

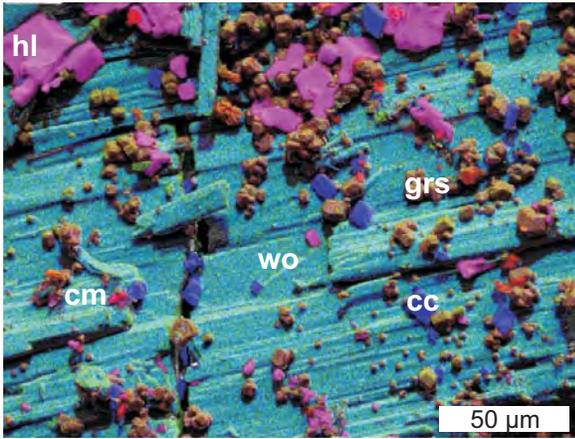
## Appendix Figure 1

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.

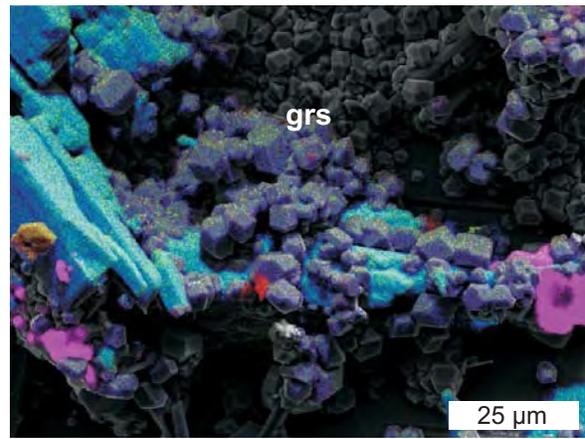
Sample order is increasing run-time of the experiments; all experiments were performed at 400 Mpa and 600°C.

Abbreviations 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;

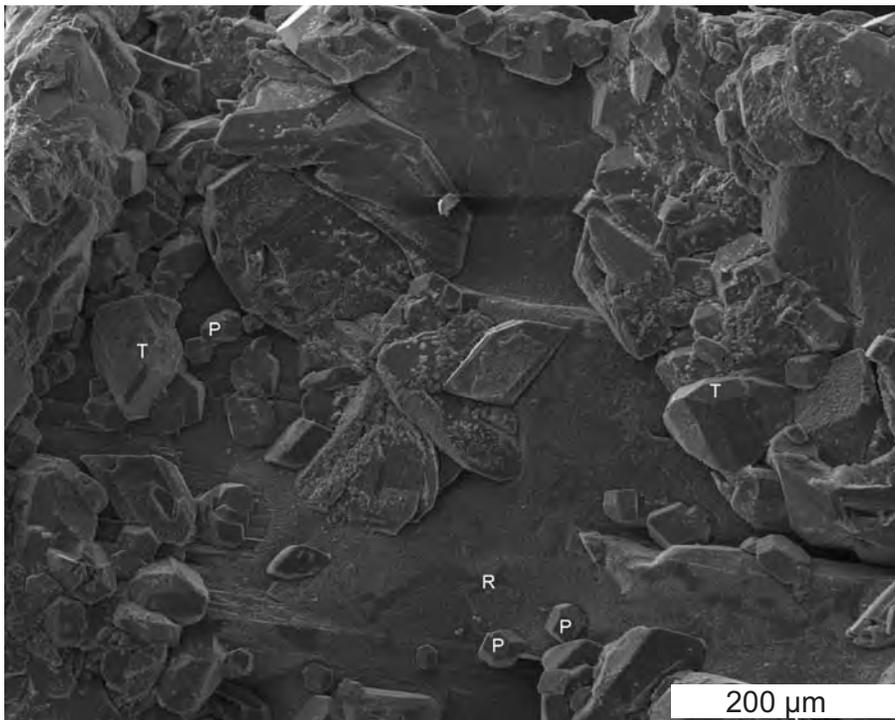
outer = material from the outer Au capsule;  
Inner =material from the inner Pt capsule



