

Deanna L. Pickel

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Education

Saint Mary's College, South Bend, IN	Chemistry and Math	B.S., B.A. <i>Summa Cum Laude</i> ,	1999
University of Akron, Akron, OH	Polymer Science	Ph.D.,	2003

Professional Experience

2007–present	Research Staff Member, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory
2007	Principle Research Chemist, Eastman Chemical Company, Kingsport, TN
2003–2007	Senior Research Chemist, Eastman Chemical Company, Kingsport, TN
1999–2003	Graduate Research Assistant, Department of Polymer Science, The University of Akron, Akron, OH
1999	Pre-Doctoral Intern, Research & Product Development, Proctor and Gamble, Cincinnati, OH
1998	Summer Undergraduate Research Intern, Department of Chemistry, Virginia Polytechnic Institute and State University, Blacksburg, VA
1997	Summer Undergraduate Research Intern, Department of Chemistry, The Ohio State University, Columbus, OH

Professional Activities

2004–Present	Membership Committee, Polymer Division of the American Chemical Society
1999–Present	Member: American Chemical Society, American Society of Mass Spectrometry

Honors and Awards

2012	Significant Event Award, Oak Ridge National Laboratory
2011	External Advisory Board, NSF-IGERT Project Magnetic and Nanostructure Materials, Norfolk State University, Norfolk, VA
2002	Eastman Chemical Company Enhancement Fellowship
2002	Hoyt F. and Merdith Wells Scholarship, Outstanding 3 rd year graduate student
2002	ICI Student Award in Applied Polymer Science Finalist (invited lecture at ACS National Meeting)
2000	Maurice Morton Award, Outstanding Performance in First Year Courses
1999	Demming Baker Scholarship, Outstanding recruit
1999	American Institute of Chemists Award, Saint Mary's College

Publications Full list follows CV

Research Interests

My current research interests involve three different areas: surface-characterization of polymer brushes utilizing MALDI-TOF MS, the effects of confinement on the structures of surface bound poly(amino acid)s, and how the micelle core structure impacts the stability, morphology, and diffusive properties of micelles. The last two areas focus on self-assembly, and how both chemical composition and confinement can alter the self-assembly behavior of macromolecular materials. The study of self-assembly requires well-define polymeric materials. In this vein, I utilize both Anionic and Controlled Radical Polymerization Techniques to precisely synthesize the materials. The resulting materials are currently studied by Dynamic and Static Light Scattering and Fluorimetry, and in the future Neutrons will be utilized.

Collaborations Outside ORNL During Past Two Years: A. Karim (U. Akron), M. Hickner (Penn State), A. Vertes (GWU), J. Lu (UCMerced), G. Sakellariou (U. Athens), R. Verduzco (Rice)

