

**ABSTRACT:**

*Rubbery electronics and bioelectronics*

Electronics that can seamlessly integrate with human body could have significant impact in medical diagnostic, therapeutics. However, seamless integration is a grand challenge because of the distinct nature between electronics and human body. Traditional electronics, rigid and planar, face inherent mismatches with the soft, deformable nature of the human body. This presentation will introduce an innovative solution to the challenge. Our approach, termed "rubbery electronics," relies on the use of elastic, rubbery materials for semiconductors, conductors, and dielectrics. These materials exhibit tissue-like softness and mechanical stretchability, enabling seamless integration with soft, deformable tissues and organs. The talk will delve into the development of rubbery semiconductors, transistors, integrated electronics, sensors, and bioelectronics. Furthermore, it will showcase functional systems enabled by rubbery electronics and explore their applications in healthcare, robotics, and human-machine interfaces. This platform technology opens doors to diverse opportunities, promising significant advancements in various fields.

**References:**

- [1] Nature Electronics, 5, 881-892, 2022.
- [2] Nature Electronics, 3, 775-784, 2020.
- [3] Science Advances, 3, e701114, 2017.

**BIOGRAPHY:**

Cunjiang Yu is the Founder Professor at the University of Illinois, Urbana-Champaign in the Departments of Electrical and Computer Engineering, of Materials Science and Engineering, of Mechanical Science and Engineering, and of Bioengineering. His research focuses on the fundamentals and applications of soft and bio electronics. He has published about 100 journal articles (~30 on Nature/Science series journals). His work has been recognized by a few awards, including the CAB Mid-Career Award, ASME Thomas J. R. Hughes Young Investigator Award, the Society of Engineering Science Young Investigator Medal Award, ASME Chao and Trigger Young Manufacturing Engineer Award, NSF CAREER Award, ONR Young Investigator Award, NIH Trailblazer Award, etc. He is an ASME Fellow.

**UPCOMING SEMINARS:**

- 10/10- Dr. Shahram Amini - *VP of R&D at Pulse Technology*
- 10/24- Dr. Hakimek Ebrahimi-Nik- *Ohio State*
- 10/31- Dr. Svenja Illien-Junger- *Emory University*
- 11/7- Dr. Jeff Lichtman- *Harvard University*
- 11/14- Dr. Kelly Langert- *Loyola University Chicago*

DEPARTMENT OF BIOMEDICAL ENGINEERING

## 2024 FALL SEMINAR SERIES

### Cunjiang Yu, Ph.D.

Founder Professor

University of Illinois, Urbana-Champaign

THURSDAY September 26, 2024  
11am-12pm  
PWEB 150



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For questions, please contact Dr. Sina Shahbazmohamadi [sina@uconn.edu](mailto:sina@uconn.edu) or Sarah Dunnack [sarah.dunnack@uconn.edu](mailto:sarah.dunnack@uconn.edu)