

DS 58: Invited – Gelbstein

Time: Friday 10:15–11:00

Location: GER 37

Invited Talk

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Development of Highly Efficient IV-VI Thermoelectric Materials — ●YANIV GELBSTEIN — Ben-Gurion University of the Negev, Beer-Sheva, Israel

IV-VI based alloys, are known as superior candidates for thermoelectric applications. Improvement of the thermoelectric performance of IV-VI based alloys was recently obtained using several approaches based on optimal doping; nano-structuring for reduction of the lattice thermal conductivity; development of functionally graded materials with

a desired dopant concentration profile; Fermi-level pinning effect, etc. Using these approaches both n- and p-type PbTe based alloys were prepared with maximal ZT values of about 1.7. However, although ZT values were dramatically increased over the last years, no correspondent increase in the efficiency of practical devices was observed. Possible reasons for that are deteriorating of nano-structures at the operating temperatures, poor mechanical properties and chemical instability. The present communication puts forward the overall factors affect the performance of alloys based on IV-VI compounds for thermoelectric power generation applications.