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# Generation of pressures to ~60 GPa in Kawai-type apparatus and stability of $MnGeO_3$ perovskite at high pressure and high temperature

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## ABSTRACT

To obtain higher pressures in a Kawai-type apparatus, we explored and tested high-pressure cell assemblies suitable for experiments using sintered diamond (SD) anvils. As a result, we succeeded in generating pressures exceeding 55 GPa at temperatures of ~1000 °C in a Kawai-type apparatus (SPEED Mk-II) at SPring-8. Using the optimized cell assembly, we examined the stability field of $MnGeO_3$ perovskite, an analog of $MgSiO_3$ perovskite, which was recently found to transform to a new high-pressure form under the *P-T* conditions near the core-mantle boundary. From our in situ X-ray observations, $MnGeO_3$ perovskite was found to be stable at pressures up to 56–57 GPa at temperatures of 800–1050 °C.

**Keywords:** Pressure generation, high pressure and temperature, manganese germanate, perovskite