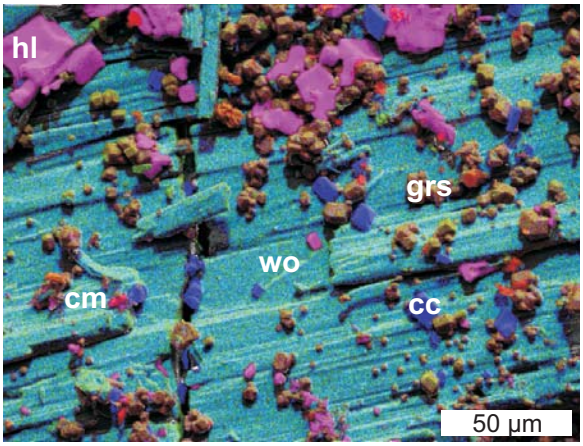
Appendix Figure 1

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.

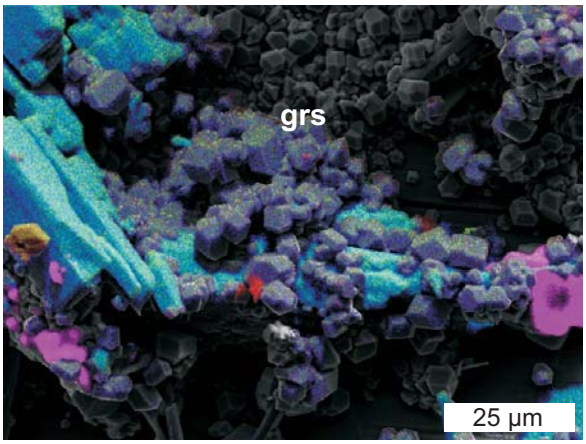
Sample order is increasing run-time of the experiments; all experiments were performed at 400 Mpa and 600°C.

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;

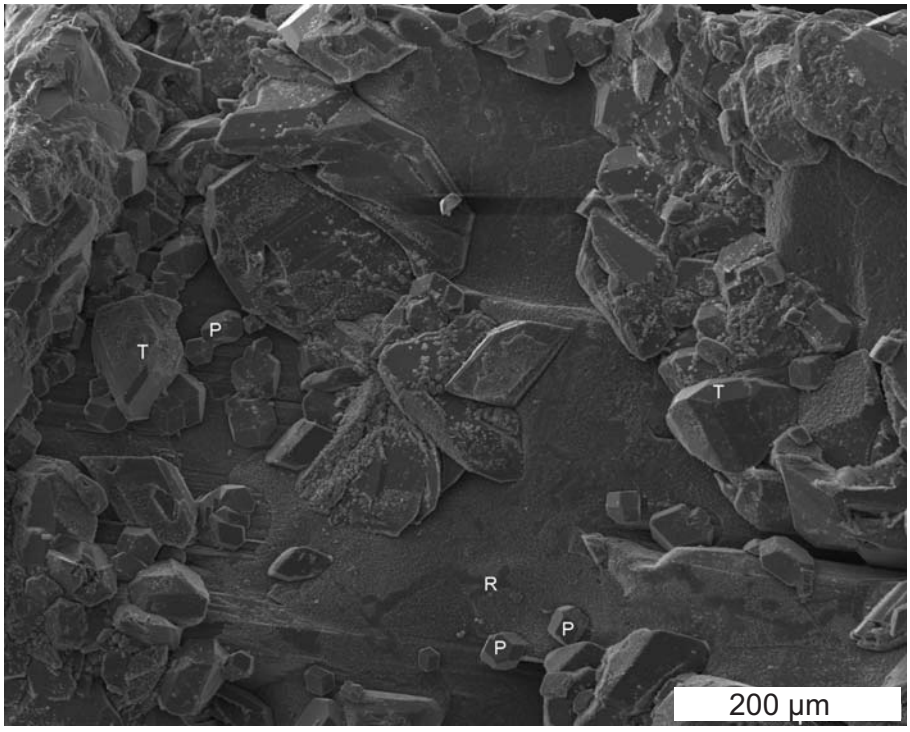
outer = material from the outer Au capsule;
Inner =material from the inner Pt capsule



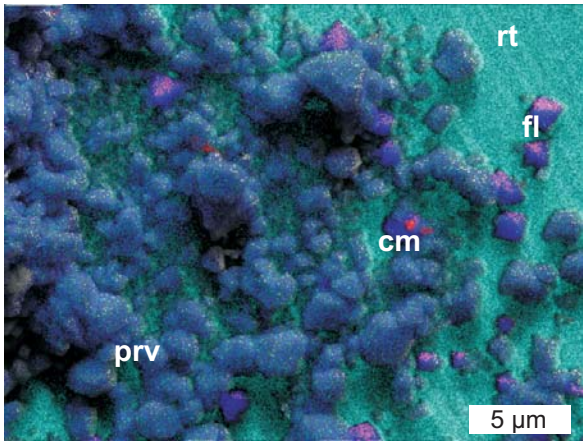
Ttn4-outer-1



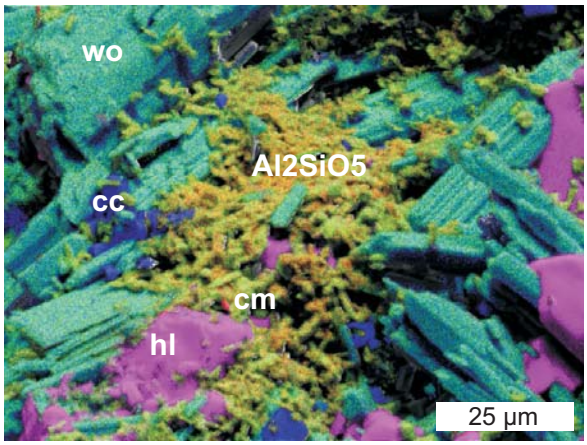
Ttn4-outer-2



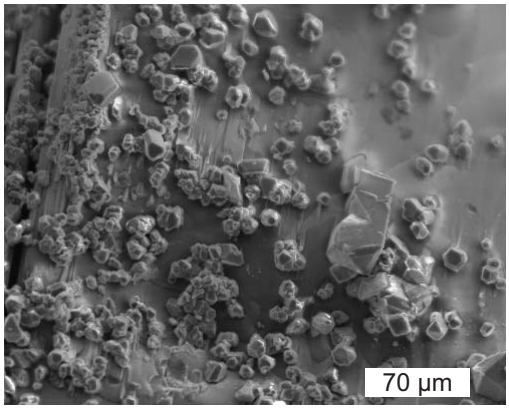
Ttn4-inner; T= titanite; R= rutile; P=perovskite



