CURRICULUM VITAE

Ryan Mondschein

1020 Montgomery Street, Apt. C • Blacksburg VA, 24060
(610) 657-6382 • rjm5316@vt.edu

EDUCATION:

VIRGINIA POLYTECHNIC AND STATE UNIVERSITY — **BLACKSBURG, VA**
Ph.D., Chemistry, concentration in Polymer Chemistry, 3.60/4.00 — Expected May, 2018

PENNSYLVANIA STATE UNIVERSITY — **STATE COLLEGE, PA**
B.S., Chemistry, 3.55/4.00; Dean's List (Fall '08, '09, Spring '09, '10) — December 2012

PROFESSIONAL EXPERIENCE:

Graduate Research Assistant, *Department of Chemistry*, Virginia Tech — **12/2013-Present**

Research Advisor:	Professor Timothy E. Long
Research Topics:	Biodegradable and High Performance Polyesters
	Structurally Modified Polyimides
	Phosphonium Ionenes Synthesis and Characterization
	Selective Antimicrobial Coatings for Fibers and Fabrics

Undergraduate Researcher, *Department of Chemistry*, Penn State — **12/2010-5/2013**

Research advisor:	Professor Harry R. Allcock
Research topic:	Novel Polyphosphazenes for Hard Tissue Engineering
	Novel Polyphosphazenes for Water Soluble Adhesives

Merck Future Talent Intern, *Process Chem. Department*, Rahway, NJ — **6/2012-8/2012**

Research Mentor:	Dr. Jongrock Kong
Research Topic:	Rh-Catalyzed Asymmetric Arylation of Ketimines

Graduate Teaching Assistant, *Department of Chemistry*, Virginia Tech — **8/2013-6/2014**

Lab Supervisor:	Clair Santos
Class:	1st and 2nd Semester Organic Chemistry Lab
Responsibilities:	Lecture students on experiment fundamentals
	Safe laboratory technique training and practices
	Trained students on analytical instruments

Instrument Room Teaching Assistant, *Department of Chemistry*, Penn State — **8/2011-6/2012**

Lab Supervisor:	Dr. Sheryl Rummel
Responsibilities:	Instructed and supervised students using analytical chemistry equipment
	Included: ^{1}H NMR, FTIR, GC-MS, and UV-VIS

PROFICIENT SKILLS:

Polymer Design & Synthesis • Melt & Solution Polymerization • NMR Spectroscopy Schlenk/Glove Box Technique • Size Exclusion Chromatography Analysis • Thermogravimetric Analysis Differential Scanning Calorimetry • Dynamic Mechanical Analysis • Melt & Solution Rheology Gas Permeation Analysis • Solvent & Melt Film Processing • Tensile & Flexural Mechanical Analysis Mass Spectrometry Analysis • Infrared Spectroscopy • Scanning Electron Microscopy with EDX

FAMILIAR WITH:

Optical Spectroscopy • *in-situ* FTIR • Dynamic Light Scattering • X-ray Diffraction Techniques Transmission Electron/Atomic Force Microscopy • Karl Fischer Titration • Electrospinning Thermogravimetric Analysis-Sorption Analysis • Heat Flow Analysis • Cell Culture Amino Acid Protection/Deprotection • Metal Catalyst Reaction Optimization • 3D Printing Techniques Flow Cytometry • Gel Electrophoresis

INVENTIONS:

1. **Mondschein, R. J.;** Liu, H.; Turner, S. R.; Long, T. E. Biphenyl-containing (Co)polyesters for High Performance Applications, **2015**, *Provisional Patent Filed,* VTIP 15-100
2. Liu, H.; **Mondschein, R. J.;** Long, T. E.; Turner, S. R. Novel Copolyesters Based on Benzoic Acid, Terephthalic Acid with Various Diols, **2015**, *Provisional Patent Filed,* VTIP 16-016

PUBLICATIONS:

