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Elastic constants and sound velocities in single crystal transition metal scandates MATTHEW G. HILT, K.A. PESTKA II[1], JIN H. SO, J.D. MAYNARD, The Pennsylvania State University — An important effect on thin films deposited on substrates is the strain induced by lattice mismatch. Different perovskite structured transition metal scandates have similar a-axis lattice parameters but slightly different c-axis lattice parameters. By adjusting the transition metal content, the c-axis lattice parameter may be controlled, so that if these materials are used as substrates, lattice mismatch may be greatly reduced. To further match lattices dynamically, it is necessary to know the elastic constants of the scandate materials. However, only small single crystals of GdScO3, DyScO3, SmScO3, and NdScO3 have been fabricated. By using the small sample version of resonant ultrasound spectroscopy, we have determined the elastic constants and sound velocities for several transition metal scandates.

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