## عنوان مقاله:

Substitution effects of La۳+ and Zn۲+ ions on the microstructural andmagnetic properties of Sr۲-x Lax Ni۲ Fe۱۲-x ZnxO۲۲ Y-type hexaferritesynthesized by sol-gel auto-combustion method

## محل انتشار:

دوازدهمین کنگره سرامیک ایران (سال: 1398)

تعداد صفحات اصل مقاله: 11

## نویسندگان:

Razieh Rezaee - *Master of Science in Materials Engineering and Metallurgy - Materials selection for engineering design*

.Omid Mirzaee - *Associate Professor of Materials Science and Engineering, University of Semnan, Semnan, Iran*

Mohammad Tajally - *Associate professor of Materials Science and Engineering, University of Semnan, Semnan, Iran*

## خلاصه مقاله:

Strontium hexaferrite nanoparticles with composition Sr۲-xLaxNi۲Fe۱۲-xZnxO۲۲ (for x= ۰.۰, ۰.۱, ۰.۲, ۰.۳, ۰.۴, ۰.۵) have been synthesized by auto combustionsol-gel method. The samples were characterized by X-ray diffraction (XRD), highresolution field emission scanning electron microscopy (FESEM), and vibratingsample magnetometer (VSM).The X D analysis confirms the single phase at ۱۰۰۰ ˚Cand various parameters such as lattice constant, cell volume and crystallite size havealso been calculated from XRD data. FE-SEM patterns showed that all of theparticles had a hexagonal platlet shape and with the increase of La۳+, Zn۲+ contents,the size of particles reduced. This reduction is relative on the inhibitor properties ofadditional elements. The VSM measurements were used to determine the saturationmagnetization (Ms), retentivity (Mr) and coercivity (Hc) of the samples. This resultsshowed that by increasing the La۳+ and Zn۲+ contents, the saturation magnetizationand retentivity were increased from ۳۷.۹۴ to ۴۴.۱۴ emu/g and ۱۸.۴۶ to ۲۰.۵۶ emu/g,respectively, whereas coercivity was decreased from ۱۱۹۹.۹۵ to ۸۹۸.۶ Oe. Thereduction in coercivity revealed that this material is suitable for high frequencyapplications, such as electromagnetic devices, because of its soft magnetic properties

## کلمات کلیدی:

Microstructural, Magnetic properties, Y-type hexaferrite, Sol-gel autocombustionmethod

## لینک ثابت مقاله در پایگاه سیویلیکا: