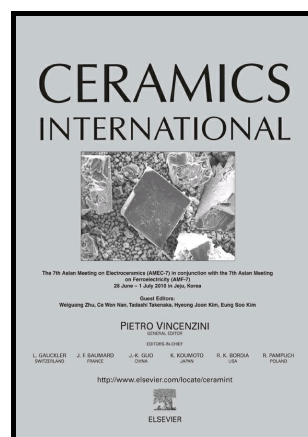


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A new method for the fabrication of MgO-Y₂O₃ composite nanopowder at low temperature based on bioorganic material.

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Abstract

MgO-Y₂O₃ composite nanopowders were synthesized by agarose at low calcination temperature. The influences of agarose (A) to transition metals (TM) mole ratio and calcination temperature on the properties of the composite nanopowder were investigated. As-synthesized samples were characterized by X-ray diffraction (XRD), field-emission scanning electron microscope (FESEM), thermal gravimetric-differential thermal analysis (TG/DSC) and Fourier transform infrared (FTIR) analysis. The optimized sample synthesized with A to TM mole ratio of 1:1, had the average particle size of 18 nm with 59 m²/g specific surface area. Furthermore, using agarose led to reducing calcination temperature from 600 to 400°C and the particle size reduced from 18 nm to 8.6 nm. The FESEM results showed that MgO and Y₂O₃ phases had a uniform distribution phase in MgO-Y₂O₃ composite.

Keywords: MgO-Y₂O₃ Composite, Agarose, Low Temperature, Nanopowders

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