

### **Supplementary material captions.**

**Figure S1: Petrographic features of the sample BAR38-A: (a) Sp foliation made by white mica- and quartz-rich layers, wrapping garnet porphyroblasts (XPL). (b) Chloritoid marking the Sp foliation, which wraps garnet blasts (PPL). (c) Garnet blast partly growing over the Sp foliation (PPL). (d) Sp foliation defined by white mica and chloritoid (PPL). (e) Chloritoid blasts growing within garnet strain shadows (BSE). (f) Paragonite and white mica blasts growing static over the Sp foliation (XPL).**

**Figure S2: Rose diagrams of the long-axis orientations of all mineral phases extracted from the whole mapped area.**

**Table S1: Excel spreadsheet reporting grain data extracted from MFA for the 2D analysis.**

**Table S2: Excel spreadsheet reporting WDS representative chemical analyses of the main mineral phases.**

**Table S3: Excel spreadsheet reporting modal abundances and bulk rock compositions for 2D thin section, 3D volume and XZ, YZ, XY extrapolations.**