

**Fig. S1 to S5:** EBSD maps of the five selected granulite samples. Samples G2 and TAF500 have been cut perpendicular to the foliation and also to the lineation (YZ plane), while G3, G4 and TAF501 have been cut perpendicular to the foliation and parallel to the lineation (XZ plane).

**Fig. S6 and S7:** Crystallographic preferred orientation of the main rock-forming minerals in restitic (Fig. S6) and quartzo-feldspathic (Fig. S7) granulites. Lower hemisphere stereographic projections with contours at 1 Multiple of a Uniform Distribution (MUD) intervals. The grey scale corresponds to MUD for each cell. To facilitate comparisons, CPOs have been rotated to put [001] of sillimanite in the EW direction considering that the maximum concentration of this axis is representative of the lineation. The foliation is ~EW and normal to the plane of the pole figure.