

Pixelized Self-powered Tactile Sensor by Selective UV Crosslinking of Thermoplastic Block Copolymer

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The Self-powered tactile sensors based on triboelectric nanogenerator can solve the critical problem of power supply, an essential part of conventional electronic devices. Tactile sensor based on TENG has been mainly demonstrated for touch imaging and pressure mapping. For the future development of wearable devices, it is important to reduce the number of wiring and pixels compared to the amount of information. In order to solve this problem, it is necessary to manufacture a sensor that can form multiple pixels on a single electrode. UV process has the potential to have multiple pixels on a single electrode as it allows for selective processing. In this study, the contact charge was observed by controlling the UV irradiation time on the thermoplastic block copolymer (BCP). The contact charge of saturated BCP, the contact charge steadily increased as the UV irradiation time increased. This achieved the condition to form multiple pixels on a single electrode, and through this, the wiring of the sensor and the number of pixels were drastically reduced. It is expected that this will have a major impact on the design of next-generation wearable sensors.