

Skin-Like Electronic Bandage for Monitoring Vital Signs and Delivering Therapeutics

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Categories:

- Biomedical Engineering
- Medical/Health

Keywords:

- Biomedical Engineering
- Drug Delivery
- Flexible Electronics
- Medical/Health
- Monitor
- Nanocomposites
- Nanowires
- Sensors
- Wearable Electronics

Researchers at Purdue University have developed skin-mountable electronic devices and systems with enhanced mechanical properties. Researchers used nanocomposite elastomers combined with highly networked one-dimensional metallic nanowires to serve as functional electrodes in skin-mountable electronic devices. Such devices monitor physiological parameters, such as temperature, pressure, oxygen concentration of blood, and electrophysiological activities, e.g., electrocardiograms (ECG) or electromyograms (EMG), of the user and/or delivers therapeutic heat or a therapeutic drug. This technology has the potential to extend the service lifetime of the devices and systems.

To view a video related to this technology, click on this link: <https://www.youtube.com/watch?v=tYRebHNI6p4&feature=youtu.be>

Advantages:

- Superior crack resistance, stretchability, contact adhesion, and normal/shear strength when compared to conventional skin-electronics
- Potential to extend the service lifetime of the devices and systems
- Simple solution

Potential Applications:

- Human healthcare
- Health monitoring

- Drug and/or heat delivery
- Wearable electronics

Related Publications:

Han, S., Kim, M. K., Wang, B., Wie, D. S., Wang, S. and Lee, C. H. Mechanically Reinforced Skin-Electronics with Networked Nanocomposite Elastomer. *Advanced Materials*, 28: 10257-10265, 2016. DOI: 10.1002/adma.201603878

People:

- Lee, Chi Hwan (Project leader)
- Malandraki, Georgia

Intellectual Property:

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