Abstract Submitted
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Thermopower and Electrical Conductivity of PbSe Nanocrystal Thin Films ROBERT WANG, JOSEPH FESER, University of California, Berkeley, JONG-SOO LEE, DMITRI TALAPIN, University of Chicago, RACHEL SEGALMAN, ARUN MAJUMDAR, University of California, Berkeley — Thin films assembled of solution-processed PbSe nanocrystals have a thermopower 2 – 3 times greater than bulk PbSe. In addition, the thermopower and electrical conductivity both exhibit a size-dependence on nanocrystal size. As the nanocrystal diameter changes from 4 to 9 nm, the thermopower and electrical conductivity change from 850 to 650 μV/K and 10^{-4} to 10^{-2} S/cm, respectively. If electrical conductivity can be improved, these materials represent a new class of inexpensive and scalable thermoelectric materials.

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