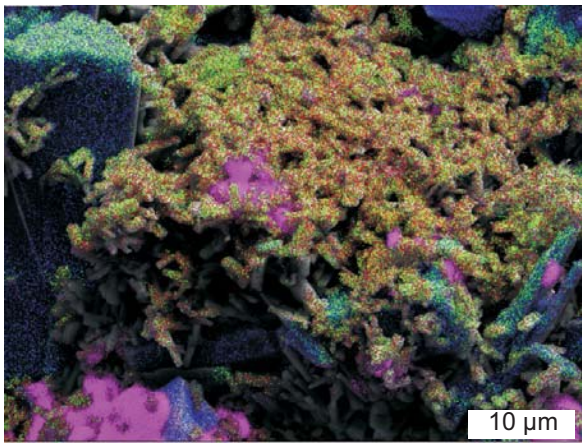
Ttn7-inner-1



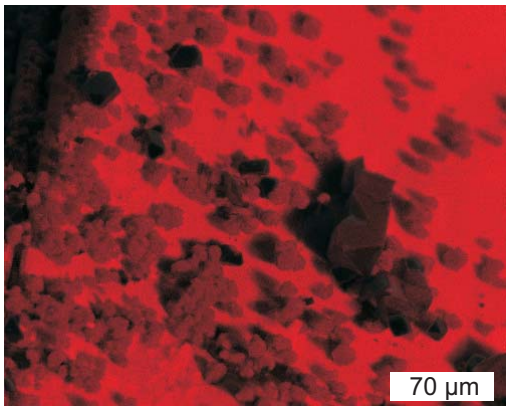
Ttn7-outer-1



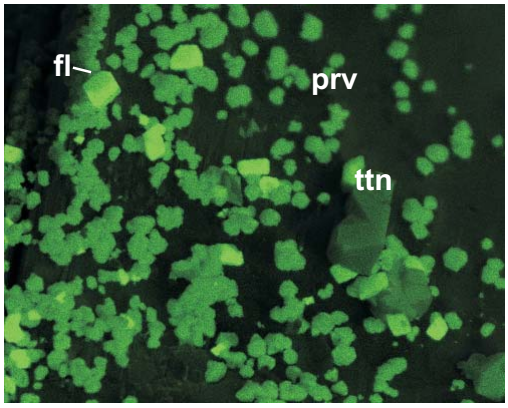
Ttn7-inner-2 SEM image



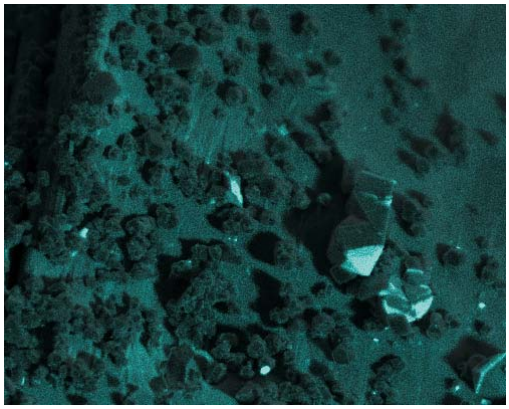
Ttn7-outer-2



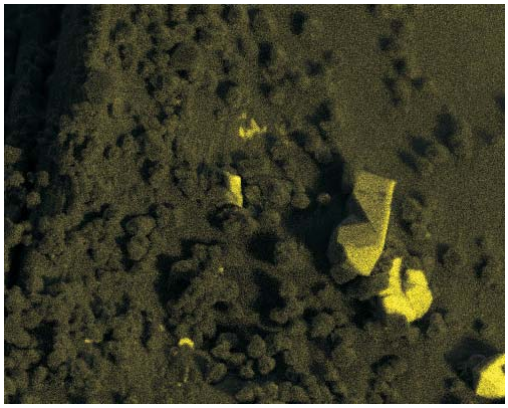
Ttn7-inner-2 SEM element map Ti



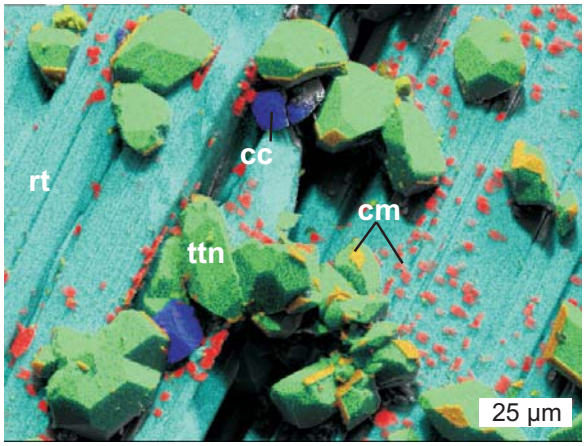
Ttn7-inner-2 SEM element map Ca



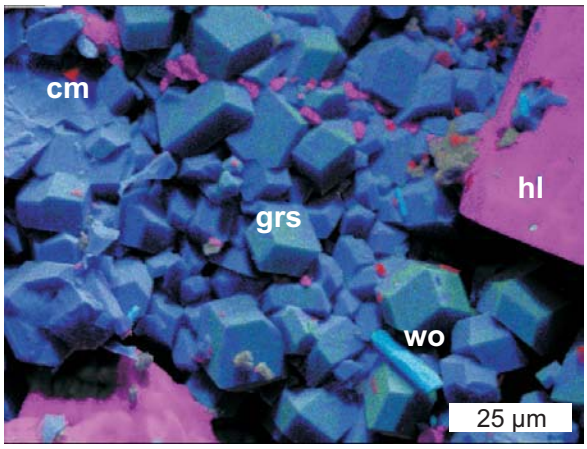
Ttn7-inner-2 SEM element map Al



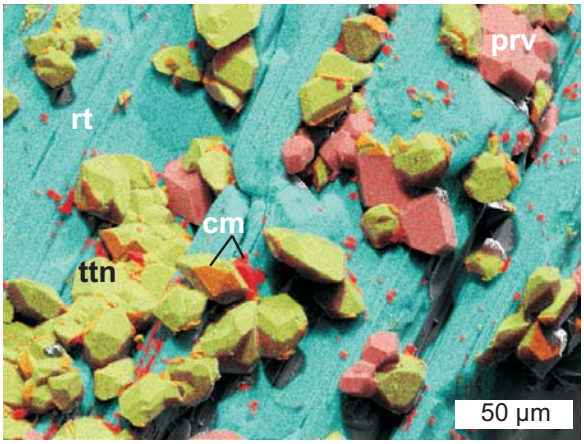
Ttn7-inner-2 SEM element map Si



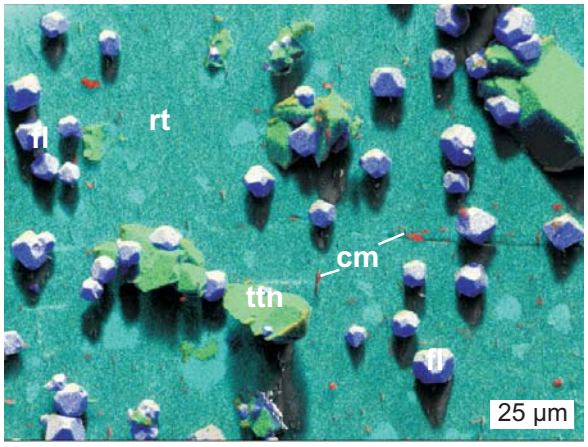
Ttn9-inner-1



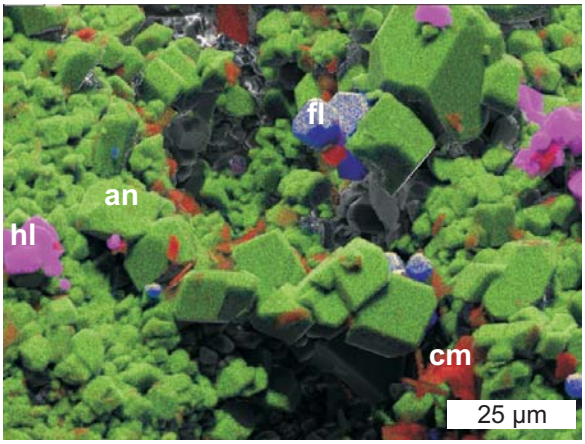
Ttn9-outer



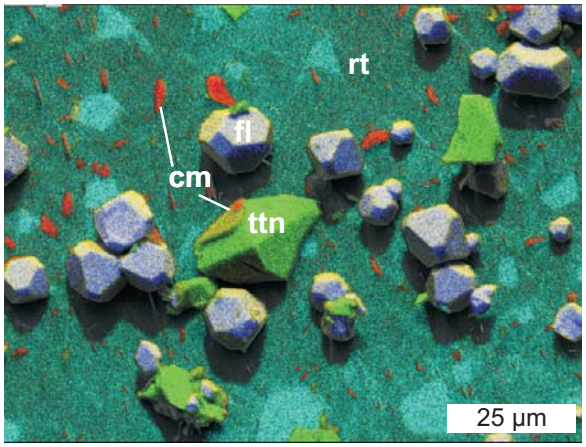
Ttn9-inner-2



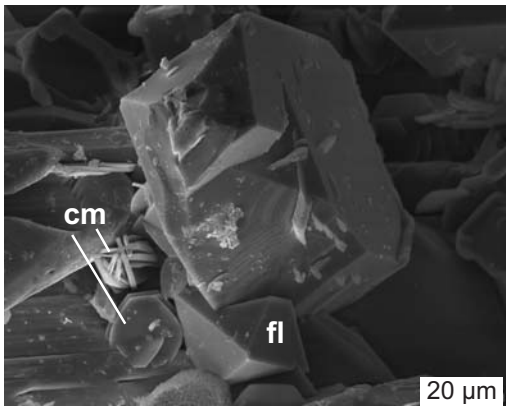
Ttn10-inner-1



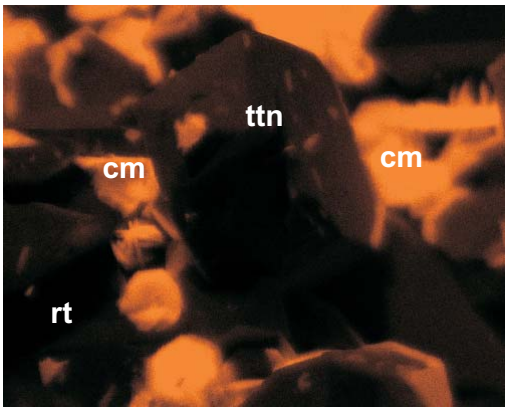
Ttn10-outer



Ttn10-inner-2

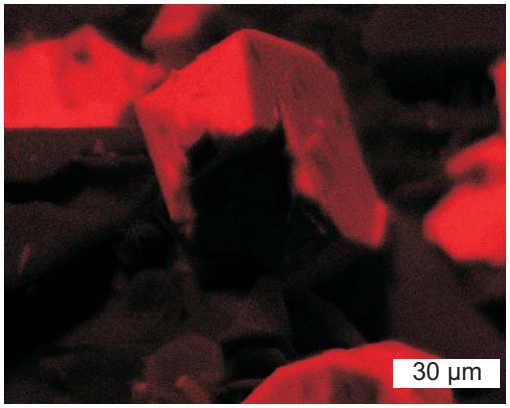


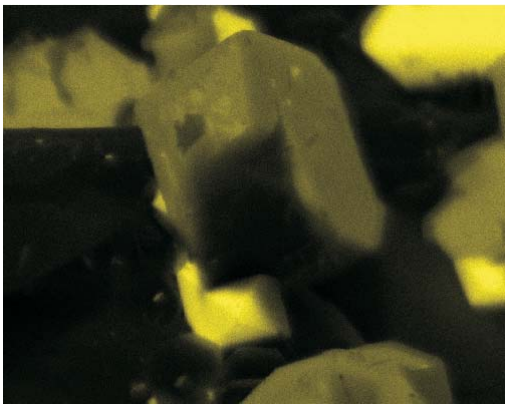
Ttn10-inner-3 SEM image detail



Ttn10-inner-3 SEM element map Al

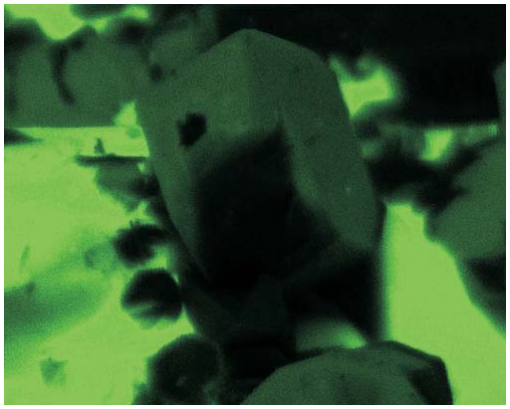
Ttn10-inner-3 SEM element map Si



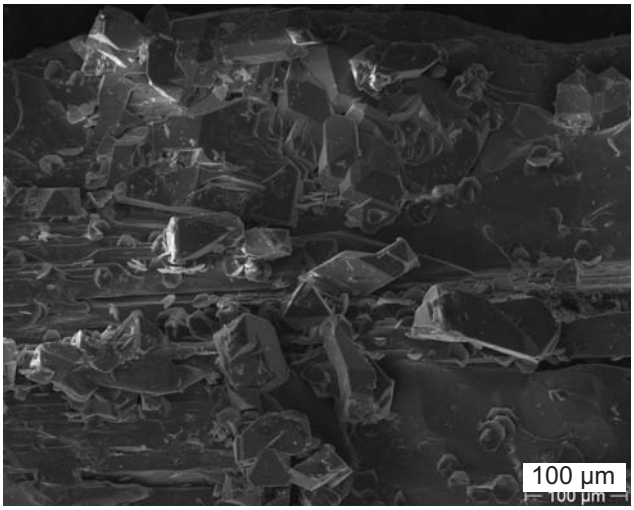


Ttn10-inner-3 SEM element map Ca

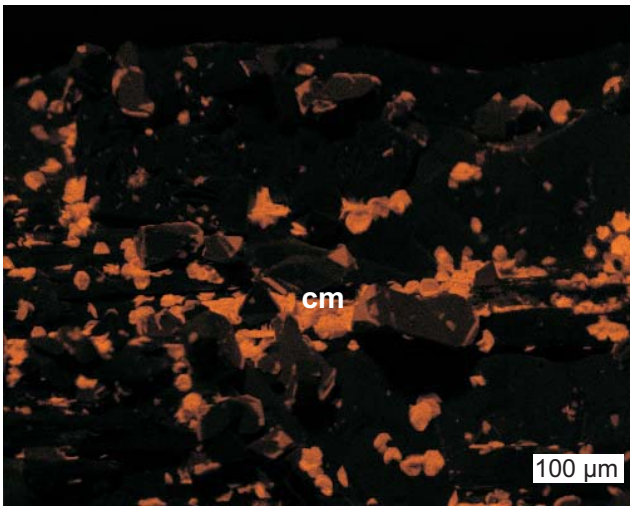
Ttn10-inner-3 SEM element map Ti



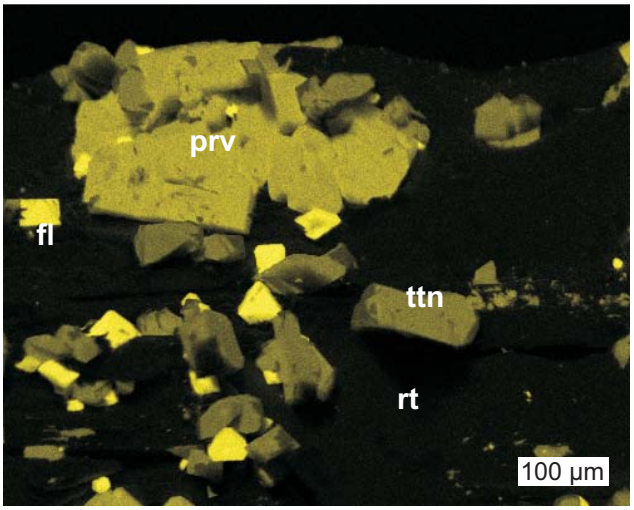
Appendix Figure 1; page 5; Ttn10 (3 days;F)



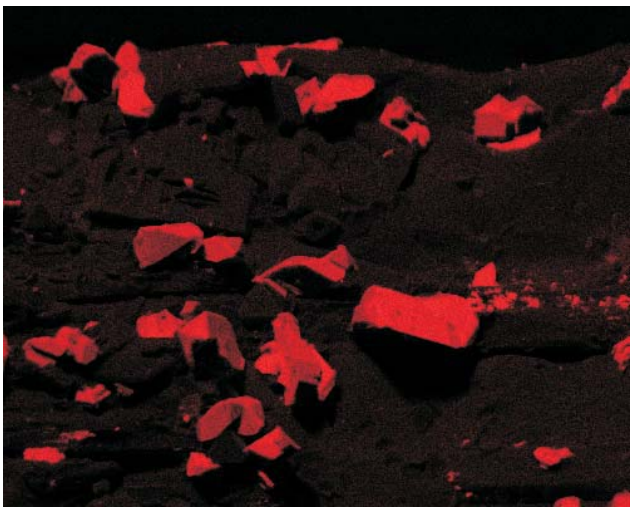
Ttn10-inner-4; SEM image



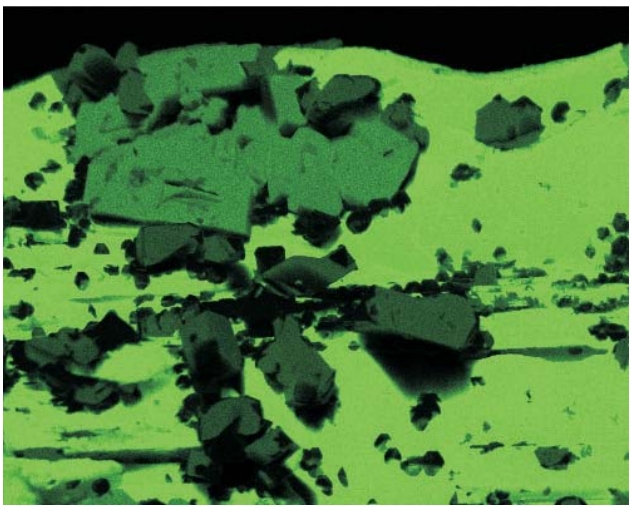
Ttn10-inner-4; SEM element map Al



Ttn10-inner-4; SEM element map Ca

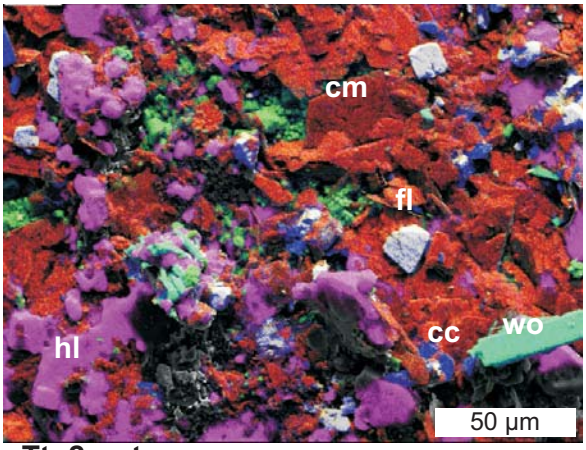


Ttn10-inner-4; SEM element map Si

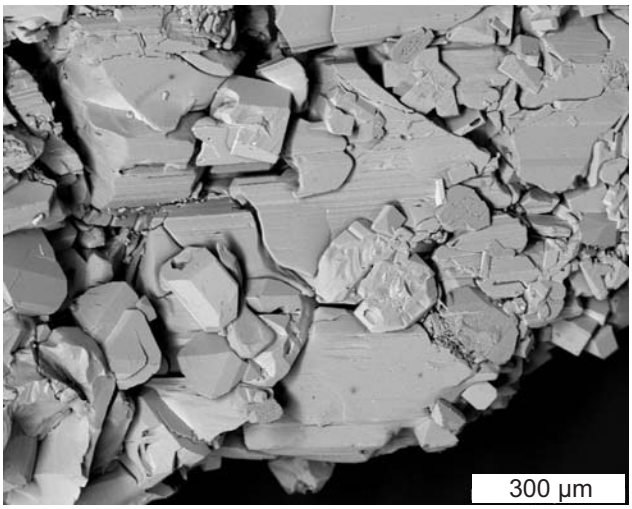


Ttn10-inner-4; SEM element map Ti

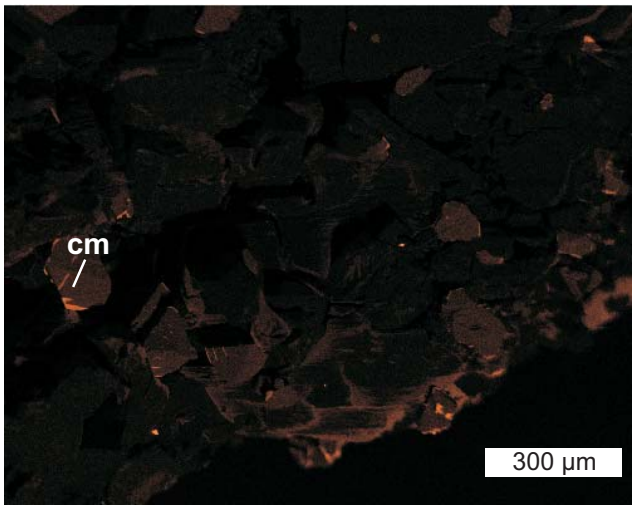
Appendix Figure 1; page 6; Ttn10 (3 days; F)



