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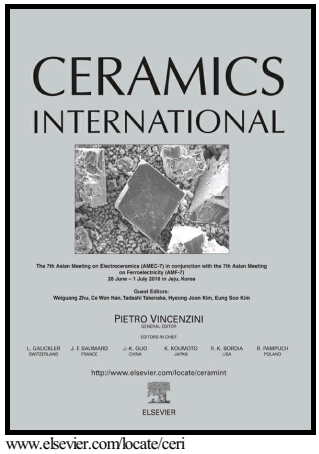

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ACCEPTED MANUSCRIPT

A facile solvothermal method for high-quality $Gd_2Zr_2O_7$ nanopowder preparation

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ABSTRACT

A facile solvothermal method has been developed to synthesize $Gd_2Zr_2O_7$ nanopowders with well-controlled particle size and dispersion. The nanopowders were consolidated into dense ceramic pellets by pressureless sintering, and effects of the solvothermal method in microstructure control are demonstrated by comparison with conventional precipitation approach. X-ray diffraction, electron microscopy, gas adsorption, and a standard operating procedure (SOP) in Malvern Instruments were employed to investigate crystallite/grain sizes and structural morphology evolutions of nanopowders and ceramics. Well-crystallized $Gd_2Zr_2O_7$ nanopowders with little

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