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Investigation of the thermopower in transition metal chalcogenides

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The oxides present fascinating properties as they can exhibit a large thermopower together with a metallic behavior, as shown in Na_xCoO_2 [1] or cobalt misfits [2]. The spin and orbital entropy can also play a major role on the thermopower [3][4]. The mobility of carriers being too small, sulfides and selenides, with more covalent bonding, have been considered for thermoelectric applications. We will show here several examples of the chalcogenides investigated in our laboratory, highlighting the different approaches followed to optimize the Seebeck coefficient, and reduce the thermal conductivity.

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