**Ttn4-outer-1**

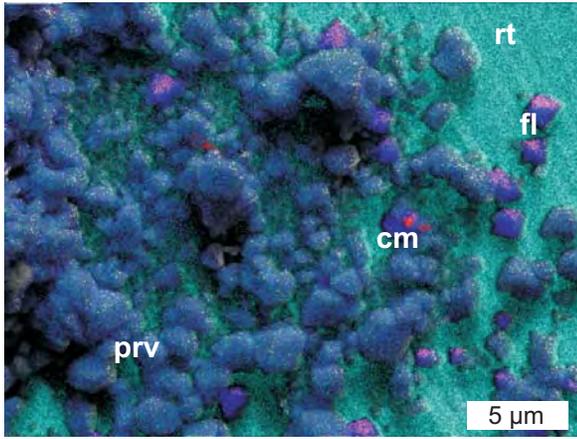


**Ttn4-outer-2**

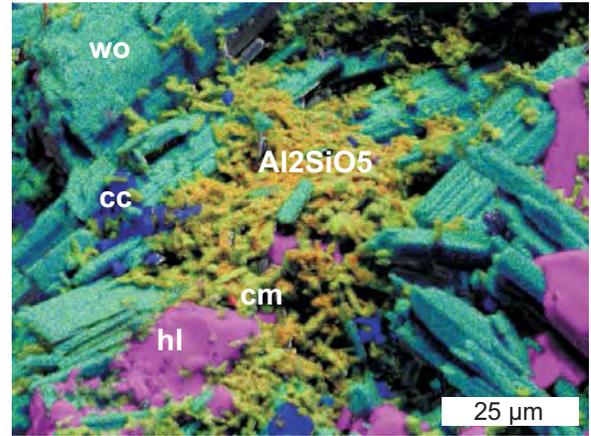


**Ttn4-inner**; T= titanite; R= rutile; P=perovskite

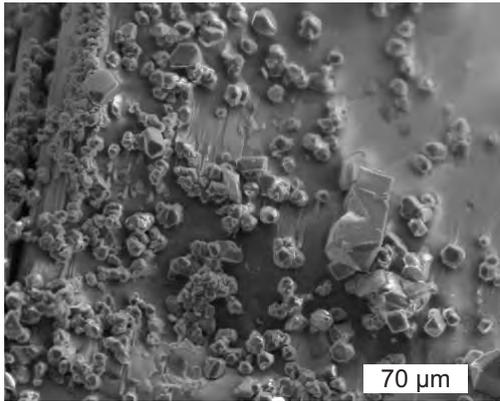
Appendix Figure 1; page 2 Ttn4 (1 day, no F)



