

Wearable Ultrasound Imaging Technologies

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TIME
16:00 – 17:00



VENUE
B5-208, 5/F Yeung Kin Man Academic Building

ABSTRACT

Ultrasound imaging technologies play a pivotal role in clinical diagnostics. However, the bulky design, operator dependence, and intermittent acquisition of conventional probes limit their utility for continuous monitoring in acute, chronic, and high-risk conditions. Recent advances in soft functional materials, micro-nano fabrication, and integrated packaging have spurred the development of wearable ultrasound technologies. By combining high-sensitivity piezoelectric arrays, stretchable conductive networks, and biocompatible multifunctional encapsulation, the wearable ultrasound devices preserve the imaging precision of traditional ultrasound while enhancing skin conformability, sensing continuity, and responsiveness to dynamic physiological changes. In addition, this technology adds a new sensing dimension to the wearable platform that enables continuous imaging of deep tissues and central organs. It supports multimodal functions such as anatomical imaging, cardiac function assessment, hemodynamic analysis, and deep-tissue biomechanics. This paradigm extends wearable health technologies into deep physiological monitoring, with transformative potential for smart healthcare, chronic disease management, and consumer health solutions.

BIOGRAPHY

Dr. Hongjie Hu is an Assistant Professor in the School of Integrated Circuits at Peking University. He received his Ph.D. in Materials Science and Engineering and completed postdoctoral training in the Aiiiso Yufeng Li Family Department of Chemical and Nano Engineering, both at the University of California San Diego. His research is dedicated to the development of wearable ultrasound technologies for continuous and long-term monitoring and imaging of human vital signs, deep tissue and central organs. He has published numerous first-author papers in *Nature*, *Nature Biomedical Engineering*, *Nature Reviews Materials*, *Nature Communications*, *Science Advances*, among others. His research has been reported by the *Wall Street Journal*, the U.S. National Institutes of Health, and many well-known academicians and experts. Dr. Hu received the Hisako Terasaki Young Innovator Award in 2023 in recognition of his contribution to the field of biomedical Engineering.