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Preparation and Characterization of Polypyrrole/TiO_2 nanocomposites in Presence poly(vinyl pyrrolidone) (PVP)

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Abstract:

This work presents the synthesis of Polypyrrole/TiO_2 nanocomposites. This nanocomposites were synthesized in aqueous media by polymerization of pyrrole using $FeCl_3$ as an oxidant in the presence of poly(vinyl pyrrolidone) (PVP) as a surfactant and TiO_2 nanoparticles. The PPy/TiO_2 nanocomposites were characterized in terms of their particle size, morphology and chemical structure. X-ray diffraction (XRD) and fourier transform infrared (FTIR) spectra were used to characterized the structure of the obtained polypyrrole/TiO_2 nanocomposites. Also the morphology of products was characterized by using scanning electron microscope (SEM). The results indicate that, the morphology and particle size of products are dependent on the presence of surfactant and metallic oxide.

Keywords: Polypyrrole, Nanocomposite, Titanium Oxide, Morphology, X-ray Diffraction