

**substance: IrP<sub>2</sub>**

**property: physical properties**

The energy level scheme is expected to be similar to that given for CoAs<sub>2</sub> (Fig. 1).

**energy gap and activation energy**

$E_g$	$\approx 1$ eV	$T = 295$ K	from diffuse reflectance, powder sample	63H
	1.1 eV	$T = 295$ K	from optical absorption on single crystals containing 0.24 wt% Sn and 0.006 wt% Cu	77K
$E_A$	0.009 eV	$T = 77...160$ K	from $\log \rho \propto E_A/kT$	77K
	0.022 eV	$T = 160...300$ K	from $\log \rho \propto E_A/kT$	

**resistivity**, temperature dependence in the extrinsic range 77...300 K: Fig. 2.

**carrier concentration**

$p$	$6.9 \cdot 10^{18} \text{ cm}^{-3}$	RT	from Hall effect ( $R_H > 0$ ) on single crystal grown from Sn (Cu) flux	77K
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**thermoelectric power**

$S$	$+ 250 \mu\text{V K}^{-1}$	RT	non-oriented single crystal	77K
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**magnetic susceptibility**

(in  $10^{-6} \text{ cm}^3 \text{ mol}^{-1}$ ,  $\chi$  in CGS units)

$\chi_m$	$- 61$	$T = 295$ K	non-oriented single crystals from Sn-flux	77K
	$- 45$	$T = 60$ K		
	$- 106$	$T = 295$ K	polycrystalline sample	71K
	$- 100 - 0.02T$	$T = 80...900$ K		

**far infrared absorption:** for spectrum in the range 50...400  $\text{cm}^{-1}$ , see [83L].

**structural transformation:** The arsenopyrite  $\rightarrow$  loellingite transformation is expected to take place at 1620 K (provided that the peritectic decomposition occurs at a higher temperature) [ 77K].

**Comparative tables on structural data of transition metal dipnictides:**

**structure, chemical bond:** see document ,

**interatomic distances** in arsenopyrite-type phases, see document .

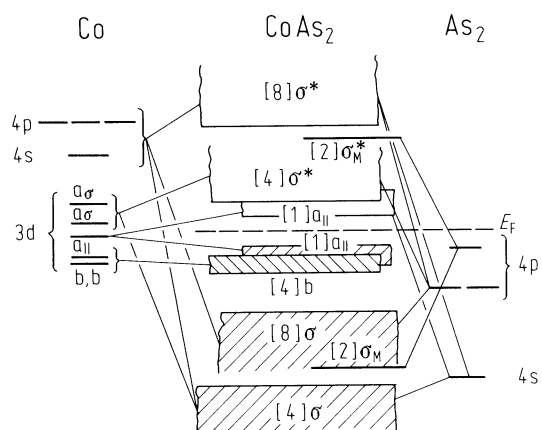
**crystallographic data:** see document .

## References:

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**Fig. 1.**

$\text{CoAs}_2$ . Energy-level scheme for the valence electrons in the arsenopyrite-type phase with formal  $d^5$  configuration [72G].



**Fig. 2.**

IrP<sub>2</sub>. Resistivity vs. reciprocal temperature [77K]. Measurements on two different single crystals containing up to 0.24 wt% Sn and 0.006 wt% Cu from tin flux; orientation unknown.

