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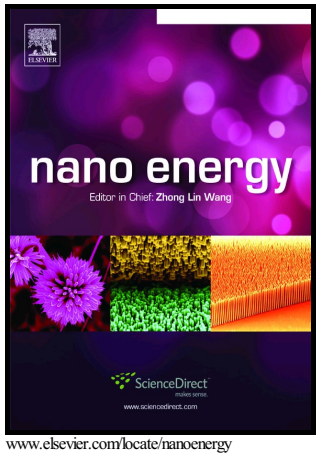

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High-Performance, Flexible Electronic Skin Sensor Incorporating Natural Microcapsule Actuators

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Abstract

The incorporation of stimuli-responsive elastic components within wearable sensors holds excellent potential for reinforcing structural features as well as improving high-performance detection capabilities. Herein, we report the development of a highly sensitive electronic skin (e-skin) sensor that is based on incorporating natural, elastic microcapsules within a biomimetic architecture, and represents a new biologically-inspired approach to design wearable sensors. Configured as a pressure sensor, the device exhibited the lowest reported limit of detection for applied pressure (1.6 Pa) and discriminated between multiple spatiotemporal tactile stimuli under both static and dynamic pressure conditions. Furthermore, the device displayed high stability over 25,000 cycles and inclusion of the natural microcapsules imparted hydrophobic character that facilitated waterproofing for all-weather use. This work

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