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Topic of the Speech:
Fiber Materials and Devices for Digital Healthcare

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Dr. Zeku Liu receives his Ph.D. degree at Department of Materials, The University of Manchester in 2022. He is now working as a Research Associate at Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford. During the Ph.D. study, his research focused on functionalized fiber materials for developing wearable strain, pressure, and strain sensors, which are utilized for body area sensing networks with improved sensing reliability. His current research mainly refers to flexible and biocompatible soft robots for tissue engineering.

He published several peer-reviewed journal papers in Advanced Functional Materials, Nano Energy, Nano-Micro Letters, Bioactive Materials, Chemical Engineering Journal and ACS Applied Materials & Interfaces, etc. His research interests include nanomaterials and functionalized materials for the development of advanced composites, functional clothes, biomedical devices, and flexible electronics such as sensors, batteries, solar cells, and generators.

ABSTRACT SUBMISSION
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Fiber Materials and Devices for Digital Healthcare

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ABSTRACT (NO MORE THAN 500 WORDS:)

Wearable sensing devices, pioneers of flexible electronics, have sparked research interest due to their potential in digital healthcare, offering smarter tracking, efficient diagnostics, and lower medical costs. Unlike rigid sensors, fiber-based ones compete with their flexibility, durability, adaptability to body structures as well as eco friendliness to environment. The development of flexible sensors has made great progress up to date. However, some vital performance of the sensing devices in practical applications is still not far from optimal, such as wearable comfort, sensing selectivity, sensing reliability in the fickle microclimate of wearable interfaces and multi-direction dynamic tactile stimulations. In this work, we developed many functionalized fiber-based flexible strain, pressure, and humidity sensors by hybrid fiber functionalization approaches and advanced engineering, endowing the devices with improved sensing reliability towards changeable wearable microclimate and complex mechanical stimulation. Body area digital sensing networks based on the sensors show a better sensing accuracy. We envision the high-performance and flexible sensors can be utilized in real applications for digital health with improved sensing performance.