1. Sirrine, J. M.; Ashraf-Khorassani, M.; Moon, N. G.; **Mondschein, R. J.**; Long, T. E. Supercritical Fluid Chromatography with Evaporative Light Scattering Detection (SFC-ELSD) for Determination of Oligomer Molecular Weight Distributions, *Chromatographia,* DOI: 10.1007/s10337-016-3098-9. Published Online: May 20, 2016.
2. Kong, J.; McLaughlin, M.; Belyk, K.; **Mondschein, R. J.**; Enantioselective Rh(I)-Catalyzed Addition of Arylboronic Acids to Cyclic Ketimines, *Org. Lett.* **2015**, *17*, 5520-5523
3. Morozowich, N. L.; **Mondschein, R. J.**; Allcock, H. R.; Comparison of the Synthesis and Bioerodible Properties of N-Linked Versus O-Linked Amino Acid Substituted Polyphosphazenes, *Journal of Inorganic and Organometallic Polymers and Materials*, **2014**, 24, 164
4. Morozowich, N. L.; Nichol, J. L.; **Mondschein, R. J.,** Allcock, H. R.; Design and Examination of an Antioxidant Containing Polyphosphazene Scaffold for Tissue Engineering, *Polymer Chemistry*, **2012**, 3, 778
5. Morozowich, N.L.; Weikel, A.L.; Nichol, J.L.; **Mondschein, R. J.;** Chen, C.; Nair, L.S.; Laurencin, C.T.; Allcock, H.R.; Synthesis and Synthetic Challenges of Biomolecule-Containing Polyphosphazenes, *Polymer Preprints*, **2011**, 52, 354

PRESENTATIONS:

1. **Mondschein, R. J.;** Long, T. E.; Williams, C. B.; Schultz, A.; Sirrine, J. M.; Scott, P.; Nelson, A. M.; Pekkanen, A. M.; Chartrain, N. A.; Lambert, P. 'Designing Advanced Materials for Advanced Manufacturing: Polymer Characterization Challenges for Additive Manufacturing' Oral

Presentation, *Innovation in Materials Characterization: Waters & University of Akron Co-Sponsored Executive Technology Summit*, Akron, Ohio, June, **2016**

2. **Mondschein, R. J.;** Pekkanen, A. M.; Guenette, D.; Mohapatra, N.; Long, T. E. 'Development of Antimicrobial Fibers using Biologically-Derived Peptide-Nucleic Acids (PNAs): Attachment, Efficacy and Release' Poster Presentation, *12th National Graduate Research Polymer Conference*, The University of Akron, June, **2016**
3. **Mondschein, R. J.;** Abdulahad, A. I.; Chen, Q.; Colby, R. H.; Long, T. E 'Synthesis and Characterization of Novel Phosphonium Ionenes' Poster Presentation, *University of Tennessee and Virginia Tech Polymer Workshop*, University of Tennessee, April, **2016**
4. **Mondschein, R. J.;** Schultz, A. R.; Sirrine, J. M.; Williams, C. B.; Long, T. E. 'Functional Polymers Challenging Chromatography' Oral Presentation, *International Symposium, GPC/SEC and Related Techniques*, Philadelphia, Pennsylvania, October, **2015**
5. **Mondschein, R. J.;** Abdulahad, A.; Chen, Q.; Colby, R. H.; Long, T. E. 'Synthesis and Characterization of Novel Phosphonium Ionenes as a New Family of Polyelectrolytes' Oral Presentation, POLY 105, *250th American Chemical Society National Meeting & Exposition*, Boston, Massachusetts, August, **2015**
6. **Mondschein, R. J.;** Pekkanen, A. M.; Guenette, D.; Mohapatra, N.; Long, T. E. 'Development of Antimicrobial Fibers using Biologically-Derived Peptide-Nucleic Acids (PNAs): Attachment, Efficacy and Release' Poster Presentation, POLY 358, *250th American Chemical Society National Meeting & Exposition*, Boston, Massachusetts, August, **2015**
7. **Mondschein, R. J.;** Nelson, A. M.; Sirrine, J. M.; Long, T. E. 'Advanced Polymer Chromatography in the Design of Polymers for 3D Printing' Poster Presentation, *Waters & TA Instruments Executive Technology Summit, Innovations in Materials Characterization*, Turf Valley, Ellicott City, Maryland, **2015**
8. **Mondschein, R. J.;** Abdulahad, A. I.; Chen, Q.; Colby, R. H.; Long, T. E 'Synthesis and Characterization of Novel Phosphonium Ionenes' Poster Presentation, *2015 MII Technical Conference and Review*, Virginia Tech, April, **2015**
9. **Mondschein, R. J.** 'Synthesis and Performance of Tailored Macromolecules: Novel Macromolecular Vectors for Nucleic Acid Delivery' Poster Presentation, *Translational Medicine Forum*, Virginia Tech, November, **2014**
10. **Mondschein, R. J.,** Hemp, S. T., Abdulahad, A. I., Long, T. E. 'Synthesis and Characterization of Phosphonium Ionenes from Step-Growth Polymerization' Poster Presentation, *11th National Graduate Research Polymer Conference*, Louisiana State University, June, **2014**
11. **Mondschein, R. J.,** Kong, J. 'Rh-Catalyzed Asymmetric Arylation of Ketimine' Poster Presentation, *Merck Research Laboratories Summer Intern Poster Session*, Merck Research Laboratories, Rahway, New Jersey, August, **2012**
12. **Mondschein, R. J.** 'Synthesis of Novel Polymers for Bone Tissue Engineering' Poster Presentation, *The Eberly College of Science Alumni Society Undergraduate Science Poster Session Showcase*, Penn State University, April, **2012**
13. **Mondschein, R. J.;** Breon, J.; Swartz, J.; Zezenski, K. 'Analysis of Crystallinity in Two Samples of Polypropylene by Differential Scanning Calorimetry and Raman Spectroscopy' Poster Presentation, *Undergraduate Poster Symposium*, Penn State University, December, **2011**

