Materials Science & Engineering Seminar Series

Carnegie Mellon University
Materials Science & Engineering

presents

Engineering Silk Proteins for Regenerative Medicine

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Abstract: Silk is one of the oldest biomaterials, utilized as sutures and in wound healing for centuries, yet undergoing a rebirth into new biomaterial formats and applications over the past few decades. One key to this emergence has been to modify the native protein using new processing methods and chemistries to engineer new material features. Some of these strategies developed to morph silk, a high molecular weight amphiphilic protein, into new materials with new properties will be discussed. The utility of some of these materials in printing, scaffolding and related applications will also be discussed. The needs for tunable, degradable, mechanically robust biomaterials for a range of tissue engineering and regenerative medicine goals remains high and silk proteins offer a unique suite of options to help address these needs.

Bio: David Kaplan is the Stern Family Endowed Professor of Engineering and Distinguished University Professor at Tufts University. He is Professor & Chair of the Department of Biomedical Engineering and also holds faculty appointments in the School of Medicine, Department of Chemistry and the Department of Chemical and Biological Engineering. His research focus is on biopolymer engineering to understand structure-function relationships, with emphasis on studies related to self-assembly, biomaterials engineering and regenerative medicine. Since 2004 he has directed the NIH P41 Tissue Engineering Resource Center (TERC) that involves Tufts University and Columbia University. He has published over 700 peer reviewed papers. He is the editor-in-chief of ACS Biomaterials Science and Engineering and serves on many editorial boards and programs for journals and universities. He has received awards for teaching, was Elected Fellow American Institute of Medical and Biological Engineering and received the Society for Biomaterials Clemson Award for contributions to the literature.

Doherty Hall 2210, 11:30AM
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