Exploring Novel Catalysts for the Chemical Vapor Deposition Synthesis, and Characterization of Zinc and Gallium Oxide Nanostructures

Zinc oxide (ZnO) possesses a non-centrosymmetric structure, which imparts it with piezoelectric properties, rendering it appealing for various technological applications involving nanostructured ZnO. In this investigation, the growth of ZnO surface structures was examined using Magnetite-Catalyzed Chemical Vapor Deposition (CVD). The CVD technique offered control over reaction time, enabling precise growth of ZnO structures. Incorporating catalytic layers of magnetite nanoparticles promoted nucleation and facilitated the development of a distinct morphology resembling interconnected microsized flakes as observed through scanning electron microscopy (SEM).