

BRYAN S. BECKINGHAM, Ph.D.

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RESEARCH INTERESTS

I endeavor to combine synthetic polymer chemistry with materials characterization to inform the design of novel polymer materials for target applications.

EDUCATION

Princeton University, Princeton, NJ
Ph.D., Chemical & Materials Engineering (September 2013)
Dissertation: Mixing thermodynamics of block-random copolymers
Advisor: Dr. Richard A. Register

M.A., Chemical Engineering (June 2009)

Clarkson University, Potsdam, NY
B.S. with University Honors, Chemical Engineering with Great Distinction; Minors: Physics, Mathematics (May 2007)

PROFESSIONAL EXPERIENCE

<i>Current</i>	<i>Assistant Professor</i> , Auburn University, Auburn, AL Department of Chemical Engineering
2014-2015	<i>Materials Postdoctoral Fellow</i> , Joint Center for Artificial Photosynthesis, Lawrence Berkeley National Laboratory, Berkeley, CA. Supervisor: Dr. Nathaniel A. Lynd
2013-2014	<i>Materials Postdoctoral Fellow</i> , Joint Center for Artificial Photosynthesis, Lawrence Berkeley National Laboratory, Berkeley, CA. Supervisor: Dr. Rachel A. Segalman
2007-2013	Princeton University, Princeton, NJ <i>Research Assistant</i> for Prof. Richard A. Register, Dept. of Chemical and Biological Engineering <i>Teaching Assistant</i> for Dept. of Chemical and Biological Engineering
2006	<i>Undergraduate Research Assistant</i> , Center on Polymer Interfaces and Macromolecular Assemblies, for Prof. Majorie Longo, University of California, Davis, Davis, CA.
2006-2007	<i>Honors Thesis</i> , with Prof. Roshan Jachuck. Clarkson University, Potsdam, NY.
2004	<i>Honors Program Summer Researcher</i> , for Prof. Gregory Campbell, Clarkson University, Potsdam, NY.

PROFESSIONAL MEMBERSHIPS

American Institute of Chemical Engineers
American Chemical Society
American Physical Society
Omega Chi Epsilon; Clarkson University Co-President 2006-2007
Pi Mu Epsilon; Clarkson University President 2006-2007
Tau Beta Pi, Treasurer, Clarkson University, 2005-2007

PEER REVIEWED PUBLICATIONS

Sanoja, G.E.; Popere, B.C.; **Beckingham, B.S.**; Evans, C.M.; Lynd, N.A.; Segalman, R.A. "Structure-Conductivity Relationships of Block Copolymer Membranes based on Hydrated Protic Polymerized Ionic Liquids: Effect of Domain Spacing" *Macromolecules*, **Submitted**

Beckingham, B.S.; Sanoja, G.E.; Lynd, N.A. "Simple and Accurate Determination of Reactivity Ratio Using a Nonterminal Model of Chain Copolymerization" *Macromolecules*, 2015, **48 (19)**, 6922-6930. [[doi](#)]

Davidson, E.C.; **Beckingham, B.S.**; Ho, V.; Segalman, R.A. "Confined Crystallization in Lamellae Forming Poly(3-(2'-ethylhexylthiophene) (P3EHT) Block Copolymers" *J. Polym. Sci. Part B: Polym. Phys.*, 54: 205–215. doi:10.1002/polb.23904. [[doi](#)]

Himmelberger, S.; Duong, D.T.; Northrup, J.E.; Rivnay, J.; **Beckingham, B.S.**; Koch, F.P.V.; Smith, P.; Stingelin, N.; Segalman, R.A.; Mannsfeld, S.C.B.; Salleo, A. "Role of Side-Chain Branching on Thin-film Structure and Electronic Properties of Polythiophenes" *Advanced Functional Materials*, **2015**, 25, 2616-2624. [[doi](#)]

Beckingham, B.S., Ho, V. and Segalman, R. A. "Melting Behavior of Poly(3-(2'-ethyl)hexylthiophene)" *Macromolecules*, **2014**, 47, 8305-8310. [[doi](#)]

Beckingham, B.S.; Ho, V.; Segalman, R.A. "Formation of a Rigid Amorphous Fraction in Poly(3-(2'-ethyl)hexylthiophene)" *ACS Macro Letters*, **2014**, 684-688. [[doi](#)]

Ho, V.; **Beckingham, B. S.**; Hoi, H. Ng; Segalman, R. A. "Control of Thermal and Optoelectronic Properties in Conjugated Poly(3-alkylthiophenes)" *MRS Communications*, **2014**, 4, 45-50. [[doi](#)]

Beckingham, B.S., and Register, R.A. "Architecture-Induced Microphase Separation in Nonfrustrated A-B-C Triblock Copolymers" *Macromolecules*, 2013, **46**, 3486-3496. [[doi](#)]

Beckingham, B.S., and Register, R.A. "Regular Mixing Thermodynamics of Hydrogenated Styrene-Isoprene Block-Random Copolymers" *Macromolecules*, 2013, **46**, 3084-3091. [[doi](#)]

Beckingham, B.S., Burns, A.B., and Register, R.A. "Mixing Thermodynamics of Ternary Block-Random Copolymers Containing a Polyethylene Block" *Macromolecules*, 2013, **46**, 2760-2766. [[doi](#)]

Beckingham, B.S. and Register, R.A. "Synthesis and Phase Behavior of Block-Random Copolymers of Styrene and Hydrogenated Isoprene" *Macromolecules*, 2011, **44**, 4313-4319. [[doi](#)]

INVITED PRESENTATIONS

Beckingham, B.S. "Structure-Property Relationships in Polymer Materials" University of Utah, Dept. of Chemical Engineering Seminar. May 2015.

