

Investigation on Morphologies, Forming Mechanism, Photocatalytic and Electronic Properties of Co-Zn Ferrite Nanostructure Grown on the Reduced Graphene Oxide Support

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Abstract : Graphene sheets are promising nanoscale building blocks as a support material for the dispersion of nanoparticles. In this work, a solvothermal method employed to directly grow $\text{Co}_{1-x}\text{Zn}_x\text{Fe}_2\text{O}_4$ ferrite nanospheres on graphene oxide support that is subsequently reduced to graphene. The samples morphology, structure and crystallography were investigated using field-emission scanning electron microscopy (FE-SEM) and powder X-ray diffraction (XRD). The influences of the Zn^{2+} content on photocatalytic activity, electrical conductivity and magnetic property of the samples are also investigated. The results showed that $\text{Co}_{1-x}\text{Zn}_x\text{Fe}_2\text{O}_4$ nanoparticles are dispersed on graphene sheets and obtained nanocomposites are soft magnetic materials. In addition the samples showed excellent photocatalytic activity under visible light irradiation.

Keywords : reduced graphene oxide, ferrite, magnetic nanocomposite, photocatalytic activity, solvothermal method

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