

Ultrathin flexible optoelectronic devices for wearable/implantable applications

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Soft electronic devices have been intensively studied over the past decade due to their unique advantages in biomedical applications. To achieve the soft nature in high performance electronics and to apply this technology to wearable biomedical electronics/optoelectronics, several strategies have been employed, such as the designed assembly of high-quality nanomaterials, combination of unconventional manufacturing processes with existing micro-processing technologies, new design of individual devices with deformable structures, and disease-specific system-level integration of diverse soft electronics. Here, we describe ultrathin flexible optoelectronic devices for wearable/implantable applications. Ultrathin high-resolution red-green-blue quantum dot LEDs can be utilized next-generation electronic tattoo, transparent smart display, and display of healthcare monitoring wearable devices. In addition, graphene-MoS₂ heterostructures can be applied to the ultrathin curved image sensors for the retina prosthetics.