

# THE DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING SPEAKER SERIES

**PRESENTS**

## **Fantastic Voyage: Tiny Robots in Bodily Fluidic Environments**

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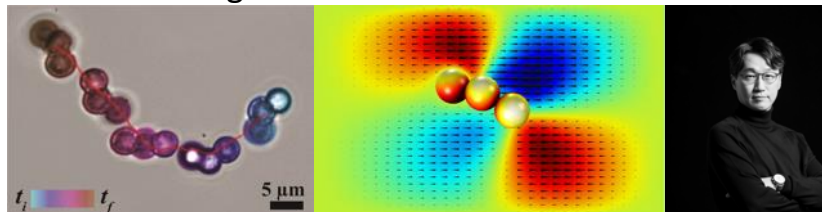
**Monday, March 24, 9:55 am, Room W122, Engineering Building 2**

### **LECTURE ABSTRACT**

How can corkscrew nanorobots drill through blocked arteries? Surgeons will soon deploy armies of tiny robots to perform microsurgeries throughout the body. Reconfigurable modular nano/microrobots could aid drug delivery and microsurgery, allowing a single system to navigate diverse environments and perform multiple tasks. So far, such systems have limited versatility. We use *magnetohydrodynamics* to assemble and disassemble modular robots with desired physical characteristics. We experimentally demonstrate dynamically changing physical properties of tiny swimmers through assembly and disassembly in a controlled fluidic environment. Finally, we examine speed dependence on configuration size.

### **SPEAKER BIOSKETCH**

Dr. MinJun Kim



earned B.S. and M.S. degrees in Mechanical Engineering from Yonsei University in Korea and Texas A&M University, Ph.D. degree in Engineering at Brown University and was a postdoctoral fellow at the Rowland Institute in Harvard University. He joined Drexel University in 2006 as Assistant Professor and later promoted to Professor of Mechanical Engineering and Mechanics. Dr. Kim explores biological transport phenomena including cellular/molecular mechanics and engineering in novel nano/microscale architectures to produce new types of nanobiotechnology, such as nanopore technology and nano/micro robotics. Notable awards include the NSF CAREER (2008), HFSP Young Investigator (2009), Army RO Young Investigator (2010), KOFST Brain Pool Fellowship (2013 & 2015), ISBE Fellow (2014), ASME Fellow (2014), Top10 Netexplo (2016), KSEA & KOFST Engineer of the Year Award (2016), and Sam Taylor Fellowship (2018).