Smart Textiles for Personalized Health Care

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Abstract:

There is nothing more personal than healthcare. Health care must move from its current reactive and disease-centric system to a personalized, predictive, preventative and participatory model with a focus on disease prevention and health promotion. As the world marches into the era of Internet of Things (IoT) and 5G wireless, technology renovation enables industry to offer a more individually tailored approach to healthcare with more successful health outcomes, higher quality and lower costs. However, empowering the utility of IoT enabled technology in personalized health care is still significantly challenged by the shortage of cost-effective and wearable biomedical devices to continuously provide real-time, patient-generated health data. Textiles have been concomitant and playing a vital role in the long history of human civilization. In this talk, I will introduce our current research on smart textiles for biomedical monitoring and personalized diagnosis, textile for therapy, and textile power generation as an energy solution for the future wearable medical devices.

Biography:

Dr. Jun Chen is currently an assistant professor in the Department of Bioengineering, University of California, Los Angeles. His current research focuses on nanotechnology and bioelectronics for energy, sensing, environment and therapy applications in the form of smart textiles, wearables, and body area sensor networks. He has already published 2 books, 115 journal articles and 70 of them are as first/corresponding authors in Chemical Reviews, Nature Energy, Nature Electronics, Nature Sustainability, Nature Communications, Joule, Matter, and many others. His works were selected as research highlight by Nature and Science 6 times. He also filed 14 US patents and licensed 1. He is currently an Associate Editor of Biosensors and Bioelectronics, and an Editorial Board Member of Advanced Fiber Materials, Nano-Micro Letters, Frontiers in Pharmacology, Frontiers in Chemistry, and Smart Materials in Medicine. With a current h-index of 61, he was identified to be one of the world's most influential researchers in the field of Materials Science by the Web of Science Group, and on the global list of The Highly Cited Researchers 2019.

Publication of speakers:

1. Progress in Triboelectric Nanogenertors as a New Energy Technology and Self-Powered Sensors; ZL Wang, J Chen, L Lin

2. Radial-Arrayed Rotary Electrification for High Performance Triboelectric Generator; G Zhu, J Chen, T Zhang, Q Jing, ZL Wang

3. Harmonic-Resonator-Based Triboelectric Nanogenerator as a Sustainable Power Source and a Self-Powered Active Vibration Sensor; J Chen, G Zhu, W Yang, Q Jing, P Bai, Y Yang, TC Hou, ZL Wang.

4. Micro-Cable Structured Textile for Simultaneously Harvesting Solar and Mechanical Energy; J Chen, Y Huang, N Zhang, H Zou, R Liu, C Tao, X Fan, ZL Wang.

5. Human Skin Based Triboelectric Nanogenerators for Harvesting Biomechanical Energy and as Self-Powered Active Tactile Sensor System; Y Yang, H Zhang, ZH Lin, YS Zhou, Q Jing, Y Su, J Yang, J Chen, C Hu.