Textile based pressure sensors: a review of materials, fabrication, and applications

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Abstract

The greatest breakthrough in modern trends is smart textiles. A magnificent development in the field of wearable and touchable electronics, specifically, for the creation of smart or intelligent textiles, the pressure sensor-based smart textile is highly needed. Designing textile-based products is very difficult, with sensitive power, straightforward production, and low cost. Therefore, this review paper has reported the substantial yarn-based triboelectric and pressure-based sensing smart textiles. The integrated spiral stainless steel yarn has been acting as the inner electrode layer, synthetic filament, and polytetrafluoroethylene filament, respectively, as both positive and negative layers are made of the woven construction. Both mechanical stability and sensing capabilities are strong points of this sensing textile. The created device, which is breathable, light, and even dyeable, can be applied to any chosen body portion to measure dynamic human motions. It can also be used to measure and keep tracking of a variety of human movements at conjunction with numerous joints, including the hand, elbow, knee, and underarms. Additionally, the sensing textile can record pulse signals in real-time and reflect the human body's current state of health. Thus, this analysis offers a cutting-edge and potentially lucrative path for multifunctional pressure sensor textiles, which have numerous uses in smart clothing and individualized healthcare.

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