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Study of electropolymerized PEDOT :PSS transducers for application as electrochemical sensors in aqueous media (Article) (Open Access)

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Abstract

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Electropolymerized poly(3,4-ethylenedioxythiophene): poly(styrenesulfonate) (PEDOT:PSS) onto screen-printed platinum electrodes was tested for stable charge/discharge cycle using cyclic voltammetry (CV) in aqueous media and its adhesion to the electrode surface was also examined. Electropolymerized PEDOT:PSS maintained most of its initial CV behavior after water-flow test (flow rate = 1 ml/s), whereas drop-cast PEDOT:PSS did not, indicating better adhesion and retention of the polymer's mechanical and electrical properties. Field emission scanning electron microscopy (FESEM) and energy-dispersive X-ray spectroscopy (EDS) suggest that film structure influence the stability of the redox current measurements. These results prove that careful electropolymerization techniques for synthesizing the PEDOT:PSS transducer are worth pursuing in developing robust electrochemical sensors suitable for continuous use in aqueous media. Developing such transducers is important for developing electrochemical sensors for biomedical and/or environmental monitoring where aqueous flow usually occurs on electrode surfaces. © 2018 The Authors

Reaxys Database Information

View Compounds

Author keywords

Electropolymerization deposition | Liquid media | Robust PEDOT:PSS transducer | Sensors

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