

## THE EFFECT OF VARIATION OF THE BISMUTH CONTENT ON THE MAGNETIC PROPERTIES OF $Y_{3-x}Bi_xFe_5O_{12}$ SYSTEM

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### ABSTRACT

$Y_{3.0-x}Bi_xFe_5O_{12}$  samples were prepared via conventional technique. Four samples of  $Y_{3.0-x}Bi_xFe_5O_{12}$  were prepared ( $x = 0.2, 0.4, 0.6, 0.8$ ). The samples were then studied for general variation of Curie temperature and initial permeability with bismuth content. All the compounds prepared were identified by X-Ray Diffraction. Sample with the highest content of bismuth, sample  $Y_{2.2}Bi_{0.8}Fe_5O_{12}$ , recorded the highest Curie temperature and the highest initial permeability. The bismuth is speculated to give rise to the strong super-exchange interaction and this results in the increase of Curie temperature. Additionally, the bismuth content works as a sintering aid to assist grain growth during sintering and hence enhances the initial permeability.

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