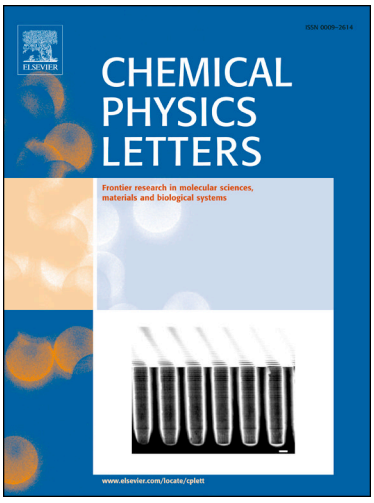

Research paper

Investigations on structural and optical properties of starch capped ZnS nanoparticles synthesized by microwave irradiation method

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Investigations on structural and optical properties of starch capped ZnS nanoparticles synthesized by microwave irradiation method

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Abstract

Following a green synthesis method, zinc sulfide (ZnS) nanoparticles were prepared by chemical co-precipitation technique using starch as capping agent. Microwave irradiation was used as heating source. X-ray diffraction studies indicated that nanopowders obtained were polycrystalline possessing ZnS simple cubic structure. Transmission electron microscopic studies indicated that starch limits the agglomeration by steric stabilization. Interaction between ZnS and starch was confirmed by Fourier transform infrared spectroscopy as well as Raman scattering studies. Quantum size effects were observed in optical absorption studies while quenching of defect states on nanoparticles was improved with increase in starch addition as indicated by photoluminescence spectra.

Key words:
ZnS nanoparticles, microwave irradiation, starch, Raman scattering, photoluminescence.