Ultrasonic velocity measurements of plycrystalline clinopyroxene under high *P-T* conditions

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Ultrasonic elastic velocity measurements of polycrystalline clinopyroxene with submicron-sized grains were conducted under high *P-T* conditions in a piston-cylinder apparatus. We prepared nano-sized powders of clinopyroxene from naturally occurring clinopyroxene single crystal and successfully fabricated fine-grained polycrystalline clinopyroxene. P and S wave velocities are determined as a function of pressure to 1.0 GPa at temperatures up to 650 ˚C for *V*p and 750 ˚C for *V*s. At room temperature, *V*p, *V*s and *V*p/*V*s increased during pressurization. On the other hand, at 1.0 GPa, *V*p and *V*s decreased and *V*p/*V*s slightly increased with increasing temperature. From P and S wave velocities and estimated density, we calculated the elastic constants of clinopyroxene and found that the bulk modulus obtained in this study is smaller than previously published data.

Keywords: elastic velocity, clinopyroxene, submicron