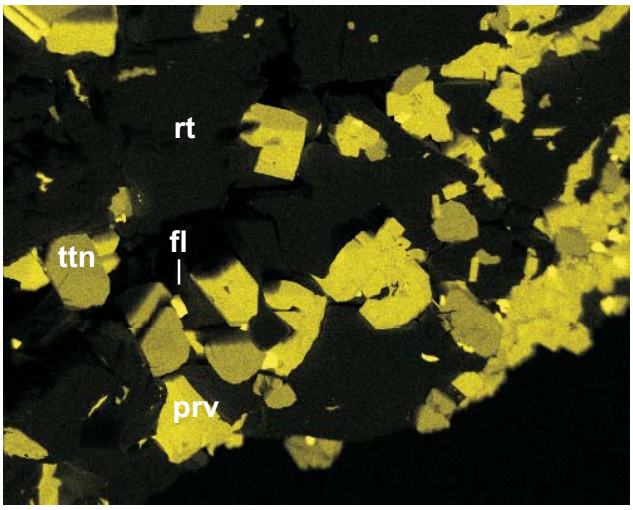
Ttn2-outer



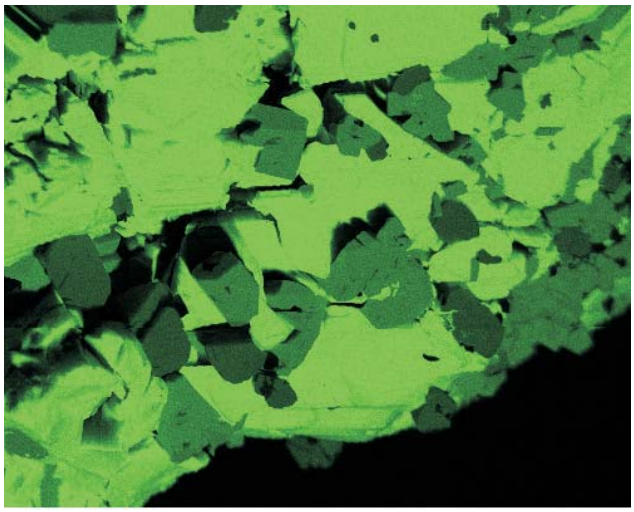
Ttn2-inner; SEM image



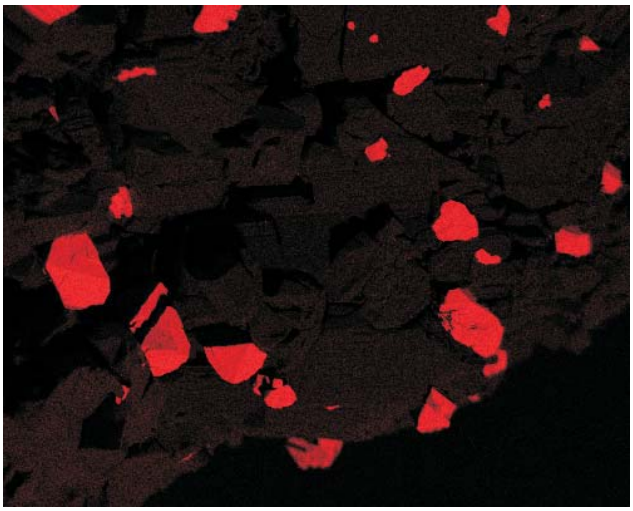
Ttn2-inner; SEM element map Al



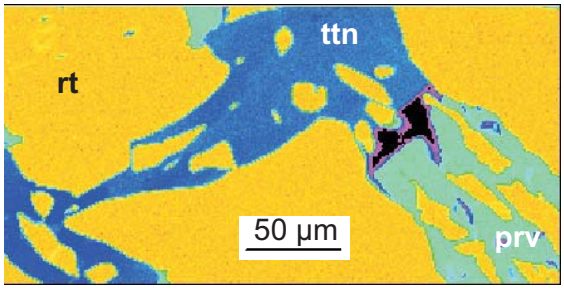
Ttn2-inner; SEM element map Ca



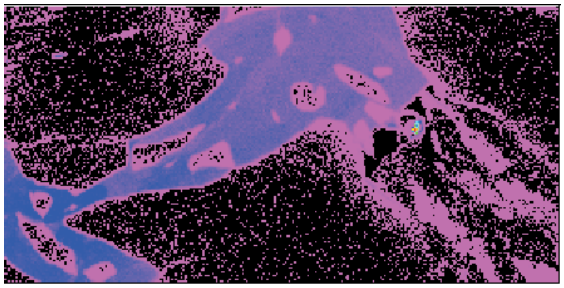
Ttn2-inner; SEM element map Ti



Ttn2-inner; SEM element map Si



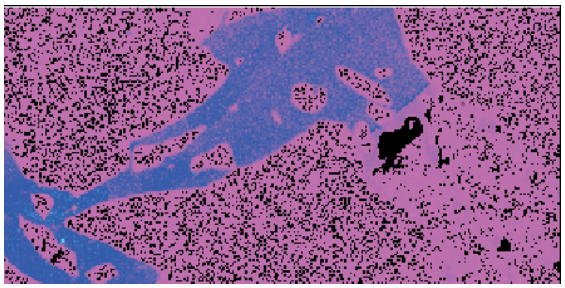
Ttn2 inner-2; EMP element distribution Ti



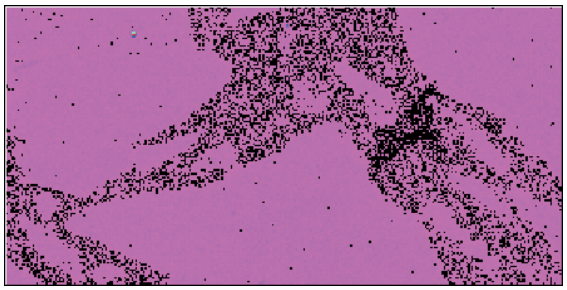
Ttn2 inner-2; EMP element distribution Al

high

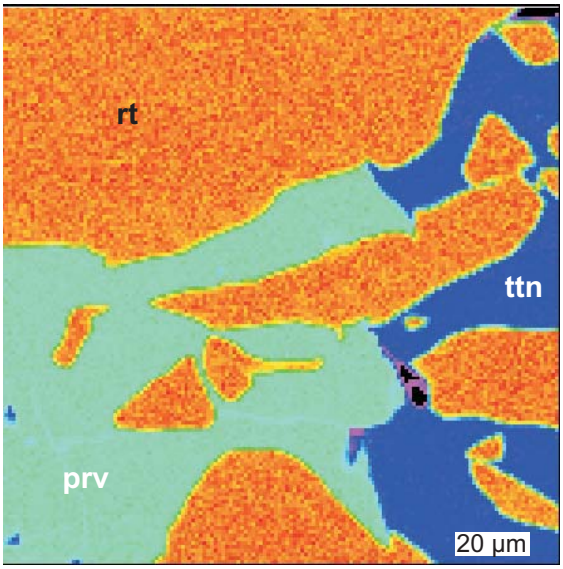
low



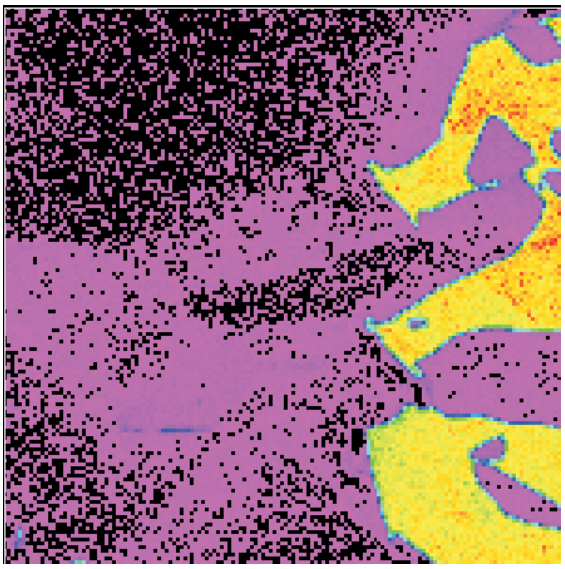
Ttn2 inner-2; EMP element distribution F



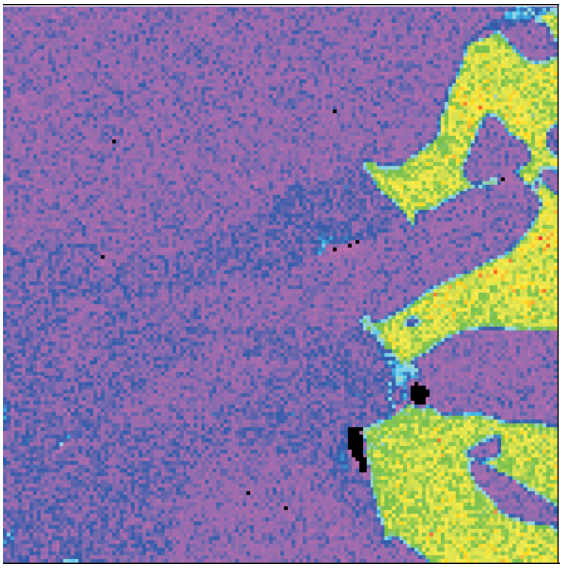
Ttn2 inner-2; EMP element distribution Fe



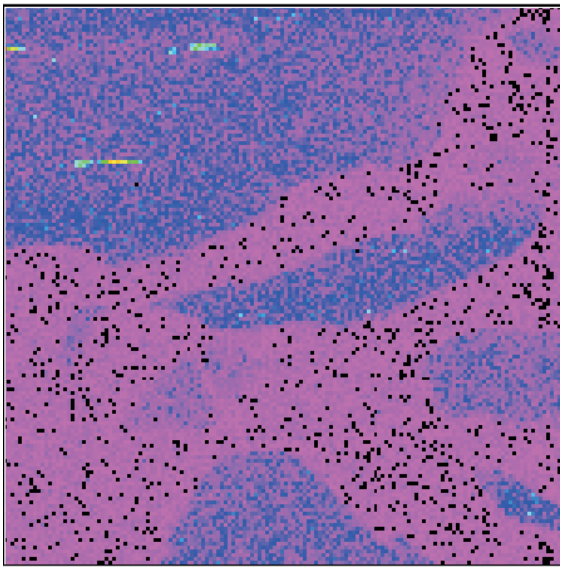
Ttn2 inner-3; EMP element distribution Ti



