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Magnetic properties of Ce-substituted yttrium iron garnet ferrite powders fabricated using a sol–gel method

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Abstract

$Y_{2.9}Ce_{0.1}Fe_5O_{12}$ powders which were annealed above $1200^\circ C$ had only a single phase garnet cubic structure and showed ferrimagnetic behaviors. Powders annealed below $1200^\circ C$ had mixed phases of garnet, $\alpha-Fe_2O_3$, and $YFeO_3$ structures. The magnetic behavior of $Y_{2.9}Ce_{0.1}Fe_5O_{12}$ powders annealed above $800^\circ C$ showed that an increase of the annealing temperature yielded decrease in the coercivity; however, opposite tendency was shown in saturation magnetization.

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