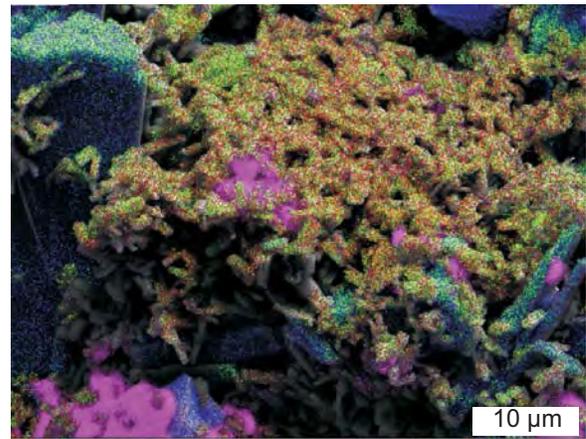
Ttn7-inner-1



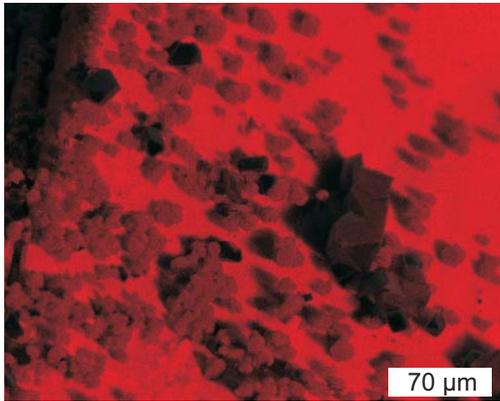
Ttn7-outer-1



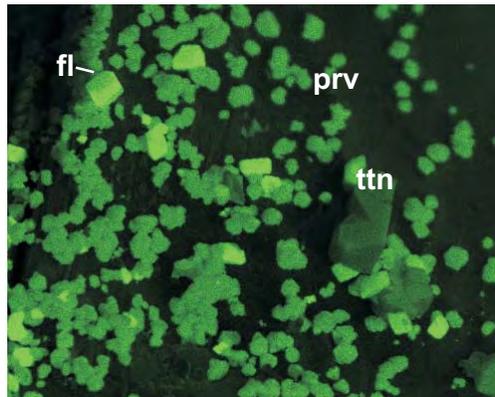
Ttn7-inner-2 SEM image



Ttn7-outer-2



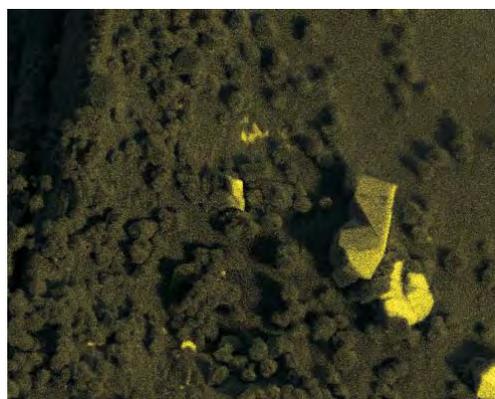
Ttn7-inner-2 SEM element map Ti



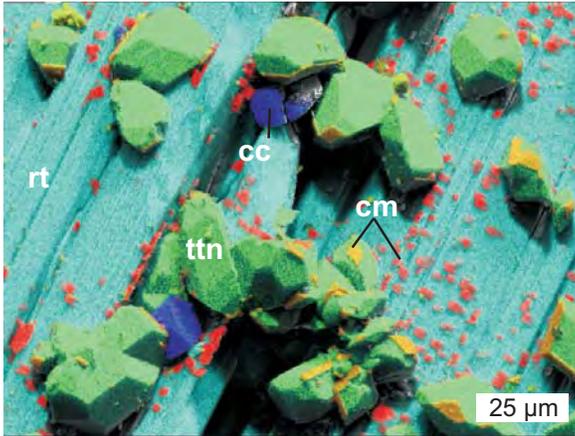
Ttn7-inner-2 SEM element map Ca



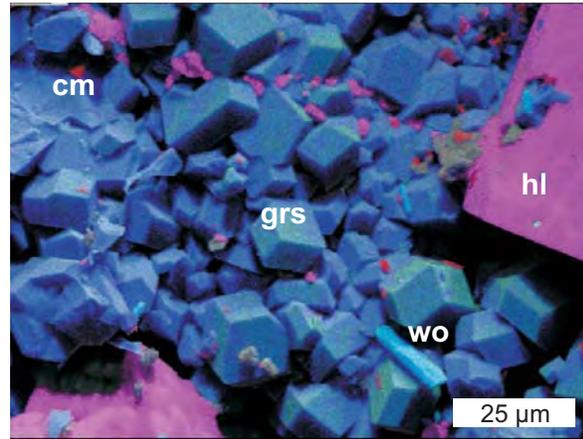
Ttn7-inner-2 SEM element map Al



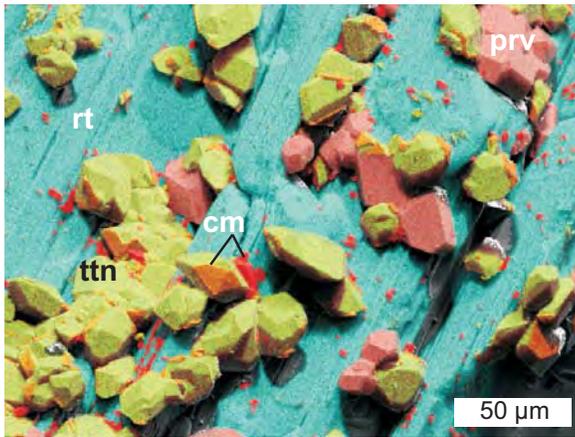
Ttn7-inner-2 SEM element map Si



