

UNIVERSITY OF RHODE ISLAND
Department of Chemistry
SEMINAR

Room 215 Beaupre Center
3:30 p.m., Thursday, December 5, 2019

Joseph C. Grim

Department of Chemical and Biological Engineering
University of Colorado, Boulder

**“Chemical and Material Strategies
to Explore Innate Immunity”**

HOST

Matthew Kiesewetter
Department of Chemistry
401-874-2619

Chemical and Material Strategies to Explore Innate Immunity

The Grim Chemical Immunology Lab will utilize chemical biology and materials-directed strategies to explore the role that innate immunity plays during disease. Traditional methods to study immunology rely on interrogation of the immune system using highly complex, and often poorly defined, animal models of disease. While these top-down approaches have been imperative for establishing our current understanding of immunity, chemistry and materials science can provide new methods to elucidate immune system function in a controlled and defined environment that compliment *in vivo* findings. In this seminar, I will present my past, present, and future efforts toward designing chemical and materials tools to study innate immunity *in vitro*. My graduate work in Professor Laura Kiessling's lab focused on the development of small molecule and polymeric probes of innate immune cell receptors. I leveraged these chemical tools to identify a mechanism by which HIV-1 escapes innate immune recognition for infection. My postdoctoral research in Professor Kristi Anseth's lab involved the design of synthetic hydrogel cell culture platforms to model disease microenvironments *in vitro*. Through new photochemical reaction development, I engineered hydrogels that mimic the dynamic changes in tissue composition that occur during disease, and I employed these materials to elucidate how innate immunity influences the progression of heart valve disease.

