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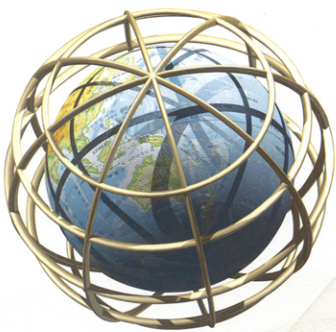

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Carrier Doping Dependence of the T_c in Double Perovskite Sr_2FeMoO_6

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We have studied effects of the electron doping on the magnetic phase transition in double perovskites $Sr_{2-x}A_xFeMoO_6$ (A= Ca and La). Polycrystalline samples were prepared by standard solid-state reaction. X-ray diffraction patterns reveal that samples are single-phase with tetragonal I_4/mmm symmetry. In SCFMO, the T_c decreases from 377 K for x=0 to 365 K for x=0.1 with Ca doping. However, the T_c of SLFMO increases from 377 K for x=0 to 390 K for x=0.1 with La doping. Since the ionic radii of Ca^{2+} ion (1.34 Å) and La^{3+} ion (1.36 Å) are almost same, considering ionic size effect, we cannot expect any difference in T_c between A=Ca and La with increasing x. Contrary to the case for A=Ca, the substitution of La^{3+} for Sr^{2+} introduces electrons in the electronic systems, which changes the valence state of Fe/Mo ions. Hall effect measurement shows the normal Hall coefficient for A=La is negative, so that the increase of T_c with La^{3+} doping originates from electron doping effects.