for BaBi$_2$Mo$_4$O$_{13}$ a= 6.434Å, b=11.763 Å, c=29.998 Å, cell volume V=2270.34 Å$^3$, Z=8.


**Keywords:** BaBi$_2$B$_2$O$_7$, BaBi$_{10}$B$_6$O$_{25}$, BaBi$_8$B$_2$O$_{16}$

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**Isomorph (Mg, K) Substitution in Triple Molybdate K$_{3.11}$Li$_{0.89}$Mg$_4$(MoO$_4$)$_6$**

**Keywords:** triple molybdate, nonstoichiometry, structure

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**Nanostructured Random Type MgFe$_2$O$_4$ Spinel Prepared by Soft Mechanochemical Route. A. Kremenovic$^a$, B. Antić$^b$, N. Jović$^c$, M. Vučinic-Vasic$^c$. aUniversity of Belgrade, Belgrade, Serbia. bThe “Vinča” Institute, Belgrade, Serbia. cUniversity of Novi Sad, Novi Sad, Serbia.**

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Results of structural, spectroscopic and magnetic investigations of MgFe$_2$O$_4$ nanoparticles prepared by soft mechanochemical synthesis will be reported. MgFe$_2$O$_4$ nanoparticles crystallize in $Fd3m$ space group with mixed cation distribution and reduced percentage of Fe$^{3+}$ at tetrahedral (8a) sites. Discrepancy in the cation distribution compared to that in the bulk Mg-ferrite is one of the highest known. X-ray line broadening analysis reveals crystallite size and strain anisotropy. The average apparent size is 10(1) nm and the average maximum strain is 27(2) x 10$^{-4}$. The projection of three-dimensional bodies representing “average apparent crystallite size” and “apparent maximum strain” on crystallographic (001) plane are given in Figure 1.

The saturation magnetization, $M_{sat} = 62$ emu/g measured at 5 K is twice higher than that found in the bulk counterparts. Such high value of $M_{sat}$ is attributed to the low value of cation inversion parameter ($\delta=0.69$), to the core/shell structure of the nanoparticles and to the surface/volume ratio. Mössbauer spectrum collected at room temperature reveals ferrimagnetic ordering between Fe$^{3+}$ ions in 8a and 16d sites, while zero-field-cooled (ZFC) and field-cooled (FC) M(T) measurements were shown SPM state above 350 K.

**Keywords:** nanocrystals, microstructure analysis, magnetism