

pound, and (b) the assumption of a fixed ratio of the two cationic species. It is shown that these two approaches are not equivalent, and that for the latter case, the activities of the binary constituents can vary widely with changes in the equilibrium nonmetal activity. For example, a ternary oxide with a fixed ratio of the two cationic components may be driven out of the single phase region by changes in ambient oxygen pressure, in effect transforming an initial case (b) to case (a), as defined above.  $\text{BaTiO}_3$  is used as a specific example, and is discussed for the limiting case of negligible coulombic interaction between point defects.

*Study by Electron Microscopy and Electron Diffraction of Formation of Nickel Epitaxially Grown Catalysts.* G. DALMAI-IMELIK, C. LECLERCQ, AND A. MAUBERT-MUGUET. C. N. R. S., Institut de Recherches sur la Catalyse, 69626-Villeurbanne, France. In order to study the influence of the crystallographic arrangement at the surface of a metal supported catalyst on its catalytic properties, catalysts have been prepared with well-faceted nickel crystallites presenting particular faces at their surface. Catalysts were obtained by reduction by hydrogen of nickel antigorite evacuated at different temperatures. The morphology and structure of nickel antigorite, the parent of catalyst, has been determined by electron microscopy and electron diffraction at different temperatures. Rolled or flat sheets were observed. The texture of the catalysts obtained after reduction was determined. The crystallites of nickel are hexagonal platelets with either their [111] or their [110] plane parallel to the sheet support, depending on the conditions of preparation and reduction. Study of the orientations of [111] type or [110] type was done.

*Étude Structurale de  $\text{Cs}_2\text{SnF}_6$ .* J. DURAND, J. L. GALIGNE, AND A. LARI-LAVASSANI. Laboratoire de Chimie Minerale C and Laboratoire de Mineralogie et Cristallographie, Université des Sciences et Techniques du Languedoc, 34060 Montpellier, France. The  $\text{Cs}_2\text{SnF}_6$  structure is of the  $\text{K}_2\text{GeF}_6$  type (trigonal  $P\bar{3}m1$ ). The unit cell dimensions are  $a = 6.322(6)$  Å,  $c = 5.032(5)$  Å;  $Z = 1$ . Each tin atom is linked to six fluorine atoms at the corners of a nearly regular octahedron with  $\text{Sn}-\text{F} = 1.952(7)$  Å. The  $\text{SnF}_6^-$  anions are isolated. Each cesium atom is surrounded by 12 fluorine atoms. The final  $R$  index is  $R = 0.045$  from 453 X ray reflections.

*Magnetic Susceptibility of the One-Dimensional Conductor  $(\text{H}_3\text{O})_{1.6}[\text{Pt}(\text{C}_2\text{O}_4)_2]_n\text{H}_2\text{O}$ .* D. HEITKAMP AND H. S. RADE. Institut für Chemie, Kernforschungsanlage Jülich. AND H. J. KELLER AND H. H. RUPP. Institut für Anorganische Chemie der Universität Heidelberg, Germany. The magnetic susceptibility of the dioxalatoplatinate acid  $(\text{H}_3\text{O})_{1.6}[\text{Pt}(\text{C}_2\text{O}_4)_2]_n\text{H}_2\text{O}$ , a mixed valence planar (MVP) compound with columnar structure and one-dimensional metallic conduction properties, has been measured in the temperature range 1.5–300°K. The observed paramagnetism, like in other MVP-compounds, may be described by a linear  $1/T$  dependence with a break in the slope at a characteristic temperature. The Curie constants as well as the point of discontinuity have been found to depend on the crystal water content. The results are discussed in terms of different theoretical concepts.

*Formation Energies of Schottky Defects in Alkaline Earth Oxides.* G. RAMANI AND K. J. RAO. Materials Science Division, National Aeronautical Laboratory, Bangalore-560017, India. Schottky defect formation energies of alkaline earth oxides have been calculated by the procedure of Mott and Littleton, employing two parameter repulsive potentials. It is found that the polarizability of oxygen ion must be substantially lower in the case of MgO to obtain meaningful defect formation energy. Use of both displacement and anion polarizabilities, obtained from respective dielectric data, for each oxide, yields defect formation energies that are in fair agreement with more recent experimental values, for all the alkaline earth oxides.

*The Electrical Conductivity of Ammonium Perchlorate Single Crystals.* A. G. KEENAN AND M. G. OHANIAN. Department of Chemistry, University of Miami, Coral Gables, Florida 33124. The electrical conductivity of single crystals of ammonium perchlorate has been studied from 25–180°C. Plots of  $\log \sigma T$  versus  $1/T$  show two linear regions, one from 25–100°C and another from 100–180°C. Activation energies for the conduction processes in the low and high temperature regions are 0.12 and 1.04 eV, respectively. The conduction is a bulk process and not a surface mechanism. Conduction in the low temperature region is predominantly due to the migration of protons and is sensitive to the concen-