

## Abstracts of Forthcoming Articles

*Ultramicrostructural Characteristics of Some Intercalates of Graphite: An Electron Microscopic Study.* E. L. EVANS AND J. M. THOMAS. Edward Davies Chemical Laboratories, The University College of Wales, Aberystwyth, SY23 1NE, United Kingdom. The ultramicrostructure of certain graphite-intercalate residue compounds known to exhibit ordering has been investigated using high-resolution transmission electron microscopy and electron diffraction. Some novel ternary graphite-intercalates formed as a result of interactions between existing intercalates and other guest species have also been investigated. The superlattice patterns associated with the ordering of the intercalating species are readily interpretable, and it has been possible to obtain direct lattice images of the  $\{10\bar{1}0\}$  graphite (0.21 nm) of the  $\{100\}$  intercalated  $\text{FeCl}_3$  (0.52 nm) and of  $\{10\bar{1}0\}$  intercalated potassium (0.36 nm). It is shown that potassium acts as an effective reducing agent and, in the graphite-ferric chloride-potassium system, free iron and potassium chloride are formed. The catalytic activity of this ternary intercalate is probably associated with highly dispersed free iron.

*The Structure of Defect  $\text{Ru}_4\text{Si}_3$ .* S. ANDERSSON, C. LEYGRAF, T. JOHNSON. Inorganic Chemistry II, Chemical Centre, Lund, Sweden. The nature of the defect structure of  $\text{Ru}_4\text{Si}_3$  has been studied with electron diffraction and electron microscopy methods. Lattice image pictures, interpreted with histogram analysis, reveal that planar defects of chemical twinning type are common in the crystals.

*Oxydes de Plomb. II. Etude Structurale à 5 K de la Phase Orthorhombique de l'Oxyde  $\text{Pb}_3\text{O}_4$ .* J. R. GAVARRI, G. CALVARIN, AND D. WEIGEL. Laboratoire de Chimie, C.S.P. Université Paris, Nord et Ecole Centrale des Arts et Manufactures, 92290 Chatenay-Malabry, France. The structure of  $\text{Pb}_3\text{O}_4$  at 5 K has been studied from X-ray and neutron diffraction patterns. The cell is orthorhombic:  $a = 9.124 \text{ \AA}$ ,  $b = 8.467 \text{ \AA}$ , and  $c = 6.566 \text{ \AA}$ . Twelve coordinates of lead and oxygen atoms have been refined from space group  $Pbam$ . From neutron diffraction data, an  $R$  value of 0.030 has been obtained, while the  $R$  value from X-ray diffraction data is 0.06. The interatomic  $\text{Pb}^{\text{IV}}\text{-O}$  and  $\text{Pb}^{\text{II}}\text{-O}$  distances are compared with those found in the quadratic structure: the  $\text{Pb}^{\text{II}}\text{-O}$  bonds are longer than those found at 293 K.

*Préparation et Structure d'un Polyphosphure de Magnésium:  $\text{MgP}_4$ .* A. E. MASLOUT, M. ZANNE, J. JEANNOT, AND C. GLEITZER. Laboratoire de Chimie du Solide, C.N.R.S. No. 158, Service de Chimie Minérale A, No. 140, 54037 Nancy Cedex, France. This compound is prepared through reaction of gaseous phosphorus with  $\text{Mg}_3\text{P}_2$  at  $600^\circ\text{C}$  in a sealed silica tube. Evidence for a primitive monoclinic cell is obtained from electron microdiffraction; a refinement from X-ray powder diagrams provide the atomic positions; the compound is isotypic with  $\text{CdP}_4$ .

*Etude de la Tétracoordination de l'Étain dans deux Orthothiostannates:  $\text{Na}_4\text{SnS}_4$  et  $\text{Ba}_2\text{SnS}_4$  ( $\alpha$ ).* J. C. JUMAS, E. PHILIPPOT, F. VERMOT-GAUD-DANIEL, M. RIBES, AND M. MAURIN. Laboratoire de Chimie Minérale C, E.R.A. 314, Université des Sciences et Techniques du Languedoc, Place Eugene Bataillon, 34060 Montpellier Cedex, France. The crystal structure of  $\text{Na}_4\text{SnS}_4$  and  $\text{Ba}_2\text{SnS}_4$  ( $\alpha$ ) were determined.  $\text{Na}_4\text{SnS}_4$  crystallizes in tetragonal system, space group  $P\bar{4}2_1c$  with parameters  $a = 7.837 \text{ \AA}$ ,  $c = 6.950 \text{ \AA}$ ,  $Z = 2$ , and  $\text{Ba}_2\text{SnS}_4$  ( $\alpha$ ) in the monoclinic system, space group  $P2_1/c$  with  $a = 8.481 \text{ \AA}$ ,  $b = 8.526 \text{ \AA}$ ,  $c = 12.280 \text{ \AA}$ ,  $\beta = 112.97^\circ$  and  $Z = 4$ . In these compounds, the crystal structure is built up from discrete orthothiostannate tetrahedra  $\text{SnS}_4$ . The structure of  $\text{Ba}_2\text{SnS}_4$  ( $\alpha$ ) is modified  $\text{K}_2\text{SO}_4\beta$  type.

*Etude Thermodynamique des Oxydes  $\text{TiO}_{2-x}$  à  $1050^\circ\text{C}$ .* C. PICARD AND P. GERDANIAN. Laboratoire des Composés Nonstoechiométrique, Université de Paris—Sud, Centre d'Orsay, 91405 Orsay, France.  $g_{\text{O}_2}^{\text{M}}$  (O/Ti) and  $h_{\text{O}_2}^{\text{M}}$  (O/Ti) have been directly measured at  $1050^\circ\text{C}$  within the whole homogeneity range