Chemistry Department Colloquium

“Merging Natural and Synthetic Components to Build New Functional Materials and Devices”

Prof. Todd Emrick

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Thursday, October 12
4:00 PM *(3:45PM Reception)*
B01 McCourtney Hall

Abstract: This presentation will describe the preparation of new polymer materials containing components from Nature that promote beneficial solubility, interfacial interactions, thin film formation, and device performance. For example, several types of zwitterions, from phosphorylcholines to choline phosphates, allow synthetic polymers to be tailored for segregation to fluid-fluid interfaces and used as coatings for smart droplets and delivery devices. In another example, the extreme hydrophilicity offered by zwitterionic groups leads to new approaches to macromolecular chemotherapeutic structures and the facile delivery of otherwise insoluble or unstable drugs. Overall, the presentation will emphasize new syntheses, polymer-based methodologies, and the translation of synthetic methods to useful functional materials.

Biography: Todd Emrick received a B.S. in Chemistry from Juniata College (Huntingdon PA) in 1992 and earned a Ph.D. in Organic Chemistry at the University of Chicago in 1997. He performed postdoctoral research with Jean Frechet at the University of California Berkeley on the topic of branched polymers and adhesives, before beginning his independent career at UMass Amherst in January 2001. Recent recognition of Emrick's research includes receipt of the Carl S. Marvel Award in Creative Polymer Chemistry, election to the National Academy of Inventors, and selection as a Fellow of the American Chemical Society. Emrick directed the NSF-supported Materials Research Science and Engineering Center at UMass from 2009 to 2017.

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