



Magnetic Microrobots for Biomedical Applications

David Cappelleri

School of Mechanical Engineering, Weldon School of Biomedical Engineering

Wednesday, Feb. 11th @ 2:00 pm in BRK 1001

Coffee and snacks served before seminar

also on [MS Teams](#)

Abstract: Small robotic systems are being explored for a myriad of applications. Specifically, magnetically actuated microrobots capable of remote manipulation hold significant potential for in vivo applications such as targeted delivery of therapeutics as well as for in vitro applications such as micromanipulation and biological material characterization. In this talk I will present families of wireless magnetic mobile microrobots driven by external magnetic fields that we have developed over the years for biomedical applications. These include the microscale tumbling microrobot for targeted drug delivery, micro-scale adaptive swimming microrobots, modular microrobots for advanced micromanipulation, and micro-force sensing mobile microgrippers for in vitro biomedical applications.

Bio: David J. Cappelleri is the Assistant Vice President for Research Innovation in the Office of Research, B.F.S. Schaefer Scholar & Professor in the School of Mechanical Engineering, and Professor in the Weldon School of Biomedical Engineering (by courtesy) at Purdue University. Prof. Cappelleri founded the Multi-Scale Robotics & Automation Lab (MSRAL) that performs cutting-edge research on robotic and automation systems at various length scales. His research interests include mobile microrobotics for biomedical and manufacturing applications, surgical robotics, automated manipulation and assembly, and unmanned aerial and ground robot design for agricultural applications. Prof. Cappelleri is the Purdue site director for the NSF Engineering Research Center on the Internet of Things for Precision Agriculture (IoT4Ag). Prof. Cappelleri has received various awards, such as the NSF CAREER Award, Harvey N. Davis Distinguished Assistant Professor Teaching Award, the Association for Lab Automation Young Scientist Award, and is a Fellow of the American Society of Mechanical Engineers (ASME). He received a Bachelor of Mechanical Engineering degree from Villanova University, a MS in Mechanical Engineering degree from The Pennsylvania State University, and a PhD degree in Mechanical Engineering & Applied Mechanics from the University of Pennsylvania.