect of Temperature Gradient and Long-range Surface Interactions on Morphology Evolution in Polymer Blends", 61st Canadian Chemical Engineering Conference, London, Canada, Abstract 358 (October 23-26, 2011).

M. Tabatabaieyazdi, P.K. Chan and J. Wu, "Effect of Temperature Gradient and Surface Potential on Morphology Evolution in Symmetric Polymer Blends", 61st Canadian Chemical Engineering Conference, London, Canada, Abstract 589 (October 23-26, 2011).

S. Ghafoori, M. Mehrvar, P. Chan and K. Shah, "TOC Removal of Pharmaceutical Wastewater using Combined Granular Activated Carbon and UV/H₂O₂ Processes", 61st Canadian Chemical Engineering Conference, London, Canada, Abstract 356 (October 23-26, 2011).

S. Ghafoori, M. Mehrvar and P. Chan, "Photoinduced Degradation of Poly(n-vinyl pyrrolidone) in Aqueous Solution by Iron Salts: Degradation Mechanism and Kinetic Modeling", 61st Canadian Chemical Engineering Conference, London, Canada, Abstract 56 (October 23-26, 2011).

S. Ghafoori, M. Mehrvar and P. Chan, "Photodegradation of Poly(ethylene oxide) by UV/H₂O₂ Process: Experimental Analysis and Kinetic Modeling Approach", 61st Canadian Chemical Engineering Conference, London, Canada, Abstract 352 (October 23-26, 2011).

S. Ghafoori, M. Mehrvar and P. Chan, "Mechanism and Kinetic Modeling of Photodegradation of Polymer-based Composites in Aqueous Solution, The 2nd International Conference on Composites: Characterization, Fabrication and Application, Kish Island, Iran (December 27-30, 2010).

S. Ghafoori, M. Mehrvar and P. Chan, "Photochemical Kinetics of Poly(ethylene glycol) Degradation in Aqueous Solution", 46th Central Canadian Symposium on Water Quality Research, Burlington, Canada (February 21-23, 2011).

L. Pakzad, F. Ein-Mozaffari and P. Chan, "Analysis of Cavern Formation in Mixing of Yield Stress Fluids Using Tomography and CFD Modeling", 6th International Symposium on Mixing in Industrial Processes, Niagra Falls, Canada (August 17-21, 2008).

L. Pakzad, F. Ein-Mozaffari and P.K. Chan, "Simulation of the Mixing of Highly Viscous Fluids with a Scaba 6SRGT Impeller using CFD", CANCAM 2007, Toronto, Canada (June 3-7, 2007).

K.-W.D. Lee, M.R. Kamal and P.K. Chan, "Phase Separation in Thermotropic Liquid Crystalline Polymer/Polycarbonate Blends under Shear", ANTEC 2007, Cincinnati, USA (May 6-10, 2007).

B.T. Jiang, P.K. Chan and K.-W.D. Lee, "Fabrication of Anisotropic Porous Polymeric Materials", 56th Canadian Chemical Engineering Conference, Sherbrooke, Canada, Abstract 23 (October 15-18, 2006).

K.-W.D. Lee, M.R. Kamal and P.K. Chan, "Thermally-Induced Phase Separation in Thermotropic Liquid Crystalline Polymer / Polycarbonate Blends", 56th Canadian Chemical Engineering Conference, Sherbrooke, Canada, Abstract 24 (October 15-18, 2006).

K.-W.D. Lee, M.R. Kamal and P.K. Chan, "Effect of Shear on the Phase Diagram and Morphology of PC/LCP Blends", ANTEC 2006, Charlotte (May 7-11, 2006).

S.J. Hong, B.T. Jiang and P.K. Chan, "Fabrication of Functional Polymeric Materials with Anisotropic Morphologies", 55th Canadian Chemical Engineering Conference, Toronto, Canada, Abstract 141 (October 16-19, 2005).

K.-W.D. Lee, M.R. Kamal and P.K. Chan, "Determination of Phase Separation Temperatures by Polarized Light Microscopy in Liquid Crystalline Polymer / Polycarbonate Blends", 55th Canadian Chemical Engineering Conference, Toronto, Canada, Abstract 136 (October 16-19, 2005).

K.-W.D. Lee, P.K. Chan and X. Feng, "A Computational Study of the Thermal-Induced Phase Separation Phenomenon in Polymer Solutions under a Temperature Gradient", 53rd Canadian Chemical Engineering Conference, Hamilton, Canada, Abstract 560 (October 26 – 29, 2003).

