



Effect of water, stress, and pressure on the lattice-preferred orientation (LPO) of olivine and various examples of the LPOs of olivine recently found in nature

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Seismic anisotropy in the upper mantle is often considered to be caused by lattice-preferred orientation (LPO) of olivine. Experimental studies on the deformation of olivine at high pressure and high temperature showed that water, stress, and temperature affect the development of LPO of olivine (Jung & Karato, 2001; Katayama et al., 2004; Jung et al., 2006; Katayama & Karato, 2006). Recent experimental study of harzburgite at high pressure and high temperature under low stress and dry conditions revealed that pressure also affects the development of LPO of olivine (Jung et al., 2009). I will review experimental studies on the deformation of olivine at high pressure and high temperature. And then, I will present various types of olivine LPOs found recently in natural rocks such as type-B, -C, -D and -E which are considered to be caused by water, stress, and pressure. Seismic anisotropy from the LPOs of olivine will be also discussed.