# $MgSiO_3$ post-perovskite phase P-V-T equation of state

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The recent discovery of a new $MgSiO_3$ high pressure polymorph ([1][2]) has a huge impact on our understanding of the structure and dynamics of the deep Earth. This phase with Cmcm $CaIrO_3$ type-structure, and now commonly named post-perovskite phase, is produced from Pbnm-perovskite $MgSiO_3$ in the 110-125 GPa pressure range ([3]). This roughly corresponds to the depth of appearance of Earth's D" layer. This lowermost part of the lower mantle is the probable destination of a non negligible part of downwelling subducted slabs, the probable source of superswells and mantle plumes, and the site of chemical exchanges with the core, all of this being ruled by the very steep temperature gradient near the core-mantle boundary. It displays very complex seismic signatures, mainly due to a high lateral heterogeneity and shear-wave splitting ([4]). Knowing that (Al,Fe)-$MgSiO_3$ perovskite phase is the major constituent of the lower mantle, it is mandatory to clarify what are the effects of the post-perovskite phase production, i.e. the Clapeyron slope dP/dT of the transition and of course the post-perovskite phase elastic properties. It is therefore necessary to provide precise data on the post-perovskite phase compressibility at D" layer pressure and temperature conditions. The new ID27 beamline facilities of ESRF (Grenoble) were used to collect in-situ high temperature angle-dispersive x-ray diffraction spectra at high pressure. After a short presentation of the experimental setup, details on $MgSiO_3$ post-perovskite phase P-V-T equation of state will be provided.

**References**

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