

## البحث رقم (2)

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### عنوان البحث:

**Structural and magnetic properties of  $\text{BiFe}_{1-x}\text{Cr}_x\text{O}_3$  synthesized samples**

### Abstract:

Chromium doping effects on the structure and the magnetic properties of bismuth ferrite  $\text{BiFe}_{1-x}\text{Cr}_x\text{O}_3$  ( $x = 0-0.3$ ) ( $\text{BFC}_x\text{O}$ ) polycrystalline samples are examined. The Perovskite-type oxide samples are synthesized by the conventional solid state reaction at a high pressure of 7 GPa and a temperature of 1273 K. The X-ray powder diffraction patterns at room temperature show that all the samples with  $x = 0.0-0.3$  are described by the rhombohedral structure. In the meantime, it is revealed that the doping of Cr can induce noticeable lattice distortions in the doping samples, and the largest distortion is observed in the case  $x = 0.1$ . The magnetic hysteresis loops

measured at room temperature exhibit weak ferromagnetic behaviors of the samples and the magnetization is found to increase with the increase in Cr concentration. The temperature dependent magnetization curves indicate antiferromagnetic features in samples. Moreover, Cr-doping tends to reduce the ordering temperature.