

substance: titanium oxide (TiO₂)

property: absorption spectra, energy-loss spectra in rutile

absorption spectra: Figs. 1, 2

electron-energy loss spectra: Fig. 3.

References:

- 58B Bevan, H., Dawes, S. W., Ford, R. A.: Spectrochim. Acta. 13 (1958) 43.
77B Balabanova, L. A., Stepin, E. V.: Fiz. Tverd. Tela 19 (1977) 3018.
78P Pascual, J., Camassel, J., Mathieu, H.: Phys. Rev. B18 (1978) 5606.

Fig. 1.

TiO₂. (a), (b) Square root of the absorption coefficient vs. photon energy near the absorption edge for $E \parallel c$ (a) and $E \perp c$ (b), inset in (b) shows the 1s exciton; (c) wavelength modulated spectrum (differential of ΔK vs. photon energy) at 1.6 K [78P]. e-TA, a-O₁: emission of TA phonons, absorption of O₁ phonons.

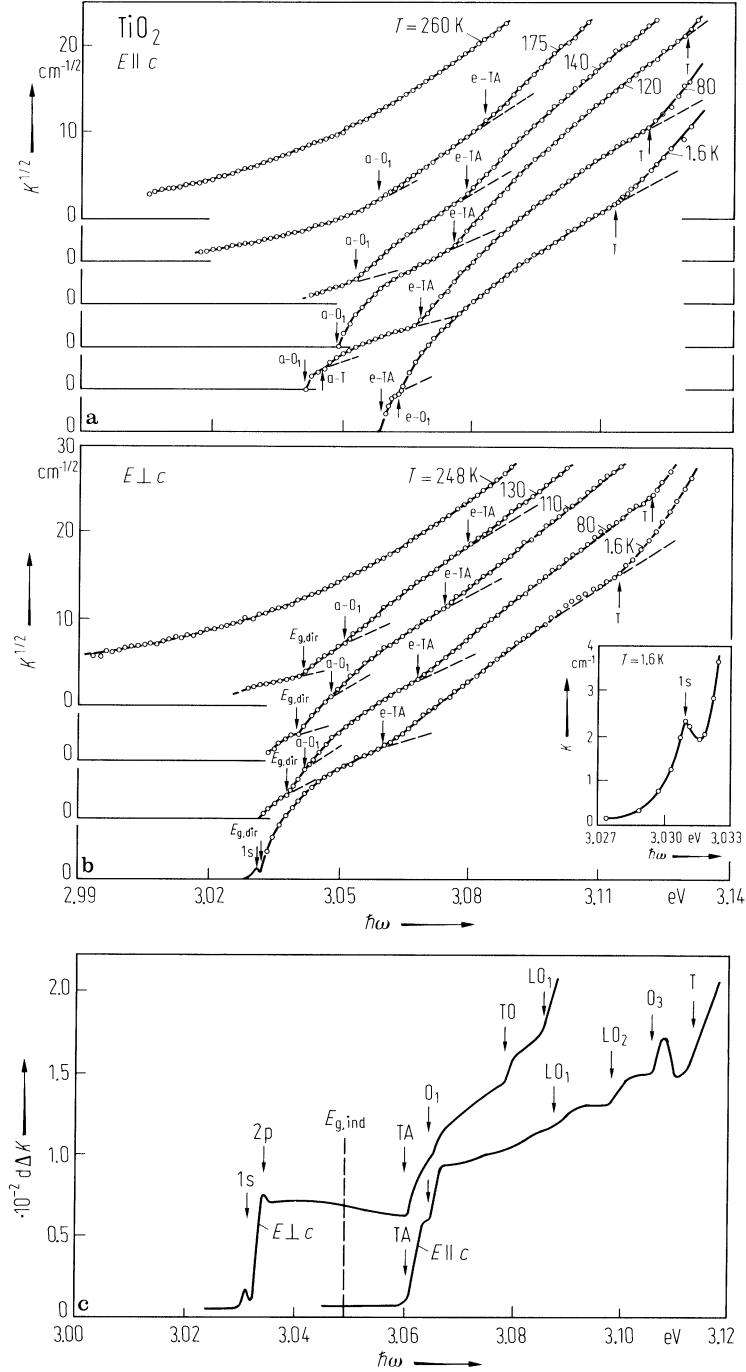


Fig. 2.

TiO₂, anatase and rutile. Low resolution spectra (optical density vs. wavenumber) [58B].

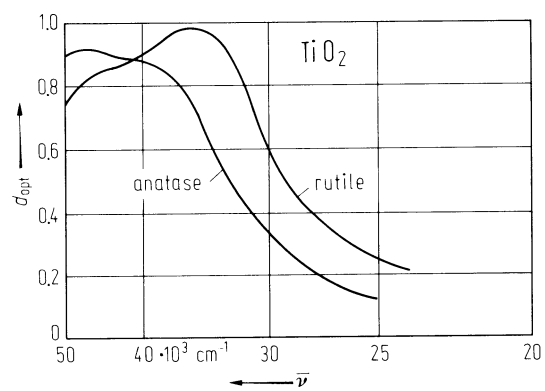


Fig. 3.

TiO₂. Electron energy loss ($-\text{Im}(\epsilon^{-1})$) and derived optical constants vs. photon energy for a thin film [77B], r is the reflection coefficient, n_{eff} the effective number of electrons per molecular unit involved in the optical absorption.

