

Abstracts of Forthcoming Articles

Etude Structurale et Magnetique des Oxydes Perovskites Ba₂NbVO₆ et Sr₂TaVO₆. JEAN-CLAUDE BERNIER, CHRISTIAN CHAUVEL ET OLIVIER KAHN. Universite Louis Pasteur, Ecole Nationale Supérieure de Chimie de Strasbourg, Département Science des Matériaux, B.P. 296/R8, 67 Strasbourg, France. Two new perovskites Ba₂NbVO₆ and Sr₂TaVO₆ 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 polycrystalline 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 Ca₂Nb₂O₇-NaNbO₃ et La₂Ti₂O₇-CaTiO₃: 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 Ca₂Nb₂O₇-NaNbO₃ et La₂Ti₂O₇-CaTiO₃. Les mailles cristallines se déduisent de la maille pérovskite (*a*₀) à l'aide des relations: *a_n* = *a*₀, *b_n* = *na*₀√2 + 2*K* et *c_n* = *a*₀√2 (*K* ≃ 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 Cu₂GeSe₃ 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 Cu₂Ge_{0.85}Se₃ has a monoclinic unit cell with *a* = 5.512 Å, *b* = 5.598 Å, *c* = 5.486 Å, and β = 89.7°, while the composition Cu₂Ge_{1.55}Se₃ is cubic with *a* = 5.569 Å. The results of this investigation indicate that the structure and stability of the A₂B^{IV}C₃^{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 LaYO₃.

Structural Aspects of the Metal-Insulator Transition in V₅O₉. M. MAREZIO, P. D. DERNIER, D. B. MCWHAN, AND S. KACHI. Bell Laboratories, 600 Mountain Avenue, Murray Hill, New Jersey 07974. V₅O₉, 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 VO₆ 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,