

**VITA****Brooke A. Van Horn**

Assistant Professor of Chemistry  
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**I. Education****Washington University in St. Louis**

Ph. D. Organic Chemistry, August 2007

A. M. Organic Chemistry, August 2004

**Indiana University in Bloomington**

B. S. Biochemistry with Highest Distinction, December 2000

B. S. Physics with Highest Distinction, December 2000

**II. Previous Research Experience**

**Princeton University**, September 2007 – February 2010

*Postdoctoral Teaching Fellow, The Council on Science and Technology*

*Research Associate, Department of Chemical Engineering*

**Advisor – Prof. Richard A. Register**

**Washington University in St. Louis**, August 2002 – August 2007

*Graduate Research Associate, Department of Chemistry*

**Advisor – Prof. Karen L. Wooley**

Ph. D. Dissertation: “*Functional Polyester Materials With Tunable Degradability: Investigations into the use of reductive amination, ketoxime ether, and hydrazone linkages for functionalization, covalent stabilization and crosslinking of poly(epsilon-caprolactone) materials*”

**IBM Almaden Research Center**

*Visiting Researcher, CPIMA Fellowship*, January 2001 – July 2002

*Student Contractor, NSF Summer Research Grant GOALI*, May 2000 – August 2000

**P. I. – Dr. Craig J. Hawker**

### III. Teaching Experience

#### College of Charleston

Faculty, Assistant Professor, Fall 2010 – Present

Organic Chemistry II Lecture, Chem232 (one section – Spring 2011)

Organic Chemistry II Laboratory, Chem231L (two sections – Spring 2011)

Advanced Organic Chemistry, Chem531 (one of four co-lecturers – Spring 2011)

Organic Chemistry I Lecture, Chem231 (one section – Fall 2010)

Organic Chemistry I Laboratory, Chem231L (two sections – Fall 2010)

Adjunct Instructor, Organic Chemistry II Laboratory (two sections – Summer Session II 2010)

#### Benedictine University

Assistant Professor, Organic Chemistry II Lecture (three sections), Chem247, Spring 2010

#### Princeton University

Co-instructor, Polymer Synthesis, CHE 541/MSE 534, Spring 2009

Co-instructor, Introduction to Materials Science and Engineering, MSE 301, Spring 2008

#### Washington University in St. Louis

Invited Lectures

Chem 458 Synthetic Polymer Chemistry Lecture, January 2006

Chem 251 Sophomore Organic Chemistry Lecture, September 2004

Teaching Assistant Organic Chemistry Lab, CH 257, Springs 2007, 2004 and 2003

Teaching Assistant Organic Chemistry, CH 251, Falls 2003 and 2002

#### Indiana University in Bloomington

Undergraduate Teaching Intern, Freshman Honors Physics, Fall 2000

Peer Tutor, Student Academic Center, September 1999 – December 2000

### IV. Mentoring Experience

#### Princeton University

Research – Alex Corona (REU student, U. Texas Austin), Summer 2008

#### Washington University in St. Louis

Research – Matt Hynes (Entering Ph. D. student, WUStL), Summer 2007

Research – Philip Imbesi (Entering Ph. D. student, WUStL), Summer 2007

Research – Kevin Sullivan (Undergraduate, WUStL), Fall 2005 – Fall 2007

Research – Ben Stormo (REU student, Bowdoin College), Summer 2005  
Chemistry Department Peer Mentor (Co-Chair 2006-07), 2003 – 2007

#### **IBM Almaden Research Center**

Research – Anne Phinney-Foreman (H. S. Teacher, Waverly NY), Summer 2002  
Research – Chad Gonzales (Ph. D. student in Math, ASU), Summers 2001, 2002

### **V. University and Professional Service**

Departmental Safety Committee, Member, Department of Chemistry and Biochemistry,  
College of Charleston, September 2010-present

Women in Science and Engineering Event, Princeton University,  
Organizing Committee Member and Panelist, March 14<sup>th</sup>, 2008

Washington University Housing Strategic Planning Task Force, 2006 – 2007

WUStL Delegate in the National Conference on Graduate Student Leadership (NCGSL)  
- [www.ncgsl.wustl.edu](http://www.ncgsl.wustl.edu), November 18<sup>th</sup>-20<sup>th</sup>, 2005

Graduate Student Senate  
Co-President, 2005-2006  
Chemistry Graduate Student Senator, 2004-2005

Graduate School of Arts and Sciences Council Representative, 2004-2005  
Executive Committee, 2004-2005  
Teaching and Professional Development Committee, 2004-2005  
Policies and Services Committee, 2004-2005

228<sup>th</sup> National American Chemical Society Meeting, Panel Member, “Research as a  
Springboard to Graduate School”, August 21<sup>st</sup>, 2004

