X-ray investigations and magnetic properties of $CuCr_{2-x}SnSe_4$ - compounds.

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Streszczenie

We have observed that doping CuCr2Se4 with tin introduces and then increases the tetrahedral deformation of the spinel structure, which can be connected with the Jahn-Teller (JT) distortion due to Cr2+ ions in antiprismatic environment. The presence of Cr2+ is corroborated by the increase of the saturation magnetization above the 6μB value expected for the 2 Cr3+ ions. In the high limit of the high Sn doping the deformation is decreased, which we attribute to elimination of the JT condition by the increased local distortions. With the tin doping the magnetic structure evolves from the ferromagnet, through spin-glass like to the antiferromagnetic due to increased AF coupling in the system. This is corroborated by the decreasing transition temperature and the Curie-Weiss parameter.

Słowa kluczowe

ceramic method, X-ray diffraction, Rietveld Refinement, Magnetic Property

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