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Thermoelectric and Thermomagnetic Properties of Nanostructured Lead Chalcogenides.[1] SURAJ JOOTTU THIAGARAJAN, The Ohio State University, Columbus, Ohio 43210, TROY PYLES, RAMACHANDRA R. REVUR, Metamateria Partners, LLC, Columbus, Ohio 43212, VLADIMIR JOVOVIC, JOSEPH D. WEST, JOSEPH P. HEREMANS, The Ohio State University, Columbus, Ohio 43210, SUVANKAR SENGUPTA, J. RICHARD SCHORR, Metamateria Partners, LLC, Columbus, Ohio 43212 — We report results of a study of the thermoelectric and thermomagnetic properties of nanostructured PbTe/PbSe alloys. By the four-coefficients method, the carrier density, effective mass, mobility and scattering parameter are obtained which could then be used for optimizing the material. The samples show higher thermopower than bulk. This enhancement is due to the energy filtering induced by change of the scattering parameter, which in turn, could be due to the electronic density of states altered by the quantum dot inclusions. This is a promising lead to high performance nanostructured thermoelectric materials manufacturable in bulk quantities.

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