

Engineering of Sonochemical Process for Synthesis of Highly Porous/Hollow ZnO Nanoparticles

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The application of ultrasonic technology has been receiving wide attention by the world in development of new synthetic methods that provide control nanostructure. The ultrasonic irradiation provides a short duration of extremely high temperatures and pressures in liquids and thus offers a versatile synthetic tool for nanostructured materials that are often unavailable by conventional methods. It is believed that ultrasonic irradiation significantly enhances the hydrolysis rate, and shock waves can induce a typical morphology of material. In our research, the ZnO porous/hollow nanoparticles were easily obtained after few minutes of ultrasonic irradiation with an excellent reproducibility. Plausible mechanisms for the morphological evolution with ultrasonication time were proposed based on time-dependent experiments and characterizations.