

Self-powered and Stretchable tactile sensor with Liquid Metal Nanoparticle electrodes

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A stretchable tactile interface for energy-harvesting and pressure sensing using liquid metal(LM) nanoparticle film electrodes has been developed. A new method to prepare LM nanoparticle based conductive film is introduced and simple surface patterning method is used to prepare micro-structured dielectric surface. The excellent electrical conductivity, mechanical properties, stretchability, deformability, durability, nontoxicity and recyclability of LM nanoparticle based conductive film are utilized for preparing a flexible touchable sensor. A simple method was used to obtain PDMS with microstructure and it resulted that great improvement of the output performance and pressure sensitivity of the tactile sensing interface compared with the performance of the device with a smooth surface. The device has excellent tensile properties and can show stable and great performance under different tensile conditions. In addition, a new method to prepare liquid metal nanoparticle conductive film provides new possibilities for applications of LM. And it is promising in fields of self-powered and energy harvesting system for driving portable electronic products.