**Supplementary Materials**



Fig. S1 The selected XRD patterns of Gd1.5Ce0.5Ti2O­7 under different pressures in run2. ☆ belong to Argon’s reflections.



Fig.S2. The a-axial length *a*(Å) as a liner function of pressure. The slope change is observed as 6.5 GPa and 13 GPa, respectively.



Fig. S3. Le Bail refinement of Gd1.5­Ce0.5Ti2O7­ at various pressures. a)-c) are patterns from run1, with silicone oil as pressure medium. d)-f) are patterns from run2, with Argon as the pressure medium. Magenta bar are reflections of pyrochlore structure and green bar belongs to pressure-induced solidified Argon.