Rekayasa Kemagnetan dan Penyerapan Gelombang Mikro pada Nanokomposit SHF-FeCo melalui Reduksi Karbon CoFe2O4 = Magnetic Engineering and Microwave Absorption in SHF-FeCo Nanocomposites through Carbon Reduction of CoFe2O4

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Abstrak

Penelitian ini dilakukan untuk membuat material nanokomposit magnetik berbahan dasar stronsium heksaferit (SrFe12O19 atau SHF) dan besi kobalt (FeCo) sebagai Radar Absorbing Material (RAM). Telah dibuat nanokomposit (SrFe12O19)1-x.(FeCo)x melalui metode mechanical milling dengan variasi x=0; 0.3 dan 0.5. Komposit dibuat menggunakan nano SHF dan paduan FeCo. FeCo diperoleh dari reduksi karbon nano CoFe2O4 pada temperatur 1100°C selama 3 dan 5 jam disertai dengan quenching. Karakterisasi magnet diambil dengan pengujian Permagraf dan VSM. Karakterisasi fasa didapatkan dengan uji XRD. Pengujian VNA dilakukan untuk mendapat nilai reflection loss (RL) sehingga dapat diketahui persentase serapan nanokomposit yang terbentuk.

.....This research purpose is to make a magnetic nanocomposite material based on strontium hexaferrite (SrFe12O19 or SHF) and iron-cobalt (FeCo) as a Radar Absorbing Material (RAM). Nanocomposites following the composition of (SrFe12O19)1-x.(FeCo)x through mechanical milling method with x=0; 0,3 and 0,5 has been made. The composites are based on nano SHF and FeCo alloy. The FeCo alloy was synthesized via carbon reduction of nano CoFeâOâ in 1100°C with various holding time of 3 and 5 hours, with quenching applied after annealing. Magnetic characterization was gained through Permagraph and VSM testing. The phases of the nanocomposites gained through XRD testing. VNA testing was done to gain reflection loss (RL) value so the absorbtion percentage of the created nanocomposite can be calculated.