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Structural and magnetic properties of nano-sized Cu–Cr ferrites prepared through a simple method using egg white

M.A. Gabal*

Chemistry department, Faculty of Science, King Abdul Aziz University, Jeddah, Saudi Arabia

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ABSTRACT

CuFe_{2-x}Cr_xO₄ (0 ≤ x ≤ 1) nanopowders were successfully synthesized by a simple method using metal nitrates and freshly extracted egg white. The resultant powders annealed at 550 °C for 2 h and were investigated by X-ray diffractometer (XRD), transmission electron microscopy (TEM), Fourier transform infrared spectroscopy (FT-IR) and vibrating sample magnetometer (VSM). The results revealed the formation of cubic spinel structure at Cr concentrations ≥ 0.2. In spite of the lattice constant is hardly changed with increasing of Cr content, the magnetic properties of Cr-substituted copper ferrite are strongly affected. The saturation magnetization, remanent magnetization, and coercive force were found to decrease monotonously with increasing of Cr content.

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