**Research Title** The investigation of microstructure and magnetic property of Magnesium Manganese Ferrite (Mg(1-x)MnxFe2O4) ceramics prepared by co-precipitation method and two-step sintering.

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**ABSTRACT**

This research was carried out to study microstructure and magnetic property of magnesium manganese ferrite (Mg(1-x)MnxFe2O4). The mixed ceramics were prepared by co-precipitation method and two-step sintering with different x ratio of x = 0.5, 0.6 and 0.7 at a calcination temperature of 1,100 oC. The two-step sintering was carried out by comparing sintering temperature of T1 ranging from 1,250-1,450 oC and sintering temperature of T2 at 1,200 oC. The ceramics structure determined by X-ray diffraction revealed that it was cubic spinel. Microstructure of ceramics determined by scanning electron microscope, revealed that the grain was polygonal and irregular in size. All samples showed ferromagnetic properties which were determined by Vibrating sample magnetometer (VSM). The study on physical characteristics of Mg0.4Mn0.6Fe2O4, revealed that the grain is square and the density of sample not different in each sintering temperature. The results of magnetic property of Mg0.4Mn0.6Fe2O4 sintered with T1 at 1,300 oC show the ferromagnetic properties and maximum magnetic field constant value was 6.001 emu/g