SPIN STATES OF Ni^{3+} IONS $PrSrAl_{1-x}Ni_xO_4$ CERAMICS.

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Ceramics $PrSrAl_{1-x}Ni_xO_4$ ($0 \le x \le 0.2$) with the structure of the K_2NiF_4 layered perovskite type were synthesized and studied. EPR shows existence of Ni^{3+} centers with different spin-state. The high-spin (HS) centers occupy the Pr^{3+} and Sr^{2+} positions, the low-spin (LS) – Al^{3+} positions. Agglomerates of a large number of Ni^{3+} ions also arise. An increase of the Ni^{3+} concentration results in the increase of a number of HS centers and a number of LS centers decrease. EPR signals are detected in the temperature range 4.2-100 K. In the limit of an experimental accuracy the relative intensity of signals from the different types of centers does not depend on temperature. The shortening of the spin-lattice relaxation time of the LS centers relatively to one observed in the $LaSrAl_{1-x}Ni_xO_4$ can be explained by the interaction of Ni^{3+} spin system with the spin system of the rapidly relaxing Pr^{3+} ions. It is shown that the observed EPR spectra being the superposition of signals from various centers reflect the peculiarity of the micro-non-homogeneity of the ceramics studied.