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Clathrates, a Challenge for Thermoelectrics ¹

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The present paper gives an overview on a systematic study of the formation, crystal chemistry and physical properties of "intermetallic" clathrates in various ternary and higher order systems. In these systems alkaline earth elements act as cage filler atoms, whereas the M-atoms act as stabilizers of the clathrate compounds with frameworks made of Ge and/or Si. The ratio of M-atoms to the vacancy content of the framework defines the doping level and consequently the thermoelectric characteristics of the material. The thermoelectric potential of this class of materials will be discussed.

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