

Conjugated Polymer-Coated Fabrics for Disposable Health Monitoring Sensors and Scalable Fabrication

oCVD-coated fabrics yield lightweight, disposable, breathable health-monitoring wearables for pulse and respiration tracking.

Researchers at Purdue University have developed wearable sensors for monitoring health information such as pulse and respiration. Installing sensors on wearable fabrics allows the sensors to be easily integrated with the human body. However, using the current methods, wearability of devices installed on fabrics is low. The Purdue researchers' technology preserves wearability by directly coating conductive polymers onto fabrics using oxidative chemical vapor deposition (oCVD), leading to a direct fabrication of sensors. This method is an inexpensive and simple way to monitor health information without compromising the wearability of the devices on fabrics.

Advantages

- Lightweight sensors
- Inexpensive manufacturing method
- Simple manufacturing method
- Does not compromise wearability or breathability of fabrics
- Easy to use

Applications

- Monitoring health information

Technology Validation: The researchers successfully fabricated a respiration-measuring sensor on a disposable facemask and a pulse-measuring sensor on a fabric glove.

Technology ID

2021-LEE-69500

Category

Medtech & Digital
Health/Wearable Health Tech &
Biosensors
Chemicals & Advanced
Materials/Materials Processing &
Manufacturing Technologies

Authors

Michael Vincent Clevenger
Hyeonghun Kim
Sunghwan Lee

Further information

Aaron Taggart
adtaggart@prf.org

View online



Related Publication: Michael Clevenger et al. ,Binder-free printed PEDOT wearable sensors on everyday fabrics using oxidative chemical vapor deposition. Sci. Adv. 7, eabj8958 (2021). DOI: 10.1126/sciadv.abj8958

TRL: 5

Intellectual Property:

Provisional-Patent, 2021-06-17, United States

Utility Patent, 2022-06-17, United States

Keywords: Biomedical Engineering, Breathable, Conformal Coating, Conjugated polymers, Disposable, Fabric-based sensor, Health monitoring system, Oxidative chemical vapor deposition (oCVD)