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Electropolymerization of poly(3,4-ethylenedioxythiophene) onto polyvinyl alcohol-graphene quantum dot-cobalt oxide nanofiber composite for high-performance supercapacitor

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Abstract

Fabrication of highly conductive nanofiber by coating polyvinyl alcohol-graphene quantum dot-cobalt oxide (PVA-GQD-Co₃O₄) nanofiber composite with a conductive material, poly(3,4-ethylenedioxythiophene) (PEDOT) for supercapacitor was successfully prepared via two-step technique i.e. electrospinning and electropolymerization. The prepared electrode materials were characterized using FTIR, Raman and XRD analysis to confirm the structure of the electrospun nanofiber composite. The presence of cauliflower-like structure studied by FESEM revealed that PEDOT was uniformly coated on PVA-GQD-Co₃O₄ electrospun nanofibers. The PVA-GQD-Co₃O₄/PEDOT nanofiber composite exhibited a specific

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