POLYMERIC FILMS CONTAINING POLYPYRROLE AND ZnO-Ag NANOPARTICLES FOR PHOTODEGRADATION OF RHODAMINE B DYE

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It is known that approximately 15% of the wastes from the textile industries are discharged into the environment, causing serious pollution of the water resources which affects the aquatic life and human beings [1]. Because of their stable molecular structures, some dyes cannot be degraded by conventional degradation methods [2,3]. One of the employed processes to eliminate hazardous waste materials is heterogeneous photocatalysis, a technique that allows the removal of organic compounds by degrading them to less toxic or less harmful materials [4]. Among the materials used in photocatalysis, the zinc oxide (ZnO) received great attention because of its impressive catalytic activity and quantum efficiency [5]. Consequently, different ZnO materials have been tested to degrade various dyes such as methyl orange, methylene blue [6], nile red or malachite green by photocatalytic reaction under UV and visible light illumination. In the present work, we have prepared hybrid nanocomposite with ZnO (prior prepared) and Ag nanoparticles in situ created during photopolymerization of monomer mixture incorporating silver salt and pyrrole. The photopolymerization kinetics, structural properties, and the surface morphology of these hybrid films were investigated to be then utilized as the photocatalysts for the degradation of Rhodamine B dye in aqueous solution upon visible light.

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