

BIOENGINEERING

PRESENTS

From composite biomaterials to bones, from nanopore to acoustic wave devices:
A journey of biomedical engineering enhanced by integrative explorations



THURSDAY, October 3, 2019

12:00 – 1:00 PM

2101 ENGINEERING V

Guigen Zhang, Ph.D.

UK

Professor, Department Chair, and Halcomb
Endowed Chair of the F. Joseph Halcomb III,
M.D.

Department of Biomedical Engineering

ABSTRACT:

Biomedical Engineering is a field calling for integrative ways of learning, researching and innovating. In this talk, I will walk you through some of the roads we have taken in our research pursuits, in hope to stimulate you to reevaluate the ways you learn, think, imagine, and innovate. I will begin with the development and evaluation of carbon fiber reinforced polyetheretherketone (PEEK) composites for orthopedic application and the development of a nanopore technology. I will also discuss our latest efforts in gaining the engineering insights into bone regeneration, and in working with piezoelectric materials as surface acoustic devices for sensing and mechano-excitation application. Throughout the presentation, I will also highlight what I mean by integrative explorations and show you not only what we did, but also the guiding logic of thinking. I will discuss the difference in *learning that* and *learning how*, the logic of *reductive* and *abductive* thinking, and more importantly, what you could do to cultivate your imaginative ability and enhance your human capitals.

BIOGRAPHY:

Guigen Zhang is Professor, Chair, and the Halcomb Endowed Chair of the F. Joseph Halcomb III, M.D. Department of Biomedical Engineering at the University of Kentucky. He holds a BS degree in Engineering Mechanics, a MS degree in Biomechanics, and a PhD degree in Bioengineering. He is a Fellow of the American Institute for Medical and Biological Engineering, Editor-in-Chief of the Biomaterials Forum, Council of the Society for Biomaterials (2016-present), President (2017-18) of the Institute of Biological Engineering, a founding society member of the AIBME. He is also one of the four editors leading the revision of the seminal biomaterials textbook "Biomaterials Sciences" of which Buddy Ratner, Allan Hoffman, Fred Schoen and Jack Lemons are the founding editors. In addition to his extensive publications in the areas of biomechanics, biomaterials and biosensors, Professor Zhang holds numerous patents and has published three books, including Introduction to Integrative Engineering.