### **VI. Peer Reviewed Publications**

15. Iha, R. K.; **Van Horn, B. A.**; Wooley, K. L. “Complex, Degradable Polyester Materials via Ketoxime Ether-Based Functionalization: Amphiphilic, Multifunctional Graft Copolymers and Their Resulting Solution-State Aggregates”, *Journal of Polymer Science: Part A: Polymer Chemistry*, **2010**, *48*, 3553-3563.
14. **Van Horn, B. A.**; Iha, R. K.; Wooley, K. L. “Sequential and Single-Step, One-Pot Strategies for the Transformation of Hydrolytically Degradable Polyesters into Multifunctional Systems”, *Macromolecules*, **2008**, *41*, 1618-26.
13. **Van Horn, B. A.** and Wooley, K. L. “Crosslinked and Functionalized Polyester Materials Constructed using Ketoxime-Ether Linkages” *Soft Matter*, **2007**, *3*, 1032-1040.

12. **Van Horn, B. A.** and Wooley, K. L. "Toward Cross-linked Degradable Polyester Materials: Investigations into the compatibility and use of reductive amination for cross-linking" *Macromolecules*, **2007**, 40, 1480-1488.
11. Krishnan, R. S.; Mackay, M. E.; Duxbury, P. M.; Pastor, A.; Hawker, C. J.; **Van Horn, B.**; Asokan, S.; Wong, M. S. "Self-Assembled Multilayers of Nanocomponents" *Nano Letters*, **2007**, 7(2), 484-489.
10. Chen, Z.; Cheng, C.; Germack, D. S.; Gopalan, P.; **Van Horn, B. A.**; Venkataraman, S.; Wooley, K. L. "Complex Functional Macromolecules" Chapter 16 of Volume 2: "Elements of Macromolecular Structural Control" within the book series "Macromolecular Engineering", edited by K. Matyjaszewski, Y. Gnanou, and L. Leibler, Wiley-VCH, Weinheim, February 2007, p. 1341-1380. (ISBN-13:978-3-527-31446-1)
9. Tuteja, A.; Mackay, M. E.; Hawker, C. J.; **Van Horn, B.**; Ho, D. L. "Molecular Architecture and Rheological Characterization of Novel Intramolecularly Crosslinked Polystyrene Nanoparticles" *Journal of Polymer Science: Part B: Polymer Physics* **2006**, 44, 1930-1947.
8. Mackay, M. E.; Tuteja, A.; Duxbury, P. M.; Hawker, C. J. **Van Horn, B.**; Guan, Z.; Chen, G.; Krishnan, R. S. "General Strategies for Nanoparticle Dispersion", *Science*, **2006**, 311, 1740-1743.
7. Dukette, T. E.; Mackay, M. E.; **Van Horn, B.**; Wooley, K. L.; Drockenmuller, E.; Malkoch, M.; Hawker, C. J. "Conformation of Intramolecularly Cross-linked Polymer Nanoparticles on Solid Substrates", *Nano Letters*, **2005**, 5(9), 1704-1709.
6. Krishnan, R. S.; Mackay, M. E.; Hawker, C. J.; **Van Horn, B.** "Effect of ideal, organic nanoparticles on the flow properties of linear polymers: non-Einstein-like behavior", *Macromolecules*, **2005**, 38(19), 8000-8011.
5. Tuteja, A.; Mackay, M. E.; Hawker, C. J.; **Van Horn, B.** "Influence of Molecular Architecture on the Dewetting of Thin Polystyrene Films", *Langmuir*, **2005**, 21, 5770-5776.
4. Mackay, M. E.; Dao, T. T.; Tuteja, A.; Ho, D. L.; **Van Horn, B.**; Kim, H.-C.; Hawker, C. J. "Nanoscale effects leading to non-Einstein-like decrease in viscosity", *Nature Materials*, **2003**, 2(11), 762-766.
3. Harth, E.; **Van Horn, B.**; Lee, V. Y.; Germack, D. S.; Gonzales, C. P.; Miller, R. D.; Hawker, C. J. "A facile approach to architecturally defined nanoparticles via intramolecular chain collapse", *Journal of the American Chemical Society*, **2002**, 124(29), 8653-8660.
2. Blomberg, S.; Ostberg, S.; Harth, E.; Bosman, A. W.; **Van Horn, B.**; Hawker, C. J. "Production of crosslinked, hollow nanoparticles by surface-initiated living free-radical

polymerization”, *Journal of Polymer Science: Part A: Polymer Chemistry*, **2002**, 40(9), 1309-1320.

1. Harth, E.; **Van Horn, B.**; Hawker, C. J. “Acceleration in nitroxide mediated ‘living’ free radical polymerizations”, *Chemical Communications*, **2001**, 9, 823-824.

