Abstract Submitted
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High Pressure Structure and Electrical Resistance Measurements on Cadmium Sulfide Nanoparticles[1] J.M. MONTGOMERY, A.K. STEMSHORN, A. STANISHEVSKY, Y.K. VOHRA, University of Alabama at Birmingham (UAB), S.T. WEIR, Lawrence Livermore National Laboratory (LLNL) — Room-temperature four-probe electrical resistance and synchrotron x-ray diffraction measurements have been performed on dried and aqueous suspensions of CdS nanoparticles (25 nm in diameter) to 35 GPa. Nanoparticles used in these experiments were synthesized using the reaction between a cadmium salt and thiourea under hydrothermal conditions without using any surfactants. While the x-ray structure data confirms the irreversible wurtzite $\rightarrow$ rocksalt transition seen at 2.5 GPa in bulk CdS, the corresponding resistance drop was not observed in the measured range, indicating that the nanoparticle boundaries may prevent electronic communication between particles. Further studies on dry and aqueous 10 nm nano-spheres and 9 nm diameter nano-rods are planned, and the results of these experiments will be presented.

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