

Curriculum Vitae
MICHAEL B. LARSEN

Department of Chemistry, University of Minnesota
207 Pleasant St SE
Minneapolis, MN 55455
(612) 624-6000

2118 Pillsbury Ave S #4
Minneapolis, MN 55404
(720) 297-1153
mblarsen@umn.edu

EDUCATION

University of Minnesota

Postdoctoral Research Associate
Research Advisor: Dr. Marc Hillmyer

Minneapolis, MN
October 2015 – Present

University of Washington

Ph.D., Organic Polymer Chemistry GPA: 3.80
Research Advisor: Dr. Andrew J. Boydston
Thesis Title: *Fundamental and Applied Investigations in Solid-State Polymer Mechanochemistry*

Seattle, WA
July 2015

Colorado College

B.A., Chemistry GPA: 3.73
Research Advisor: Dr. Rongson Pongdee

Colorado Springs, CO
May 2009

AWARDS AND HONORS

Eastman Chemical Student Award in Applied Polymer Science (2014)
Paul H. and Karen S. Gudiksen Endowed Fellowship in Chemistry (2013-2014)
University of Washington Department of Chemistry Alma Mater Travel Award (2014)
University of Washington Department of Chemistry Travel Award (2012)
National Merit Scholar (2006-2009)

RESEARCH EXPERIENCE

Department of Chemistry, University of Minnesota

Advisor: Dr. Marc Hillmyer

Minneapolis, MN
October 2015 – Present

- Application of nanostructured block polymers to gas- and liquid-phase separations
- Elucidation of monomer structure-property relationships in porous block polymer monoliths

Department of Chemistry, University of Washington

Advisor: Dr. Andrew J. Boydston

Seattle, WA
July 2010 – July 2015

- Development and application of novel modes of activation in polymer mechanochemistry
- 3-D printing of stimuli-responsive polymeric materials
- Application of mechanochemical responses to stimuli-responsive drug delivery platforms
- Investigation of mechanochemical transduction as a function of polymer mechanical properties

Department of Chemistry, Colorado College

Advisor: Dr. Rongson Pongdee

Colorado Springs, CO
October 2009 – May 2010

- Investigations toward the synthesis of galtamycin
- Synthesis of substrates for cyclization reactions of the tetracyclic core

TEACHING EXPERIENCE

Department of Chemistry, University of Minnesota

Mentorship Program for Aspiring Chemistry Teachers
(MPACT)

Minneapolis, MN
September – December 2016

- Guest lecturing, presentation of research to joint undergraduate/graduate course on polymer chemistry, supervised by Prof. Marc Hillmyer
- Assistance in exam writing, grading, office hours
- Participation in workshops dealing with chemistry pedagogy
- Class size 40 students

Department of Chemistry, Colorado College

Visiting Instructor

Colorado Springs, CO
March – April 2015

- Full instruction of lecture, laboratory sections of CH251: Reactions of Organic Molecules
- Development of curriculum, lectures, exams, quizzes, and laboratory sections
- Class size 16 students

Department of Chemistry, University of Washington

Teaching Assistant

Seattle, WA
September 2010 – December 2014

- Supervision of laboratory sections and administration of short lecture sessions, both introductory and honors organic chemistry
- Administration and grading of exams, lab reports, and quizzes
- Class sizes 20-25 students

Department of Chemistry, University of Washington

Graduate Student

Seattle, WA
September 2010 – June 2014

- Mentoring of undergraduate researchers in the Boydston Research Group
- Instruction in practical laboratory techniques, data analysis, and presentation skills pertaining to organic and polymer chemistry
- Direction of short- and long-term research projects

Department of Chemistry, Colorado College

Paraprofessional

Colorado Springs, CO
August 2009 – May 2010

- Supervision of laboratory sections of introductory general chemistry and biochemistry
- Grading of lab reports, quizzes, and lab notebooks
- Development and setup of chemical demonstrations
- Class sizes 15-25 students

PROFESSIONAL DEVELOPMENT, SERVICE, AND OUTREACH

2016 Future Faculty Workshop

Participant

Newark, DE

August 2016

- Workshop providing mentoring for aspiring future chemistry professors
- Topics included grant writing, research supervision, and professional service opportunities
- Emphasis on inclusion of women and underrepresented minorities in research

University of Minnesota

Volunteer, Energy and U

Minneapolis, MN

January 2016

- Setup and coordination of visiting K-8 students for Energy and U, a chemistry demonstration show focusing on teaching energy-related chemistry topics
- Attended by approximately 500 students

University of Washington Chemistry Graduate Student Club

President

Social Chair

Seattle, WA

August 2013 – August 2014

August 2012 – August 2013

- Head of organization dedicated to furthering welfare of chemistry graduate students
- Liaison between faculty and students
- Development of activities during prospective graduate student visit weekends
- Planning and execution of department-wide social events

