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YUCOMAT 2023

**Program
and
Book of Abstracts**

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Physicochemical properties of solvothermally synthesized zinc copper ferrite nanoparticles

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In the past two decades spinel ferrites nanoparticles have been extensively investigated due to their potential applications in a variety of fields (data storage, catalysis, energy, environment, biomedicine, etc.). In the present work, zinc ferrite nanoparticles with different copper content ($Zn_{(1-x)}Cu_xFe_2O_4$; $x=0, 0.2, 0.4, 0.6, \text{ and } 0.8$) but with the same particle size distribution and amount of oleic acid as capping agent were prepared by solvothermal synthesis and the physicochemical properties of as-prepared samples were investigated. The prepared samples were characterized by X-ray powder diffraction (XRD), transmission electron microscopy (TEM), Fourier transform infrared spectroscopy (FT-IR) and vibrating sample magnetometry (VSM). The XRD results show that all the diffraction maxima correspond to the cubic spinel structure, while TEM images revealed that samples are consisted of sphere-like particles, 5-7 nm in size. The presence of oleic acid on the surface of nanoparticles was confirmed by FTIR analysis. The magnetic measurements revealed superparamagnetic behavior of obtained powders, with gradual increase of saturation magnetization.