substance: NiP_2
property: physical properties

NiP_2 (monoclinic)

energy gap

E_g	> 0.3 eV	T = 0 K	from log $\rho \propto E_g/2kT$, T = 500...600 K, single crystal	78O
	0.5 eV	T = 0 K	from log $\rho \propto E_g/2kT$, polycrystalline sample	63H
	0.73 eV	RT	from optical absorption (0.5...3.5 eV), single crystal	78O

activation energy of resistivity

E_A	0.002 eV		from log $\rho \propto E_A/kT$, T = 35...100 K, single crystal	78O

resistivity

ρ	0.29 Ω cm	T = 77 K	crystal grown from a tin flux, extrinsic range	78O
	0.39 Ω cm	RT	van der Pauw method	
	0.09...0.42 Ω cm	RT	crystals from different batches	

carrier concentration

n	$7.3 \cdot 10^{17}$ cm^{-3}	T = 77 K	from the Hall coefficient	78O
	$8.7 \cdot 10^{17}$ cm^{-3}	T = 290 K	(van der Pauw method)	

thermoelectric power

S	+ 392 μV K^{-1}	RT	crystal from Sn flux	78O
	– 100 μV K^{-1}	RT	sintered sample	63H

magnetic susceptibility

χ_m	$\approx 19.0 \cdot 10^{-6}$ cm^3 mol^{-1}	T = 77...300 K, B = 1 T	no field dependence; χ_m in CGS-emu; single crystals from tin flux	78O

Comparative tables on structural data of transition metal dipnictides:

structure, chemical bond: see document ,

crystallographical data of PdP_2-type compounds with square-planar cation coordinates, see document ,

interatomic distances for the PdP_2-type compounds, see document .

References:

63H Hulliger, F.: Phys. Lett. 4 (1963) 282.
78O Odile, J. P., Soled, S., Castro, C. A., Wold, A.: Inorg. Chem. 17 (1978) 283.