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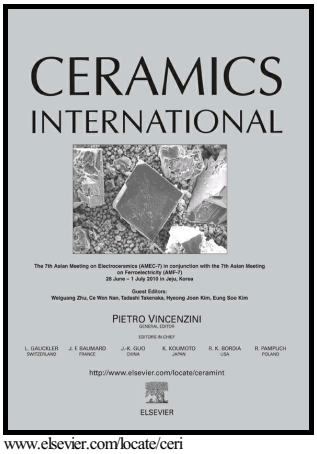
S. Ghorbani, M.R. Loghman-Estarki, R. Shoja Razavi, A. Alhaji



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A new method for the fabrication of $MgO-Y_2O_3$ composite nanopowder at low temperature based on bioorganic material.

S. Ghorbani*, M.R. Loghman-Estarki, R.Shoja Razavi, A. Alhaji.

Department of Materials Engineering, Malek Ashtar University of Technology, P.O. Box 83145/115, Shahin Shahr, Isfahan, Iran.

Sghorbani1375@gmail.com

Phone number: +98 917 506 5181, Fax number: +98 314 522 5041

Abstract

$MgO-Y_2O_3$ 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 m^2/g specific surface area. Furthermore, using agarose led to reducing calcination temperature from 600 to 400^oC and the particle size reduced from 18 nm to 8.6 nm. The FESEM results showed that MgO and Y_2O_3 phases had a uniform distribution phase in $MgO-Y_2O_3$ composite.

Keywords: $MgO-Y_2O_3$ Composite, Agarose, Low Temperature, Nanopowders