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Green synthesis of ZnO hollow microspheres and ZnO/rGO nanocomposite using red rice husk extract and their photocatalytic performance

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A novel ZnO hollow microspheres and ZnO microspheres/rGO nanocomposites were synthesized by a green method using red rice husk extract and water. The green ZnO and ZnO/rGO materials were characterized by X-ray diffraction, SEM, FTIR spectroscopy, Raman spectroscopy, BET surface area analyzer and TGA. The results showed that the as-obtained products had a hollow spherical morphology composed of small ZnO particles with the mean particle size of about 15 nm. The synthesized green ZnO microspheres show high photocatalytic activity for the degradation of malachite green dye (MG) as a model pollutant. The photocatalytic activity was further increased in the presence of ZnO/rGO nanocomposite evidencing the role of graphene oxide in capturing the photo generated electrons and decreasing the electron-hole pair recombination.

Biography

Nuhad A. Alomair has completed his PhD at the age of 32 years from University of Dammam and postdoctoral studies from Cardiff University and University of Dammam. She is former dean of Science College of University of Dammam. She has published more than 15 papers in reputed journals and has received reward excellence for scientific publishing.

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