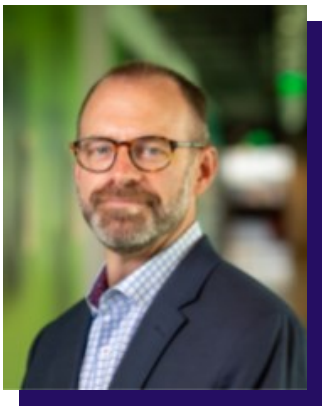
Joint Department of

BIOMEDICAL ENGINEERING

UNC CHAPEL HILL | NC STATE UNIVERSITY

Coulter Seminar Series Presents

"Understanding and exploiting ultra-soft colloids"



L. Andrew Lyon, PhD
Founding Dean
Dale E. and Sarah Ann Fowler School of Engineering
Keck Center for Science and Engineering
Chapman University

Dr. Andrew Lyon has >20 years of experience as a chemist, bioengineer, educator, and entrepreneur and currently serves as the Founding Dean of the Dale E. and Sarah Ann Fowler School of Engineering at Chapman University. Prior to his current role, he served as Dean of the Schmid College of Science and Technology at Chapman University from 2014-2018. Before arriving at Chapman, Dr. Lyon spent 16 years at the Georgia Institute of Technology as a member of the Chemistry & Biochemistry faculty, directing a research program aimed at creating new types of biomaterials for regenerative medicine applications. In addition to his role at Chapman, he is the co-founder and Chief Scientific Officer of Sanguina, Inc., SelSym Biotech, Inc., and Split Rock Therapeutics, LLC, three early-stage biotechnology companies. He is the recipient of the NSF CAREER, Beckman Young Investigator, Research Corporation Research Innovation, and Camille Dreyfus Teacher-Scholar Awards, an Alfred P. Sloan Fellowship, and the National Fresenius Award.

ABSTRACT

This talk will focus on the unusual, and sometimes advantageous properties that emerge from colloidal materials that undergo deformation in response to relatively small forces. Of primary focus will be poly(N-isopropylacrylamide) – based microparticles (microgels) that are self-crosslinked, i.e., are formed without the addition of exogenous crosslinker (i.e., ultra-low crosslinked, ULC). The exceedingly low (<0.1 %) crosslink density of these particles results in shear moduli far smaller than the microgel bulk modulus. As a result, the behavior of ULC microgels in confined or crowded environments is highly dependent on the local context, providing for emergent properties that hold promise for a range of biomedical applications. In particular, the behavior of ULC microgels in wound healing applications, as novel tissue scaffold components, and as yield-stress materials for bioprinting will be discussed. Finally, we will explore how the biological fate of injected ultra-deformable particles might relate to their softness.

Friday, October 28th
12:00 Noon

Presented From: 4142 Engineering Building III (NC State)
Videoconferenced to: 321 MacNider Hall (UNC)