

## Luminescence at the axial centers of CdP<sub>2</sub>-D<sub>4</sub><sup>8</sup> crystals

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### Abstract

Emission lines of free excitons and excitons bound to axial centers have been observed in the luminescence spectra of CdP<sub>2</sub>-D<sub>4</sub><sup>8</sup> crystals doped with Mn, Sn, and Sb at 10 K. Bands models of excitons bound to axial centers (Mn, Sn, Sb) are proposed. The luminescence of crystals doped with Fe does not correspond to the axial centers band scheme. It is shown that direct transitions in excitonic band are polarized and in the case of indirect transitions they are unpolarized. The direct band gap is due to allowed transitions  $\Gamma_1 \rightarrow \Gamma_1$  and  $\Gamma_2 \rightarrow \Gamma_1$  in  $E||c$  and  $E \perp c$  polarizations, respectively. The coefficient of the energy shift in the temperature range of 2–10 K in  $E||c$  and  $E \perp c$  polarizations differs ( $\Delta E/\Delta T = 3.5$  meV/K,  $E||c$  and 1 meV/K,  $E \perp c$ ).