香港大學 機械工程系
Department of Mechanical Engineering
THE UNIVERSITY OF HONG KONG

SEMINAR

Title: **Soft magnetoelastic bioelectronics for healthcare**

Speaker: **Dr. Yihao Zhou**
Postdoctoral Associate
Department of Mechanical Engineering
University of California, Los Angles, UCLA
USA

Date: **30 December, 2025 (Tuesday)**

Time: **9:00am (Hong Kong Time)**

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Abstract:
The coupling between mechanics and magnetism in soft systems creates new opportunities for bioelectronics, healthcare, and robotics. In this seminar, I will present our efforts to understand and engineer soft systems with integrated mechanical and magnetic functionality. These soft systems can transduce displacement and deformation into vector magnetic signals in a battery-less, self-powered, and remotely detectable manner, enabling soft magnetoelastic bioelectronics for diverse healthcare applications. The first part of the seminar will focus on our understanding, modeling, and design of soft magnetic systems, including soft magnetoelastic composites and permanent fluidic magnets. The second part will discuss how these insights enable the design and manufacturing of bioelectronic devices for healthcare applications, from skin cancer screening to cardiovascular health monitoring. I will conclude with a vision for the future convergence of soft systems, bioelectronics, and artificial intelligence toward enabling human digital twins for personalized and digital health.

Biography:
Dr. Yihao Zhou is a Postdoctoral Scholar at UCLA, Department of Bioengineering. Dr. Zhou received his Bachelor of Science from Nanjing University and earned his Ph.D. in Mechanical Engineering and Materials Science from Duke University. His research focuses on materials-driven soft bioelectronics, including wearable bioelectronics, portable medical devices, and biomedical implants. He leverages theoretical understanding and computational modeling to design and manufacture material-driven, AI-assisted bioelectronic devices to address critical healthcare challenges, with applications ranging from skin cancer screening to artificial electronic skin. Dr. Zhou has developed expertise in soft magnetic systems and soft magnetoelastic bioelectronics, leading to several first-author and co-first-author papers in leading journals, including *Nature Materials*, *Nature Electronics*, *Science Advances*, *Nature Communications*, and *Joule*. His research work was featured in Nature, Science, Nature Materials, Nature Review Bioengineering, Nature Electronics, Nature Biotechnology, UCLA News, etc. He is listed as the Top 2% Scientists in the world by Stanford University and Elsevier. He is a Clarivate Highly Cited Researchers (cross-field) in 2025.

ALL INTERESTED ARE WELCOME
For further information, please contact Prof. Mingxin Huang at mxhuang@hku.hk