Ttn2 inner-3; EMP element distribution Al

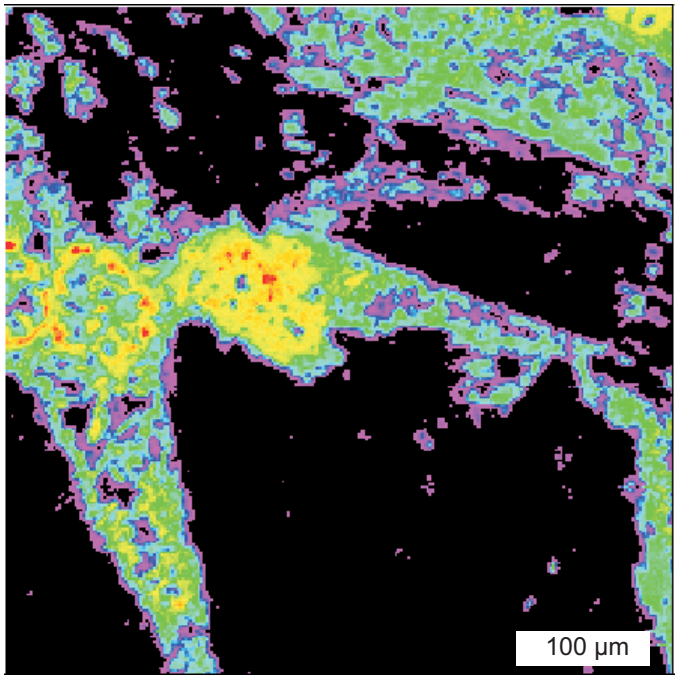


Ttn2 inner-3; EMP element distribution F

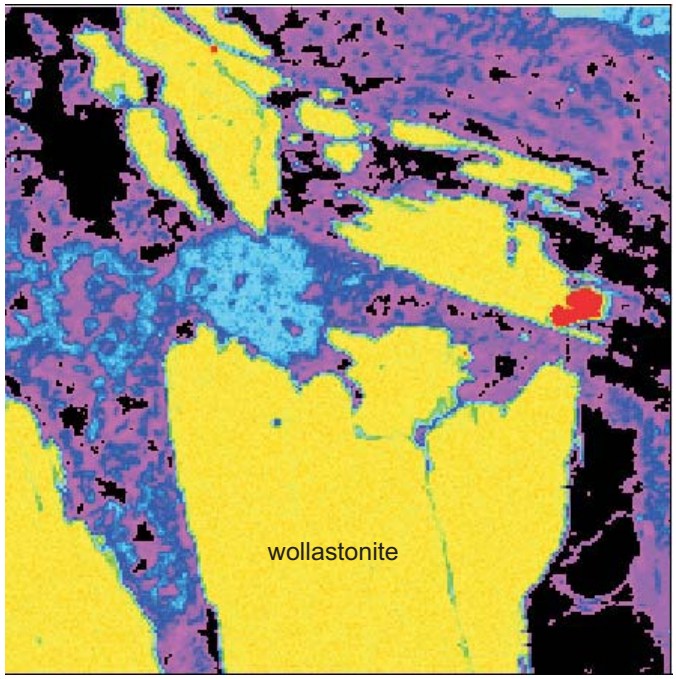


Ttn2 inner-3; EMP element distribution Fe

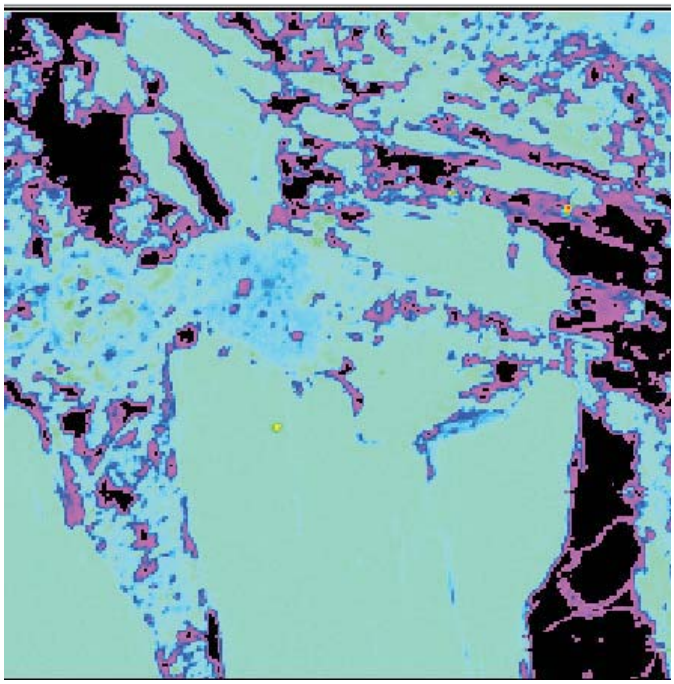
Appendix Figure 1; page 8; Ttn2 (7 days; F)



Ttn2 outer-2; EMP element distribution Al

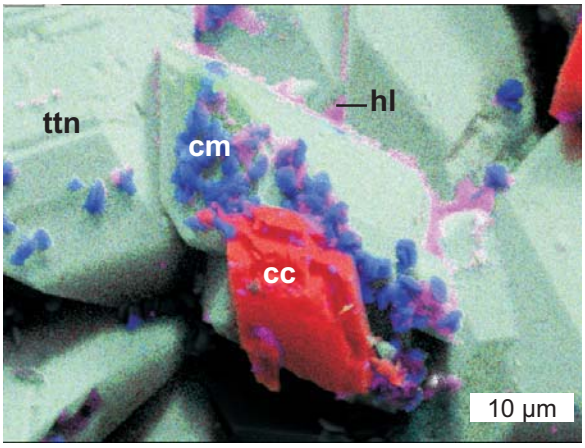


Ttn2 outer-2; EMP element distribution Ca

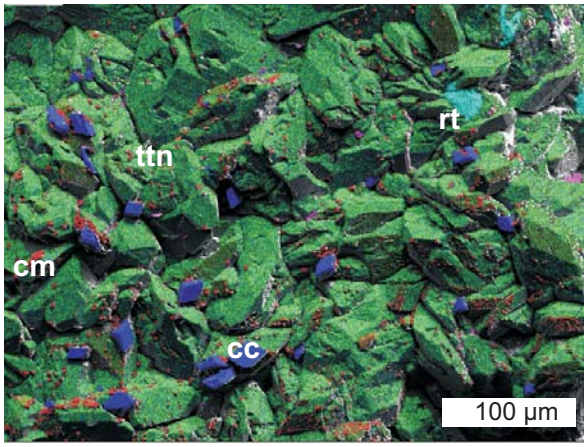


Ttn2 outer-2; EMP element distribution Si

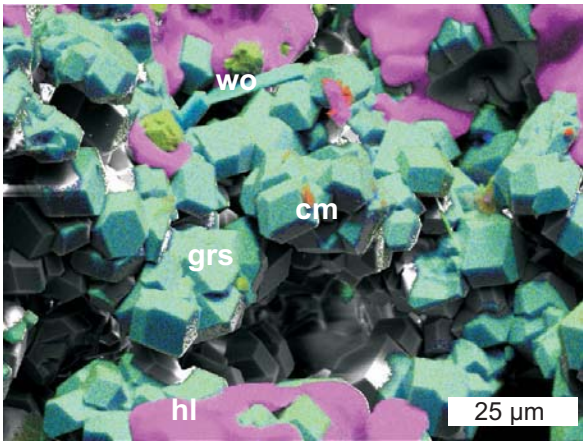
Appendix Figure 1; page 9; Ttn2 (7 days; F)



Ttn8-inner-detail

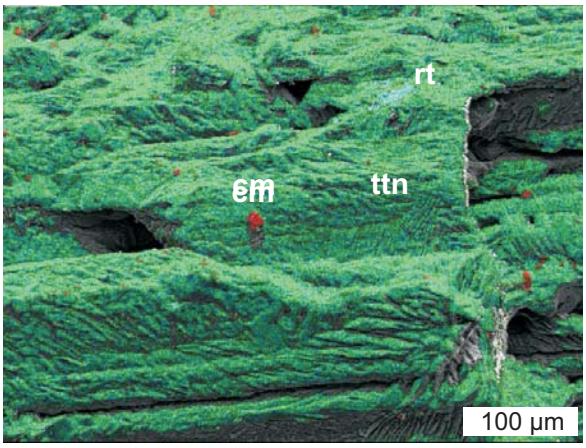


Ttn8-inner-1

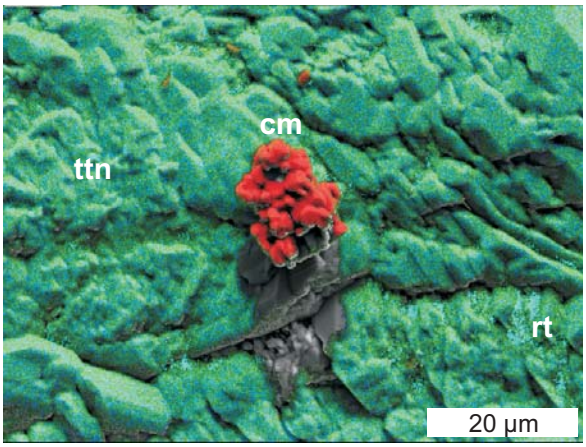


Ttn8-outer

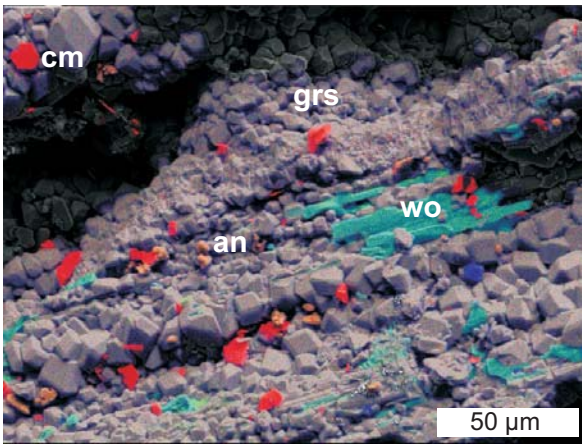
Appendix Figure 1; page 10; Ttn8 (7 days; no F)



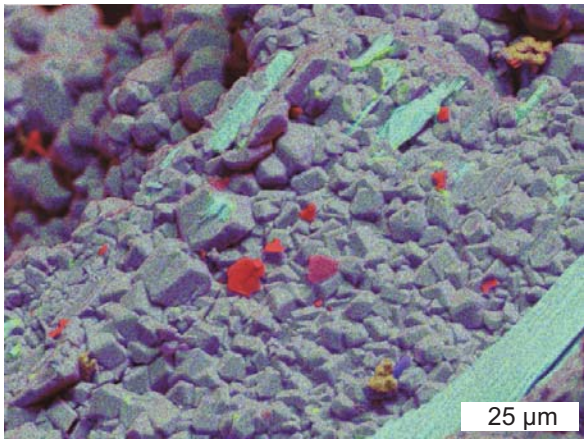
Ttn1-inner-1



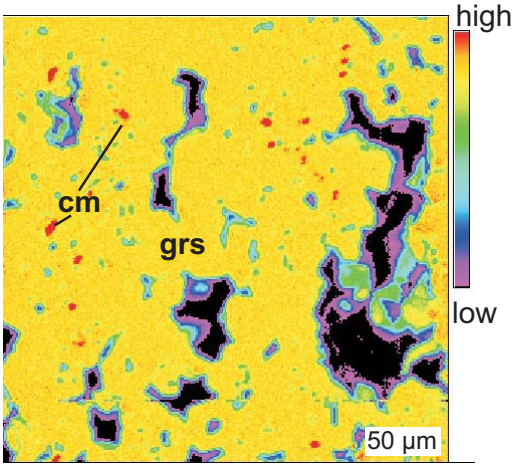
Ttn1-inner-1-detail



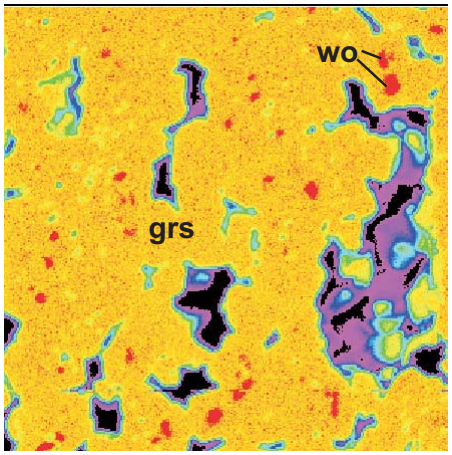
Ttn1-outer-1



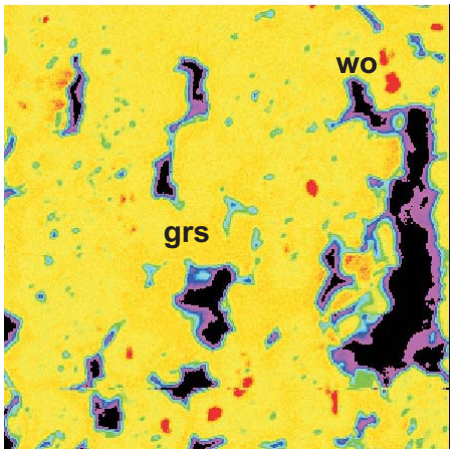
Ttn1-outer-2



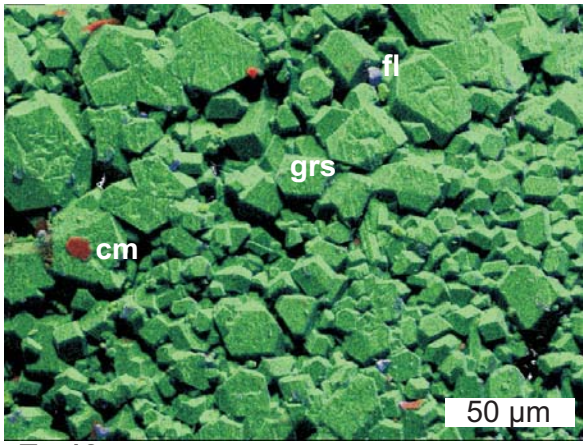
Ttn1-outer
EMP element distribution map: Al



