

Raman spectroscopy study of $\text{La}_{0.5}\text{Sr}_{0.5}\text{FeO}_{3-\gamma}$ ferrite

Gavrilicheva K A[®] and Barkalov O I

Institute of Solid State Physics of the Russian Academy of Sciences,
Akademika Osipyana Street 2, Chernogolovka, Moscow Region 142432, Russia

[®] xenia.gavrilicheva@issp.ac.ru

In the mixed lanthanum ferrite $\text{La}_{0.5}\text{Sr}_{0.5}\text{FeO}_{3-\gamma}$, a gradual loss of oxygen and an increase in the number of oxygen vacancies occurred with an increase in the vacuum annealing temperature. In [1], the rare-earth orthoferrites were studied by Raman spectroscopy. Calculations carried out for LaFeO_3 allowed for the assignment of the peaks observed in the present work in the low-frequency region to the Fe-O vibration modes, while the high-frequency broad band was attributed to the two-magnon scattering indicating an antiferromagnetic ordering in the sample similar to the parent LaFeO_3 compound.

The increase in the annealing temperature resulted in a pronounced decrease of the peak linewidth and increase of the signal-to-noise ratio, thus, pointing to the improvement of the ferrites crystalline structure during the annealing.

[1] Weber M C and et al 2016 *Sov. Phys. Usp.* **94** 214103