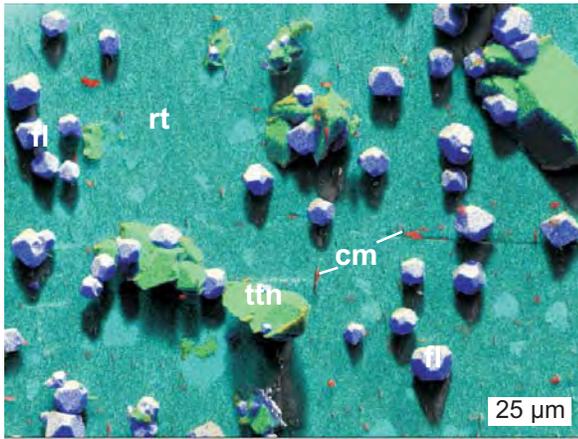
**Ttn9-inner-1**



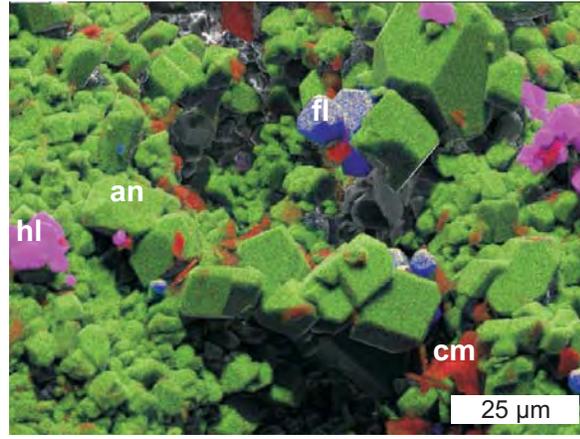
**Ttn9-outer**



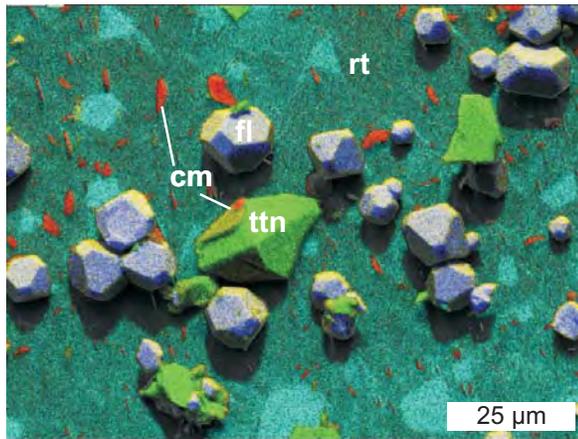
**Ttn9-inner-2**



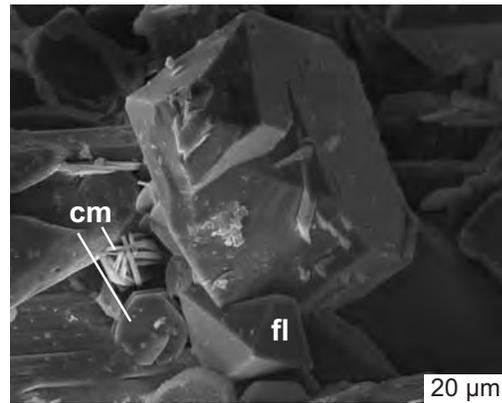
Ttn10-inner-1



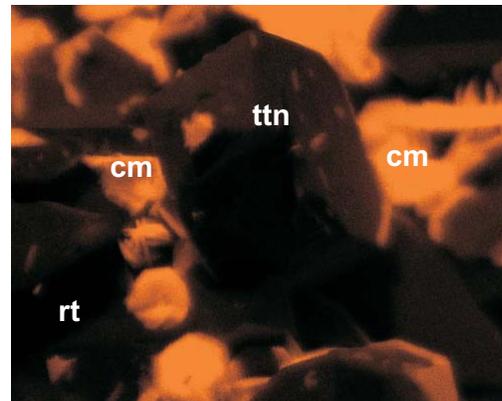
Ttn10-outer



Ttn10-inner-2

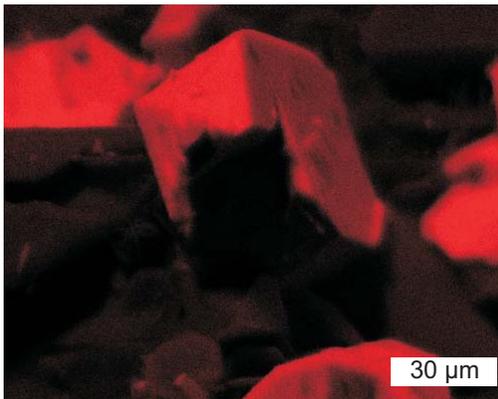


Ttn10-inner-3  
SEM image  
detail

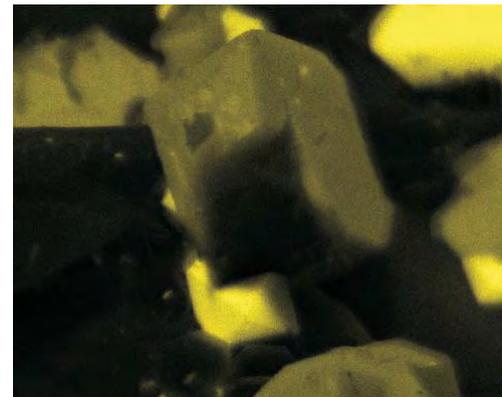
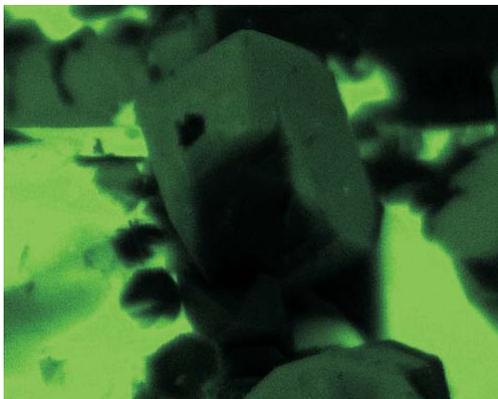


