

Magnetically Activated Biomaterials For Drug Delivery and For Tissue Regeneration

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**Chemistry
Seminar on
Magnetic
Biomaterials**

**Monday
May 4 at 4
pm in 126
Schrenk**

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Abstract: Traumatic spinal cord injury (SCI) is a devastating condition currently affecting approximately 296,000 US citizens, with around 18,000 new cases each year. SCI occurs when a severe physical force causes compression of the spinal cord, killing neurons and glia at the injury site. Multiple secondary injury cascades are initiated immediately after the initial insult and lead to additional neuronal loss. The degree of inflammation that occurs after SCI has been shown to relate to the magnitude and duration of secondary injury. Depending on the severity of the SCI and the demographics of the patient, the inflammatory response varies after injury. Biomaterials, such as electrospun fibers, can provide local release of therapeutics to limit adverse off-target effects; however, drug-releasing biomaterials do not address the variability of patient inflammation or provide scaffolds capable of directing regeneration following injury. The focus of this talk will summarize our efforts to combine superparamagnetic iron oxide nanoparticles with polymeric fibers to direct axonal regeneration and release protein therapeutics to mitigate inflammation following injury.

About the speaker: Dr. Gilbert is the Doshi Department Chair in the Department of Chemical and Biochemical Engineering at Missouri S&T. Dr. Gilbert completed his undergraduate degree in chemical engineering at the University of Michigan – Ann Arbor and his Ph.D. in biomedical engineering from Case Western Reserve University. Dr. Gilbert’s lab focuses on the development of biomaterials for tissue engineering and for the development of biomaterials for drug and gene delivery. Dr. Gilbert is a Fellow of the American Institute for Medical and Biological Engineers (AIMBE), editor-in-chief of the journal *Cells Tissues Organs*, and his laboratory is currently funded by the National Institutes of Health (NIH) and the Veterans Affairs (VA).