
[EJ] Evening Poster | S (Solid Earth Sciences) | S-CG Complex & General

[S-CG57]Dynamics in mobile belts

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The dynamic behaviours of mobile belts are expressed across a wide range of time scales, from the seismic and volcanic events that impact society during our lifetimes, to orogeny and the formation of large-scale fault systems which can take place over millions of years. Deformation occurs on length scales from microscopic fracture and flow to macroscopic deformation to plate-scale tectonics. To gain a physical understanding of the dynamics of mobile belts, we must determine the relationships between deformation and the driving stresses due to plate motion and other causes, which are connected through the rheological properties of the materials. To understand the full physical system, an integration of geophysics, geomorphology, and geology is necessary, as is the integration of observational, theoretical and experimental approaches. In addition, because rheological properties are greatly affected by fluids in the crust and fluid chemical reactions, petrological and geochemical approaches are also important. After the 2011 great Tohoku-oki earthquake, large-scale changes in seismic activity and regional scale crustal deformation were observed, making present-day Japan a unique natural laboratory for the study of the dynamics of mobile belts. This session welcomes presentations from different disciplines, such as seismology, geodesy, tectonic geomorphology, structural geology, petrology, and geofluids, as well as interdisciplinary studies, that relate to the dynamic behaviour of mobile belts.

[SCG57-P32]Ultrasonic velocity measurements of polycrystalline clinopyroxene under high P - T conditions

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Keywords:elastic velocity, clinopyroxene, submicron

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.