Publications – Research Articles

1. Kochemba, W.; Pickel, Deanna L.; Sumpter, Bobby; Chen, Jihua; Kilbey, S. Michael “In-situ formation of pyridyl-functionalized poly(3-hexylthiophene)s via quenching of the Grignard metathesis polymerization: Toward ligands for semiconductor quantum dots” *Chem. Mater.*, 2012, 24, 4459–4467.
2. Hinestrosa, J. P.; Uhrig, D. W.; Pickel, D. L.; Mays, J. M.; Kilbey, S. M. II “Hydrodynamics of Polystyrene-Polyisoprene Miktoarm Star Copolymers in a Selective and a Non-Selective Solvent” *Soft Matter*, 2012, 8, 10061-10071.
3. Saito, T.; Brown, R. H.; Hunt, M. A.; Pickel, D. L.; Pickel, J. M.; Messman, J. M.; Baker, F. S.; Keller, M.; Naskar, A. K. “Turning Renewable Resources into Recyclable Polymer: Development of Lignin-Based Thermoplastic” *Green Chemistry*, 2012, 14, 3295-3303. Featured Front Cover December 2012.
4. Chen, J.; Yu, X.; Hong, K.; Messman, J. M.; Pickel, D. L.; Xiao, K.; Dadmun, M. D.; Mays, J. W.; Rondinone, A. J.; Sumpter, B.; Kilbey, S. M. II “Ternary Phase Behavior of P3HT/P3HT-b-PEO/PCBM: Manipulating Donor/Acceptor Nano-Phase Separation with a Conjugated Block Copolymer Compatibilizer” *J. Mater. Chem.*, 2012, 22, 13013-13022. Featured Inside Front Cover July 14, 2012.
5. Kochemba, W. M.; Kilbey, S. M., II; Pickel, D. L.; “End-group composition of poly(3-hexylthiophene)s prepared by *in situ* quenching of the GRIM polymerization: Influence of additives and reaction conditions” *J. Polym. Sci. Part A: Polym. Chem.*, 2012, 50, 2762-2769.
6. Messman, J. M.; Pickel, D. L.; Goswami, M.; Uhrig, D. W.; Sumpter, B. G.; Mays, J. W. “Combating ionic aggregation using dielectric forces—combining modeling/simulation and experimental results to explain end-capping of primary amine functionalized polystyrene” *Polym. Chem.* 2011, 2(11), 2481-2489. Featured Cover November 2011 Issue.
7. Verduzco, R.; Botiz, I.; Pickel, D. L.; Kilbey, S. M. II; Hong, K. L.; Dimasi, E.; Darling, S. B.; “Polythiophene-block-polyfluorene and Polythiophene-block-poly(fluorene-co-benzothiadiazole): Insights into the Self-Assembly of All-Conjugated Block Copolymers” *Macromolecules*, 2011, 44(3), 530-539.
8. Driva, P.; Pickel, D. L.; Mays, J. W.; Baskaran, D. “A New Approach to the Living Anionic Polymerization of 4-Cyanostyrene” *Macromolecules*, 2010, 43(16), 6915-6918.
9. Walker, B. N.; Stolee, J. A.; Pickel, D. L.; Retterer, S. T.; Vertes, A. “Assessment of Laser-Induced Thermal Load on Silicon Nanostructures Based on Ion Desorption Yields” *Applied Physics A*, 2010, 101(3), 539-544.
10. Walker, B. N.; Stolee, J. A.; Pickel, D. L.; Retterer, S. T.; Vertes, A. "Tailored Silicon Nanopost Arrays for Resonant Nanophotonic Ion Production" *J. Phys. Chem. C.*, 2010, 114(11), 4385-4840. Featured Cover of March 25, 2010 Issue.
11. Pickel, D. L.; Politakos, N.; Avgeropoulos, A.; Messman, J. M. “A Mechanistic Study of α -Amino Acid-N-Carboxy Anhydride Polymerization: Comparing Initiation and Termination Events in High Vacuum and Traditional Polymerization Techniques” *Macromolecules*, 2009, 42(20), 7781-7788.
12. Zhang, X. H.; Berry, B. C.; Yager, K. G.; Kim, S.; Jones, R. L.; Satija, S.; Pickel, D. L.; Douglas, J. F.; Karim, A.; “Surface Morphology Diagram for Cylinder-Forming Block Copolymer Thin Films” *ACS Nano*, 2008, 2(11), 2331-2341.

13. Quirk, R. P.; Pickel, D. L.; Hasegawa, H. "Anionic Polymerization Chemistry of Epoxides: Electron-Transfer Processes" *Macromol. Symp.* 2005, 226, 69-77.
14. Quirk, R. P.; Hasegawa, H.; Gomochak (Pickel), D. L.; Wesdemiotis, C.; Wollyung, K. "Functionalization of Poly(styryl)lithium with Styrene Oxide" *Macromolecules* 2004, 37(19), 7146-7155.
15. Quirk, R. P.; Gomochak (Pickel), D. L.; Bhatia, R. S.; Wesdemiotis, C.; Arnould, M. A.; Wollyung, K. "Synthesis of diene-functionalized macromonomers via functionalization with hexa-1,3,5-triene" *Macromol. Chem. Phys.* 2003, 204(18), 2183-2196.
16. Quirk, R. P.; Gomochak (Pickel), D. L. "Recent advances in anionic synthesis of chain-end functionalized elastomers using epoxides and related compounds" *Rubber Chem. Tech.* 2003, 76(4), 812-831.
17. Quirk, R. P.; Cheong, T.-H.; Jiang, K.; Gomochak (Pickel), D. L.; Yoo, T.; Andes, K. T.; Mathers, R. T. "Recent advances in the anionic synthesis of chain-end functionalized polymers" *Macromol. Symp.* 2003, 195, 69-74.
18. Quirk, R. P.; Gomochak (Pickel), D. L.; Wesdemiotis, C.; Arnould, M. A. "Functionalization of polymeric organolithium compounds with 3,4-epoxy-1-butene: Precursors for diene-functionalized macromonomers" *J. Polym. Sci., Part A: Polym. Chem.* 2003, 41(7), 947-957.

