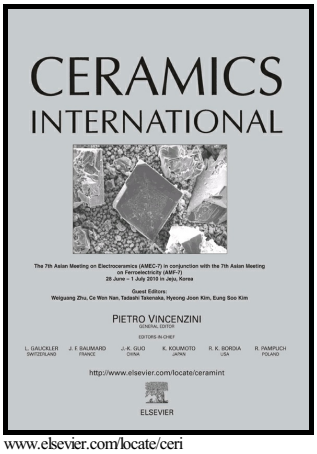

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AC Susceptibility and Hyperfine Interactions of Vanadium Substituted Barium Nanohexaferrites

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Abstract

Vanadium ions substituted $BaFe_{12}O_{19}$ nanohexaferrites, $BaFe_{12-x}V_xO_{19}$ $(0.0 \leq x \leq 0.1)$, were produced through the sol-gel auto-combustion route. The structure, morphology and the elemental compositions of various products were examined using X–ray powder diffraction, scanning electron microscopy coupled with EDX and EDS elemental mapping. These techniques confirmed the formation of the desired Ba-nanohexaferrite phases. The crystallites size was found to be 55-58 nm range for all products. The magnetic properties of $BaFe_{12-x}V_xO_{19}$ nanohexaferrites were investigated by Mossbauer spectroscopy, ZFC-FC magnetizations and AC susceptibility. The evolutions in the values of hyperfine magnetic field, isomer shift, quadrupole splitting, and line width were

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