substance: MoO_3
property: photocurrent

The (photo)current-voltage curve is shown in Fig. 1. A transition to a space-charge limited region ($I \propto U^{3/2}$) is apparent. Photocurrent spectrum (Fig. 2) shows a threshold at ca. 3.4 eV larger than the direct edge threshold (ca. 3.0 eV). The peculiar Urbach tail (3.0...3.4 eV) suggests that excitonic effects may be dominant at the threshold. If so the relatively low electric fields used in the photoconductivity experiment may be insufficient to separate the carriers. The photoconductivity shows complex time-dependence and the role of traps is very considerable [68D]. The activation energy for the photocurrent is about 0.24 eV.

References:

68D Deb, S. K.: Proc. Roy. Soc. A304 (1968) 211.

Fig. 1.

MoO_3. Current-voltage characteristic of a single crystal at 300 K (a) in the dark, (b) during illumination with the full output of a mercury lamp [68D].

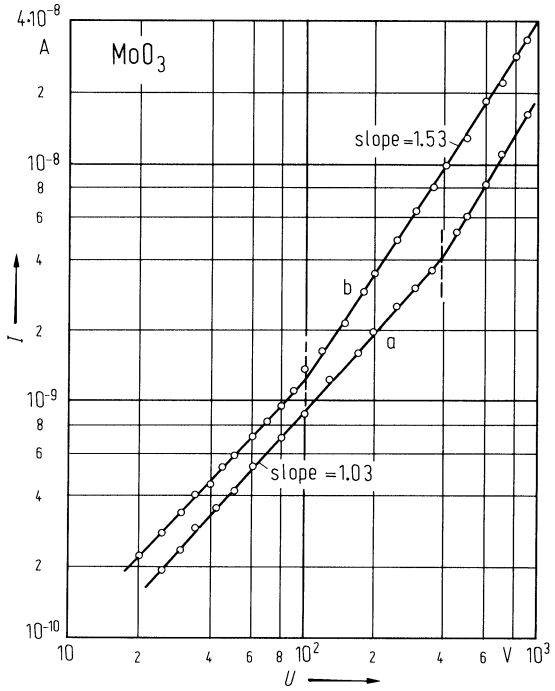

Fig. 2.

MoO_3. Photocurrent intensity vs. wavelength in (a) a single crystal, (b) a thin film [68D].