Crystal structure and magnetic properties of pyrrhotite-type compounds $Fe_{7-y}V_yS_8$

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The magnetic behavior of the ferrimagnetic compound Fe_7S_8 (pyrrhotite) with a layered superstructure of the NiAs type is strongly dependent on the distribution and ordering of vacancies and substitutions [1]. The aim of the present work is to study how the substitution of V for Fe affects the crystal structure, phase transition and magnetic properties of $Fe_{7-y}V_yS_8$ compounds. Together with changes in the period of superstructure the growth of the V content in $Fe_{7-y}V_yS_8$ is observed to result in a sharp decrease in the resultant magnetization, non-monotonous change of the coercive field and reduction of the magnetic ordering temperature. This work was supported by the RFBR (projects No 16-02-00480 and 16-03-00733) and by the Ministry of Education and Science of Russia (project No 3.2916.2017).

References:

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