

Abstracts of Forthcoming Articles

Partial Decomposition of Dolomite in CO₂. H. HASHIMOTO, E. KOMAKI, F. HAYASHI, AND T. UEMATSU, Faculty of Engineering, Chiba University, Yayoicho, Chiba-shi, Japan. Thermal decomposition of dolomite into CaCO₃ and MgO under CO₂ was investigated by isothermal kinetic measurements, X-ray diffraction analysis, and electron diffraction. The decomposition was described as an interfacial reaction. Crystalline CaCO₃ is formed in an extremely oriented state even if the temperature is higher than the decomposition temperature of calcite, at least at the earlier stage of the decomposition. The crystallites of MgO grow with time and temperature, while the grain size of CaCO₃ remains constant during the isothermal decomposition. The CaCO₃ crystallite size is a minimum at about 750°C. The classical theories of the mechanism of formation of CaCO₃ from dolomite were reexamined, and a direct formation theory was suggested on the basis of the results of X-ray analysis.

Solid-State Reaction between Thallous Carbonate and 8-Hydroxyquinoline. N. B. SINGH, R. P. SINGH, J. SINGH, AND H. C. SINGH, Department of Chemistry, University of Gorakhpur, Gorakhpur (U.P.), India. The solid-state reaction between thallous carbonate and 8-hydroxyquinoline has been studied. The energy of activation for surface migration was found to be 8.8 kcal/mole whereas for inner penetration it was 14.6 kcal/mole. The reaction product was characterized by elemental analysis and ir spectral studies.

Resonance Paramagnetique Electronique du Centre F⁺ dans les Fluorapatites Carbonatees de Type B. GERARD BACQUET, VO QUANG TRUONG, GILBERT BONEL, AND MIREILLE VIGNOLES, Laboratoire de Physique des Solides, CNRS, Université Paul Sabatier, 31077 Toulouse Cédex, France. Samples of B-type carbonated fluorapatites were heated at 450°C, X-irradiated at room temperature, and then annealed at 150°C. The ESR spectrum obtained after such a treatment was attributed to an electron trapped at an oxygen vacancy (F⁺ center). The intensity of this spectrum increases with the amount of carbonate ions present in the specimens, then decreases. Such behavior was correlated with the number of oxygen vacancies present in the samples as a function of the carbonate content. Our results support the structural model proposed for these compounds.

P-T-X Phase Equilibrium Study of New Solid Solution Systems, Cd_{1-x}M_xS (M = Mg, Ca, Sr). TOSHIO KOBAYASHI, KENZO SUSAKI, AND SATOSHI TANIGUCHI, Central Research Laboratory, Hitachi Ltd., Tokyo 185, Japan. Pressure, temperature, and composition phase equilibrium diagrams of new solid solution systems of the Cd_{1-x}M_xS (M = Mg, Ca, Sr) type were investigated using the quenching method. The stable region for the rock salt-type phase is widely extended toward the high temperature-low pressure region by substituting 10-20 mole% of Cd with Ca or Sr. Temperature and composition phase diagrams for each solid solution system were obtained at 2 GPa. The rock salt-type phase stability is discussed in view of these phase relations.

Etude Cristallographique Comparée et Conductivité Electrique de Deux Tellurates Mixtes: Ag_xNa_{2-x}Te₂^{IV}Te₃^{VI}O₁₄ (x = 0, 4) et K₂Te^{IV}Te₃^{IV}O₁₂. WALOEJO LOEKSMANTO, JACQUES MORET, MAURICE MAURIN, AND ETIENNE PHILIPPOT, Laboratoire de Chimie Minérale C, Université des Sciences et Techniques du Languedoc, Place Eugene Bataillon, 34060 Montpellier Cedex, France. Ag_xNa_{2-x}Te₂^{IV}Te₃^{VI}O₁₄ (x = 0.40) is monoclinic, space group P2₁/c with a = 6.332(2), b = 24.681(8), c = 7.308(2) Å, β = 110.84°, and Z = 4. The structure refinement was performed to a final R value of 0.041. The tridimensional network is characterized by corner-sharing octahedral sheets (Te^{VI}O₄)_n, with hexagonal sites as in the K₂Te^{IV}Te₃^{VI}O₁₂ and Te₂^{IV}O₈ groups. The differences between these two crystal structures are discussed in terms of ionic radii of Na, Ag, and K cations. The results of electric conductivity measurements on homogenous ceramic disks are reported.

Mössbauer ⁵⁷Fe Spectra Exhibiting "Ferrous Character." G. A. FATSEAS AND JOHN B. GOODENOUGH, Laboratoire de Chimie des Solides, CNRS, 2 rue de la Houssinière, 44072 Nantes Cedex, France. The term "ferrous character" reported extensively in the literature for the Mössbauer spectroscopy of octahedrally coordinated iron atoms in chalcogenides and antimonides is critically evaluated. The significance of a formal valence state for the iron is examined. The magnitude of the isomer shift is shown to provide a guide not only to the existence of high-spin versus low-spin states, but also to