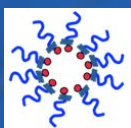


FALL 2019 COLLOQUIUM SPEAKER

PolyActives and Sugar-based Amphiphiles that are Biodegradable and Biocompatible

While polymeric bioactives were initially designed for delivering pharmaceuticals, the concept has been expanded beyond medical uses to improved lubricity of engine oils, prevention of plaque buildup on tooth enamel, and improved skin appearance. To design biocompatible and biodegradable polymers, we begin with starting materials that are naturally occurring and deemed safe. We have two different classes of polymers – sugar-based amphiphiles that deliver bioactives and polymers derived from bioactives (PolyActives).



As polymers that deliver bioactives, nanoscale sugar-based amphiphiles were initially created to encapsulate hydrophobic drugs and improve drug water-solubility and improve bioavailability. Our current work builds upon

the discovery that the demonstrated that the sugar-based amphiphiles themselves are bioactive – they actively coordinate with binding domains on macrophages to mitigate formation of atherosclerotic plaques. They also display novel mechanisms for mitigating biofilm formation.

As polymers derived from bioactives, PolyActives are designed to biodegrade into therapeutically useful or bioactive molecules. The first example was a poly(anhydride-esters) that yielded salicylic acid, the active component of aspirin. This concept has been expanded to include PolyAntibiotics, PolyAntiseptics and PolyOpiates useful for localized, controlled bioactive delivery for pharmaceutical, personal care, and commercial applications.



October 9, 2019

WCH 205/206

1 PM - 2 PM



Kathryn Uhrich

Dean College of Natural &
 Agricultural Sciences,
 University of California, Riverside

Dr. Kathryn Uhrich is currently Dean of the College of Natural and Agricultural Sciences as well as Professor of Chemistry at University of California, Riverside. She earned a Ph.D. in Organic Chemistry from Cornell University, and her BS in Chemistry from the University of North Dakota. Prior to UCR, Dr. Uhrich served as Dean of Mathematical and Physical Sciences at Rutgers University. Uhrich's research links chemistry with the life sciences and engineering disciplines to create bioactive, biodegradable polymers and devices for use in drug delivery, food safety and personal care. She has been issued nearly 60 patents, and her work has spawned several start-up companies. Uhrich has authored around 180 peer-reviewed articles and generated nearly \$30 million in federal and corporate research funding. As a researcher, Uhrich's interest in mentoring the next generation of scientists is reflected by the composition and size of her research team: she has supervised more than 60 graduate students and 80 undergraduate students. Uhrich's scholarly and entrepreneurial achievements are highlighted by her election as Fellow of the American Chemical Society, the American Institute of Medical and Biological Engineering, the Controlled Release Society, and the National Academy of Inventors. She is Editor-in-Chief of the Journal of Bioactive and Compatible Polymers.