

DEPARTMENT OF MECHANICAL ENGINEERING

WILLIAM MAXWELL REED SEMINAR SERIES

“Biohybrid Design: Integrating biological and biomimetic materials with machines”

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Abstract: Biological materials dynamically sense and adapt their form and function to changing environments, but these capabilities have not been fully replicated in the synthetic materials traditionally used by engineers. My research has shown that integrating biohybrid and biomimetic materials with engineered systems yields devices capable of complex behaviors such as self-assembly, self-maintenance, and self-healing. These responsive behaviors are especially desirable in machines that interface with the dynamic human body, as they enable sensing and responding to individualized patient needs. This talk will introduce my fundamental research in understanding and engineering biohybrid neuromuscular tissues. These advances will enable my future lab to restore motility in diseased or damaged bodily systems, and also implement engineered tissues as efficient adaptive actuators for powering implantable devices. This talk will make the case that the next generation of biologically relevant machines must integrate our dynamic natural world with our own adaptive bodies.

Bio: Ritu Raman is an engineer with a passion for biohybrid design: building machines powered by biological materials that work with the human body to fight disease and damage. She is also an educator and a writer and has developed biofabrication and bioethics curricula for classrooms and makerspaces around the country. Ritu is currently a postdoctoral fellow with Robert Langer at MIT, funded by L’Oréal USA Women in Science and NASEM Ford Foundation Fellowships. She received her B.S. magna cum laude from Cornell University and her Ph.D. from the University of Illinois at Urbana-Champaign as an NSF Fellow. She holds many awards for scientific innovation, including being named a Kavli Fellow by the National Academy of Sciences and being named to the MIT Technology Review 35 Innovators Under 35 and Forbes 30 Under 30 lists. Ritu grew up in India, Kenya, and the United States, learning to appreciate and thrive in diverse dynamic environments. She is passionate about increasing diversity in STEM and has championed many initiatives to empower women in science, including being named a AAAS IF/THEN ambassador and founding the Women in Innovation and STEM Database at MIT (WISDM).
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Date: Friday, Nov. 6th

Place: <https://uky.zoom.us/j/92940732923>

Time: 3:00PM EST

Contact: Dr. Alexandre Martin 257-4462

Meet the speaker and have refreshments
Attendance open to all interested persons