

Abstract Submitted
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Structure and dynamics of CdTe studied by X-ray and neutron scattering¹ MATTHEW STONE, JENNIFER NIEDZIELA, Oak Ridge National Laboratory — We present x-ray diffraction and inelastic neutron scattering studies of the structure and lattice dynamics of commercially available cadmium telluride. We also present complementary density functional theory calculations. The x-ray data show a subtle structural transition is present near 80 K, which manifests also in the measured phonon density of states. Refinement of the structure above and below the transition temperature shows no change to the long-range ordered structure. The inelastic neutron scattering studies were performed using an isotopically un-enriched sample of CdTe, which possesses a high cross section for thermal neutron absorption. The neutron portion of the study was performed with a thin-plate geometry in the reflection condition at the ARCS instrument at the SNS, showing the high flux of the instrument makes possible lattice dynamics studies of materials with high thermal neutron absorption. Single crystal and powder inelastic neutron scattering measurements will be presented. Current interpretation of the nature of the transition and future studies will be discussed.

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