

**PEMBUATAN DAN KARAKTERISASI
NANOKOMPOSIT MFe_2O_4 DAN $MFe_2O_4-SiO_2$ (M = Cu, Ni)**

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ABSTRACT

Nanocomposites of MFe_2O_4 and $MFe_2O_4-SiO_2$ (M= Cu, Ni) were prepared by complexation and complex polymerization methods using citric acid as complexing agent, tetraethylorthosilicate (TEOS), metal (Cu, Ni) nitrate and iron chloride as precursors. FT-IR spectroscopy was used to analysis the complexation and polymerization process. The decomposition of material was investigated by TG-DTA. Microstructure characterization was carried out by XRD and SEM. Peaks in XRD pattern indicate that the nanocomposites products consist of copper iron oxide ($CuFe_2O_4$) and ($NiFe_2O_4$) crystals, copper iron oxide crystal distributed in silica ($CuFe_2O_4-SiO_2$) and nickel iron oxide crystal distributed in silica ($NiFe_2O_4-SiO_2$). SEM images of $CuFe_2O_4$ and $NiFe_2O_4$ show that the composites have porous and spherical texture. The surface texture of $CuFe_2O_4-SiO_2$ composite is triangel like and has porous but $NiFe_2O_4-SiO_2$ is not regulated texture and has porous.

Keywords: MFe_2O_4 , MFe_2O_4/SiO_2 , citric acid and complex polymerization method

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