

DESIGN AND DEVELOPMENT OF CONDUCTING POLYURETHANE FOAM SENSORS FOR BREATHING FREQUENCY MEASUREMENT

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ABSTRACT

Textile electrodes are a new and potential choice for long term and continuous monitoring of bio-signals. In this research, a novel dry foam electrode fabricated by embroidering conductive yarn on the electrically conductive polymer foam. The compressible conducting smart foam has been developed by coating polyurethane (PU) foam with inherently conducting polyaniline (PANi). The developed smart foam was characterized based on surface resistance and ageing . The foam electrodes have been designed and developed by embroidering conductive silk zari yarn on the developed smart foam. The results show that developed smart foam has the surface resistance of $7K\Omega$ /square and the ageing tests show that there is only a negligible deviation in the surface resistance. The use of this smart foam sensor in a prototype breath monitor is also reported.

KEY WORDS: Breathe monitor, electrode, polyaniline, surface resistance, textile sensors.