14. **Mondschein, R. J.;** Soudakov, A.; Breon, J.; Meckler, S. 'Whitmore Shore: An Original Synthesis of Gyrosanol C' Poster Presentation, *Undergraduate Poster Symposium*, Penn State University, December, **2010**

OTHER PRESENTATIONS:

1. Hemp. S. T.; **Mondschein, R. J.;** Jangu, C.; Schultz, A. R.; Chartrain, N. A.; Williams, C. B.; Long, T. E. 'Ionic liquids inspiring the design of phosphonium-containing polymers: From 3D printed objects to block copolymer elastomers' Oral Presentation, POLY 460, *250th American Chemical Society National Meeting & Exposition*, Boston, Massachusetts, August, **2015**
2. McDaniel, D., Jo, A.; Rothschild, D.; **Mondschein, R. J.;** Pekkanen, A. M.; Heid, B.; Oestreich, K.; Long, T. E.; Davis, R.; Allen, I. C. 'M1 and M2 Macrophages Respond Similarly to Nanoparticles with Distinct Compositions' Poster Presentation, *2015 MII Technical Conference and Review*, Virginia Tech, April, **2015**
3. Pekkanen, A. M.; **Mondschein, R. J.;** Geunette, D.; Mohapatra, N.; Long, T. E. 'Characterization of Peptide Adhesion to Fiber Surfaces' Poster Presentation, *2015 MII Technical Conference and Review*, Virginia Tech, April, **2015**

AFFILIATIONS:

- American Chemical Society
  - POLY Division
- Pi Lambda Phi
  - Omega Gamma Chapter
- National Honors Society

LEADERSHIP & COMMUNITY INVOLVEMENT:

- ACS Fall 2017 Graduate Student Symposium Planning Committee **6/2016-Present**
  - Committee Chair
- Virginia Tech POLY/PMSE ACS Student Chapter **6/2016-Present**
  - President & Founding Member
- Laboratory Safety Officer **3/2015-Present**
  - Responsible for maintaining chemical hygiene plan
  - Oversee proper safety attire and techniques worn/used in lab
  - Confirm all safety training completed by active researchers
- ACS Polymer Short Course Lab Coordinator **12/2014-Present**
  - Responsible for organizing experiments and preparing students for laboratory demonstrations
- Member of Pi Lambda Phi, Omega Gamma Chapter **4/2011-5/2013**
  - Positions Held: Vice President of Administration, Alumni Relations
  - Participated in and helped set up various Philanthropy and Community Service Events
  - Actively involved in Penn State's THON
  - Greek Week Special Events Captain
- Nittany Chemical Society, Penn State local ACS Student Affiliate Chapter **1/2011-12/2012**

- Penn State Berks Division III Ice Hockey Member **8/2009-3/2010**

PROFESSIONAL SERVICE:

Peer Review: *Macromolecules; Polymer Chemistry; Macromolecular Chemistry and Physics; ACS Sustainable Chemistry & Engineering; Industrial & Engineering Chemistry Research*

AWARDS AND RECOGNITION:

- Dean's List (Fall '08, '09, Spring '09, '10)
- Defenseman of the year, Bethlehem Blast Youth Ice Hockey Association, **2006**

REFERENCES:

- Available upon request