Elasticity of Polycrystalline $Mg_4Si_4O_{12}$ Majorite Garnet at P=9 Gpa and T=1000K in a DIA-Type Cubic-Anvil Apparatus Interfaced with Synchrotron X-rays	X17B1

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Dense isotropic polycrystalline $Mg_4Si_4O_{12}$ majorite garnet were fabricated at high pressures and temperatures in a 2000-ton uniaxial split sphere anvil apparatus (USSA-2000) using hot-pressing techniques developed previously by Gwanmesia and Liebermann (1992; see also Gwanmesia *et al.*, 1993). These specimens have bulk densities identical to the x-ray density and exhibit compressional (P) wave and shear (S) wave velocities within 0.2% of single crystal elastic moduli of Pacallo and Weidner (1997). Recent technological development in our laboratory has enabled precise interferometric measurements wave velocities in minerals to be performed to pressures of 9 Gpa and temperatures of 1500K in a DIA-type, cubic anvil apparatus (SAM-85) interfaced with white x-ray radiation from the superconducting wiggler port of the National Synchrotron Light Source at Brookhaven National Laboratory (see Liebermann *et al.*, 1997). We have obtained new data on the pressure and temperature dependence of S wave velocity in the $Mg_4Si_4O_{12}$ majorite to 7 Gpa at 1000K. The new data are combined with previous data for P wave and compared with acoustic and PVT data for other compositions in the Pyrope-majorite solid solution series, especially those for a $Py_{62}Mj_{38}$ specimen studies by Rigden, Gwanmesia and Liebermann (1994) and Wang *et al.* (1996).