Abstract Submitted
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Extreme Seebeck anisotropy in the quasi-one-dimensional metal, $\mathbf{Li_{0.9}Mo_6O_{17}}$[1] JOSHUA COHN, SAEED MOSHFEGHYEGANEH, University of Miami, CARLOS A.M. DOS SANTOS, Escola de Engenharia de Lorena - USP, Brazil, JOHN J. NEUMEIER, Montana State University — We present resistivity and thermopower measurements in the range 300 $K \leq T \leq 500$ K on single crystals of the quasi-one-dimensional (q1D) metal, $Li_{0.9}Mo_6O_{17}$ (LiPB) transverse to the q1D metallic chains. Direct electron transfer between the chains of this material is sufficiently weak that inter-chain transport above 400 K is predominated by thermal activation of valence-band states (~ 0.14 eV below E_F), yielding a large, p-type inter-chain Seebeck coefficient that coexists with n-type metallic behavior confined along the q1D chains. A significant Seebeck anisotropy, $\Delta S \simeq 200$ μV/K, along mutually perpendicular directions gives LiPB potential as a transverse thermoelectric. This anisotropy along with a relatively low inter-chain thermal conductivity ($\kappa \simeq 2$W/mK) results in a substantial transverse Peltier effect.

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