

Measurement of seismic wave velocities up to 1.0 GPa : an example of Kohistan arc lower crustal rocks

Yoshio Kouno[1], Masahiro Ishikawa[2], Makoto Arima[3]

[1] Geological Inst., Yokohama National Univ, [2] Dept of Environmental Sci, Yokohama National Univ, [3] Geolo. Instit. Yokohama Natl. Univ.

P-wave velocities in Kohistan arc lower crustal rocks were determined up to 1.0GPa from 25C to 400C using piston-cylinder apparatus. P-wave velocities at 1.0GPa,25C are, respectively, 7.29km/s, 7.38km/s for two-pyroxene granulite, 7.28km/s, 7.68km/s for garnet-clinopyroxene granulite and 7.91km/s, 8.39km/s for garnet pyroxenite. In the case of increasing temperature up to 400C, P-wave velocities of all samples decrease 0.01-0.07km/s at 1.0GPa, 0.06-0.11km/s at 0.7GPa and 0.21-0.42km/s at 0.4GPa. By the dehydration reaction, bulk compositions doesn't change, but P-wave velocities increase 0.31km/s. Comparing P-wave velocities with weight % of SiO₂ in arc crustal rocks, there is a difference relation between garnet-bearing rocks and garnet-free rocks.