Hollow NiO nanoparticles grown by aqueous solution process

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Nanocrystalline, uniform-sized hollow nickel oxide (NiO) nanoparticles were synthesized in a high yield via simple solution process. The typical diameters of the hollow NiO nanoparticles were in the range of 20-30 nm as was confirmed from the FESEM and TEM observations. In a typical reaction process, initially, the Ni^{2+} ions were adsorbed on the negative charge carrying polystyrene nanospheres which form core-shell type nanoparticles in the solution. The further calcination of these core-shell nanoparticles would lead the formation of hollow NiO nanoparticles. The detailed structural characterizations by XRD and HRTEM confirmed the nanocrystalline nature for the as-grown NiO nanoparticles. The FTIR studies were carried to check the composition and purity of the synthesized products. Good optical properties were obtained for the as-synthesized NiO nanoparticles as was confirmed from the UV-vis spectroscopy.