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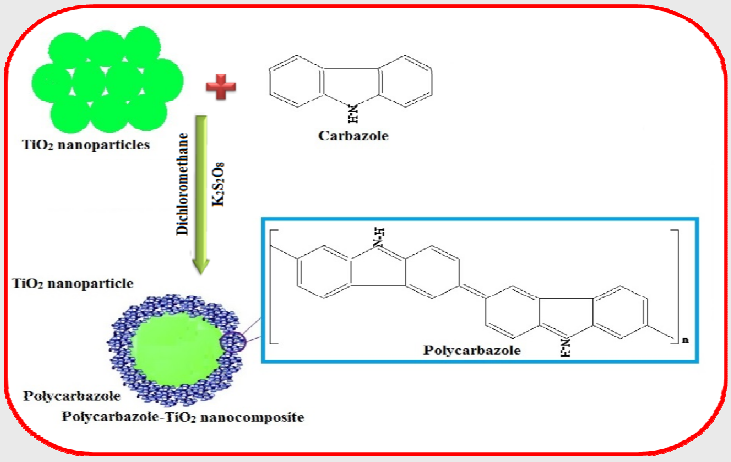
Titanium dioxide based nanostructured polycarbazole reinforced organic-inorganic composite material

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Abstract

During the last few decades, conducting polymers have received focused attention in many technological areas such as rechargeable batteries, sensors, molecular devices, corrosion inhibitors, etc. owing to their remarkable electrochemical and physical attributes. In most of the applications, the conducting polymers are used as copolymer or nanocomposites. In view of their promising application in the high-tech areas, prevail a growing interest for the synthesis, characterization of conducting polymers and the development of their blend, co-polymer and composites. Herein, we report in situ preparation of polycarbazole (PCz)/Titanium dioxide (TiO_2) nanocomposites (PCz/TiO_2) by using $K_2S_2O_8$ as an oxidizing agent. Due to the excellent properties synergistically derived from polymer and inorganic materials, polymer composite materials are used in many fields. In the recent years, composite materials have replaced the pristine polymers due to their strength and stiffness and possess evolutionary means of achieving properties that cannot be realized with single materials. The incorporation of TiO_2 nanoparticles improved the stability, electrical and thermal properties of proposed nanocomposites. These nanocomposites were characterized by FTIR, UV–vis spectrophotometer, TGA and DTA. The nano size of PCz and its Composite (PCz/TiO_2) was confirmed by X-ray diffraction and transmission electron microscopy (TEM). The morphological studies confirmed the formation of a nanocomposite. The conductivity of PCz and its nanocomposite were determined by four probe method. The thermal stability was found to increase with the increase in the loading of titanium dioxide (3, 5 and 7 wt %) in PCz.



Biography

Professor Mohammad Shakir has completed his M.Phil. in Chemistry in 1981 and Ph.D in Chemistry in 1983 from Aligarh Muslim University. Prof. M. Shakir is a Coordinator of Centre of Professional Courses, A.M.U, Aligarh since 2011-Continued (Running 28 Post Graduate Courses, Diploma and Certificate Courses in Paramedical courses, etc.). He became the Professor of Chemistry in 2001 and the Research Interests in the broader areas of Coordination, Macrocyclic, Supramolecular and Bio-inorganic Chemistry and synthesis, characterization and application of Novel nano materials. Teaches Basic and Advanced Courses in Inorganic Chemistry specially Organometallic Chemistry and Spectroscopic Methods for Inorganic Chemists. Published more than 100 papers in various journals of which few reputed are Dalton Trans, (U.K) Inorg. Chem. Commun, Spectrochimica Acta, Polyhedron, Transition Metal Chemistry and Journal of Coordination Chemistry.