Phase Behavior of Li_2WO_4 at High Pressures and Temperatures. CARL W. F. T. PISTORIUS. National Physical Research Laboratory, C.S.I.R., P.O. Box 395, Pretoria, South Africa. The phase diagram of Li_2WO_4, previously studied by Yamaoka *et al.*, has been revised. Li_2WO_4 II is stable at atmospheric pressure below ~310°C. This phase appears to be modified spinel, and is tetragonal, a, $c = 14.941$, 8.409 Å, $Z = 16$, space group $I4_1/amd$. The melting curve of phenacite-type Li_2WO_4 I rises with pressure with a slope of 0.9°C/kbar to the III/I/liquid triple point at 3.1 kbar, 743°C, beyond which the melting curve of orthorhombic Li_2WO_4 III rises steeply with pressure (initial slope 31°C/kbar). The Li_2WO_4 I/III transition line at 3 kbar is almost independent of temperature, i.e., the I/III transition entropy is zero. Li_2WO_4 is 21.3% denser than Li_2WO_4 I at ambient conditions.

Topotactic Decomposition and Crystal Structure of White Molybdenum Trioxide–Monohydrate: Prediction of Structure by Topotaxy. H. R. OSWALD, J. R. GÜNTER, AND E. DUBLER. Anorganisch-chemisches Institut der Universität Rämistrasse 76, CH-8001 Zürich, Switzerland. Single crystals of the white $MoO_3 \cdot H_2O$ modification ("α-molybdic acid") were transformed by heating to 160° into perfect pseudomorphs built up from oriented MoO_3 crystallites of known structure. From the mutual orientation relationship of the unit cells of both phases involved in this topotactic reaction, as determined by X-ray photographs, a model for the so far unknown crystal structure of white $MoO_3 \cdot H_2O$ could be deduced. Independently, this structure was determined by X-ray diffractometer data then: Space group $P\bar{1}$, $a = 7.388$, $b = 3.700$, $c = 6.673$ Å, $\alpha = 107.8$, $\beta = 113.6$, $\gamma = 91.2°$, $Z = 2$. The structure was solved from the Patterson function and refined until $R = 0.088$. It is built up from isolated double chains of strongly distorted $[MoO_5(H_2O)]$-octahedra sharing two common edges with each other. This result agrees well with the model derived from topotaxy, and it becomes evident how the MoO_3 lattice formed through corner linking of the isolated double chains after the water molecules are removed. The study of topotactic phenomena seems rather generally applicable to deduce the main features of structures involved and for better understanding of structural relationships.

Optical Characteristics and Intensity Parameters of Sm^{3+} in GeO_2, Ternary Germanate and Borate Glasses. R. REISFELD, A. BORNSTEIN, AND L. BOEHM. Department of Inorganic and Analytical Chemistry, The Hebrew University of Jerusalem, Israel. Absorption and fluorescence spectra of Sm^{3+} were measured in GeO_2, ternary germanate and borax glasses. From these the intensity parameters were calculated by use of Judd–Ofelt formula. Visible emission and decay times from the $^4G_{5/2}$ level and its relative quantum efficiencies were measured. The quantum efficiencies (Q.E.) of the fluorescence in ternary germanate was higher by a factor of 20 than in GeO_2. The small Q.E. in GeO_2 is explained by cross relaxation between neighboring Sm^{3+} ions. The latter process is hindered by the change in glass structure in presence of modifier ions. A similar effect is observed in other glasses such as borax–borate where the addition of modifiers increases the quantum efficiency of fluorescence.

Synthese, Croissance Cristalline, Propriétés Structurales et Physiques d'un Nouveau Tungstate +V D'Aluminium $AlWO_4$. J. P. DOUMERC, M. VLASSE, M. POUCHARD, P. HAGENMULLER. Laboratoire de Chimie du Solide du Centre National de la Recherche Scientifique, Universite de Bordeaux I, 351, cours de la Liberation, 33405 Talence, France. Aluminium tungstate (V) is isostructural with the monoclinic chromium doped M_2 variety of VO_2 (space group $C2/m$). In the rutile like framework tungsten +V is stabilized by *W–W* pairs. The structure is confirmed by diamagnetic and semiconductor behavior; the activation energy measured on single crystal prepared by electrolytic reduction in an alumina crucible is 0.35 eV.