The NiAs–MnP Phase Transition in VS. H. F. FRANZEN AND G. A. WIEGERS. Laboratorium voor Anorganische Chemie, Rijksuniversiteit, Zerniklaan, Groningen, The Netherlands. Results of measurements of the lattice parameters, magnetic susceptibility and electrical resistivity of stoichiometric VS as functions of temperature through the MnP–NiAs transition region are reported and discussed. The properties are found to be consistent with a metallic solid in which the Fermi energy passes through a marked change in the density of states with the concurrent formation of zigzag metal chain in the *a–b* plane.

Nonstoichiometric Phases in the Sn–Nb–O and Sn–Ta–O Systems Having Pyrochlore-Related Structures. T. BIRCHALL AND A. W. SLEIGHT. Central Research Department, Experimental Station, E. I. duPont de Nemours and Company, Wilmington, Delaware 19898. Phases in the Sn–Nb–O and Sn–Ta–O systems with cubic pyrochlore related structures have been synthesized and characterized by X-ray diffraction, tin Mössbauer, density determinations and chemical analyses. All data fit the general formula $Sn^{2+}_{2-x}(M_{2-y}Sn^{4+}_{y})O_{7-x-y/2}$ where M is Nb^{5+} or Ta^{5+}. Thus there are generally both cation and anion vacancies. The cubic cell increases with increasing x and with increasing y. The observed range in a was 10.55 to 10.61 Å for both the Nb and Ta systems. Mössbauer data indicate that Sn^{2+} is actually not at the $\bar{3}m$ site of the ideal pyrochlore structure. The structure of $Sn^{2+}_{1.76}Ta_{1.56}Sn^{4+}_{0.44}O_{6.54}$ was refined to an R of 1.6 using 46 independent observations. Sn^{2+} was found to be displaced from the $\bar{3}m$ position by 0.38 ± 0.02 Å. These static displacements are apparently somewhat cooperative since none of these phases is centric; thus, they do not belong to the space group $Fd3m$ of the ideal pyrochlore structure.

New $A^{III}B^{III}O_3$ Interlanthanide Perovskite Compounds. U. BERNDT, D. MAIER, C. KELLER, Institut für Radiochemie, Kernforschungszentrum, 75 Karlsruhe, Postfach 3640, Germany. The new interlanthanide perovskites $LaHoO_3$, $CeLuO_3$, $CeYbO_3$, $CeTmO_3$, $PrLuO_3$, $PrYbO_3$, and $NdLuO_3$ have been prepared by solid state reactions. $PrYbO_3$ and $NdLuO_3$ are metastable at high temperatures and cannot be prepared by heating up the mechanically mixed binary oxides. The thermal stability of the $A^{III}B^{III}O_3$ perovskites decreases with increasing ionic radius of B(III), the dissociation temperatures of $LaHoO_3$ and $LaYO_3$ being 1300 and 1470°C, respectively. No perovskites with A = Pu and Am have been obtained, therefore the existence of $A^{III}B^{III}O_3$ lanthanide–actinide and of interactinide perovskites can be excluded. Lattice constants, detailed preparation methods and the phase diagrams of the systems $LaO_{1.5}$–$HoO_{1.5}$, $LaO_{1.5}$–$YO_{1.5}$, and $LaO_{1.5}$–$SmO_{1.5}$–$YbO_{1.5}$ are reported.

Neutronenbeugungsuntersuchungen An $(Se_{0.5}U_{0.5})O_2$ (Se = Y, La, Nd, Ho, und Lu). H. WEITZEL AND C. KELLER. Institut für Radiochemie, Kernforschungszentrum, D 75 Karlsruhe, Germany. Neutron diffraction studies of $(RE_{0.5}U_{0.5})O_{2.00}$ (RE = Y, La, Nd, Ho, Lu) and $(La_{0.67}U_{0.33})O_{2.00}$ ternary oxides have proved that these ternary oxides crystallize in the fluorite structure. The oxygen atoms are located on the normal anion sites of the fluorite structure, thus excluding a covalent UO_2^+ group. In these ternary oxides the lanthanide atoms as well as the U(V) and U(VI) have a nondistorted cubic environment (coordination No. 8), for U(VI) such a coordination is reported for the first time. The mean vibration amplitude of the oxygen atoms $(\overline{u^2_{50}})^{1/2}$ and the lattice constant increases with the mean ionic radius of the metal atoms in the $(RE_{0.5}U_{0.5})O_{2.00}$ phases.

Stereochimie des Elements Comportant des Paires $4s^2$, $5s^2$ et $6s^2$ Non Liées: Ge(II), As(III), Se(IV), Br(V), Sn(II), Sb(III), Te(IV), I(V), Xe(VI), Tl(I), Pb(II) et Bi(III) (Oxydes, Fluorures et Oxyfluorures). J. GALY AND G. MEUNIER. Service de Chimie Minérale Structurale de l'Universite de Bordeaux I, C.N.R.S., 351 cours de la Liberation, 33405 Talence, France AND S. ANDERSON AND A. ÅSTRÖM, Inorganic Chemistry 2, Chemical Centre, Lund, Sweden. General principles are worked out for the structural relations and stereochemical behavior in oxides, fluorides of elements having lone pairs of electrons.

Relationships between the Structures of the Rare Earth Fluorides and High Chalcocite, Cu_2S. Implications for Solid Electrolyte Behaviour. M. O'KEEFE AND B. G. HYDE. Department of Chemistry, Arizona State University, Tempe, Arizona 85281. Similarities between the high chalcocite (Cu_2S), tysonite (LaF_3), and YF_3 structures are noted. These prove useful in interpreting solid electrolyte behavior.