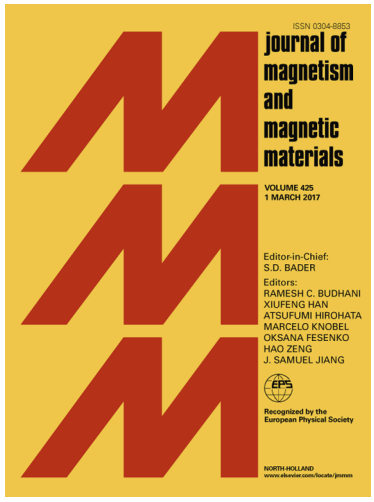

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Highly frustrated Bi-Cr-Sb-O pyrochlore with spin-glass transition

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Abstract

The detailed study of magnetic properties, including *dc* and *ac* measurements, has been carried out on the Bi-Cr-Sb-O pyrochlore. The region of pyrochlore phase existence was determined and photocatalytic properties have been also studied. We revealed that the Bi-Cr-Sb-O pyrochlore phase occurs along $Bi_{2-x}Cr_{1+x}SbO_7$ section within the region x=0.1-0.4. The Cr^{3+} ions oxidation state in Bi-Cr-Sb-O pyrochlore was confirmed by XANES spectra. The best Rietveld refinement results for $Bi_{1.8}Cr_{1.2}SbO_7$ composition were achieved for the disordered structure model (space group *Fd-3m*). According to the magnetic data $Bi_{1.8}Cr_{1.2}SbO_7$ is a highly frustrated pyrochlore with short-range antiferromagnetic exchange interactions between the nearest Cr^{3+} ions. At T_g = 4 K this compound undergoes spin-glass transition.

Keywords

Pyrochlore, homogeneity range, magnetic properties**,** spin-glass.