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Development of Textile Based Strain Sensor from Polypyrrole

The conducting polymers are polyconjugated, which possess electronic properties of metals, while retaining the mechanical properties and processability of conventional polymers. Conductive polymers can only withstand limited strain before breaking and cannot perform well in evaluating large strains. The aim of this study was to develop a low cost, small to large strain sensor using Polypyrrole and Latex/Polyamide 6 yarn. The stretchable yarn was chosen as the substrate due to its excellent resilience and elasticity. Polypyrrole was coated as thin film onto the substrate by means of vapour deposition technique. The response of resistance of the samples on 2% deformation and relaxation during 40 cycles was analysed. The sensitivity or the change in resistance per unit deformation was used as a tool to figure out the suitability of strain sensor. The high resistive sample gave better sensitivity as well as uniformity as compared to low resistive sample which made it suitable to use as a strain sensor.

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