substance: $PtSb_2$
property: optical properties, dielectric constant

optical absorption at 10 and 77 K: Figs. 1...3.

dielectric constant

$\varepsilon(\lambda)$	30	λ = 16 μm, T = 10 K	from refractive index (n^2), p-type crystal with $2 \cdot 10^{17}$ holes cm^{-3} at 77 K	68R
	31			83D
	32	IR, T = 360 K	from reflection coefficient 0.49 and low absorption (cited from inaccessible Russian paper)	79K
	31.4	f = 25.7 GHz, T = 6...40 K	Te doped (10^{17} cm^{-3}) single crystal, $n_a/n_d \approx 0.7...1$. Permittivity due to the crystal lattice; contribution from free carriers negligible	79K

refractive index

n	5.5	λ = 16 μm	from transmission interference fringes at 10 K	68R

References:

68R Reynolds, R. A., Brau, M. J., Chapman, R. A.: J. Phys. Chem. Solids 29 (1968) 755.
70O O'Shaughnessy, I., Smith, C.: Solid State Commun. 8 (1970) 481.
79K Kundrotas, J. P., Dargys, A. J.: Litov. Fiz. Sb. 19 (1979) 549.
83D Dargys, A., Kundrotas, J.: J. Phys. Chem. Solids 44 (1983) 261.

Fig. 1.

$PtSb_2$. Absorption coefficient vs. photon energy at 77 K [70O]. *1* and *2*: n-type samples with extrinsic carrier concentration at 77 K ≈ $6 \cdot 10^{16}$ cm^{-3}. *1* thickness 457 μm, *2* thickness 306 μm. *3*: data of [68R] from an n-type specimen with carrier concentration $9.8 \cdot 10^{17}$ cm^{-3} at 77 K.

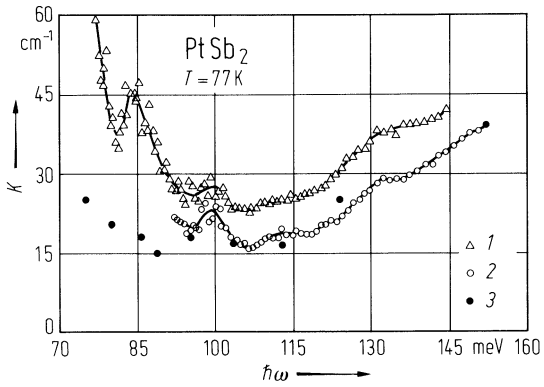

Fig. 2.

$PtSb_2$. Absorption coefficient vs. photon energy at 77 K [70O]. Specimen 2 of Fig. 1.

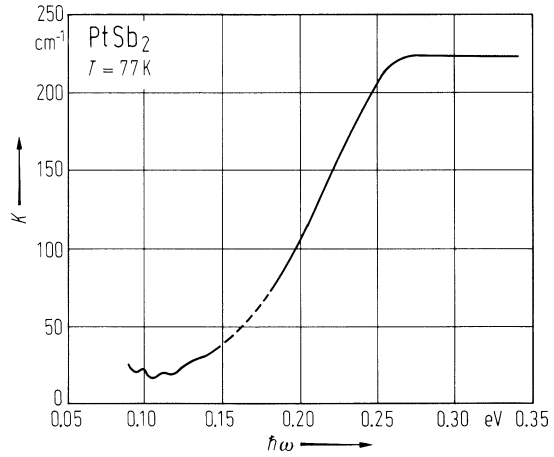

Fig. 3.

$PtSb_2$. Square root of the intrinsic absorption coefficient vs. photon energy [68R]. Open circles show the 10 K data (filled circles) after a wavelength-independent correction of 1.4 cm^{-1} has been subtracted from the experimental data, i.e. $(K–1.4)^{1/2}$. To obtain the intrinsic band-to-band absorption at 77 K, the free-carrier absorption was extrapolated to shorter wavelengths and subtracted from the total absorption.