

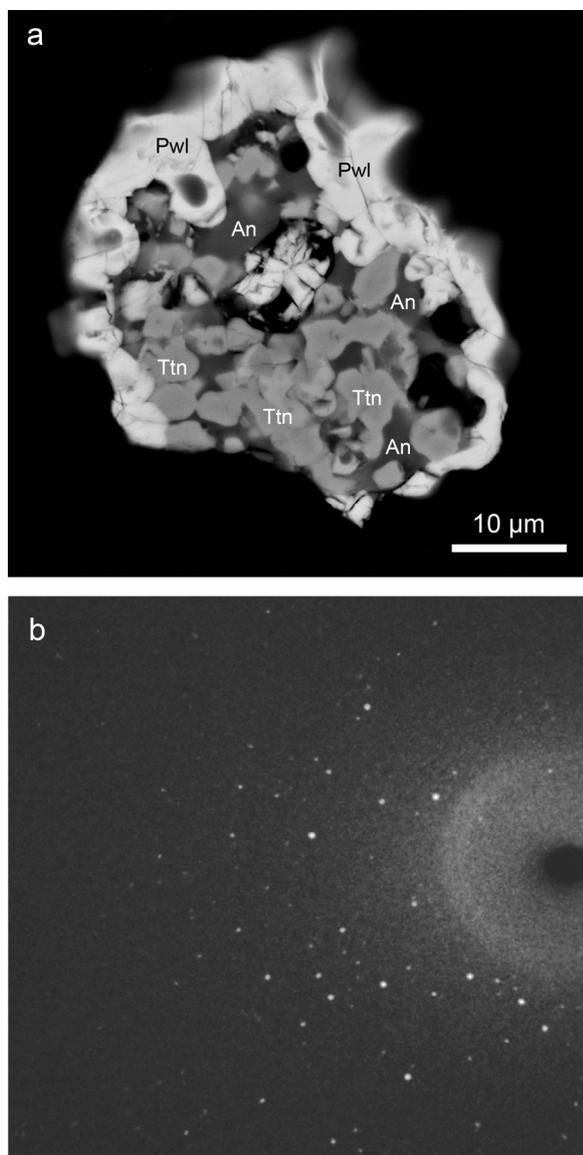
Supplementary Data

**Natural cubic perovskite,  $\text{Ca}(\text{Ti},\text{Si},\text{Cr})\text{O}_{3-\delta}$ , a versatile potential host for rock-forming and less-common elements up to Earth's mantle pressure**

Sergey N. Britvin, Natalia S. Vlasenko, Andrey Aslandukov, Alena Aslandukova, Leonid Dubrovinsky, Liudmila A. Gorelova, Maria G. Krzhizhanovskaya, Oleg S. Vereshchagin, Vladimir N. Bocharov, Yulia S. Shelukhina, Maksim S. Lozhkin, Anatoly N. Zaitsev, Fabrizio Nestola



**Figure S1.** Gehlenite rock composed of colorless equant gehlenite micrograins – a host for cubic perovskite and associated minerals. Photomicrograph in scattered light.



**Figure S2.** (a) SEM BSE image of an aggregate of titanite (Ttn) and anorthite (An) formed upon fusion of melilite glass-stuffed cubic perovskite crystal at 1300 °C. The white rim is a recrystallized powellite grain (Pwl) which was occasionally intergrown with perovskite-C. (b) XRD pattern of a grain depicted in (a).