Ttn10-inner-3  
SEM element  
map Al

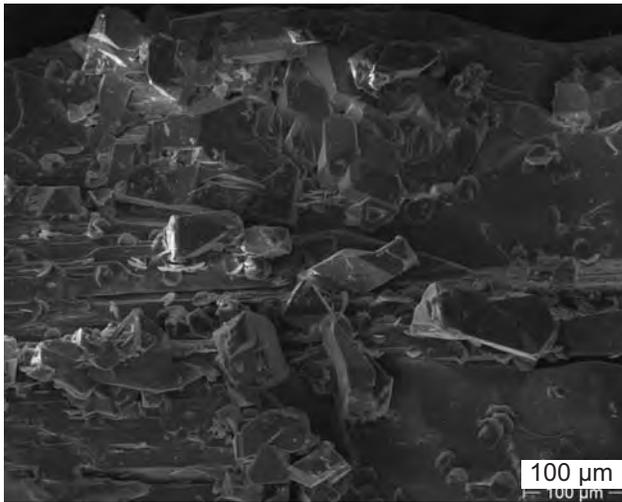
Ttn10-inner-3  
SEM element  
map Si



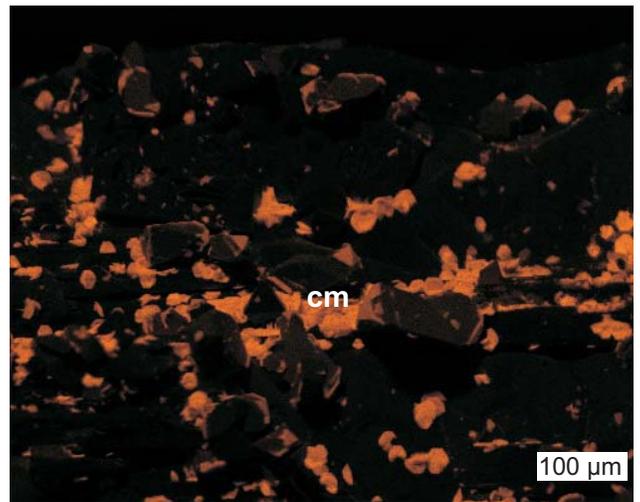
Ttn10-inner-3  
SEM element  
map Ti



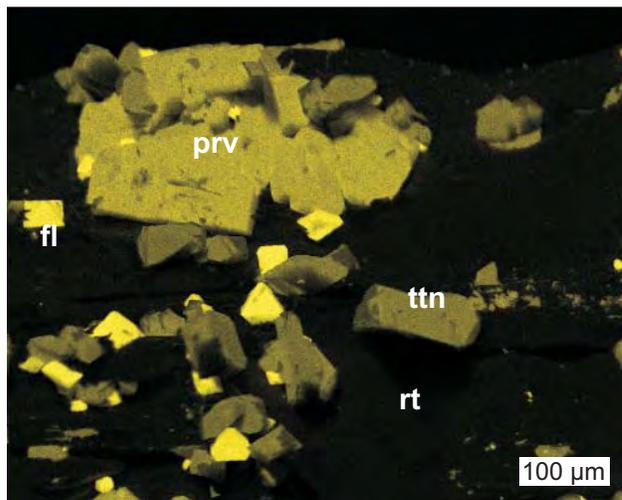
Ttn10-inner-3  
SEM element  
map Ca



Ttn10-inner-4; SEM image



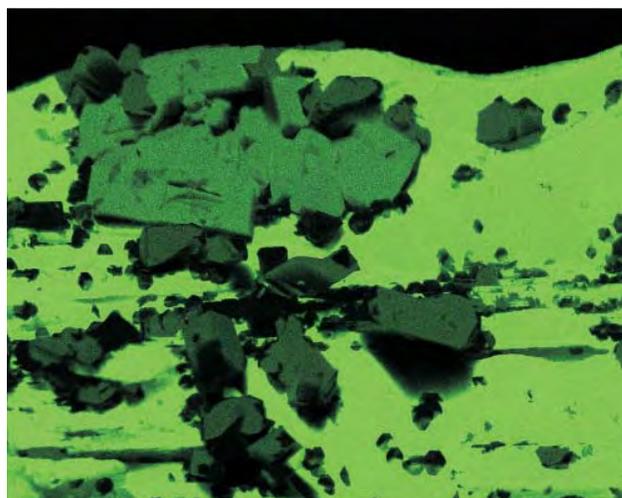
Ttn10-inner-4; SEM element map Al



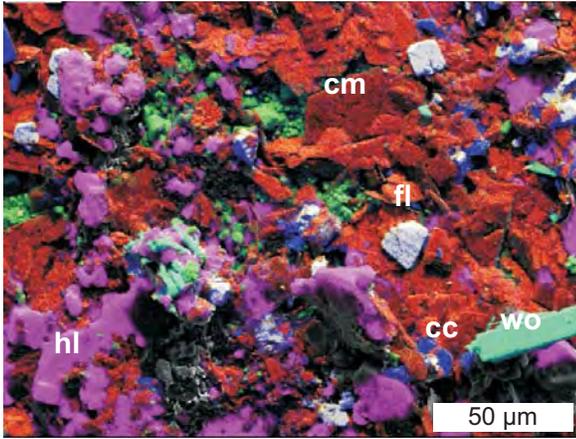
