

# Development and Applications of New Synthetic Strategies for Polymer Science

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Synthetic polymers are significant importance in all aspects of modern life, and during the last few decades, these materials have facilitated major societal advances. Innovative polymeric materials have the potential to address humankind's next grand scientific and technological challenges; however, taking advantage of the opportunities presented by these materials requires new methods for gaining precise control of polymer structure and function. To address this challenge, our research group focuses on the development of new synthetic methods and catalyst systems to control polymer architecture, composition, and function to yield next-generation materials. Specifically, this presentation will detail (1) the development of cationic polymerization reactions where polymer chain growth and sequence are regulated with external stimuli and (2) a modular strategy to dictate the shape and composition of polymer molecular weight distribution to precisely control properties.

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## **Education:**

2006 B.Sc. in Chemistry, Montana State University

2011 Ph.D. in Organic Chemistry, Massachusetts Institute of Technology

## **Employment:**

2014 – Present Assistant Professor, Department of Chemistry and Chemical Biology, Cornell University

2011 – 2014 Elings Postdoctoral Fellow with Professor Craig J. Hawker, University of California, Santa Barbara

2006 – 2011 Graduate Student with Professor Stephen L. Buchwald, Massachusetts Institute of Technology