Talk Title:

Conjugated Polymers Inspired by Crystalline Silicon

Synopsis:

Daily life depends on the ubiquitous semiconductor silicon: computers, solar cells, and many more. Yet silicon synthesis relies on top-down, high-temperature approaches that yield only the most thermodynamically stable forms of silicon. Uncovering new structure-function space demands a different synthetic vision. This talk will describe the synthesis of molecular and polymeric silanes inspired by the complexity, selectivity, and elegance of target-oriented organic synthesis. Topics include the chemoselective polymerization of novel bifunctional silane monomers, selective preparation of linear and cyclic polycyclosilanes, and the stereocontrolled synthesis of cis- and trans-siladecalin. Approaches to the structural characterization of novel silane architectures will also be discussed.

Klausen Biography:

Rebekka S. Klausen, PH.D. received her B. S. degree in Biochemistry *cum laude* from Boston College in 2005. From 2005-2011, she carried out her graduate studies in organic synthesis under the supervision of Prof. Eric N. Jacobsen (Harvard University, Department of Chemistry and Chemical Biology). In 2011, Rebekka moved to New York, NY to complete postdoctoral research in single molecule electronics with Prof. Colin Nuckolls (Columbia University, Department of Chemistry). Rebekka initiated her independent research career in 2013, joining the Johns Hopkins University Department of Chemistry as an Assistant Professor. She now holds the title of Second Decade Society Associate Professor. Her research program bridges polymer chemistry and synthesis (organic and organometallic). Rebekka has been recognized with awards including the Department of Energy Early Career Award (2015), the Sloan Research Fellowship (2017), the Mason Award for Women in the Chemical Sciences (2017), the National Science Foundation CAREER Award (2018), the ACS Award in Pure Chemistry (2021), and the ACS Macro Letters / Biomacromolecules / Macromolecules Young Investigator Award (2022).