

## Abstracts of Forthcoming Articles

*Etude Structurale et Magnétique des Oxydes Perovskites  $Ba_2NbVO_6$  et  $Sr_2TaVO_6$ .* JEAN-CLAUDE BERNIER, CHRISTIAN CHAUVET ET OLIVIER KAHN. Université Louis Pasteur, Ecole Nationale Supérieure 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 polycrystalline powder samples gives the spatial group  $Pm\bar{3}m$  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 séries 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  $c_n = a_0\sqrt{2}$  ( $K \approx 2.25 \text{ \AA}$ ).

*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  $a = 5.591 \text{ \AA}$  and  $c = 5.485 \text{ \AA}$ . 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  $Cu_2Ge_{0.83}Se_3$  has a monoclinic unit cell with  $a = 5.512 \text{ \AA}$ ,  $b = 5.598 \text{ \AA}$ ,  $c = 5.486 \text{ \AA}$ , and  $\beta = 89.7^\circ$ , while the composition  $Cu_2Ge_{1.55}Se_3$  is cubic with  $a = 5.569 \text{ \AA}$ . The results of this investigation indicate that the structure and stability of the  $A_2^I B^{IV} C_3^{VI}$  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 Température du Diagramme d'Équilibre 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  $\sim 135^\circ\text{K}$ . The structures of both phases have been refined at  $298^\circ\text{K}$  and  $110^\circ\text{K}$  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  $298^\circ\text{K}$  are for independent atoms 1 through 6. 1.949, 1.959, 1.965, 1.973, 1.967, and 1.971  $\text{\AA}$ , respectively. At  $110^\circ\text{K}$  the distances are 1.929, 1.975, 1.954, 1.994,