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<https://doi.org/10.1002/pssb.2220690153>

Short Notes

K79

phys. stat. sol. (b) **69**, K79 (1975)

Subject classification: 20.3; 22.3

Sektion Physik der Karl-Marx-Universität Leipzig (a)
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Fine Structured Low Temperature Luminescence of CdP₂

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The A^{II}B^V₂ semiconductors show interesting optical properties (1 to 3 and references therein). In this note we report photoluminescence spectra of tetragonal CdP₂ single crystals at 4.2 K which show much more fine structure than the spectra published so far (3, 4).

CdP₂ single crystals were grown from the gaseous phase (2) without intentional doping. They were immersed in liquid He and excited with the light of a high pressure mercury lamp.

With low spectral resolution our spectra are identical with those of (4): two broad bands peaked at 2.09 and 1.85 eV. With high resolution the high energy part of the 2.09 eV peak shows pronounced fine structure (Fig. 1). This fine structure is very similar to the near gap luminescence of tetragonal ZnP₂, an indirect gap semiconductor with E_g = 2.200 eV at T = 4.2 K (1). In ZnP₂ this luminescence is

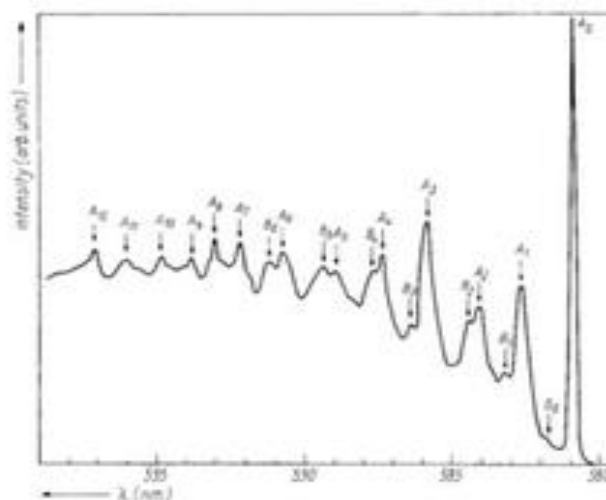


Fig. 1. Photoluminescence spectrum of CdP₂, T = 4.2 K