Ttn10-inner-4; SEM element map Ca



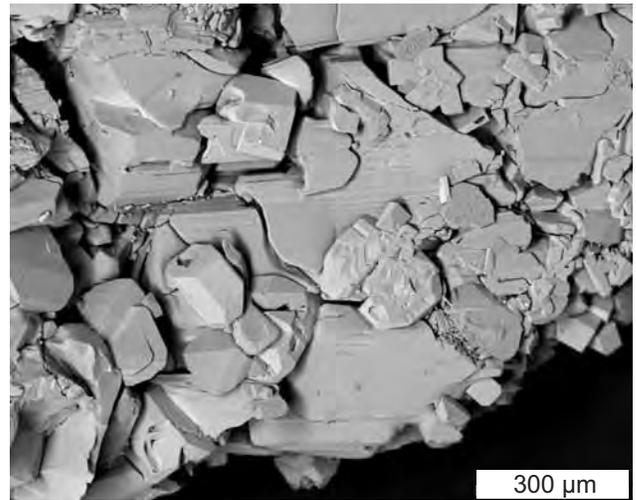
Ttn10-inner-4; SEM element map Si



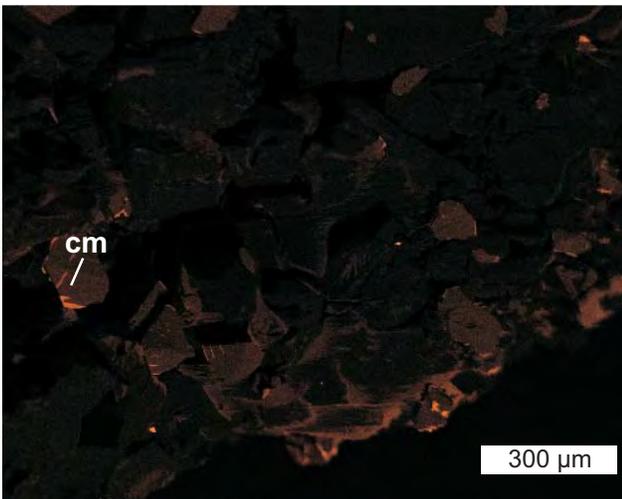
Ttn10-inner-4; SEM element map Ti



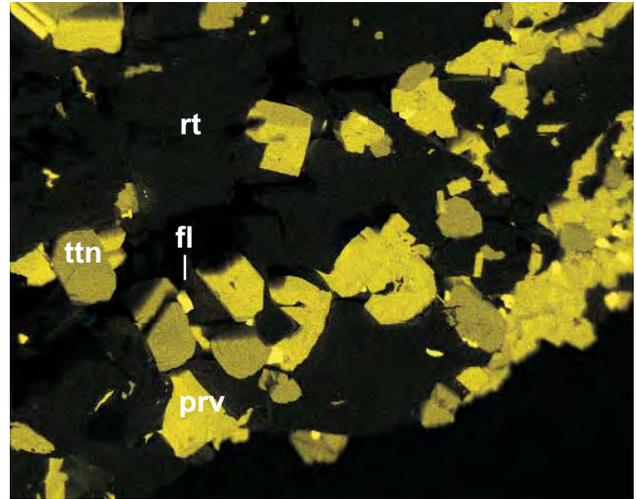
Ttn2-outer



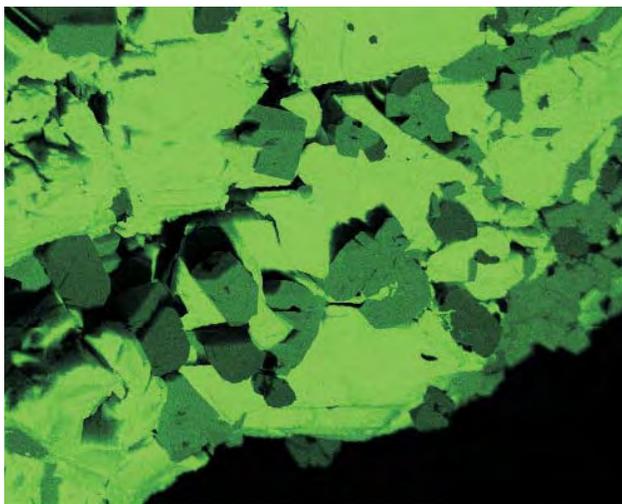
Ttn2-inner; SEM image



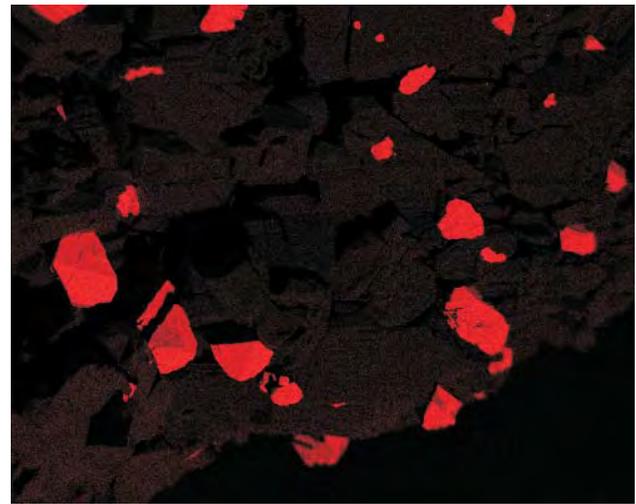
Ttn2-inner; SEM element map Al



