

Abstract Submitted
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Resonant Ultrasound Studies of Mo_3Sb_7 ¹ LINDSAY VANBEBBER, Dept. of Materials Science and Engineering, University of Tennessee, JIAQIANG YAN, DAVID MANDRUS, Dept. of Materials Science and Engineering, University of Tennessee and Materials Science and Technology Division, Oak Ridge National Laboratory, BRIAN C. SALES, Materials Science and Technology Division, Oak Ridge National Laboratory, VEERLE KEPPENS, Dept. of Materials Science and Engineering, University of Tennessee — The elastic behavior of a series of $\text{Mo}_{3-x}\text{M}_x\text{Sb}_{7-y}\text{X}_y$ (M= Cr, Ru, X= Te) single crystals is examined with resonant ultrasound spectroscopy (RUS) as a function of temperature (300 K - 5 K). The elastic response of the parent compound Mo_3Sb_7 reveals a transition at around 53K, evidenced by a dramatic softening in the shear modulus $c=(c_{11}-c_{12})/2$. This softening is associated with a cubic-to-tetragonal structural transition as well as a spin gap formation. The transition temperature is lowered by a few degrees upon doping with Cr. Doping with Ru and Te is known to suppress the structural transition, but the softening in the shear modulus suggests that a structural instability remains present in these compounds.

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