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MAGNETIC AND STRUCTURAL PROPERTIES OF ZN-DOPED YIG NANOPARTICLES

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Zn-doped YIG was prepared using the sol gel method and TGA measurements showed the phase formation between 900°C and 1000°C. XRD analysis showed close to 1100°C the formation of Franklinite phase, coexisting with the cubic YIG. Y3(Fe1-xZnx)5O12 samples with different Zn concentrations (x = 0, 0.01, 0.03 and 0.05) were prepared and analyzed by a magnetic study. A decrease in magnetic moment of the samples was confirmed with increasing the concentration of Zn ions. The diminishing is due to the substitution of Fe ions by Zn. This also confirmed the results of XRD showing the linear increasing in the lattice parameter. Fittings by the Bloch's law shows results compared with those already reported in the literature. Both the exponent of how Bloch constant presented similar values to those reported in YIG doped with other ions. We obtained the parameter ? ~ 10-6 K-n and n close to 1.9 for all samples.