



## **Energy product and magnetic properties of strontium hexagonal ferrite: experimental and theoretical investigation**

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### **Abstract:**

The interest toward hard magnetic materials increases in the last years. In order to have the best magnetic properties of these materials, researchers count on the efficiency of different synthesis methods.

In permanent magnets application, ferrite materials possess a good place among the other magnet families. In permanent magnets field, the more important parameter that describes the magnetic strength of a magnet is the maximum energy product  $(BH)_{\max}$ . A strong permanent magnet has an important value of  $(BH)_{\max}$ .

In this work, we will study the effect of annealing temperature on maximum energy product and other magnetic properties of Strontium hexaferrite  $\text{SrFe}_{12}\text{O}_{19}$  synthesized using sol-gel autocombustion method, with different annealing temperatures, characterized using Thermogravimetric analysis (TGA), X-ray diffraction (XRD), scanning electron microscopy (SEM), Mössbauer spectroscopy (MS) and superconducting quantum interference device magnetometer (SQUID). Ab initio calculation for magnetic properties is also performed in order to compare it with low temperature experimental results.

Contribution:

Oral