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Special Issue Reprint

Flexible and Wearable Sensors

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The following Reprint of the Special Issue “Flexible and Wearable Sensors: Design, Fabrication Methods, and Applications” collates scientific contributions highlighting the expanding role of flexible and wearable technologies in sensing, monitoring, and human–machine interaction. The included studies demonstrate how advances in material science, structural design, and fabrication methods have enabled the development of sensors that are flexible, stretchable, biocompatible, and conformable, thereby transforming applications across healthcare, rehabilitation, sports, and interactive systems. Contributions cover experimental investigations of novel material systems, innovative structural designs, and advanced fabrication techniques. Emphasis is placed on diverse transduction mechanisms—piezoresistive, capacitive, piezoelectric, iontronic, triboelectric, and optical fiber sensing—in addition to practical applications in cardiac monitoring, motion detection, self-powered energy harvesting, tactile sensing, and wearable musical expression. The Reprint also showcases interdisciplinary approaches that combine wearable sensors with emerging technologies such as artificial intelligence, knowledge graph-based design, time-reversal algorithms, and wireless body area networks, while addressing challenges related to long-term stability, biocompatibility, and scalable manufacturing.

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