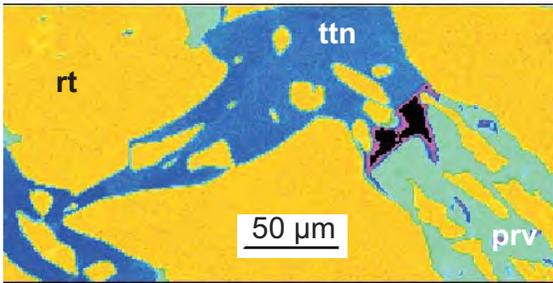
Ttn2-inner; SEM element map Ca



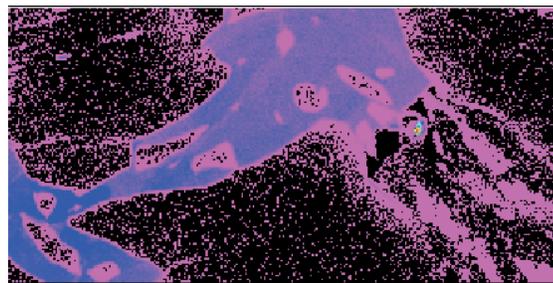
Ttn2-inner; SEM element map Ti



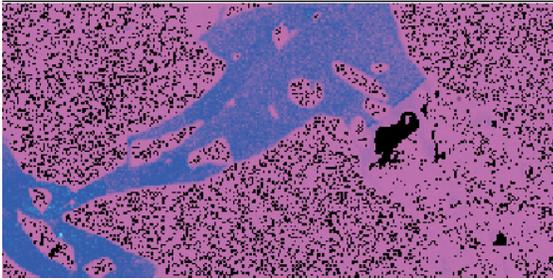
Ttn2-inner; SEM element map Si



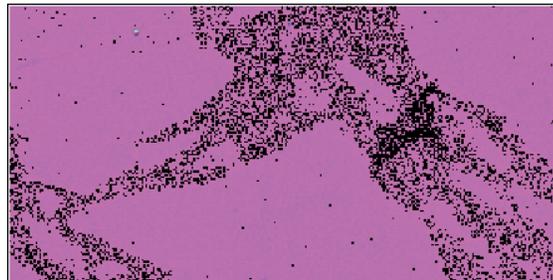
Ttn2 inner-2; EMP element distribution Ti



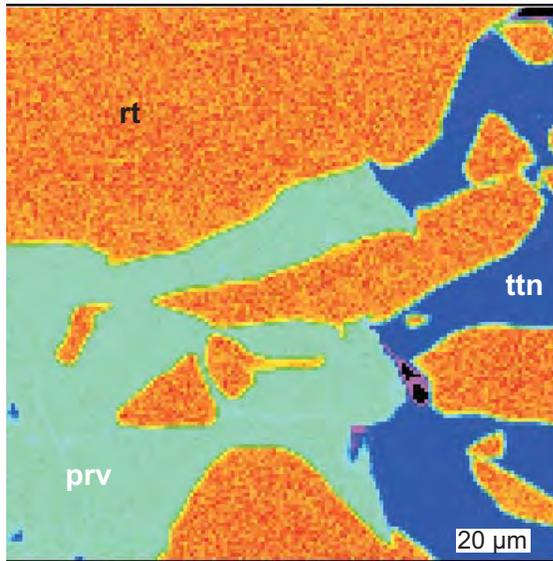
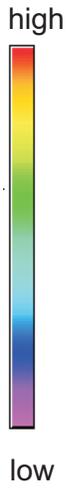
Ttn2 inner-2; EMP element distribution Al



