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**Magnetic multicomponent nanoparticles  $\text{Cu}_x\text{Mn}_{1-x}\text{Fe}_2\text{O}_4$  for biomedical applications** NURCAN DOGAN, Gebze Institute of Technology — Magnetic nanoparticles (NPs) are increasingly important in many biomedical applications, such as drug delivery, hyperthermia, and magnetic resonance imaging (MRI) contrast enhancement. In this multicomponent nanoparticles  $\text{Cu}_x\text{Mn}_{1-x}\text{Fe}_2\text{O}_4$  (CuMnF),  $x= 0, 0.6, 1$ , were prepared by hydrothermal synthesis, sol-gel and solid state methods. To build the most effective magnetic nanoparticle systems for various biomedical applications, particle characteristics including size, surface chemistry, magnetic properties and toxicity have to be fully investigated. In this work, effects of production methods of magnetic nanoparticles for the bio-medical applications are discussed. X-ray powder diffractometry (XRD), scanning electron microscopy (SEM) and vibrating scanning magnetometer (VSM) were used to characterize the structural, morphological and magnetic properties. The particle size of samples is measured by Malvern Instruments Zeta Sizer Nano-ZS instrument. The temperature dependence of field cooled (FC) magnetization of all  $\text{Cu}_x\text{Mn}_{1-x}\text{Fe}_2\text{O}_4$  samples have been shown here. The data were recorded under 1k Oe and 100 Oe magnetic fields for different ratio.

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