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Measurements of elastic constants for single crystals of magnesium diboride KENNETH PESTKA, J.D. MAYNARD, XIAXING XI, QI LI, Penn State Univeristy — Important information concerning the nature of the high temperature BCS superconductor magnesium diboride, MgB_2, may be obtained from measurements of elastic constants with single crystal samples. As derivatives of the free energy with respect to atomic displacements, the elastic constants are a sensitive probe of the lattice environment in which all solid state phenomena occur. We have used the technique of resonant ultrasound spectroscopy (RUS) for very small samples in order to measure good quality single crystals. The samples were grown epitaxially on silicon carbide substrates using physical vapor deposition; samples were a few hundred microns wide and 600 to 750 nm thick.

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