

P-wave velocity anisotropy of the Hida metamorphic rocks and its relation with mineral preferred orientation

Kentaro Yasunaga[1], Kyuichi Kanagawa[2], Osamu Nishizawa[3]

[1] Grad. School Sci. & Tech., Chiba Univ., [2] Dept. Earth Sci., Chiba Univ., [3] GSJ

We measured P-wave velocities of the Hida metamorphic rocks in three orthogonal directions defined by foliation and lineation under confining pressures up to 150 MPa, and compared their anisotropy with preferred orientation of constituent minerals. Crystalline limestone exhibits a large degree of anisotropy in P-wave velocity due to preferred orientation of calcite c-axes. In banded gneisses and hornblende gneisses, P-wave velocities in the direction parallel to lineation are the fastest due to preferred orientation of hornblende c-axes, while those in the direction normal to foliation are the slowest due to preferred orientation of biotite basal planes. The latter P-wave velocities vary according to the pattern of biotite basal plane fabrics.