substance: FeP_2
property: physical properties

Energy level scheme is similar to that given for $FeAs_2$ (Fig. 1).

energy gap

$E_{g,th}$	≈ 0.4 eV		from log $\rho \propto E_g/2kT$, T = 550...800 K, sintered sample	59H
	0.37 eV		from log $\rho \propto E_g/2kT$, T = 400...550 K, single crystal	71B

electrical resistivity and Hall coefficient 5...300 K: Fig. 2.

Hall voltage proportional to the magnetic field up to 0.7 T [71B].

carrier concentration

n	10^{17} cm^{-3}	$T \approx 5$ K	from Hall effect on iodine-transported single crystal, n-type conduction according to R_H and S	71B

mobility of charge carriers: Fig. 3.

below 60 K	$\mu_H \propto T^{0.8}$	71B
above 300 K	$\mu_H \propto T^{-2...-2.5}$	

magnetic susceptibility

χ_g	$-0.14 \cdot 10^{-6}$ cm^3 g^{-1}	T = 300 K	slightly increasing below 220 K	71B
	$-0.12 \cdot 10^{-6}$ cm^3 g^{-1}	T = 115 K	Faraday balance, three single crystals of total mass 2.4 mg	

far-infrared absorption: for spectrum in the range 180...500 cm^{-1}, see [77L].

Comparative tables on structural data of transition metal dipnictides:

structure, chemical bond: see document ,

crystallographical data of compounds with octahedrally coordinated cations, see document ,

interatomic distances in marcasite- and loellingite-type compounds, see document .

References:

59H Hulliger, F.: Helv. Phys. Acta 32 (1959) 615.

71B Boda, G., Stenström, B., Sagredo, V., Beckman, O., Carlsson, B., Rundqvist, S.: Phys. Scripta 4 (1971) 132.

72F Fan, A. K. L., Rosenthal, G. H., McKinzie, H. L., Wold, A.: J. Solid State Chem. 5 (1972) 136.

72G Goodenough, J. B.: J. Solid State Chem. 5 (1972) 144.

77L Lutz, M. D., Willich, P.: Z. Anorg. Allg. Chem. 428 (1977) 199.

Fig. 1.

$FeAs_2$. One-electron energy levels for the valence electrons in loellingite [72F, 72G].

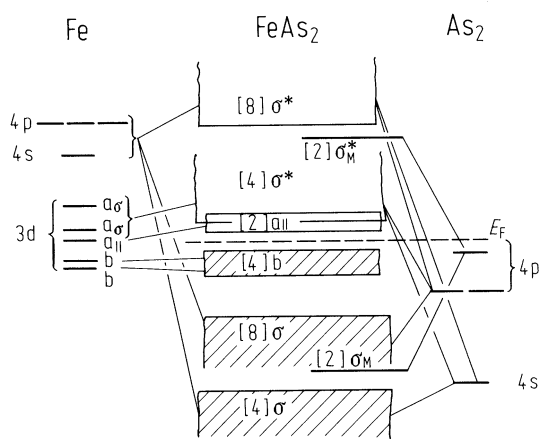

Fig. 2.

FeP_2. Hall coefficient R_H and electrical resistivity ρ vs. reciprocal temperature [71B]. Single crystal $1 \times 0.4 \times 0.4$ mm^3 (largest dimension in *c*-direction?).

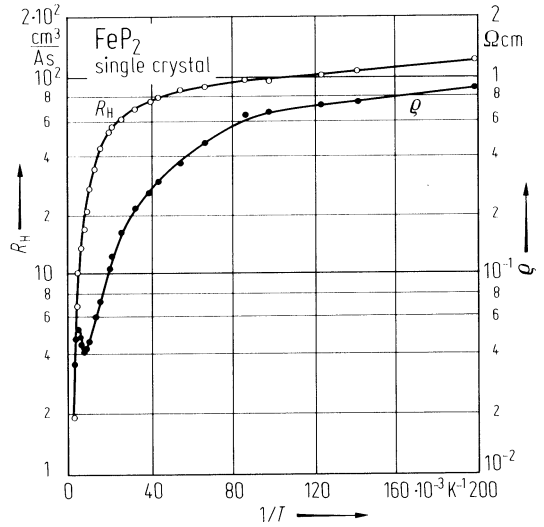

Fig. 3.

FeP_2. Hall mobility R_H/ρ vs. temperature in a doubly-loganthmic scale [71B]. Measurements on single crystals of unknown orientation.