Zahari Zlatanov. STRUCTURAL, MAGNETICT AND TRANSPORT PROPERTIES OF $RE_{1-x}M_xMnO_3$ MATERIALS, CERAMICS AND SEMIMAGNETIC SEMICONDUCTORS M_{1-x} RE_xMnTe INDUCED BY Mn IONS AND OXIDES

In this article are review recent works falling under the broad classification of manganese oxides $RE_{1-x}M_xMnO_3$, ceramics and semimagnetic semiconductors M_{1-x} RE_xMnTe induced by Mn ions and oxides. Large part of the recent studies has been devoted to the mixed valence manganese oxides exhibiting a metal insulator transition accompanied by so called colossal magnetoresistance (CMR) effects, which is magnetoresistance associated with a ferromagnetic-to-paramagnetic phase transition. The prototypical CMR compound is derived from the parent compound, perovskite $LaMnO_3$. Near the phase transition temperature, which can exceed room temperature in some compositions, large magnetoresistance is observed and it is possible application in magnetic recording has revived interest in these materials. Large magnetoresistance is also seen in other systems namely Cr chalcogenide spinels, compounds which differ greatly from the manganite perovskites In the case of the doped $A^{IV}B^{VI}$ semimagnetic semicinductors (SMSC) (example: $Pb_{1-x}Mn_XTe$, $Pb_{1-x}Gd_xTe$) was looked, after hot annealing on air (at temperature over 650 K) change of some properties-structural and magnetic. They were transformred to similar of the $RE(M=)MnO_3$ materials and some ceramics (structure–perovskite, resistivity- CMR). It is possible that SmSc shows the temperature induced transition from rock-salt (collinear) to perovskite (spiral magnetic) structure . associated with oxide atoms ordering in the Te sublattice. Such a transition could observed for PbMnTe and PbGdMnTe (NaCl-perovskite) in the GdTe and MnTe-ordered phase**.** Or of the case of rare-earth SmSc with MnTe phase this phenomenon will be observing at relatively high temperatures.

Keiwords**:** semiconductors, structure, magnetic, transport properties
PACS number: 61.72-Y