

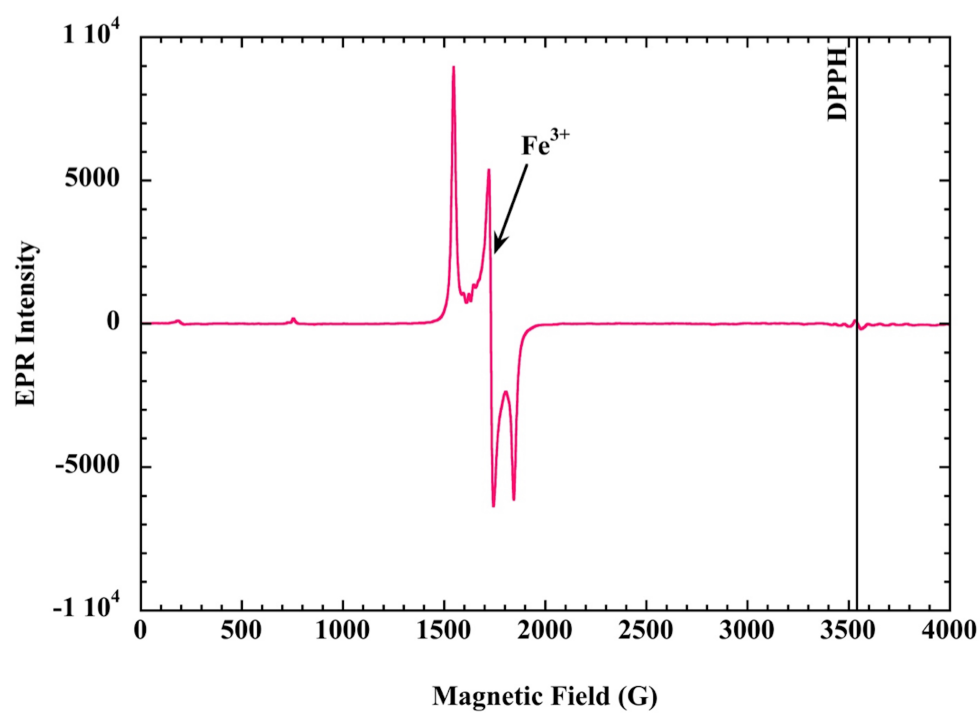
Supplemental Figure S1

(a) Configuration of the Al-octahedral site in the euclase structure (b) Projection of the structure of euclase in the (010) plane showing the zigzag chain of Al-octahedral sites. The shorter Al-Al interatomic distance is described by the *r* direction forming a 10° with the *c* direction. The figure shows the orientation of the crystallographic axes *a*, *b* and *c*, with $\beta=100^\circ$. Metal-Oxygen distances are in Å.



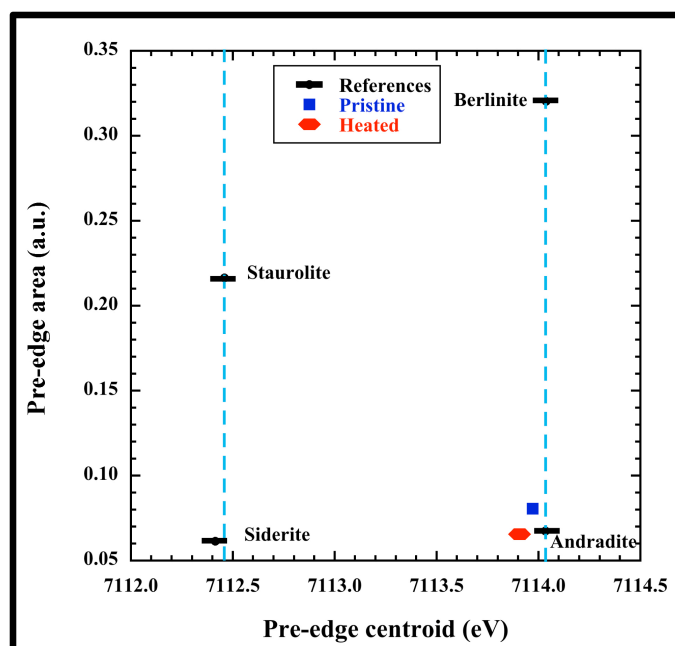
Supplemental Figure S2

Single crystal of gem-quality pink euclase.



Supplemental Figure S3

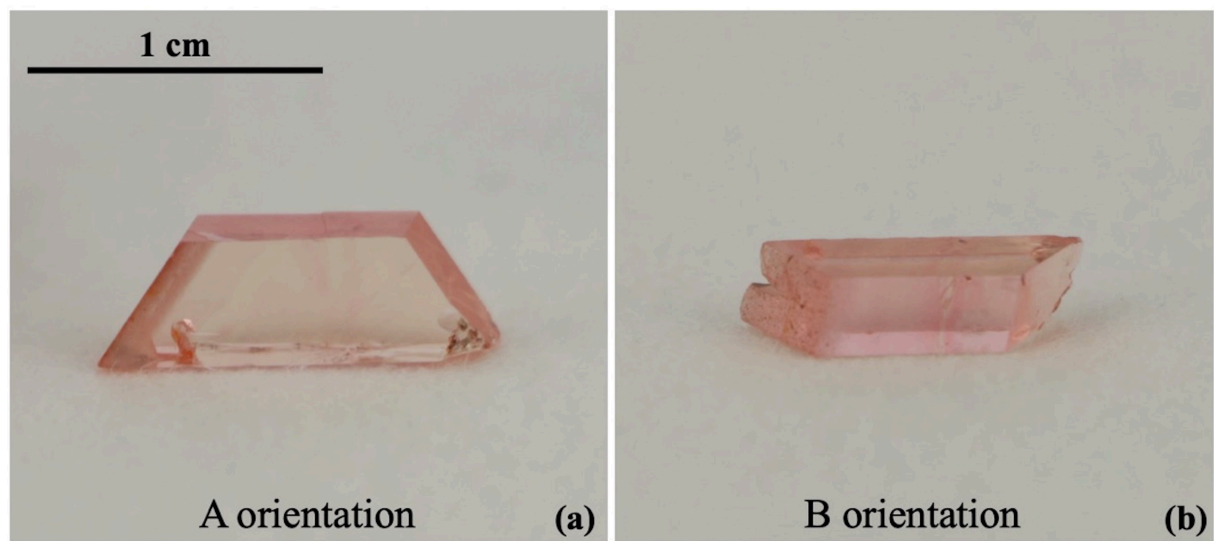
Electron Paramagnetic Resonance spectrum of powder pink euclase.



Supplemental Figure S4.

Determination of Fe oxidation state and coordination number using the pre-edge XANES components.

The references were chosen represent the main Fe speciations: siderite (FeCO_3) for VI Fe^{2+} , staurolite ($\text{Fe}_2\text{Al}_9\text{Si}_4\text{O}_{23}(\text{OH})$) for VI Fe^{2+} , andradite ($\text{Ca}_3\text{Fe}_2(\text{SiO}_4)_3$) for VI Fe^{3+} and Fe-berlinite (FePO_4) for IV Fe^{2+} .



Supplemental Figure S5.

Cut and polished sample in two orientations: (a) A orientation corresponding to the (001) section with a thickness of 3.9 mm; (b) B orientation corresponding to the (010) section with a thickness of 5.1 mm.



Supplemental Figure S6. Viridine crystals in the host schist of the investigated euclase.