

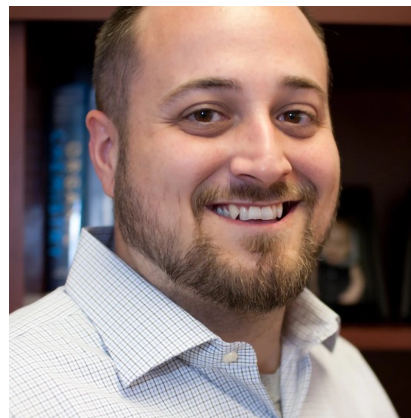
# Winter 2025 Joint Colloquium

## Materials Department & Materials Research Laboratory

Brian K. Long, PhD

Department of Chemistry  
University of Tennessee, Knoxville

Friday, January 24, 2025  
11:00 am | ESB 1001



### Harnessing the Power of Catalysis and Polymers to Address Modern Challenges in 3D Printing and Gas Separations

The Long Research Group utilizes the tools of organic synthesis, polymer science, and organometallic chemistry to address interdisciplinary challenges within the fields of macromolecular (polymer) chemistry and catalyst design. Our research projects are often fundamental in nature, but aim to tackle research problems and topics with real-world implications extending well-beyond the academic laboratory. Over the past several years, our research group has led advancements in olefin polymerization catalyst design, ring-opening polymerization catalysis, and tailored gas separation membranes. For this talk, I will focus on some of our more recent results that aim to address current limitations within the field of olefin polymerization catalysis and accessing microstructurally controlled gas separation membranes. More specifically, this talk will highlight our efforts to: a) develop a new olefin polymerization methodology, termed photoinduced olefin polymerization (PIOP), that may provide the enabling chemistry required to 3D print polyolefins directly from monomer, and b) harness the power of Ni and Pd coordination-insertion polymerization catalysts to construct polynorbornene-based gas separation membranes with controlled side group functionality and backbone sequence for the separation of greenhouse gases and purification of natural gas.

Biography: Brian (BL) received his B.S. degree in chemistry 2003 from the University of North Georgia. During his undergraduate career, he conducted research under the guidance of Prof. Dan Thompson, and was a participant in Furman University's NSF-REU program where he worked in the research groups of Profs. John Wheeler and Noel A. P. Kane-Maguire. BL obtained his Ph.D. in chemistry at the University of Texas at Austin where he worked under Prof. C. Grant Willson and was co-advised by Prof. Christopher W. Bielawski. After receiving his Ph.D. in 2009, BL pursued his postdoctoral studies at Cornell University under the supervision of Prof. Geoffrey W. Coates. BL began as an Assistant Professor of Chemistry at the University of Tennessee - Knoxville (UTK) in 2011, was promoted to Associate Professor with tenure in 2018, and then to full Professor in 2023. His research and teaching efforts have been recognized through the Ffrancon Williams Endowed Faculty Award, an Army Research Office Young Investigator Award, a Department of Energy Early Career Research Program Award, and he was named the Gleb Mamantov Professor of Chemistry in 2020.

Hosted by Chris Bates and Craig Hawker