

Monday Morning, May 20, 2019

Plenary Lecture

Room Town & Country - Session PL-MoPL

Plenary Lecture

Moderators: Christopher Muratore, University of Dayton, Michael Stüber, Karlsruhe Institute of Technology, Germany

8:40am **PL-MoPL-3 Soft Electronics for the Human Body, John Rogers,** Northwestern University, USA **INVITED**

Biological systems are mechanically soft, with complex, time-dependent 3D curvilinear shapes; modern electronic and microfluidic technologies are rigid, with simple, static 2D layouts. Eliminating this profound mismatch in physical properties will create vast opportunities in man-made systems that can intimately integrate with the human body, for diagnostic, therapeutic or surgical function with important, unique capabilities in biomedical research and clinical healthcare. Over the last decade, a convergence of new concepts in thin film materials science, mechanical engineering, electrical engineering and advanced manufacturing has led to the emergence of diverse, novel classes of 'biocompatible' electronic and microfluidic systems with ultrathin, skin-like physical properties. This talk describes the key ideas and enabling materials, and it presents some of the most recent device examples, including wireless electronic 'tattoos', with applications in continuous monitoring of vital signs in neonatal intensive care; and microfluidic/electronic platforms that can capture, store and perform biomarker analysis on sweat, with applications in sports and fitness.

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