

**substance:  $\text{V}_2\text{O}_3$**

**property: optical properties**

XPE spectrum: Fig. 1, reflectivity and optical conductivity: Fig. 2, electroreflectance: Fig. 3. Further PE data, showing development of a clear Fermi edge above  $T_{\text{tr}}$  in [80B].

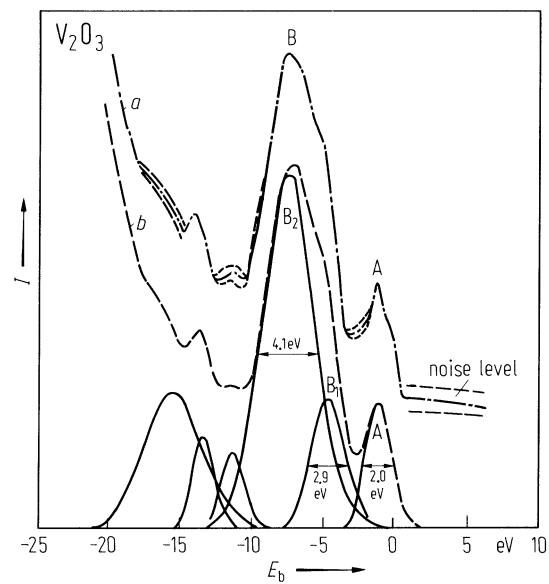
Absorption spectra: measurements for different crystalline directions at 93 K [73A] show some anisotropy, with a peak found at 0.2 eV ( $E \parallel c$ ), of width 0.14 eV, assigned to an optical exciton. Otherwise absorption above 0.1 eV is assigned to a plasmon [71Z] with  $m_{\omega_p} = 11 m_0$  (calculated from  $n = 3.85 \cdot 10^{22} \text{ cm}^{-3}$  [68Z, 69A]) or  $m_{\omega_p} = 4 m_0$  [76S]. An absorption peak at 0.32 eV ( $E \perp c$ ) at 93 K is ascribed to impurities, possibly associated with V-defects [73A].

## References:

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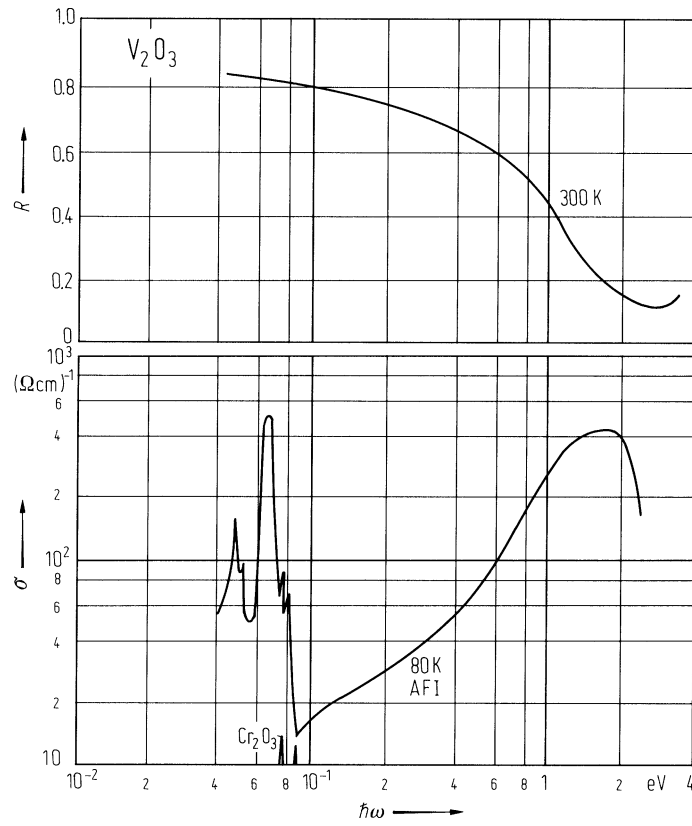
**Fig. 1.**

$\text{V}_2\text{O}_3$ . XPE spectra (intensity vs. binding energy) of a single crystal, relative to  $E_F$  for gold. (a) original data, (b) computer-based resolution into component Gaussians [72H].



**Fig. 2.**

$\text{V}_2\text{O}_3$ . Reflectivity and optical conductivity of pure samples in the M and AF phases [70B, 71Z].



**Fig. 3.**

$\text{V}_2\text{O}_3$ . (a) Reflectance, (b) electroreflectance vs. photon energy at various potentials  $U$ :  $U = 0.4 \text{ V}$  (1),  $0 \text{ V}$  (2),  $1.5 \text{ V}$  (3),  $1.7 \text{ V}$  (4),  $2.2 \text{ V}$  (5),  $2.5 \text{ V}$  (6) [71V].

