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Abstracts of Forthcoming Articles

Etude Structurale et Magnetique des Oxydes Perovskites Ba_2NbVO_6 et Sr_2TaVO_6. JEAN-CLAUDE BERNIER, CHRISTIAN CHAUVEL ET OLIVIER KAHN. Universite Louis Pasteur, Ecole Nationale Superieur de Chimie de Strasbourg, Département Science des Matériaux, B.P. 296/R8, 67 Strasbourg, France. Two new perovskites Ba_2NbVO_6 and Sr_2TaVO_6 are investigated. These compounds are prepared by solid state reaction between 1100°C and 1200°C in a special high temperature furnace. The crystallographic study on polycristalline powder samples gives the spatial group *Pm3m* for the 2 perovskites. Magnetic susceptibilities were determined in the temperature range 4.2–1200°K. Above 400°K a theoretical interpretation is proposed by magnetic exchange interaction between pairs of Vanadium. The parameters corresponding to this interpretation are calculated.

Phases Multiples dans les Systèmes $Ca_2Nb_2O_7$–$NaNbO_3$ et $La_2Ti_2O_7$–$CaTiO_3$: les series homologues de formule $A_nB_nO_{3n+2}$. MONIQUE NANOT, FRANCINE QUEYROUX, JEAN-CLAUDE GILLES, ALAIN CARPY, ET JEAN GALY. Université de Bordeaux, 351 cours de la Libération, 33405 Talence, France. Deux familles structurales $A_nB_nO_{3n+2}$ (A = Ca, Ca et Na ou La et Ca; B = Nb ou Ti) ($n = 4$, 5; 5; 6 et 7), dérivées de la pérovskite, ont été mises en évidence dans les systèmes $Ca_2Nb_2O_7$–$NaNbO_3$ et $La_2Ti_2O_7$–$CaTiO_3$. Les mailles cristallines se déduisent de la maille pérovskite (a_0) à l'aide des relations: $a_n = a_0$, $b_n = na_0\sqrt{2} + 2K$ et $c_n = a_0\sqrt{2}$ ($K \cong 2.25$ Å).

Stability of the Tetrahedral Phase in Cu–Ge–Se System. B. B. SHARMA AND HARI SINGH. Solid State Physics Laboratory, Delhi-110007, India. Cu–Ge–Se system has been investigated in the vicinity of the compound Cu_2GeSe_3 which is known to have a disordered tetragonal unit cell with $a = 5.591$ Å and $c = 5.485$ Å. The unit cell symmetry has been found to be very sensitive to Ge concentration, slight deficiency of "Ge" lowers the cell symmetry to monoclinic while excess of "Ge" raises it to cubic. The composition $Cu_2Ge_{0.85}Se_3$ has a monoclinic unit cell with $a = 5.512$ Å, $b = 5.598$ Å, $c = 5.486$ Å, and $\beta = 89.7°$, while the composition $Cu_2Ge_{1.55}Se_3$ is cubic with $a = 5.569$ Å.
The results of this investigation indicate that the structure and stability of the $A_2^IB^{IV}C_3^{VI}$ group of compounds (subscripts denote number of atoms while superscripts denote the group in the periodic table) depend on the valence state of the participating IV group elements which is known to exhibit variable valency (tetravalency and divalency). The tetravalent state favours more distorted but more stable phase while divalent state favours less distorted and less stable phases.

Etude à Haute Temperature du Diagramme d'Equilibre du Système Forme par le Sesquioxyde de Lanthane avec le Sesquioxyde d'Yttrium. JULIETTE COUTURES ET MARC FOEX. Laboratoire des Ultra-Refractaires, C.N.R.S., B.P.5, 66120 Odeillo, France. The study at high temperature up to the melting point of the system formed by lanthanum sesquioxide with yttrium sesquioxide shows the formation of several very extended solid solutions, each one corresponding to a form given in these conditions by rare earth sesquioxides.
The phases determined "in situ" at the high temperature are very different from those observed when the products are cooled down to room temperature. The influence of quenching and annealing is demonstrated, particularly with $LaYO_3$.

Structural Aspects of the Metal-Insulator Transition in V_5O_9. M. MAREZIO, P. D. DERNIER, D. B. MCWHAN, AND S. KACHI. Bell Laboratories, 600 Mountain Avenue, Murray Hill, New Jersey 07974. V_5O_9, a member of the homologous series V_nO_{2n-1}, undergoes a metal-insulator transition with decreasing temperature at ~135°K. The structures of both phases have been refined at 298°K and 110°K from single crystal data. The triclinic structures ($P\bar{1}$) consist of layers of VO_6 octahedra extending indefinitely in the *a–b* plane and truncated by a shear plane after every 5 octahedra along the *c*-axis. The average V–O distances for the V atoms at 298°K are for independent atoms 1 through 6. 1.949, 1.959, 1.965, 1.973, 1.967, and 1.971 Å, respectively. At 110°K the distances are 1.929, 1.975, 1.954, 1.994,