

Comparative Study for Average Crystallite Size of gadolinium doped-ceria synthesized by different methods

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In recent years, cerium (IV) oxide (CeO₂, also known as ceria) nanoparticles have received much attention because used in a wide variety of applications such as solid oxide fuel cells (SOFCs), catalysis, luminescence materials, UV blockers, polishing materials and gas sensors. The motivation of this work was the investigation the different synthesis method of gadolinium doped ceria nanoparticles with different morphologies. The GCO nanoparticles were synthesized in the by a simple, cost-effective, and environmentally friendly method using cerium(III) nitrate hydrate in an aqueous solution. The CGO phase were obtained at 350°C/2h synthesized by PP method and this same phase was gotten the room temperature for CO method. The GCO particles the CO sample ranges from 3 to 8nm and PP sample ranging from 20 to 35 nm. Fig.1 displays diffractions patterns to different synthesis method of gadolinium doped ceria nanoparticles. In the Fig 2 comparative study of average crystallite size.

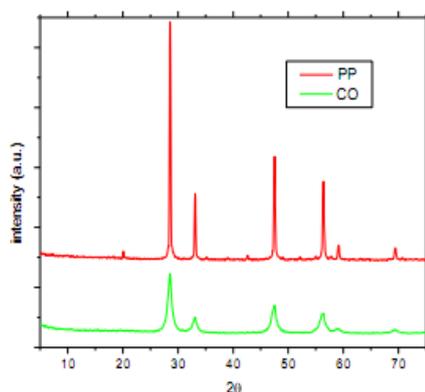


Fig 1 Diffraction patterns

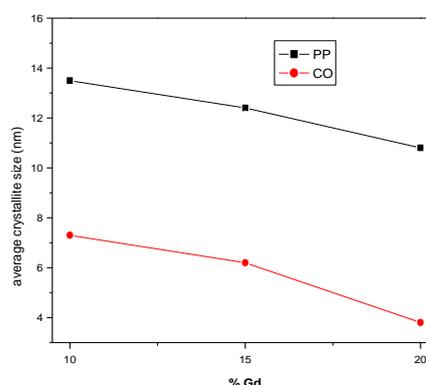


Fig 2: Average crystallite size

In summary, the coprecipitation method shows most efficient on the obtained nanoparticle comparative to the polymeric precursor method.

Keywords

Ceria, nanoparticle, average crystallite size, rare earth elements.

References:

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