

The Standard Free Energy of Formation of YbFe_2O_4 , $\text{Yb}_2\text{Fe}_3\text{O}_7$, YbFeO_3 and $\text{Yb}_3\text{Fe}_5\text{O}_{12}$ at 1200°C. N. KIMIZUKA, National Institute for Research in Inorganic Materials, Kurakake, Sakura-mura, Niihari-gun, Ibaragi, 300-31, Japan, and T. KATSURA, Department of Chemistry, Tokyo Institute of Technology, Ookayama, Meguro-ku, Tokyo, Japan. The standard free energy of formation of YbFe_2O_4 , $\text{Yb}_2\text{Fe}_3\text{O}_7$, YbFeO_3 , and $\text{Yb}_3\text{Fe}_5\text{O}_{12}$ from metallic iron, Yb_2O_3 and oxygen was determined to be -100.38 , -158.38 , -58.17 , and -283.40 kcal/mole, respectively, at 1200°C on the basis of the phase equilibria in the $\text{Fe-Fe}_2\text{O}_3\text{-Yb}_2\text{O}_3$ system. The $\text{Fe-Fe}_2\text{O}_3$ -lanthanoid sesquioxide systems were classified into four types in respect to the assemblage of the ternary compounds in stable existence at 1200°C, and the standard free energy of formation of YbFeO_3 was compared with those of the other lanthanoid-iron-perovskites.

Statistical Approach to Anderson-Gruneisen Parameter δ . S. GUPTA, M. N. SHARMA, AND S. R. TRIPATHI. Department of Physics, Lucknow University, Lucknow-226007, India. A simple and general relation has been developed for the Anderson-Gruneisen parameter δ in terms of the Gruneisen parameter γ , employing a statistical approach for ionic crystals. The relation can be expressed as:

$$\delta = a\gamma^b$$

where a and b are some arbitrary constants. It has been concluded that the developed relation is a general form of Chang's relation ($\delta = 2\gamma$).

Luminescence and Non-Radiative Relaxation of Pb^{2+} , Sn^{2+} , Sb^{3+} , and Bi^{3+} in Oxide Glasses. R. REISFELD, L. BOEHM, AND B. BARNETT. Department of Inorganic Chemistry, The Hebrew University of Jerusalem, Israel. Absorption and fluorescence spectra of Sn^{2+} and Sb^{3+} in borax, phosphate and germanate glasses were measured at temperature range 87–295°K. Fluorescence decay times of these ions in borax glass at 87°K was a single exponent with $\tau \approx 6\text{--}11$ μsec . At 293°K two decay times were resolved in the range of 50–2000 nsec. The nonexponential behavior is interpreted by the repopulation of the 3P_1 level from the 3P_0 level. The temperature dependence of fluorescence and the low values of quantum efficiencies of fluorescence are explained by means of the configurational coordinate diagram model.

Solid Solution Formation in Chalcopyrite Systems of the Type $\text{AgInX}_2\text{-AgM}^{\text{III}}\text{X}_2$ where $M = \text{Al}$, Ga , and $X = \text{S}$, Se . M. ROBBINS AND V. G. LAMBRECHT, JR. Bell Laboratories, Murray Hill, New Jersey 07974. Previous work on ternary chalcopyrite solid solution formation has shown that the difference in end point axial ratios ($\Delta c/a$) is an important factor in determining the extent of mutual solubility. It was concluded that when $\Delta c/a > 0.13$ complete solid solubility will not occur. In this work it is shown that complete solid solution formation in the systems $\text{AgAlS}_2\text{-AgInS}_2$ ($\Delta c/a = 0.111$), $\text{AgGaS}_2\text{-AgInS}_2$ ($\Delta c/a = 0.11$) and $\text{AgAlSe}_2\text{-AgInSe}_2$ ($\Delta c/a = 0.112$) does occur. This shows that the value of $\Delta c/a = 0.13$ as an upper limit for solid solution formation can be approached closely.

The Charge-Transfer Absorption Band of Eu^{3+} in Oxides. H. E. HOEFDRAAD. Physical Laboratory, University of Utrecht, Sorbonnelaan 4, The Netherlands. The position of the charge-transfer band of Eu^{3+} in the absorption spectrum of a number of oxides is discussed. It is shown that this position is more or less fixed in octahedral VI coordination and that it varies in VIII and XII coordinations as a function of the effective ionic radius of the relevant host-lattice ions.

Evolution des Propriétés Cristallographiques, Electriques et Magnétiques au Sein du Systeme $\text{La}_{1-x}\text{Sr}_x\text{VO}_3$. P. DOUGIER AND P. HAGENMULLER. Laboratoire de Chimie du Solide du C.N.R.S., Université de Bordeaux I, 33405 Talence, France. The crystallographic, electrical, and magnetic properties of the system $\text{La}_{1-x}\text{Sr}_x\text{VO}_3$ have been investigated as a function of x . An insulator \rightleftharpoons metal transition appears for $x \approx 0.225$; it may be described as a Mott-Anderson transition in an impurity band.