

# Elastomer Nanocomposite Sensors in Flexible Electronics

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Conductive elastomer nanocomposite sensors were fabricated using nanofillers such as polyaniline, carbon nanotubes and graphene. The influence of various experimental parameters on the sensitivity of the sensors was studied. Quantum mechanical tunneling effect is highlighted to be the major working mechanism of the sensor under different atmospheres. We observed greater sensitivity at high tunneling resistance. The responses of sensors under organic vapors, liquid, temperature and mechanical strain were investigated. The smart simple sensors are proposed to be suitable in modern electronics (robotic) and electric power systems. Additionally the reuses of polymer nanocomposite sensors are also discussed.

**Keywords-** Polymer sensor, Reuse, Mechanical strain, Vapor, Temperature