

substance: $\text{CoSb}_{3-x}\text{Te}_x$, $\text{Fe}_x\text{Co}_{1-x}\text{As}_{3-x}\text{S}_x$, $\text{Fe}_x\text{Co}_{1-x}\text{As}_{3-x}\text{Se}_x$

property: physical properties

$\text{CoSb}_{3-x}\text{Te}_x$: Solubility: $x \geq 0.03$? [59D]. With increasing Te content the electrical conductivity rises drastically up to $x = 0.006$, while the thermal conductivity drops to half its value in pure CoSb_3 . The Seebeck coefficient sharply increases on doping with Te, reaching a maximum value of $-300 \mu\text{V K}^{-1}$ at $x = 0.0015$ [59D].

At $x = 0.0015$, $E_{g,\text{th}} \approx 0.13\text{eV}$ above 650 K, assuming $\log \rho \propto E_g/2kT$ [59D].

$\text{Fe}_x\text{Co}_{1-x}\text{As}_{3-x}\text{S}_x$ and $\text{Fe}_x\text{Co}_{1-x}\text{As}_{3-x}\text{Se}_x$: Solubility: x very small. Strong increase of free-carrier concentration with x [82L].

References:

- 59D Dudkin, L. D., Abrikosov, N. Kh.: Fiz. Tverd. Tela t (1959) 142 (translation: Sov. Phys. Solid State 1 (1959) 126).
- 82L Lutz, H. D., Kliche, G.: Phys. Status Solidi (b) 112 (1982) 549.