

Stress induced anisotropy of partial melts inferred from experimental deformation of analogue material under acoustic monitoring

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A microstructural change of partially molten media under deviatoric stress was investigated by developing a new apparatus for deforming a large analogue sample (a 70-mm cube) under a uniform pure shear stress. A borneol + 8 percent melt system having a dihedral angle of 16.7(degrees) and texturally equilibrated under hydrostatic stress was used as a partially molten rock analogue. During the deformation, sample microstructure was observed in situ with the ultrasonic shear waves. A development of anisotropic structure under the deviatoric stress was detected by the shear wave splitting. The deviation of the sample microstructure from the equilibrium structure is discussed from an energetical point of view.