

STUDY OF THE EFFECT OF SUBSTITUTION  
OF ATOMS ON THE ENERGY BANDS  
AND EXCITONIC STATES IN  $\text{Zn}(\text{P}_{1-x}\text{As}_x)_2$   
AND  $\text{Zn}_{1-x}\text{Cd}_x\text{P}_2$  CRYSTALS

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S u m m a r y

Excitonic absorption, reflection and photoluminescence spectra of mixed  $\text{Zn}(\text{P}_{1-x}\text{As}_x)_2$  crystals over the full range of  $x$  ( $0 \leq x \leq 1$ ) and  $\text{Zn}_{1-x}\text{Cd}_x\text{P}_2$  crystals at  $0 \leq x \leq 0.05$  have been studied at low temperatures (1.8 K). The decrease of the energy gap in  $\text{Zn}(\text{P}_{1-x}\text{As}_x)_2$  at an increase of  $x$  occurs slightly sublinearly. The rydbergs of excitonic series in these crystals decrease as well, and the dependences  $Ry(x)$  for all series are strongly superlinear at small  $x$ . In  $\text{Zn}_{1-x}\text{Cd}_x\text{P}_2$  crystals, the energy gap and rydbergs decrease at an increase of  $x$  (at  $0 \leq x \leq 0.05$ ) as well. The dependences of  $E_g$  and  $Ry$  on  $x$  are considerably stronger in  $\text{Zn}(\text{P}_{1-x}\text{As}_x)_2$  than in  $\text{Zn}_{1-x}\text{Cd}_x\text{P}_2$ . At the increase of  $x$ , the half-width of excitonic absorption lines increases monotonically in both type crystals, which evidences for the increasing role of fluctuations of the crystal potential.