

LEAD ORGANIZATION: Epicore Biosystems

PROJECT: Soft, Epidermal Biosystems with Advanced Sensing and Microfluidics Capabilities for Cardiac Rehabilitation

ABSTRACT

The integration of physiological and biochemical sensing is of keen interest to clinicians, researchers, and others focused on human performance and health. However, current manufacturing processes do not support such multimodal wearable systems. Existing classes of wearable devices are primarily based on electronic sensing of inertial and/or electrical and optical signals. Epicore Biosystems will establish a low-cost manufacturing route to develop a novel wearable system that combines flexible biosensors and microfluidics structures into a single disposable wearable platform that measures motion, electrophysiology and electrochemical signals (from sweat). Epicore has developed manufacturing methodologies for these fully-integrated electronics-enabled sweat microfluidics systems, which include hybrid pick-and-place and roll-to-roll processes for creating stacks of ultrathin polymeric layers mechanically stacked and affixed to flex circuitry. These manufacturing processes have great potential to scale up in production, thus enabling flexible hybrid electronics (FHE)/microfluidics systems to become ubiquitous and low cost at high volumes.

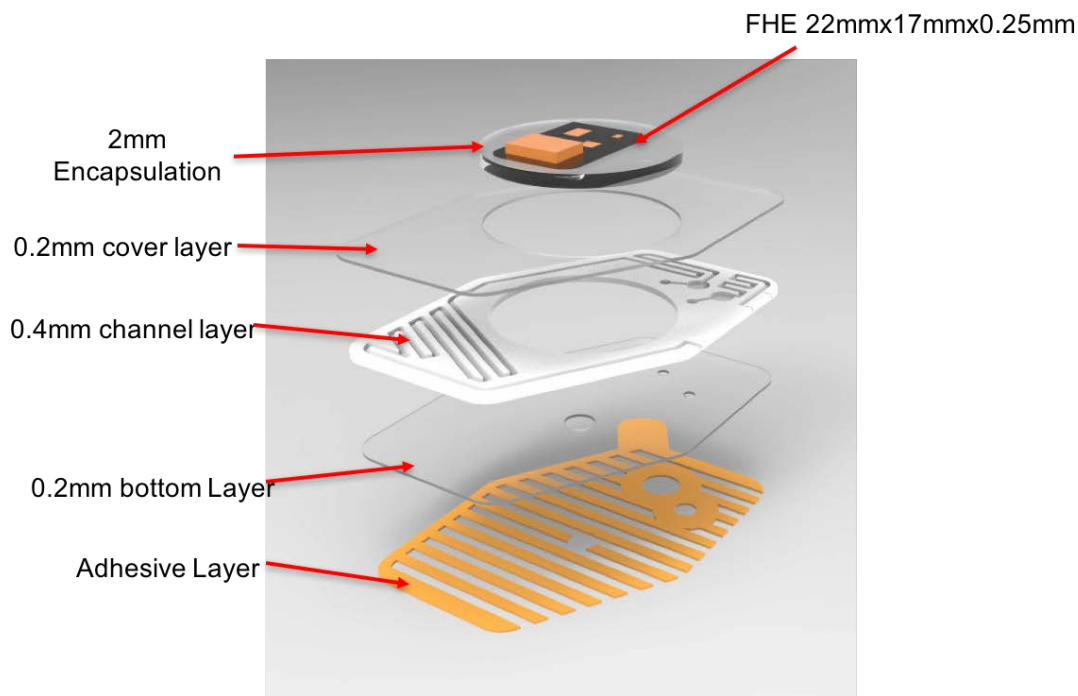


Fig. 1 | Flexible hybrid electronics/microfluidics system with onboard physiological and biochemical sensing capabilities.