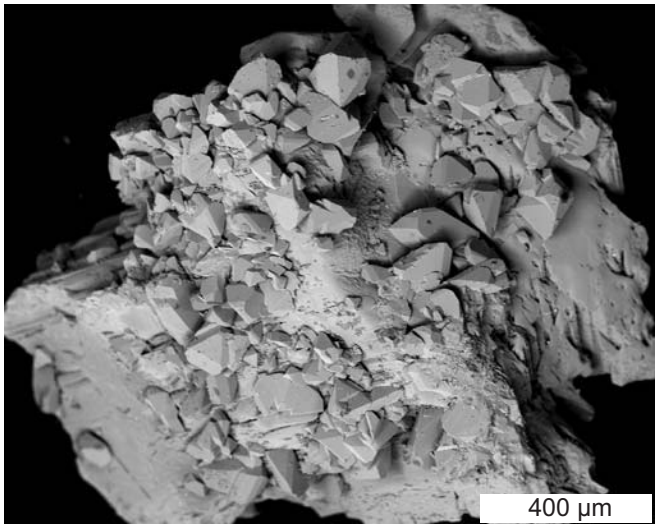
Ttn1-outer
EMP element distribution map: Ca



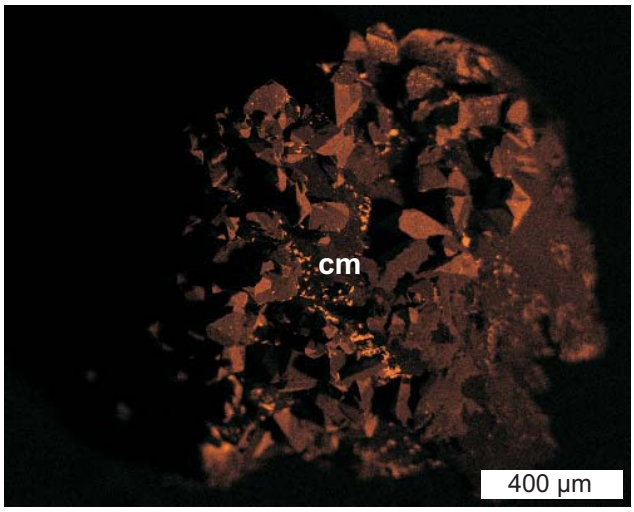
Ttn1-outer
EMP element distribution map: Si