## VII. Oral Presentations

Invited - **Van Horn, B. A.** "Using Organic Chemistry to Build Functional Polymeric Macromolecules", Departmental Seminar, The College of Charleston, Charleston, SC, March 5<sup>th</sup>, 2010.

**Van Horn, B. A.** and Register, R. A. “Toward Perfectly Linear PE-block-LLDPE from Poly(cyclopentene)-block-(1,3-butadiene) with ROMP-to-Anionic Polymerization Transformation”, 17<sup>th</sup> Cohen-Register MIT-Princeton Microsymposium on Polymers, Princeton, NJ, June 11<sup>th</sup>, 2009.

Invited - **Van Horn, B. A.** “Using Organic Chemistry to Build Functional Polymeric Macromolecules”, Departmental Seminar, Benedictine University, Lisle, IL, December 9<sup>th</sup>, 2008.

Invited - **Van Horn, B. A.** “Functional Polymeric Macromolecules: Taking advantage of organic chemistry to build degradable biomedical polymers and unique double crystalline diblock copolymers”, Departmental Seminar, Wesleyan University, Middletown, CT, November 13<sup>th</sup>, 2008.

Invited - **Van Horn, B. A.** “Functional Polymeric Macromolecules: Taking advantage of organic chemistry to build degradable biomedical polymers and unique double crystalline diblock copolymers”, Departmental Seminar, Wabash College, Crawfordsville, IN, November 4<sup>th</sup>, 2008.

Invited - **Van Horn, B. A.** “Functional Polymeric Macromolecules: From Degradable Biomedical Polymers to Unique Double Crystalline Diblock Copolymers”, CPIMA Technical Forum: Looking Towards 2009, IBM Almaden Research Center, San Jose, CA, August 7<sup>th</sup>, 2008.

Myers, S. B., **Van Horn, B. A.**, Dare, E., and Register, R. A. “Improving Efficiency and Limiting Side Reactions in ROMP-to-Anionic Polymerization Transformations”, 16<sup>th</sup> Cohen-Register MIT-Princeton Microsymposium on Polymers, Boston, MA, June 11<sup>th</sup>, 2008.

Award - **Van Horn, B. A.** and Wooley, K. L. “A Simple Approach to the Chemical Modification and Crosslinking of Poly(epsilon-caprolactone) in the Synthesis of Novel Degradable Polyester Materials”, 233<sup>rd</sup> ACS National Meeting, Chicago, IL, March 26<sup>th</sup>, 2007.

**Van Horn, B. A.** and Wooley, K. L. "Toward Crosslinked Poly(ester) Materials: Investigations into the use of reductive amination and oxime chemistries for crosslinking", 232<sup>nd</sup> ACS National Meeting, San Francisco, CA, September 13<sup>th</sup>, 2006.

**Van Horn, B. A.** "Women, Families and the Academy: Supporting Graduate Students Balancing Career and Life", part of the Diversity and Inclusiveness Panel, National Conference on Graduate Student Leadership, November 19<sup>th</sup>, 2005.

**Van Horn, B. A.;** Brown, G. O.; Wooley, K. L. "Synthesis and characterization of degradable poly(ester) materials crosslinked through reductive amination chemistry", 230<sup>th</sup> ACS National Meeting, Washington DC, August 28<sup>th</sup>, 2005.

Invited - **Van Horn, B. A.;** Brown, G. O.; Wooley, K. L. "Synthesis and characterization of degradable poly(ester) materials crosslinked through reductive amination chemistry", CPIMA Forum, "The Second Decade," IBM Almaden Research Center, San Jose, CA, August 11<sup>th</sup>, 2005.

**Van Horn, B. A.;** Brown, G. O.; Wooley, K. L. "Synthesis and characterization of degradable poly(ester) materials crosslinked through reductive amination chemistry", Sixth Graduate Research Polymer Conference, U. Massachusetts-Amherst, Amherst, MA, June 16<sup>th</sup>, 2005.

## VII. Research Funding - Awarded

Faculty Research and Development Award, \$4,000, College of Charleston, January 1<sup>st</sup>, 2011-May 15<sup>th</sup>, 2011

## IX. Honors and Awards

CST Postdoctoral Teaching Fellowship, Princeton University, August 2007-February 2010  
American Chemical Society, Division of Polymer Chemistry, "Excellence in Graduate Polymer Research", 233<sup>rd</sup> National ACS Meeting, Chicago, IL, March 26<sup>th</sup>, 2007  
WUSTL Arts and Sciences Named Scholarships, 2005-2006, 2006-2007  
Second Place Poster Prize, MACRO Warwick 2006, August 2<sup>nd</sup>, 2006  
Dean's Fellowship, Washington University in St. Louis, August 2002 – May 2004

## X. Professional Societies and Affiliations

American Association for the Advancement of Science  
American Chemical Society (Divisions - POLY, PMSE, COLL)  
Association for Women in Science  
Phi Beta Kappa