



# DEPARTMENT OF CHEMICAL ENGINEERING

## Special Guest Seminar: Dr. Jan P. Stegemann



**Jan P. Stegemann**

Professor of Biomedical Engineering  
University of Michigan  
Ann Arbor, MI

**Host:** Thomas Webster  
Professor and Department Chair,  
Chemical Engineering  
Art Zafiropoulo Chair in Engineering

**Biomaterials Science as Applied  
to Cell-based Therapies**

**Friday March 18<sup>th</sup>, 2016**

Location 305 Shillman  
Time 11:45am-1:00pm

The cellular microenvironment provides a complex set of signals that control cell phenotype and function. Among the important environmental components are the extracellular matrix, soluble biochemical factors, mechanical forces, and cell-cell signaling. Rational design and application of biomaterials can be used to coordinate these cues and thereby direct cell function in desired ways. This talk will cover the application of a variety of naturally-derived biomaterials to the directed differentiation of progenitor cells for therapeutic application. Specific examples will include composite biomaterials developed to direct cell phenotype, modular microtissues for cell delivery, and strategies to create multiphase tissue constructs. Application areas include regeneration of bone, cartilage, and blood vessels. In addition, the talk will cover recent advances in characterizing the composition and mechanical properties of soft protein and polysaccharide materials at the microscale.

Jan Stegemann is a Professor in the Department of Biomedical Engineering at the University of Michigan in Ann Arbor. He received BS and MS degrees in Chemical Engineering from the University of Toronto. Prior to earning his PhD in Biomedical Engineering from the Georgia Institute of Technology, Dr. Stegemann worked for five years at Boston-based W.R. Grace & Co. (later called Circe Biomedical), where his research focused on cell-based bioartificial organs. Dr. Stegemann's current research focuses on the use of extracellular environments to control cell function and the development of engineered tissues. In particular, his laboratory develops matrices for tissue engineering by creating composite materials of natural polymers, with application in a variety of tissue systems. Dr. Stegemann's teaching interests are in the areas of biomaterials, cell-matrix interactions, and medical product development.

*Sponsored by the Department of Chemical Engineering*