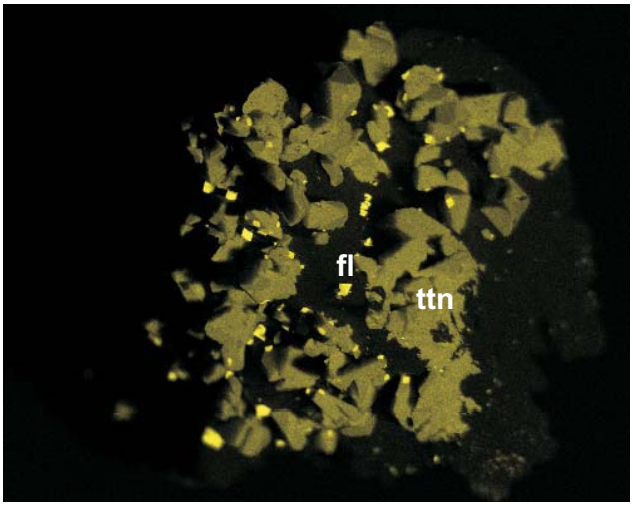
Ttn12-outer



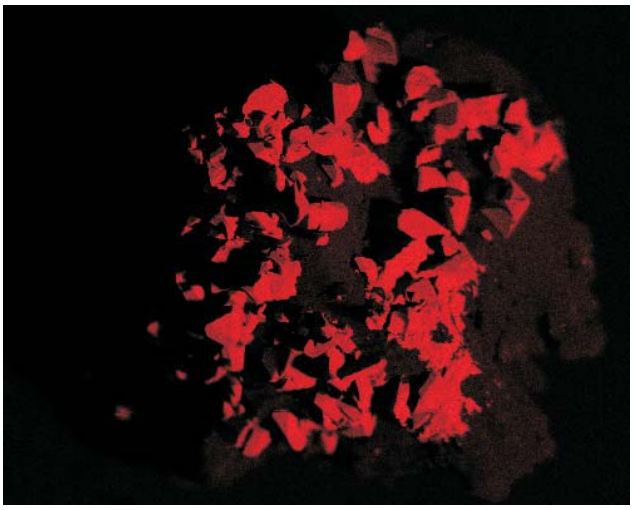
Ttn12-inner-1; SEM image



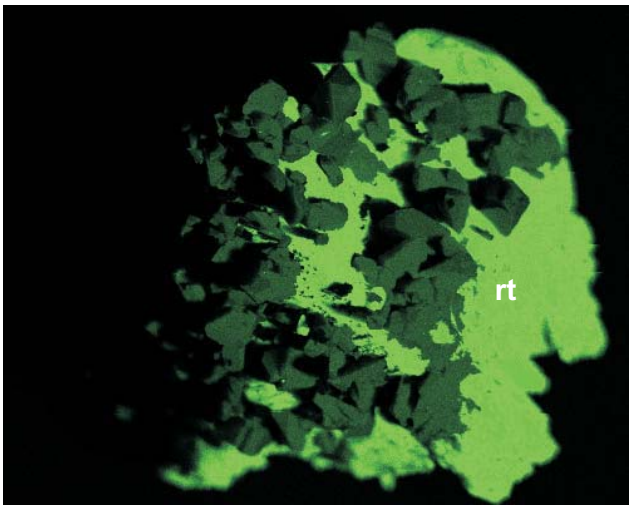
Ttn12-inner-1; SEM element map Al



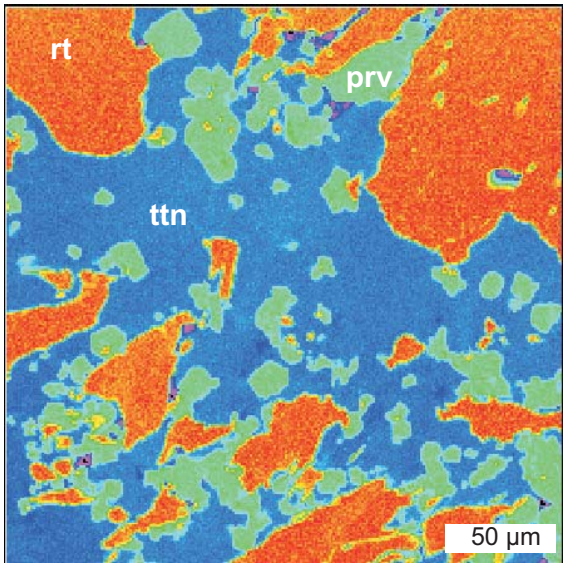
Ttn12-inner-1; SEM element map Ca



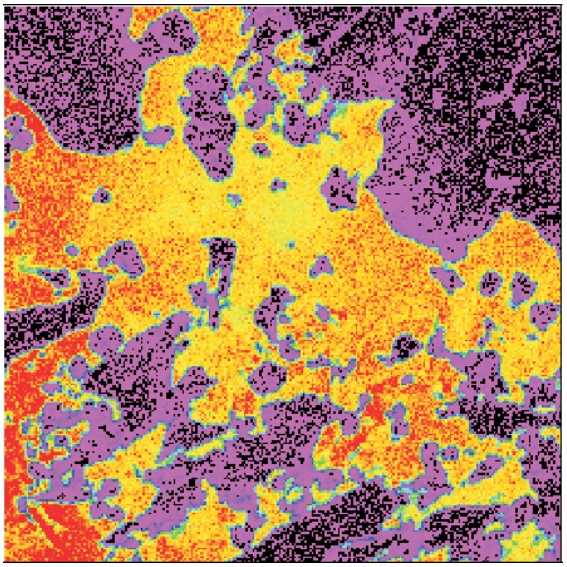
Ttn12-inner-1; SEM element map Si



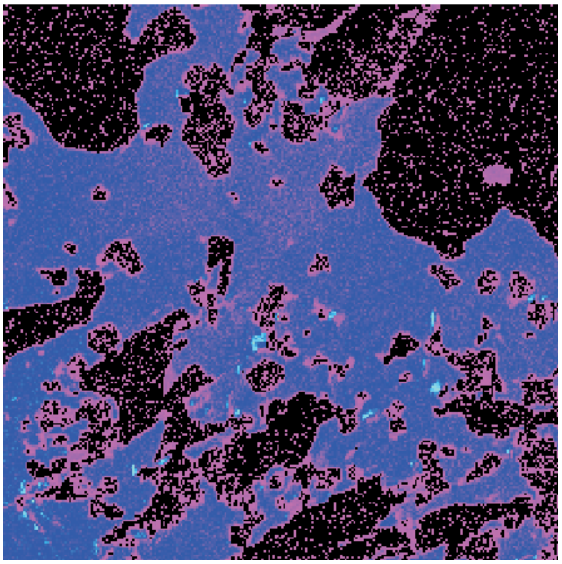
Ttn12-inner-1; SEM element map Ti



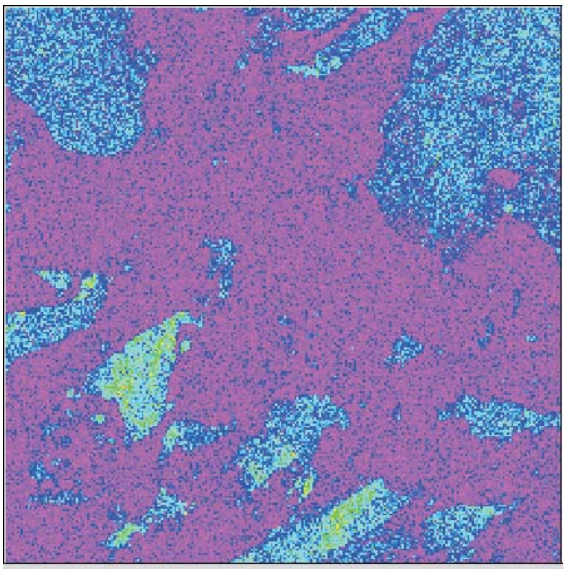
Ttn12-inner-2; EMP element map Ti



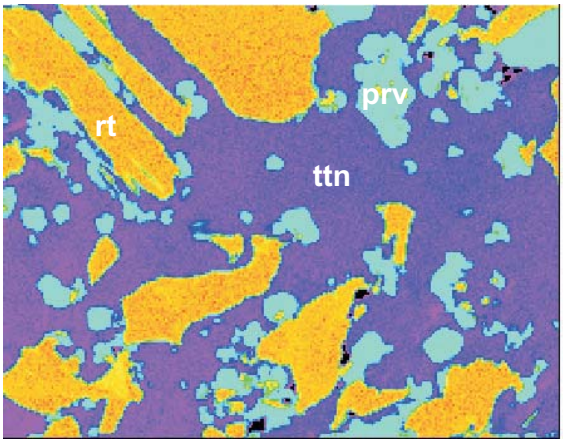
Ttn12-inner-2; EMP element map Al



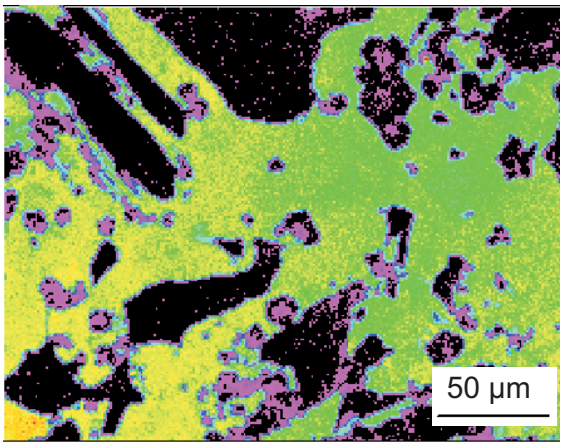
Ttn12-inner-2; EMP element map F



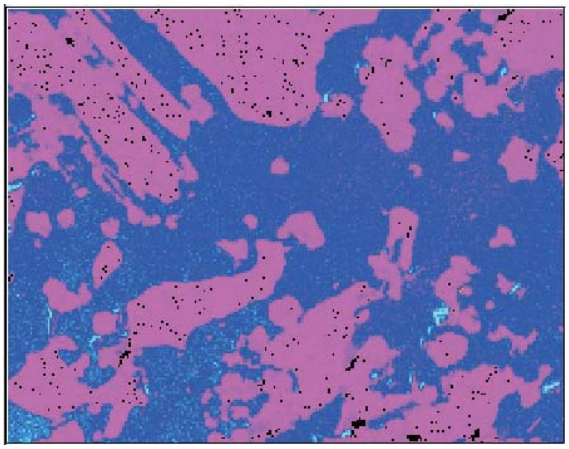
Ttn12-inner-2; EMP element map Fe



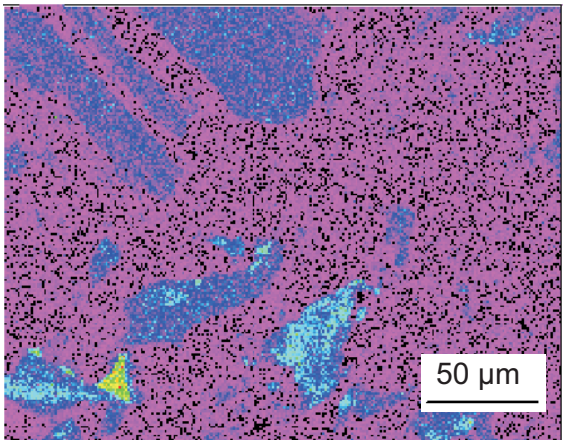
Ttn12-inner-3; EMP element map Ti



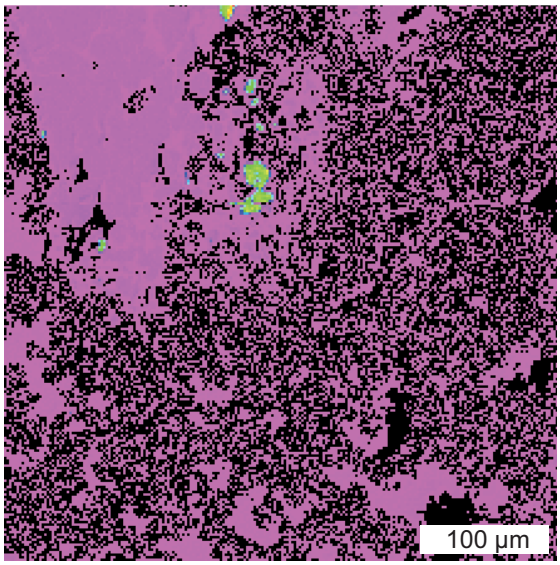
Ttn12-inner-3; EMP element map Al



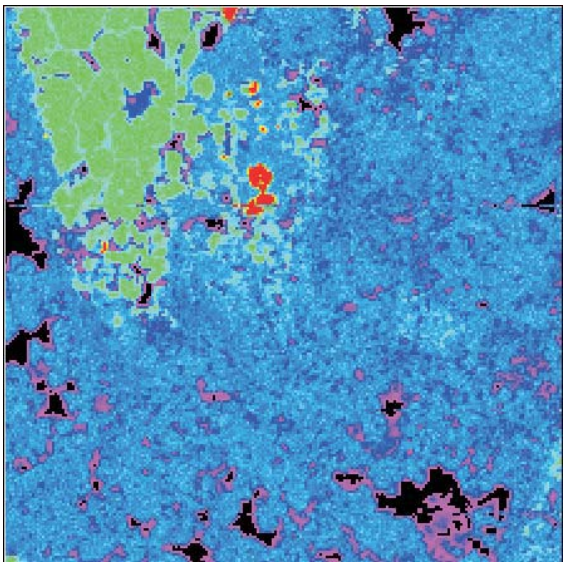
Ttn12-inner-3; EMP element map F



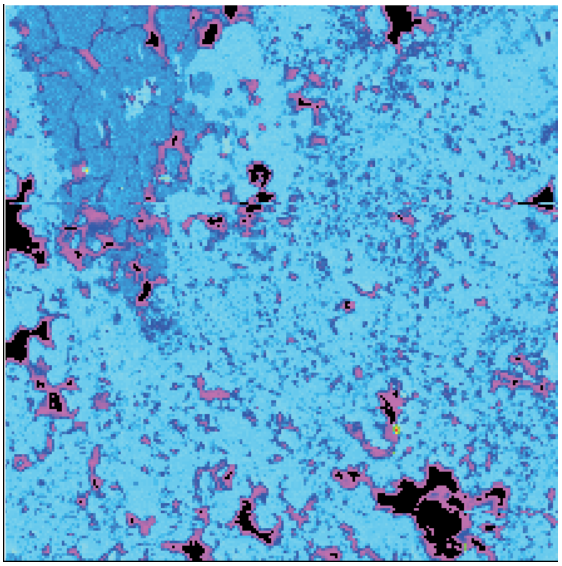
Ttn12-inner-3; EMP element map Fe



Ttn12-outer-2; EMP element map Al



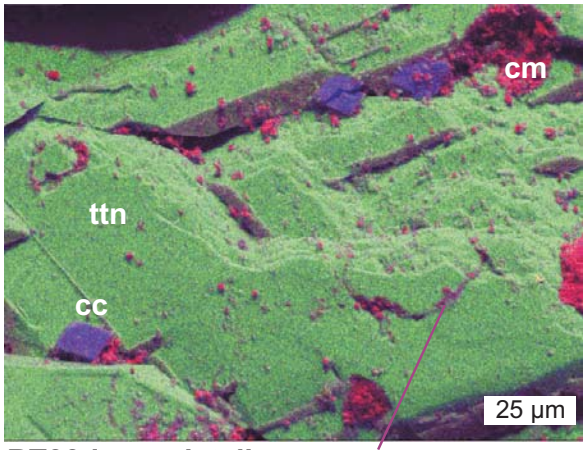
Ttn12-outer-2; EMP element map Ca



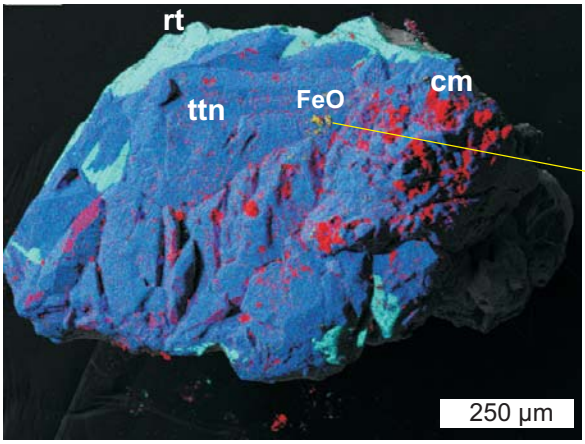
Ttn12-outer-2; EMP element map Si

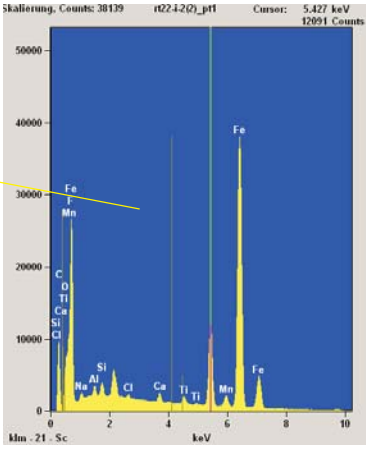
here, we face a problem to identify the minerals
solution: quantitative analyses

Appendix Figure 1; page 14; Ttn12 (14 days; F)

