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Thermoelectric features and magnetic properties of skutterudites $\text{Pr}(\text{Fe}, \text{Ni}, \text{Co})_4\text{Sb}_{12}$

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Filled skutterudites have become well known for their elevated values of the Seebeck coefficient and their reduced thermal conductivity, placing this class of materials into the group of potential candidates for thermoelectric applications. Besides their promising thermoelectric performance, Pr-based skutterudites exhibit a particular rich variety of interesting physics. Ground state properties in these systems are governed by the Pr-4*f* electrons, resulting in different types of magnetic order, heavy fermion behaviour and superconductivity.

In this paper we present transport properties of $\text{Pr}(\text{Fe}, \text{Ni}, \text{Co})_4\text{Sb}_{12}$. Throughout the whole series measurements of the Seebeck coefficient revealed values exceeding 60 $\mu\text{V}/\text{K}$ at 300 K, reaching a maximum of more than 200 $\mu\text{V}/\text{K}$ in $\text{Pr}_{0.21}\text{Fe}_{2.5}\text{Ni}_{1.5}\text{Sb}_{12}$. Measurements of temperature dependent electrical resistivity and thermal conductivity served to calculate the thermoelectric figure of merit.

In addition our interest is directed to magnetic ordering, its development with the transition metal substitution within this series and crystal electric field effects dominating the physical properties.

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