Works In Preparation

Smith, K. A.; Lin, Y.-H.; Dement, D. B.; Strzalka, J. W.; Darling, S. B.; Pickel, D. L.; Verduzco, R. "Synthesis and Crystallinity of All-Conjugated Block Copolymers prepared by Click Chemistry" *Macromolecules*, To be submitted.

Uhrig, D.; Morar, G. C.; Kilbey, S. M.; Sumpter, B.; Goswami, M.; Pickel, D. L. "Uncovering heterogeneities of well-defined branched polymers by 2D Chromatography" In preparation.

Chen, H.; Chen, J.; Yin, W.; Yu, X.; Shao, M.; Xiao, K.; Hong, K.; Pickel, D. L.; Kochemba, W. M.; Kilbey, S. M., II; Dadmun, M. "Correlation of Polymeric Compatibilizer Structure to its Impact on the Morphology and Function of P3HT:PCBM Bulk Heterojunctions" In preparation.

Alonzo, J.; Kochemba, W. M.; Pickel, D. L.; Ramanathan, M.; Sumpter, B. G.; Heller, W. T.; Kilbey, S. M., II "Novel Organic Photovoltaic Buffer Layers Based on Poly(3-hexylthiophene) (P3HT) Brushes", In preparation.

Book Chapters

Quirk, R. P.; Pickel, D. L. "Polymerization: Elastomer Synthesis" in Science and Technology of Rubber Eds. Mark, J. E.; Erman, B. 4th Ed., Ch. 2, Submitted.

Quirk, R. P.; Pickel, D. L. "Controlled end-group functionalization; including telechelics"; In Vol. 6. *Macromolecular Architecture and Soft Nano-Objects*; Müller, A.H.E. and Wooley, K.L. Vol. Eds. In *Polymer Science: A Comprehensive Reference*; Matyjaszewski, K., Möller, M., Eds.-in-Chief; Elsevier: Amsterdam, 2012; pp 351–412. <http://dx.doi.org/10.1016/B978-0-444-53349-4.00168-0>.

Quirk, R. P.; Pickel, D. L. "Polymerization: Elastomer Synthesis" in Science and Technology of Rubber Eds. Mark, J. E.; Erman, B. 3rd Ed., 2005, Ch. 2.

Quirk, R. P.; Gomochak Pickel, D. L.; Schulz, G. O. "Macromonomers as Precursors to Thermoplastic Elastomers" in Thermoplastic Elastomers Ed. Holden, G.; Kricheldorf, H.; Quirk, R. P. 4th Ed, 2004, p 323-363.

Quirk, R. P.; Pickel, D. L. "Anionic Synthesis of Chain-End Functionalized Polymers: Scope, Limitations and Recent Advances" in Living and Controlled Polymerization: Synthesis, Characterization, and Properties of the Respective Polymers and Copolymers Ed. J. Jagur-Grodzinski, Nova Science: New York 2006, pp 235-256

Quirk, R. P.; Pickel, D. L. "Polymerization" in Science and Technology of Rubber Eds. Mark, J. E.; Erman, B. 3rd Ed., 2005, Ch. 2.

Quirk, R. P.; Gomochak Pickel, D. L.; Schulz, G. O. "Macromonomers as Precursors to Thermoplastic Elastomers" in Thermoplastic Elastomers Ed. Holden, G.; Kricheldorf, H.; Quirk, R. P. 4th Ed, 2004, p 323-363.

Patents

McWilliams, D. Neill, R. T., Maine, J.C., Donelson, M. E., Hartley, G.W., Delaney-Jackson, A. M., Pickel, D. L., "UV-absorbing additives suitable for thermoplastic articles made from processes with extended heat histories" US2009105380.

Pickel, D. L.; Strand, M. A., Irick, G., McWilliams, D. S., Donelson, M. E., "Use of Copolymerizable Sulfonate Salts to Promote Char Formation in Polyesters and Copolyesters" US2008167440.

Other Written Contributions

Authored or co-authored 18 internal technical reports, contributor on 10 internal technical reports, and author of one invention report.