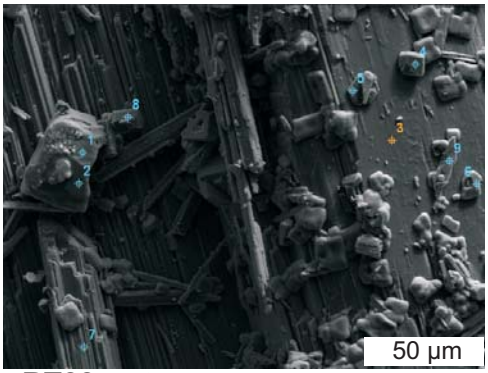


RT22-inner-detail some halite



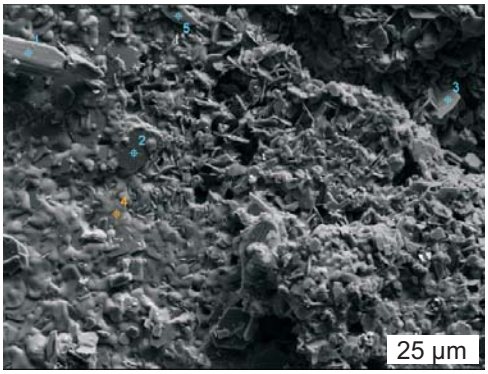


RT22-inner-2



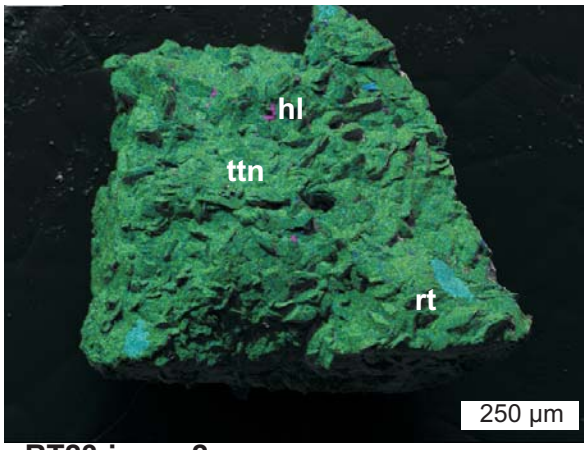
RT22-outer

mainly wollastonite, some calcite, new wollastonite and corundum

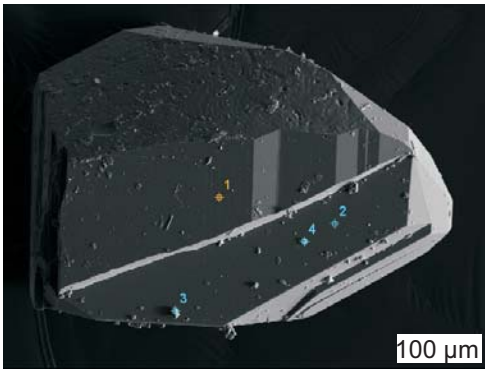


RT22-outer

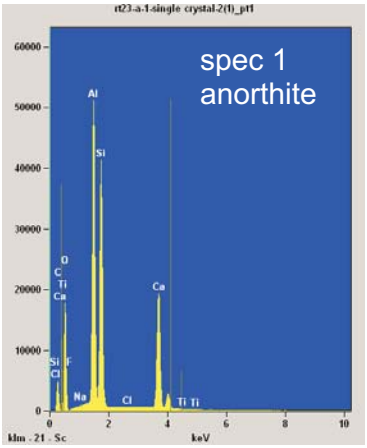
mainly corundum and halite crust

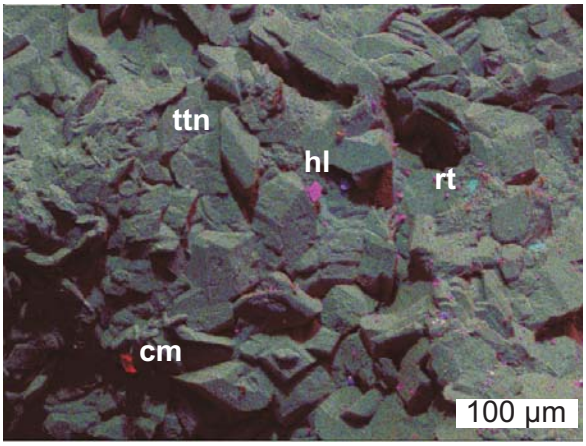


RT23-inner-2

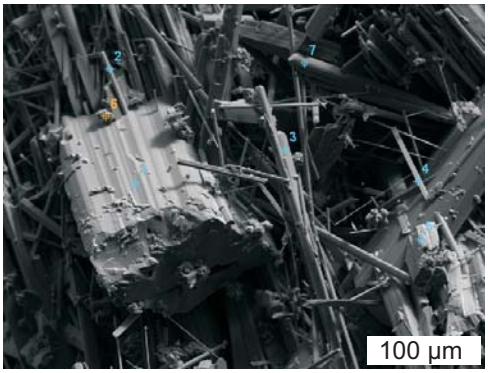


RT23-outer single-crystal anorthite

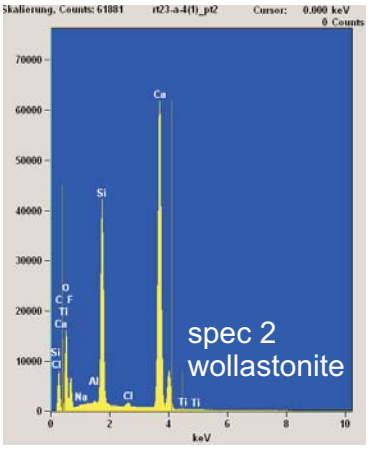




RT23-inner-1

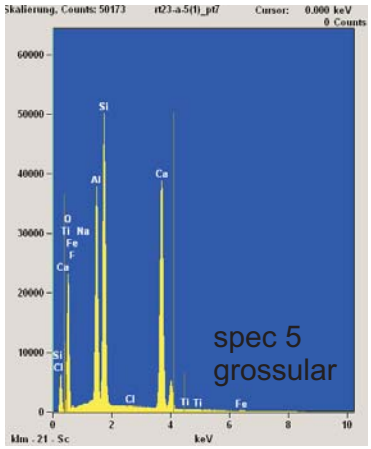


RT23-outer-4

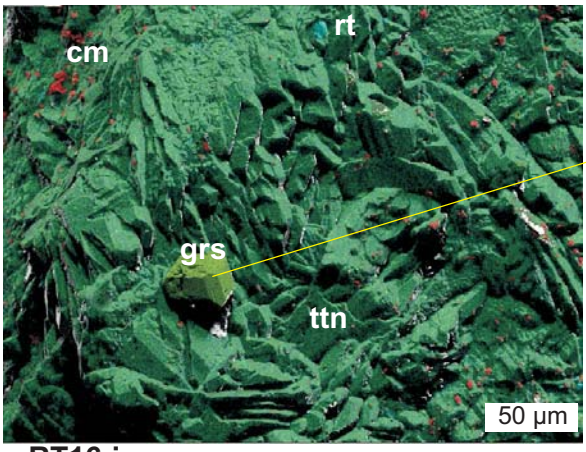


mainly wollastonite and new grown wollastonite fibres

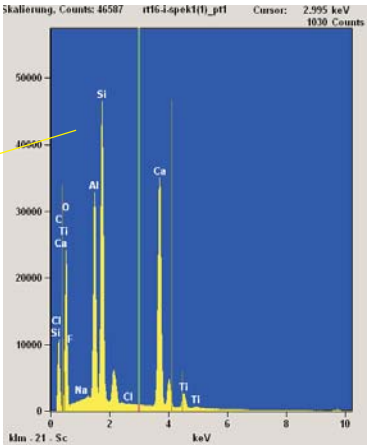
RT23-outer-5 grossular on wollastonite



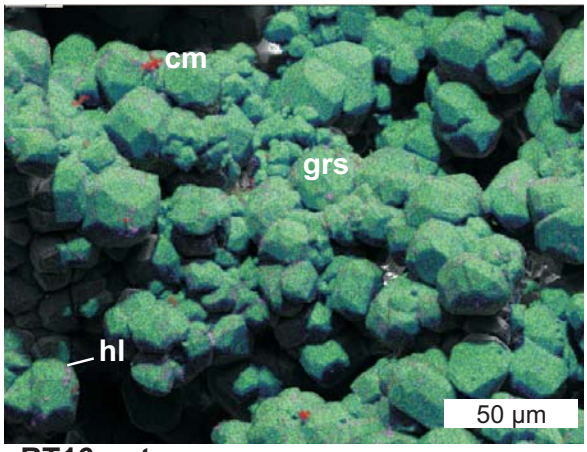
Appendix Figure 1; page 16;
RT23 (30 days; F)



RT16-inner

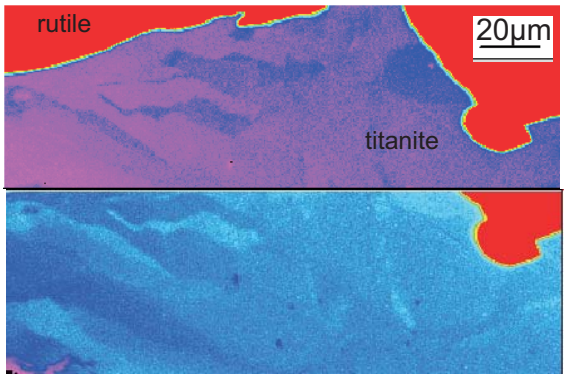


The grossular spectrum shows some Ti

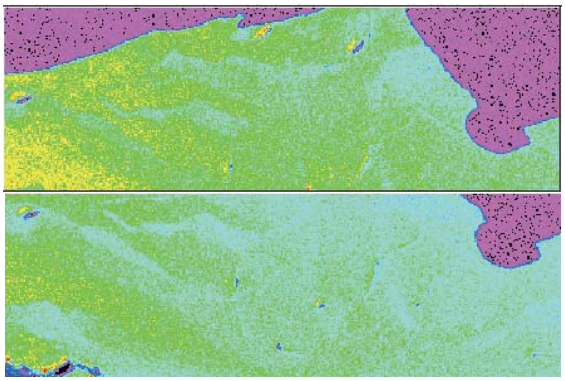


RT16-outer

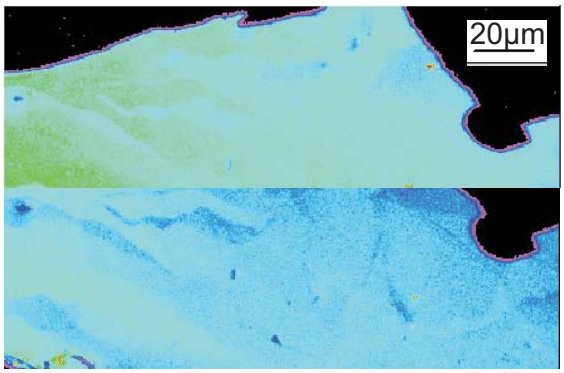
Appendix Figure 1; page 17; RT16 (60 days;no F)



RT17-inner; EMP element map Ti



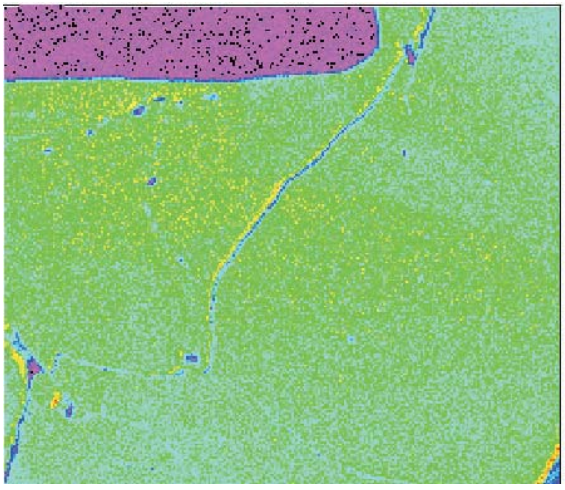
RT17-inner; EMP element map F



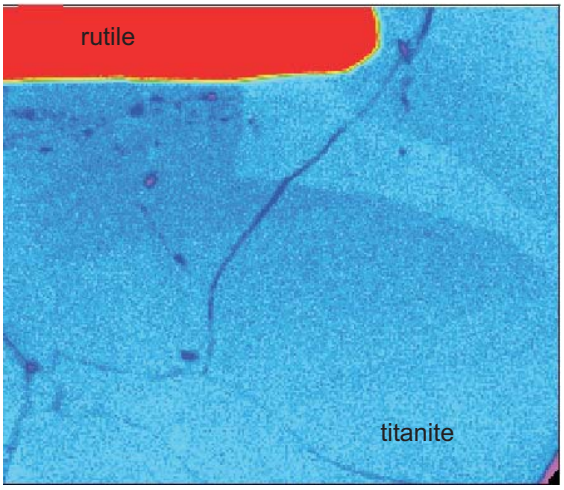
RT17-inner; EMP element map Al

higher

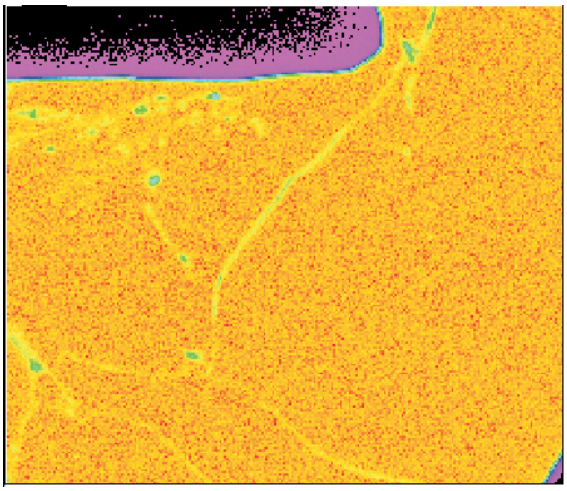
lower



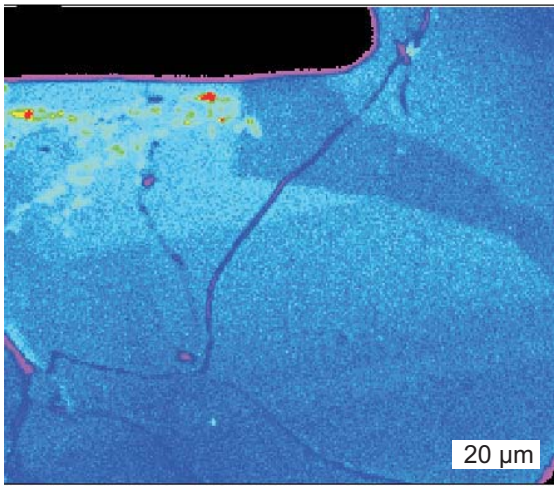
RT17-inner; EMP element map F



RT17-inner; EMP element map Ti

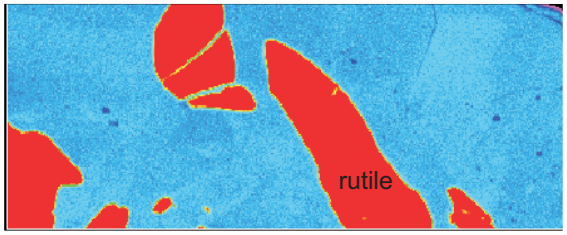


RT17-inner; EMP element map Ca

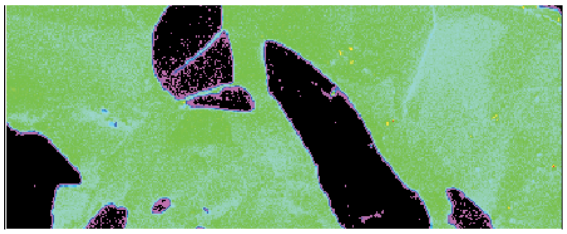


RT17-inner; EMP element map Al

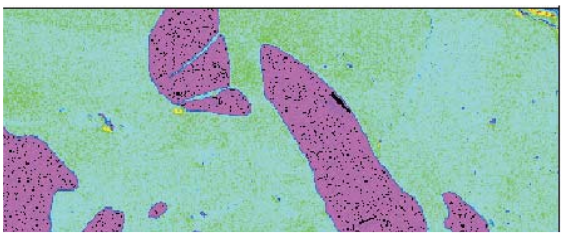
Appendix Figure 1; page 18; RT17 (60 days; F)



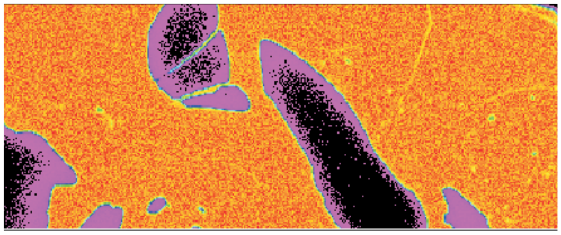
RT17-inner; EMP element map Ti



RT17-inner; EMP element map Al

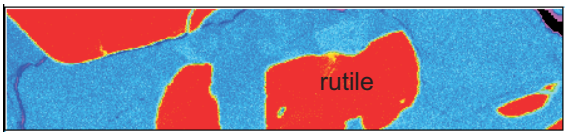


RT17-inner; EMP element map F

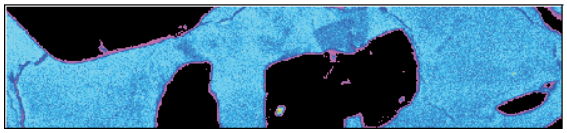


RT17-inner; EMP element map Ca; note the effect of Ca fluorescence in the rt

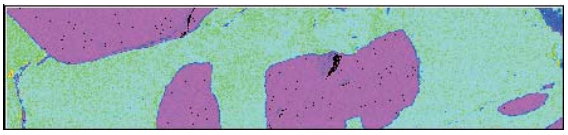
50 µm



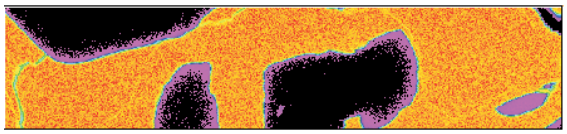
RT17-inner; EMP element map Ti



RT17-inner; EMP element map Al



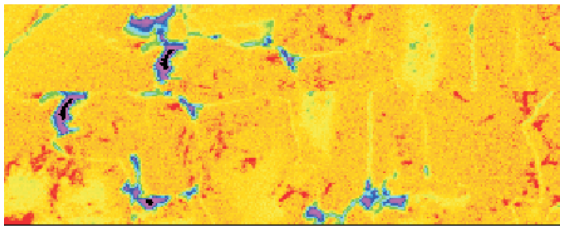
RT17-inner; EMP element map F



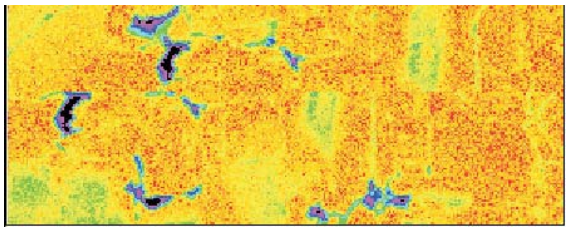
RT17-inner; EMP element map Ca; note the effect of Ca fluorescence in the rt