T.L. Tran, P.K. Chan and D. Rousseau, "Computer Modeling and Simulation of Phase Separation in Mixed Biopolymers", The 6th International Hydrocolloids Conference, Guelph, Ontario (July 15 - 19, 2002).

K.-W.D. Lee, P.K. Chan and X. Feng, "Computational Study of the Fabrication of Anisotropic Polymeric Materials from the Phase Separation of Polymer Solutions", University of Waterloo Graduate Student Research Conference, Waterloo, Canada, Conference Program p. 81 (April 1 - 5, 2002).

P.K. Chan, K.-W.D. Lee and T.L. Tran, "Optimization of the Performance of Polymer Dispersed Liquid Crystal Films", Materials Research Society 2001 Fall Meeting, Boston, USA, Abstract CC6.10 (November 26 - 30, 2001).

P.K. Chan, "Comparison of Mobility Modes in Polymer Solutions undergoing Thermal-Induced Phase Separation", Materials Research Society 2001 Fall Meeting, Boston, USA, Abstract DD4.6 (November 26 - 30, 2001).

K.-W.D. Lee, P.K. Chan and X. Feng, "Fabrication of Anisotropic Polymeric Materials via Polymerization-Induced Phase Separation of Polymer Solutions", 51st Canadian Chemical Engineering Conference, Halifax, Canada, Abstract 316 (October 14 - 17, 2001).

P.K. Chan, "Fabrication of Porous Polymeric Functional Materials Via Spinodal Decomposition", 50th Canadian Chemical Engineering Conference, Montreal, Canada (October 15-18, 2000).

P.K. Chan, "On the Magnetic-induced Director Reorientation Mechanism in the Liquid Crystalline Droplets found in Polymer Dispersed Liquid Crystals", 50th Canadian Chemical Engineering Conference, Montreal, Canada (October 15-18, 2000).

P.K. Chan, "On the Director Reorientation Dynamics in Elongated Bipolar Nematic Droplets", Materials Research Society 1999 Fall Meeting, Boston, USA, Abstract CC3.11 (November 29 - December 3, 1999).

P.K. Chan and A.D. Rey, "Simulation of Reorientation Dynamics in Bipolar Nematic Droplets", Materials Research Society 1999 Spring Meeting, San Francisco, USA, Abstract D5.7 (April 5-9, 1999).

P.K. Chan and A.D. Rey, "A Study on the Dynamics of Spinodal Decomposition in Polymerizing Monomer-Solvent Solutions", 46th Canadian Chemical Engineering Conference, Kingston, Canada, Abstract p. 131 (September 29 - October 2, 1996).

P.K. Chan and A.D. Rey, "Simulation of Transient Banded Textures of Sheared Nematic Polymers", Recent Developments in Structured Continua III, Montreal, Canada, Abstract p. 9 (May 26-28, 1993).

Invited Publications

T.L. Tran, P.K. Chan and D. Rousseau, "Phase Separation in Food Biopolymer Mixtures", in: Phase Separation in Polymer Systems: Theory and Applications, edited by P.K. Chan, Research Signpost, India (2002)

P.K. Chan, "Spinodal Decomposition in Binary Polymer Solutions", Recent Research Developments in Macromolecules Research, **3**, 439-453 (1998).

Invited Talks

P.K. Chan, "Formation of Porous Polymeric Materials using Spinodal Decomposition", Department of Chemical Engineering, McMaster University (November 23, 2006).

P.K. Chan, "Phase Separation in Polymer Solutions and Blends: Fundamentals and Applications", University of New Hampshire (May 2, 2002).

P.K. Chan and A.D. Rey, "A Study on the Dynamics of Spinodal Decomposition in Polymer Solutions", 45th Canadian Chemical Engineering Conference, Quebec City, Canada, Abstract p. 305 (October 15-18, 1995).

Editorship

"Phase Separation in Polymer Solutions and Blends", edited by P.K. Chan, Research Signpost, India (2002).

Theses

P.K. Chan, "Formation and Performance of Polymer Dispersed Liquid Crystal Films", Ph.D. Thesis, Department of Chemical Engineering, McGill University, Montreal, Canada (1997).

P.K. Chan, "A Study on the Relaxation Phenomena and Pattern Formation of Nematic Polymers after Cessation of Shear Flow", M.Eng. Thesis, Department of Chemical Engineering, McGill University, Montreal, Canada (1992).