# Lattice preferred orientations in post-perovskite-type MgGeO3 formed from different pre-phases

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Lattice preferred orientations (LPO) of post-perovskite (PPv) -type MgGeO3 formed from two different pre-phases, orthopyroxene (OPx) and perovskite (Pv), were studied using radial and axial X-ray diffraction techniques combined with a diamond anvil cell. When the PPv was made from Pv, strong LPO was formed in the PPv immediately after the transformation with an alignment of the (001) or (011) plane perpendicular to the compression axis. This present result contrasts markedly from that observed when the PPv was formed from OPx and those reported on MgGeO3-PPv and (Mg,Fe)SiO3-PPv transformed from OPx, in which (100) or (110) plane was aligned to the compression axis. It was cleared that when the PPv-type MgGeO3 is formed in diamond-anvil cells, it has strong LPO from the beginning even before plastic deformation and its character depends on the pre-phase before the transformation. The formed LPO of PPv did not change in spite of further compression using a conventional gasket because the sample became too thin to deform. However, by using a diamond gasket technique, significant variation of the relative intensities of several diffraction peaks during further compression was observed accompanied with the deformation of the sample. The change of the axial diffraction patterns could be explained only by assuming that (001) plane aligns perpendicular to the compression axis. The present result suggests that the (001) is a dominant slip plane in MgGeO3-PPv. With an assumption that silicate PPv behaves similarly at lower mantle conditions, a large S-wave polarization anisotropy observed in the Earth's D" layer can be explained by a small degree of LPO of PPv phase expected to exist in this layer.