50 µm

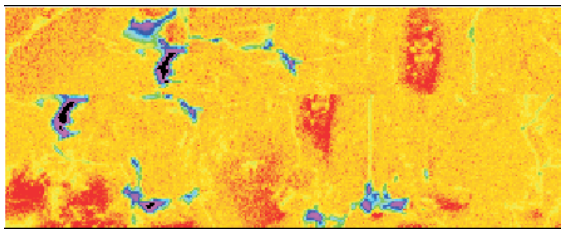
Appendix Figure 1; page 19; RT17 (60 days; F)



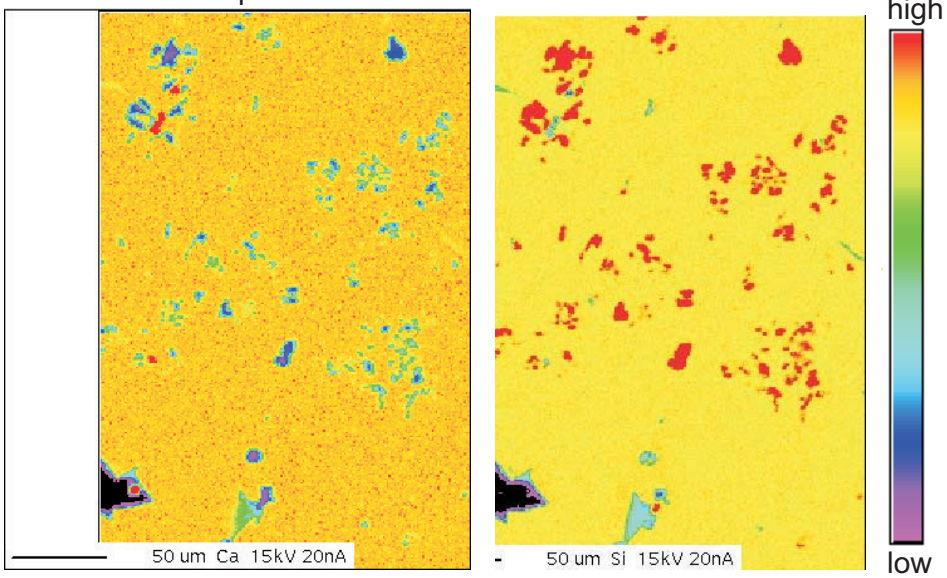
RT17-outer; plagioclase
EMP element map Al



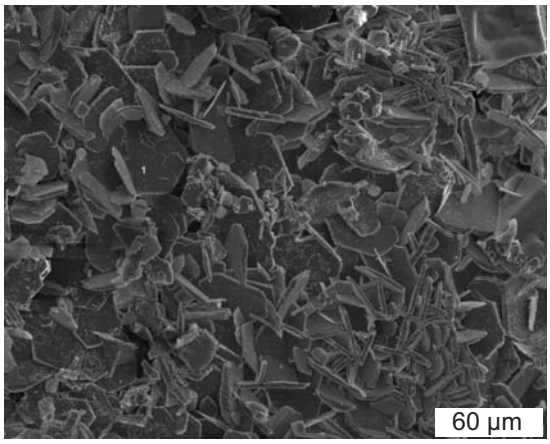
RT17-outer; plagioclase
EMP element map Ca



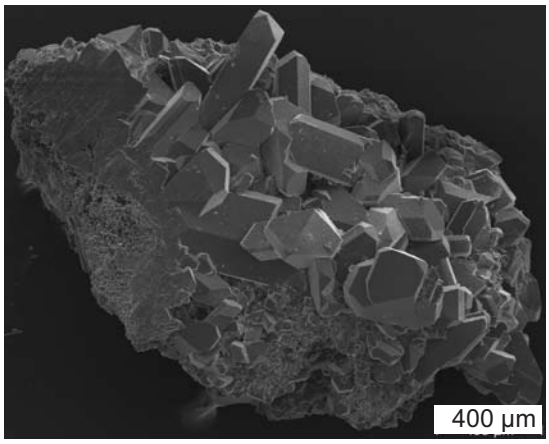
RT17-outer; plagioclase
EMP element map Si



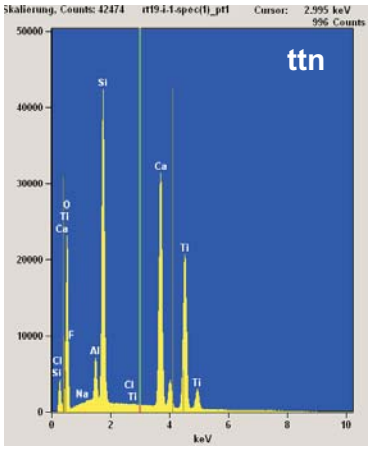
RT17-outer; grossular garnet; EMP element maps Ca - Si

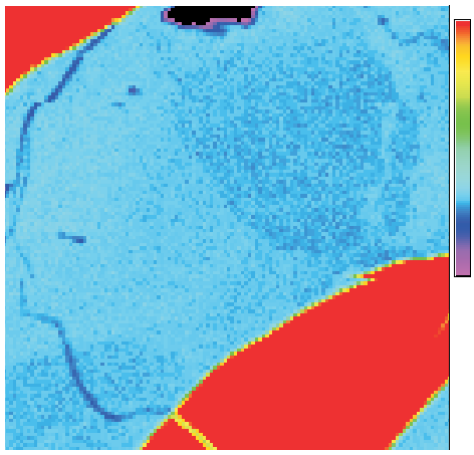


RT17-outer; SEM image,
corundum (and some halite)

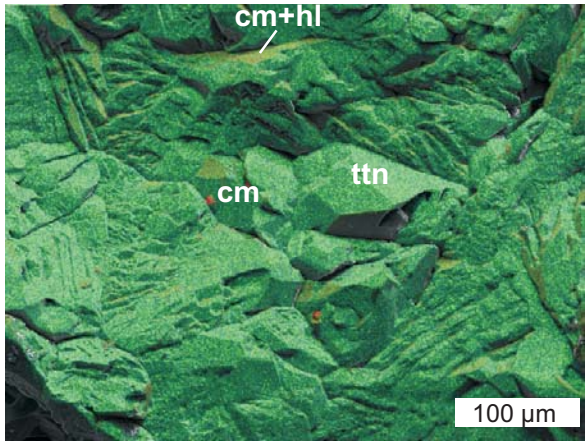


RT17-outer; SEM image, plagioclase

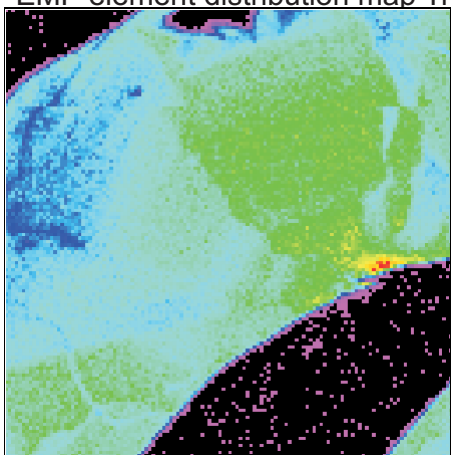




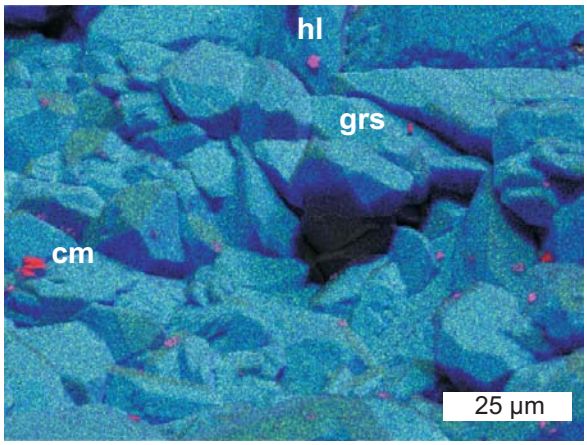
RT19-inner:
EMP element distribution map Ti



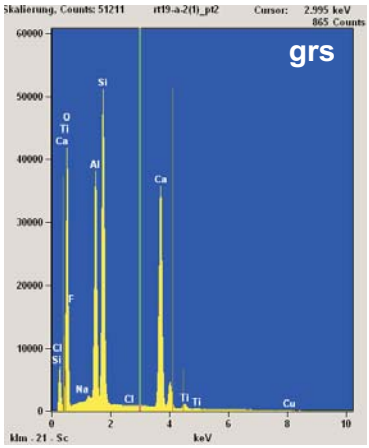
RT19-inner

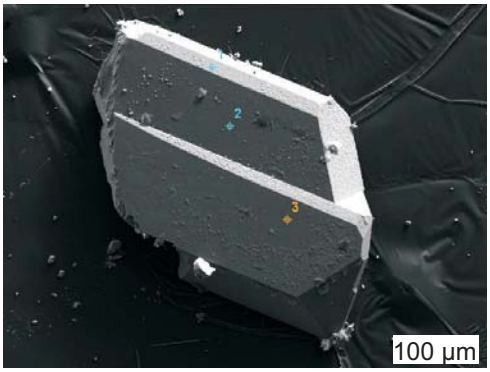


RT19-inner:
EMP element distribution map Al

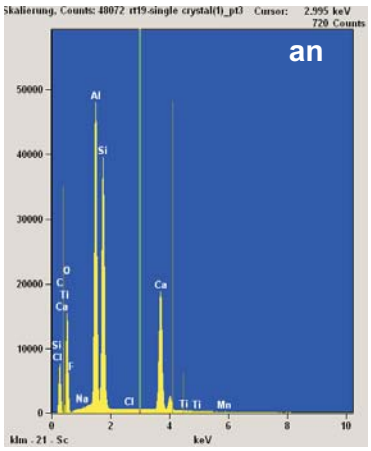


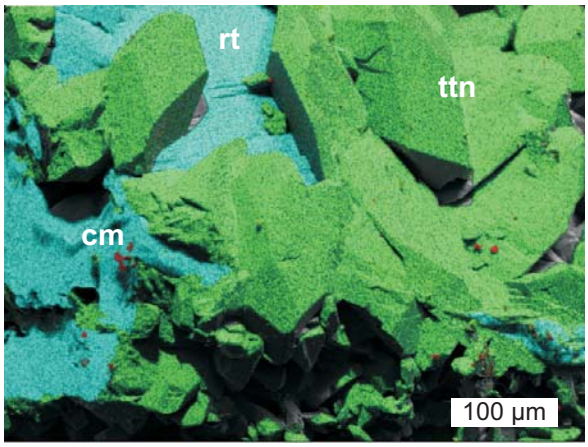
RT19-outer-1





RT19-outer-2 solitary anorthite





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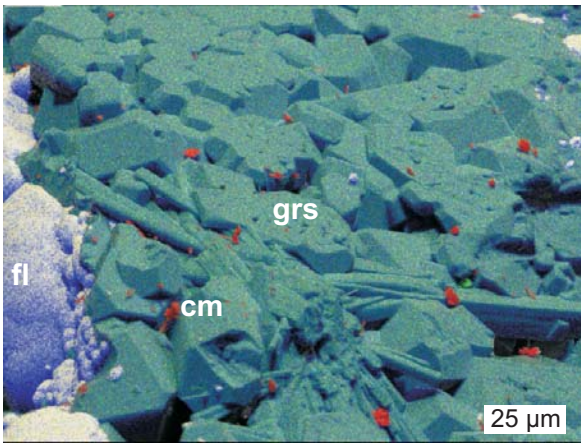

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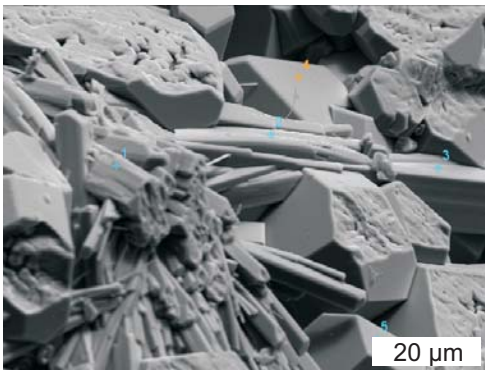

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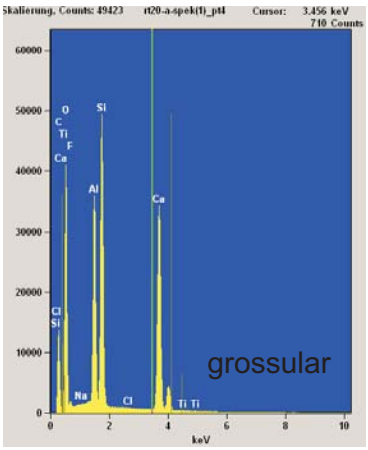

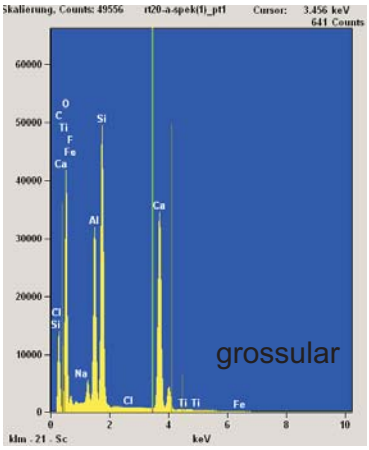

Appendix Figure 1; page 22; RT20 (107 days; F;)