

substance: titanium oxides

property: general characterization

The titanium-oxygen phase diagram (Fig. 1) contains one commercially important semiconducting phase, TiO_2 [66W, 67G]. The Magnéli phases $\text{Ti}_n\text{O}_{2n-1}$ ($4 < n < 28$) as well as Ti_3O_5 and the sesquioxide Ti_2O_3 exhibit semiconductor-metal transitions with increasing temperature; these transitions have been of considerable theoretical interest. TiO (high- and low-temperature phases), Ti_2O and α -Ti containing interstitial oxygen are metallic at all temperatures.

References:

- 66W Wahlbeck, P. G., Gilles, P. W.: J. Am. Ceram. Soc. 49 (1966) 180.
67G Gilles, P. W., Carlson, K. D., Fransen, H. F., Wahlbeck, P. G.: J. Chem. Phys. 46 (1967) 2463.

Fig. 1.

Ti–O. Phase diagram. (a) [66W], (b) [67G]. α and β refer to the hexagonal and cubic form of Ti metal.

