Appendix Figure 1

The documentation of run products from the experiments includes (1) SEM (scanning electron microscope images of grain surfaces; (2) mineral distribution on the grain surfaces from single or merged element distribution maps (SEM data); (3) point analyses (SEM) represented as element distribution spectra; (4) element distribution maps from EMP (electron microprobe) on polished grain mounts.

Sample order is increasing run-time of the experiments; all experiments were performed at 400 Mpa and 600°C.

Abrevations of minerals (if not quoted different at the respective image) cc= calcite; cm=corundum; fl=fluorite; grs=grossular; hl=halite; prv=perovskite; rt=rutile; ttn=titanite; wo=wollastonite;

outer = material from the outer Au capsule;
Inner =material from the inner Pt capsule
Ttn4-inner; T = titanite; R = rutile; P = perovskite

Appendix Figure 1; page 2 Ttn4 (1 day, no F)
Appendix Figure 1; page 4; Ttn9 (3 days; no F)
Appendix Figure 1; page 5; Ttn10 (3 days; F)
Appendix Figure 1; page 6; Ttn10 (3 days; F)
Appendix Figure 1, page 7; Ttn2 (7 days; F)
Appendix Figure 1; page 8; Ttn2 (7 days; F)

Ttn2 inner-2; EMP element distribution Ti

Ttn2 inner-2; EMP element distribution Al

Ttn2 inner-2; EMP element distribution F

Ttn2 inner-2; EMP element distribution Fe

Ttn2 inner-3; EMP element distribution Ti

Ttn2 inner-3; EMP element distribution Al

Ttn2 inner-3; EMP element distribution F

Ttn2 inner-3; EMP element distribution Fe
Appendix Figure 1; page 9; Ttn2 (7 days; F)

Ttn2 outer-2; EMP element distribution Al

Ttn2 outer-2; EMP element distribution Ca

Ttn2 outer-2; EMP element distribution Si
Appendix Figure 1; page 10; Ttn8 (7 days; no F)
Appendix Figure 1 page 11; Ttn1 (14 days; no F)
Appendix Figure 1; page 12; Ttn12 (14 days; F)
here, we face a problem to identify the minerals
solution: quantitative analyses

Appendix Figure 1; page 14; Ttn12 (14 days; F)
RT22-inner-detail  some halite

mainly wollastonite, some calcite, new wollastonite and corundum

mainly corundum and halite crust
mainly wollastonite and new grown wollastonite fibres

spec 1 anorthite

spec 2 wollastonite

spec 5 grossular

Appendix Figure 1; page 16; RT23 (30 days; F)
The grossular spectrum shows some Ti.
RT17-inner; EMP element map Ti

RT17-inner; EMP element map Al

RT17-inner; EMP element map F

RT17-inner; EMP element map Ca; note the effect of Ca fluorescence in the rt

50 μm
Appendix Figure 1; page 20; RT17 (60 days; F)
Appendix Figure 1; page 21; RT19 (107 days; no F)
Appendix Figure 1; page 22; RT20 (107 days; F;)

RT20-inner-1

RT20-outer-1

RT20-outer-1