Sammamish High School

Volunteer

Bellvue, WA

December 2012 – February 2014

- Development, demonstration, and guiding of high school students during problem-based learning of macromolecular concepts
- Judging of student poster competitions and scientific presentation skills
- Class sizes of 25-30 students

American Chemical Society

Member, POLY/PMSE Division

2010 – Present

Served as reviewer for *Macromolecules*, *Journal of the American Chemical Society*, *ACS Applied Materials and Interfaces*, *ACS Macro Letters*

PRESENTATIONS

Industrial Partnership for Research in Materials and Engineering, University of Minnesota, June 2017. Seminar Title: Intrinsic Hierarchical Nanoporosity via Polymerization-Induced Microphase Separation. **Michael B. Larsen**, J. David Van Horn, Fei Wu, and Marc A. Hillmyer.

Macromolecular Materials Gordon Research Seminar, Ventura, CA, January 2015. Seminar Title: Development of Flex-Activated Mechanophores: Small Molecule Release and Successive Activation. **Michael B. Larsen** and Andrew J. Boydston.

248th National Meeting of the American Chemical Society, San Francisco, CA, August 2014. Seminar Title: Successive Mechanochemical Activation and Small Molecule Release in an Elastomeric Material. **Michael B. Larsen** and Andrew J. Boydston.

Colorado College Speakers on Innovation Lecture Series, July 2014. Seminar Title: Use The Force: Chemical Reactions Activated by Mechanical Energy. **Michael B. Larsen** and Andrew J. Boydston.

247th National Meeting of the American Chemical Society, Dallas, TX, March 2014. Seminar Title: Development of “Flex Activated” Mechanophores: Using Bond Bending Motions to Achieve Mechanochemical Activation. **Michael B. Larsen** and Andrew J. Boydston.

244th National Meeting of the American Chemical Society, Philadelphia, PA, August 2012. Seminar Title: Novel Responses in Polymer Mechanochemistry: Dual Activation. **Michael B. Larsen** and Andrew J. Boydston.

PUBLICATIONS

Larsen, M. B.; Van Horn, J. D.; Wu, F.; Hillmyer, M. A. “Intrinsically Hierarchical Nanoporous Polymers via Polymerization-Induced Microphase Separation” *Macromolecules* **2017**, *50*, 4363-4371.

Larsen, M. B.; Boydston, A. J. “Investigations in Fundamental and Applied Polymer Mechanochemistry” *Macromol. Chem. Phys.* **2016**, *217*, 354-364.

Selected by the Editorial Board as one of the top papers of 2016

Peterson, G. I.; Yurtoglu, M.; **Larsen, M. B.**; Ganter, M. A.; Storti, D. W.; Boydston, A. J. “Additive Manufacturing of Mechanochromic Polycaprolactone on Entry-Level Systems” *Rapid Prototyping J.* **2015**, *21*, 520-527.

Peterson, G. I.; **Larsen, M. B.**; Ganter, M. A.; Storti, D. W.; Boydston, A. J. “3D Printed Mechanochromic Materials” *ACS Appl. Mater. Interfaces* **2015**, *7*, 577-583.

Highlighted by *Chemical & Engineering News* **2015**, *93*, 26.

Featured in *UW Today* February 9, 2015

Featured research piece on ScienceDaily February 9, 2015

Larsen, M. B.; Boydston, A. J. “Successive Mechanochemical Activation and Small Molecule Release in an Elastomeric Material” *J. Am. Chem. Soc.* **2014**, *136*, 1276-1279.

Highlighted by *Nature Chemistry* **2014**, *6*, 381-383.

Larsen, M. B.; Boydston, A. J. “‘Flex Activated’ Mechanophores: Using Polymer Mechanochemistry to Direct Bond Bending Activation” *J. Am. Chem. Soc.* **2013**, *135*, 8189-8192.

Peterson, G. I.; **Larsen, M. B.**; Boydston, A. J. “Controlled Depolymerization: Stimuli-Responsive Self-Immolative Polymers” *Macromolecules* **2012**, *45*, 7317-7328. (co-first author)

PATENTS

Boydston, A. J.; Yakelis, N. A.; Berenson, R. J.; Church, D. C.; Peterson, G. I.; **Larsen, M. B.** Thermally-activated self-immolative materials. US Patent 9,580,553 issued February 28, 2017.

Boydston, A. J.; Ganter, M. A.; Storti, D. W.; Peterson, G. I.; **Larsen, M. B.**; Yurtoglu, M. Mechanochemical force sensors via additive manufacturing. US provisional patent 62/049,275 filed September 11, 2014.

Boydston, A. J.; Ganter, M. A.; Storti, D. W.; Peterson, G. I.; **Larsen, M. B.** 3-D printed mechanoresponsive materials. US provisional patent 62/033,590 filed August 5, 2014.