

Conducting Glove Leathers Prepared through in-situ Polymerization of Pyrrole

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Abstract : Leather is a durable and flexible material used for various purposes including clothing, footwear, upholstery and gloves. However, the use of leather for smart product applications is a challenge since it is electrically insulating material. Here, we report a simple method to produce conducting glove leathers using an in-situ polymerization of pyrrole. The concentrations of pyrrole, ferric chloride and anthraquinone-2-sulfonic acid sodium salt monohydrate were optimized to produce maximum conductivity in the treated leathers. The coating of polypyrrole in the treated leathers was probed using FT-IR, X-ray diffraction and electron microscopic analysis. FTIR confirms that the formation of polypyrrole on the leather surface as well as presence of prominent N-C stretching band. X-ray diffraction analysis suggests para-crystallinity in the PPy-treated leathers. We further demonstrate that the treated leathers, with maximum conductivity of 7.4 S/cm, can be used for making conductive gloves for operating touch-screen devices apart from other smart product applications.

Keywords : electrical conductivity, in-situ polymerization, pyrrole, smart product

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