

Phase evolution and crystallite size of La-substituted YIG at different calcination temperatures.

ABSTRACT

Yttrium iron garnet (YIG) substituted lanthanum ions (La^{3+}) $\text{Y}_{3-x}\text{La}_x\text{Fe}_5\text{O}_{12}$ were synthesized at different temperatures. The effect of calcination temperature on crystalline structures was investigated by using X-ray diffraction (XRD). The results show that the crystallization of the samples La-substituted YIG $x=0.0$ and $x=0.5$ is more completed when the calcination temperature increases. However, Fe_2O_3 phase was formed in the sample with La substitution of $x=1.0$ when the temperature increases. The sizes of substituted YIG particles calculated from Scherrer equation were ranged from 29 to 71 nm and it was found increased with the increasing of calcination temperature.

Keyword: YIG; Phase evolution; Substituted YIG.