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Thermodynamics and Anharmonicity in Dilute Vanadium Alloys

JORGE MUNOZ, The University of Texas - El Paso, OLIVIER DELAIRE, BRENT FULTZ, California Institute of Technology — The specific heats of elemental vanadium and dilute vanadium alloys with the same body-centered cubic crystal structure were measured by differential scanning calorimetry (DSC) from room- temperature to 1673K. The results were compared to the harmonic phonon contribution to the total heat capacity, which was obtained from the phonon densities of states (DOS), previously measured using inelastic neutron scattering. The anharmonic entropy of V93-Co7 was calculated from the DSC measurements and compared to the one obtained from the phonon DOS and Thermo- Mechanical Analyzer (TMA) measurements.

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