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Large Magnetoelastic Coupling in Pr_2CuO_4 Single Crystals
DAVID MANDRUS, RONGYING JIN, BRIAN SALES, Oak Ridge National Laboratory — The in-plane thermal conductivity, κ_a, of insulating Pr_2CuO_4 was measured at low temperatures and in magnetic fields of up to 8 Tesla. At 5 K and 8 Tesla κ_a increases by 50% for H // **a**, and 300% for H // **c**, relative to its value in zero magnetic field. This increase is most likely due to the ability of the magnetic field to mix the non-magnetic ground state of the Pr 4f crystal field level with the first excited crystal field level at 18 meV. The magnetic field produces a substantial magnetic moment at each Pr site as well as a significant change in the $4f$ charge distribution. Either effect could significantly alter the heat conducted by acoustic phonons. Oak Ridge National Laboratory is managed by UT-Battelle, LLC, for the U.S. Dept. of Energy under contract DE-AC05-00OR22725.

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