Crystal Structures of V_3S_4 and V_5S_8. I. KAWADA, M. NAKANO-ONODA, M. ISHII, M. SAEKI, AND M. NAKAHIRA. National Institute for Research in Inorganic Materials, Kurakake, Sakura-mura, Niihari-gun, Ibaraki 300-31, Japan. Crystal structures of the ordered phases of V_3S_4 and V_5S_8 were refined with single crystal data. Both are monoclinic. Chemical compositions, space groups and lattice constants were as follows: $VS_{1.47}$, $I2/m$ (No. 12), $a = 5.831$ (1), $b = 3.267$ (1), $c = 11.317$ (2) Å, $\beta = 91.78$ (1)° and $VS_{1.64}$, $F2/m$ (No. 12), $a = 11.396$ (11), $b = 6.645$ (7), $c = 11.293$ (4) Å, $\beta = 91.45$ (6)°. In both structures, short metal–metal bonds were found between the layers as well as within them. In comparison with the structure of Fe_7S_8, the stability of NiAs-type structure was discussed based on the detailed metal–sulphur distances.

Vibrational Spectra of Spinels with Cation Ordering on the Octahedral Sites. V. G. KERAMIDAS, B. A. DEANGELIS, AND W. B. WHITE. Materials Research Laboratory, Pennsylvania State University, University Park, Pennsylvania 16802. Infrared and Raman spectra are reported for compounds with 1:1, 1:3, 1:2 mixed ordering on the octahedral sites of the spinel structure. The spectra of the superstructures are complex with many more bands observed than occur in the parent spinel structure, although less than were predicted by group theoretical analysis. A qualitative interpretation of the spectra can be made through the large Brillouin zone concept.

An XPS Study of $V_{0.92}S$ with the NiAs-Type Structure. H. F. FRANZEN AND G. A. SAWATZKY. Laboratories for Inorganic and Physical Chemistry, Material Science Center, Groningen, The Netherlands. An X-ray photoelectron study of defect vanadium monosulfide reveals that this compound can be thought of as an intermetallic compound with relatively little charge transfer between vanadium and sulfur atoms. This conclusion is reached from a study of the core electron binding energies, as well as from the strong band mixing found for the conduction and valence bands.

Etude Des Proprietes Ferroelectriques de Quelques Oxydes Ternaires de Type Pyrochlore. G. JEANNE, G. DESGARDIN, G. ALLAIS, ET B. RAVEAU. Groupe de Cristallographie, ERA 305, Universite de Caen, 14032 Caen Cedex, France. Ferroelectric properties of new pyrochlores of the systems $Cd_2Nb_2O_7$–Bi_3NbO_7–"$Zn_2Nb_2O_7$", $Cd_2(Nb_{2-x}Sb_x)O_7$ and $Cd_{2-x}Bi_x(Nb_{2-x}Ti_x)O_7$ have been studied. The evolution of the Curie temperature of these compounds, and of known pyrochlores is discussed.

Sputtered Films of Superconducting Ternary Molybdenum Sulfides. C. K. BANKS, L. KAMMERDINER, AND H. L. LUO. Department of Applied Physics, University of California at San Diego, La Jolla, California 92037. The preparation of superconducting ternary molybdenum sulfide films of the formula $M_xMo_3S_4$, where M = Pb, Sn, Cu and Ag, with the technique of RF sputtering from a composite target is described. The transition temperatures of these films are 13.3, 11.0, 10.7 and 8.8 K, respectively.

Etude de la Diffusion du Lithium Dans le Phosphure $\overline{Li_8SnP_4}$ Par Mesure du Temps de Relaxation Transversal RMN de ^7Li. J. P. MOTTE, A. EL MASLOUT, AND P. GRANGER. Laboratoire de Chimie du Solide, C.N.R.S. No. 158, Service de Chime Minerale A, Universite de Nancy I, 54037 Nancy Cedex, France. The measure of transverse relaxation time T_2 of ^7Li permits precise study of the diffusion of the nucleus, which has already been observed by ^{119}Sn Mössbauer spectroscopy in three phosphides. The analysis of Hendrickson and Bray has been applied to the results obtained as a function of temperature. A discontinuity in the processes of diffusion is observed, and a possible explanation has been proposed.