## BS14

# Studying of the Influence of γ Radiation on Magnetic Properties of $Sr_{0.8}La_{0.2}O.6Fe_{1.7}Co_{0.3}O_3$ Ferrite Magnetic Materials

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Some previous researches had proved that magnetic properties are unchangeable under affecting of radiating (reach 700Mrad of doses) [1-2]. For reexamining the influence of gamma radiation on the $Sr_{0.8}La_{0.2}O.6Fe_{1.7}Co_{0.3}O_3$ ferrite magnetic, we performed the study following: The $Co^{60}$ gamma radiation with 1.33 and 1.17 MeV Energy was emitted on permanent magnet $Sr_{0.8}La_{0.2}O.6Fe_{1.7}Co_{0.3}O_3$ with doses in 500-2000kGy. Analyzing magnetic properties of this system before and after emitting by hysteresisgraph AMH 50-20 was showed the change of (B-H) loop is insignificant. Our work reaffirmed the results of [1-2].

**REFERENCES**

[1] R.S. Gao et al. / Journal of Magnetism and Magnetic Materials 302 (2006) 156–159.
[2] J. Alderman, P.K. Job and J. Puhl, *Nucl. Instrum. Methods A* **481** (2002), p. 9.

## BS15

# Room Temperature Magnetic Properties of Fe-doped $CeO_2$ Nanoparticle Prepared by a Simple Method

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In this paper, we report room temperature magnetic properties of $Ce_{0.97}Fe_{0.03}O_2$ nanoparticles by a simple method using cerium (III) nitrate, Iron (III) nitrate and chitosan solution. The precursors were calcined in air at 400, 500, 600 and 700°C for 2 h to obtain nanoparticles. The synthesized samples were characterized using Thermogravimetric Differential Analysis (TG-DTA), X-ray diffractometer (XRD), UV-Visible spectroscopy (UV-Vis), Photoluminescence spectroscopy (PL), Transmission electron microscopy (TEM) and Vibrating sample magnetometry (VSM). Results from XRD indicated that the synthesized $Ce_{0.97}Fe_{0.03}O_2$ nanoparticles have the cubic structure no change in the structure affected by Fe substitution. Room temperature magnetization results revealed a ferromagnetic behavior for the $Ce_{0.97}Fe_{0.03}O_2$ samples. The origin of the room temperature ferromagnetism in this Fe-doped $CeO_2$ system is discussed.