Beckingham, B.S. "Structure-Property Relationships in Polymer Materials" Virginia Tech, Dept. of Chemical Engineering Seminar. April 2015.

Beckingham, B.S. "Design and Synthesis of Hierarchical Macromolecular Materials". University of Arkansas, Distinguished Lecture Series. February,

2015.

Beckingham, B.S. "Polyolefin mixing thermodynamics and structure-property relationships of poly (alkylthiophenes)" Exxon Corporate Research, Annandale, NJ. July 2014.

Beckingham, B.S., and Register, R.A. "Phase Behavior of Amorphous and Semicrystalline ABC Block-Random Copolymers." Invited oral presentation at Gordon Research Seminar. Mount Holyoke, MA. July, 2012.

CONFERENCE PRESENTATIONS

Beckingham, B.S., Sanoja, G.E, and Lynd, N.A. "Single Polymerization Determination of Reactivity Ratios for Ideal Ionic and Coordination Copolymerizations Using in situ Spectroscopic Techniques" Presented at the International Symposium on Ionic Polymerization 2015. Bordeaux, France. July 2015

Beckingham, B.S., Ho, V. and Segalman, R. A. "Manipulation of P3AT Crystallization Behavior" Presented at American Physical Society, March Meeting. Denver, CO. March 7, 2014.

Beckingham, B.S., Ho, V., and Segalman, R.A. "Manipulation of P3AT Crystallization Behavior" Presented at American Institute of Chemical Engineers Annual Meeting. San Francisco, CA. Nov. 5th 2013.

Beckingham, B.S., and Register, R.A. "Phase Behavior of All-Hydrocarbon Diblock-Random Copolymers" Oral presentation at American Physical Society March Meeting. Baltimore, MD. March 22, 2013.

Beckingham, B.S., and Register, R.A. "Phase Behavior of Amorphous and Semicrystalline ABC Block-Random Copolymers." Poster presentation at Gordon Research Conference. Mount Holyoke, MA. July 24-25, 2012.

Beckingham, B.S., and Register, R.A. "Phase Behavior of Linear ABC Triblock-Random Copolymers with a Semi-crystalline End Block." Oral presentation at American Physical Society March Meeting. Boston, MA. Feb. 29, 2012.

Beckingham, B.S., and Register, R.A. "Phase Behavior of Hydrogenated Derivatives of Linear ABC Block-Random Copolymers of Styrene and Isoprene." Poster presentation at American Physical Society March Meeting. Boston, MA. Feb. 27, 2012.

Beckingham, B.S., and Register, R.A. "Phase Behavior of 'Block-Random' Copolymers." Oral presentation at American Institute of Chemical Engineers Annual Meeting. Minneapolis, MN. Oct. 18, 2011.

Beckingham, B.S., and Register, R.A. "Melt and Solid-State Structures of Semicrystalline Linear ABC 'Block Random' Copolymers." Oral presentation at American Institute of Chemical Engineers Annual Meeting. Minneapolis, MN. Oct. 18, 2011.

Beckingham, B.S., and Register, R.A. "Styrene-Isoprene 'Block-Random' Copolymers: Synthesis and Phase Behavior" Oral presentation at 2011 Princeton-MIT Microsymposium on Polymers, Boston, MA. Jun. 1, 2011.

Beckingham, B.S., and Register, R.A. "Microphase Separation in Block-Random Copolymers of Styrene and Hydrogenated Isoprene" Oral presentation at American Physical Society National Meeting, Dallas, TX. Mar. 21, 2011.

Beckingham, B.S., and Register, R.A. "Frustrated ABC Linear Block-Random Copolymer with a Semicrystalline End Block" Poster presentation at American Physical Society National Meeting, Dallas TX. Mar. 21, 2011.

Beckingham, B.S., and Register, R.A. "Synthesis of and Microphase Separation in Block-Random Copolymers of Styrene and Isoprene" Poster presentation at 2010 Chemical & Biological Engineering Graduate Student Symposium. Princeton University, Princeton, NJ. Oct. 22, 2010.

Beckingham, B.S., Nekkanti, V. and Jachuck, R. "Photo Polymerization of Styrene Using Process Intensification" Oral presentation at Clarkson University Honors Program thesis defense, Potsdam, NY. April, 2007.

Beckingham, B.S., Hoopes, M.I., Goksu, E.I., Noro, M. and Longo, M. "The Stratum Corneum: Formation of Supported C24:0 Ceramide/Stearic Acid/Cholesterol Bilayers" Poster presentation at Symposium for Undergraduate Research. Stanford University, Stanford, CA. Aug. 10, 2006.

HONORS

APGA Summer Travel Fellowship 2012

\$600 for traveling expenses to Gordon Conference on Polymer Physics

Air Products Assistant in Instruction Award 2011

\$500 cash award for excellence as an AI, one of two awards

Princeton University Graduate Fellowship, 2007

Full funding for first year of Ph.D. (~\$63,000)

Clarkson Phalanx Commendable Leadership Award 2007

National Starch and Chemical Company Scholarship 2005

\$1000 award, one of three awards

Eagle Scout, 2002

SERVICE

Reviewer; ACS Macro Letters

Princeton University, Dept. of Chemical & Biological Engineering Safety Committee 2009-2011

Association of Princeton Graduate Alumni, Reunions Crew Member 2010-2012

PCCM Materials Science Day 2011, middle school outreach event

"Making Stuff", March 2011

Prepared and gave demonstrations to middle school students in preparation for the NOVA television program "Making Stuff", in conjunction with the Princeton Center for Complex Materials (PCCM).

Princeton University, Graduate Student Government; CBE dept. representative, 2008-2010

Science & Engineering Expo., Princeton U. 2008-2012 hands on material science related demonstrations for middle school students