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## STRUCTURAL, MAGNETIC AND DIELECTRIC PROPERTIES OF SOL- GEL AUTO-COMBUSTION SYNTHESIZED MAGNESIUM FERRITE NANOPARTICLES

**Gigel Gicu Nedelcu, Alin Druc, Adriana Popa, Maria Cazacu, Mihai Iacob, Marius Dobromir, Petronel Postolache, Liviu Leontie and Felicia Iacomi**

Grigore Ghica Voda Sanitary School Iasi, Romania

In the present work,  $\text{MgFe}_2\text{O}_4$  nanoparticles were prepared by sol-gel auto-combustion method, using glycine as fuel agent. Transmission electron microscopy and scanning electron microscopy (SEM) provided the data on morphological analysis and particle sizes. Structural characterization was performed with x-ray diffraction which has given data about the spinel single-phase formation. Chemical structure has been characterized by Fourier-transform infrared spectroscopy and by x-ray photoelectron spectroscopy which proved the absence of organic phases. The magnetic properties investigated by vibrating sample magnetometry and electron paramagnetic spectroscopy show that the ferrite particles are superparamagnetic behaviour, depending on the chemical composition, shape and size of the particles, the synthesis method, crystallinity, direction of magnetization and cation distribution. Dielectric properties were evaluated by dielectric permittivity and dielectric losses measurements, using an Agilent 4294A Precision Impedance Analyzer, in the range of 40 Hz - 110 MHz.