



Contribution ID: 499

Type: Poster

Influence of Nonmagnetic Cation Substitution on Magnetic Order Temperature in Y type hexaferrite: $\text{Ba}_{0.5}\text{Sr}_{1.5}\text{Zn}_2\text{Fe}_{12}\text{O}_{22}$ and $\text{Ba}_{0.5}\text{Sr}_{1.5}\text{Zn}_2\text{Al}_{0.08}\text{Fe}_{11.92}\text{O}_{22}$

Tuesday, 21 March 2023 16:00 (2 hours)

The sol-gel auto-combustion method and the sonochemical co-precipitation method were used to prepare $\text{Ba}_{0.5}\text{Sr}_{1.5}\text{Zn}_2\text{Fe}_{12}\text{O}_{22}$ (S1) and partially Al substituted $\text{Ba}_{0.5}\text{Sr}_{1.5}\text{Zn}_2\text{Al}_{0.08}\text{Fe}_{11.92}\text{O}_{22}$ (S2) powders. The XRD analyses show that the samples are single-phase Y-type hexaferrite. SEM images of the S1 sample obtained by auto-combustion revealed particles of a very non-uniform shape and well-agglomerated to form clusters of different sizes and shapes. In contrast, the particles of the samples obtained by sonochemical co-precipitation had the perfect hexagonal shape typical for Y-hexaferrite of an estimated size of 1.2 μm and an average thickness of 168 nm. We report magnetic structure determination from patterns of the samples at 5 K and 300 K and the magnetic order evolution by temperature-dependent diffraction taken on SPODI (MLZ) between 10-350 K in the heating and cooling runs using a cryostat with a closed cycle refrigerator.

Primary authors: Prof. KREZHOV, Kiril (Institute for Nuclear Research and Nuclear Energy, Bulgarian Academy of Sciences); Dr KOUTZAROVA, Tatyana (Institute of Electronics, BAS)

Presenter: Prof. KREZHOV, Kiril (Institute for Nuclear Research and Nuclear Energy, Bulgarian Academy of Sciences)

Session Classification: Poster session TUESDAY

Track Classification: Chemistry of Materials (Structure and Spectroscopy)