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Abstract
Chelating function copolymer latex was synthesized and used to prepare the YIG (Yttrium Iron Garnet, Y3F5O12) precursor in this text. The characteristic of chelating iron(U+428) and yittium(U+428) on the copolymer were confirmed by using FTIR. The effect of different series of polymer-chelated precursors on the YIG crystallization is reducing the calcining temperature. XRD present the chelated polymer-YIG precursors can obtain the good crystalline of YIG after 600℃ calcining temperature treatment, however, which is far lower than traditional high temperature procedure(1000℃). While, those YIG present the spherical yttrium iron garnet crystalline phase, relatively, no chelating copolymer additive YIG is amorphous state as the same annealing condition. However, higher calcining temperature, such as 900℃ and 1200℃, can obtain better YIG crystalline after TEM and XRD measurement. Additionally, the saturation magnetic properties of YIG at 600℃ calcining temperature is Ms=41.9emu/g which is better than that of traditional YIG (26emu/g) from the VSM analyses, meanwhile, the particles size of YIG is 100 nm which is belong to nanosize material from the TEM photograph.
Advisory Committee Cheng-Chien Wang - advisor

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