横浜国立大学

横浜国立大学 大学院
ナノリサーチクラブ(NRC)
Nano Research Club

The 19th nanotechnology exchange symposium March 5, 2024
Yokohama City University, Kanazawa-hakkei campus

【P10】Investigation of p-type thermoelectric properties for Mn doped β-$FeSi_2$

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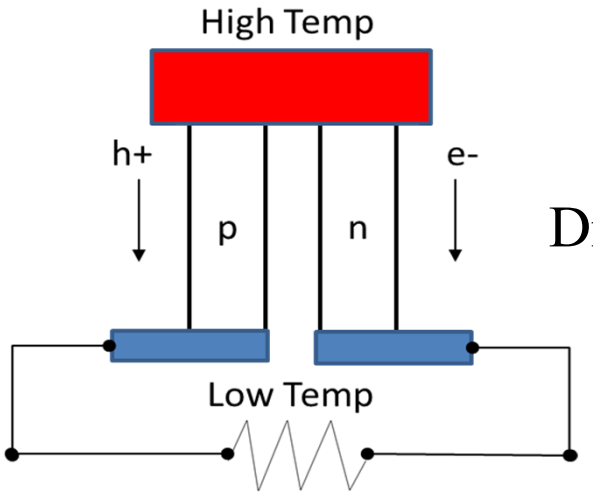


$$\rho = 1/|e|\,\mu\, n$$

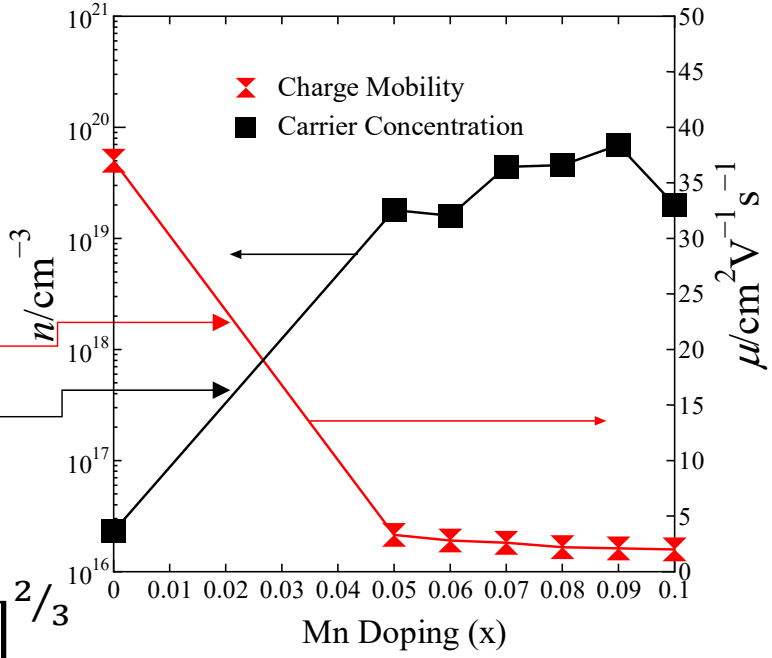
Drude's formula

$$\rho \propto \mu^{-1}$$

$$S \propto n^{-2/3}$$

Mott's formula

$$S = \frac{k_B^2 T}{3|e|\hbar^2} m^* \left[\frac{\pi}{n}\right]^{2/3}$$



Thermoelectricity

- Phenomenon to convert waste heat into electricity.
- Thermoelectric generators can be utilized for such function.
- Use of Iron silicide (β-$FeSi_2$) with doping in this case can be a good solution.
- Increase in Seebeck coefficient S and decrease in Resistivity ρ is necessary for achieving high ZT
- For this purpose, we are presenting our findings for Mn doped β-$FeSi_2$.