Wearable Sweat Sensors for Personalized Health Monitoring

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Abstract

The rising research interest in personalized and precision medicine promises to revolutionize traditional medical practices. This presents a tremendous opportunity for developing wearable devices toward predictive analytics and treatment. In this talk, I will introduce fully-integrated flexible biosensors for multiplexed in-situ perspiration analysis, which can selectively and accurately measure a wide spectrum of sweat analytes (e.g., metabolites, electrolytes, heavy metals, drugs and other small molecules). This platform allows us to gain real-time insight into the sweat secretion and gland physiology. I will also demonstrate an integrated wearable sweat extraction and sensing system which can be programmed to induce sweat on demand with various secretion profiles. To demonstrate the clinical value of our wearable sweat sensing platform, human subject studies were performed toward fitness monitoring, physiological monitoring, cystic fibrosis diagnosis and drug monitoring. These wearable and flexible devices open the door to a wide range of personalized monitoring and diagnostic applications.

Figure 1: Wearable sweat sensors.

References

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