Special MSE Seminar

Thursday, April 28th | 10:15am to 11:00am | ARMS B071

In vivo long term durability of implanted materials

Dr. Kimberly Chaffin— Vice President Corporate Technologist | Bakken Fellow, Medtronic

In the 1980's, Medtronic experienced one of the industry's most consequential recalls, where the polymer insulation on implanted cardiac leads, the conduits through which energy is delivered to the heart, disintegrated in vivo. Amid this crisis, Medtronic scientists began a quest to better understand and screen for the factors that could impact a material's long term biostability. After almost forty years of prioritizing research in this area, we lead the industry in our ability to screen and predict a material's biostability in vivo. In demonstrating our leadership position in this area, I will review a recent manuscript that used strategically designed accelerated in vitro testing to provide important insights into the long-term biostability of materials; insights that could not be readily gleaned through the in vivo studies that dominate current regulatory guidelines.

Biography: Dr. Kim Chaffin is a Vice President and Corporate Technologist, Medtronic Fellow, Bakken Fellow and Technical Fellow in the Strategic and Scientific Operations at Medtronic, Inc. Kim has responsibility for leading the enterprise wide technology effort as well as directing research projects within the corporate research organization. In her enterprise technology role, Kim is designing enterprise level platforms which will be critical in advancing new technologies across all businesses. In her research role, Kim is a recognized expert in material thermodynamics and characterization, especially as it relates to structure-property relationships that govern long-term stability and performance. She serves as an advisor to the FDA's Office of Science and Engineering Laboratories where she is helping with the strategic prioritization of their polymers research as it relates to both biostability and biocompatibility. Kim joined Medtronic in 1999, and has a Ph.D. in Chemical Engineering from the University of Minnesota Chemical Engineering and Materials Science Department, and master's and bachelor's degrees from the University of Michigan. She is a licensed Professional Engineer in the state of Minnesota. She is an inventor on 18 issued patents and an author on many peer reviewed publications