PURDUE MECHANICAL ENGINEERING

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Lecture: 3:00 PM –
https://purdue-edu.zoom.us/j/98952925154
Q & A and Social: 4:00 PM –
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Micromotors Go In-Vivo: From Test Tubes to Live Animals

Abstract:

Nanoscale robots that can effectively convert diverse energy sources into movement and forces represent a rapidly emerging and fascinating robotic research area. Such nanoscale robots offer impressive capabilities, including greatly enhanced power and cargo-towing forces, multi-functionality, easy surface functionalization, and versatility. The new capabilities of modern nanorobots indicate immense potential for a variety of biomedical applications, and should have major impact on disease diagnosis, treatment, and prevention [1]. Recent in vivo applications using different types of biocompatible and biodegradable microrobots will be illustrated, including enhanced drug delivery towards enhanced treatment of stomach bacterial infection, active vaccine delivery, autonomous gastric fluid neutralization, the ability to selectively localize at desirable segments of the GI tract, or efficient intracellular delivery of functional proteins and nucleic acids.

Biography:

Joseph Wang is Distinguished Professor, SAIC Endowed Chair, and former Chair of the Department of Nanoengineering at University of California, San Diego (UCSD). He is also the Director of the UCSD Center of Wearable Sensors and Co-Director of the UCSD Center of Mobile Health Systems and Applications (CMSA). He served as the director of Center for Bioelectronics and Biosensors of Arizona State University (ASU) before joining UCSD. Prof. Wang has published more than 1200 papers, 11 books and he holds 30 patents (H Index=185, >140,000 citations). He received 2 American Chemical Society National Awards in 1999 (Instrumentation) and 2006 (Electrochemistry), ECS Sensor Achievement Award (2018), the IUPAC Analytical Chemistry Medal (2021), IEEE Sensors Achievement Award (2021), Spiers Memorial Award (2013), the Breyer and Heyrovsky Medals from Australia and Czech Republic, respectively, and 6 Honorary Professors from Spain, Argentina, Czech Republic, Romania, China and Slovenia. Prof. Wang has been the Founding Editor of Electroanalysis (Wiley), is RSC, ECS and AIMBE Fellow and a Thomson Reuters Highly Cited Researcher (2015-2021). His scientific interests are concentrated in the areas of bioelectronics, wearable devices, biosensors, bionanotechnology, nanomachines and microrobots, flexible materials, and electroanalytical chemistry.

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