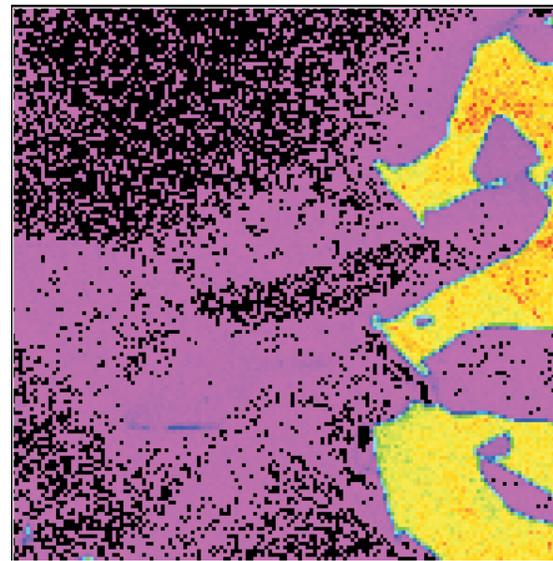
Ttn2 inner-2; EMP element distribution F



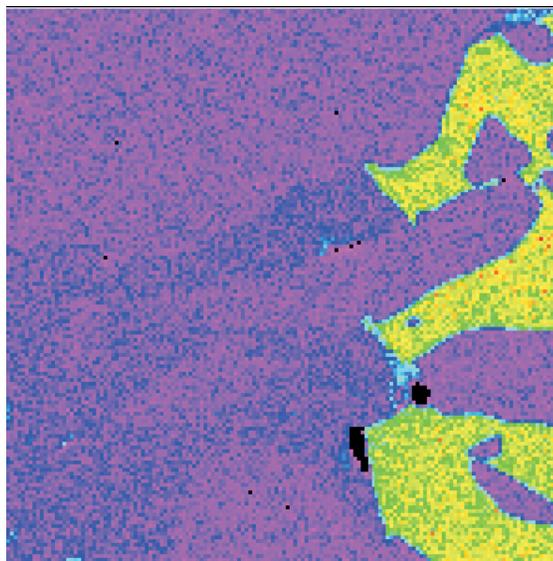
Ttn2 inner-2; EMP element distribution Fe



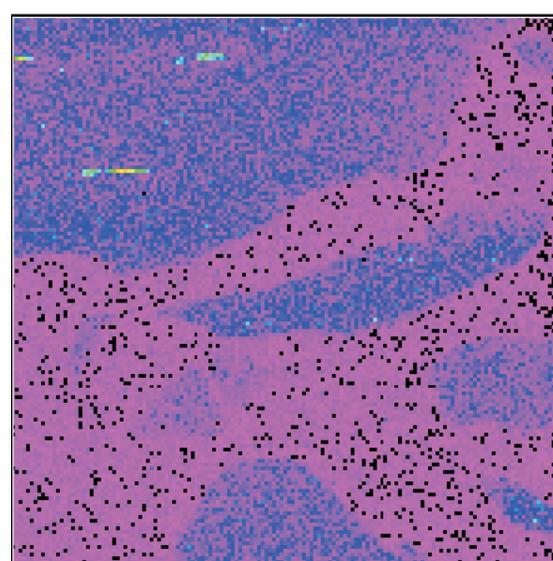
Ttn2 inner-3; EMP element distribution Ti



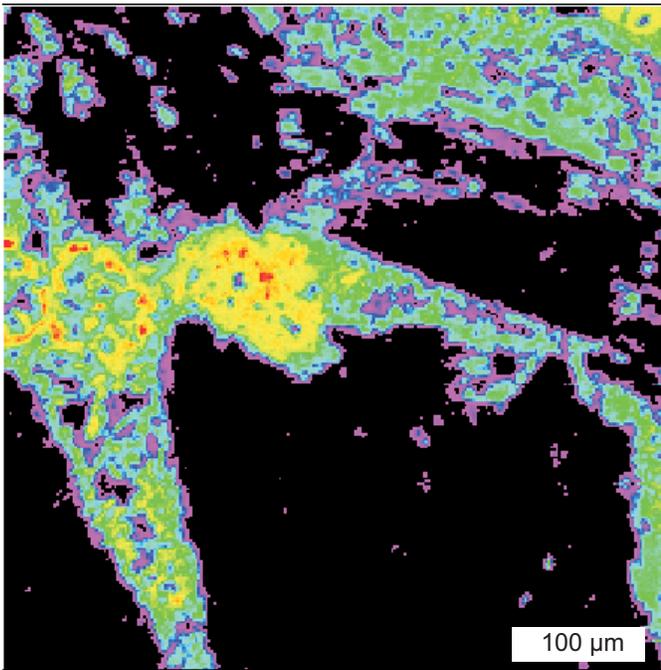
Ttn2 inner-3; EMP element distribution Al



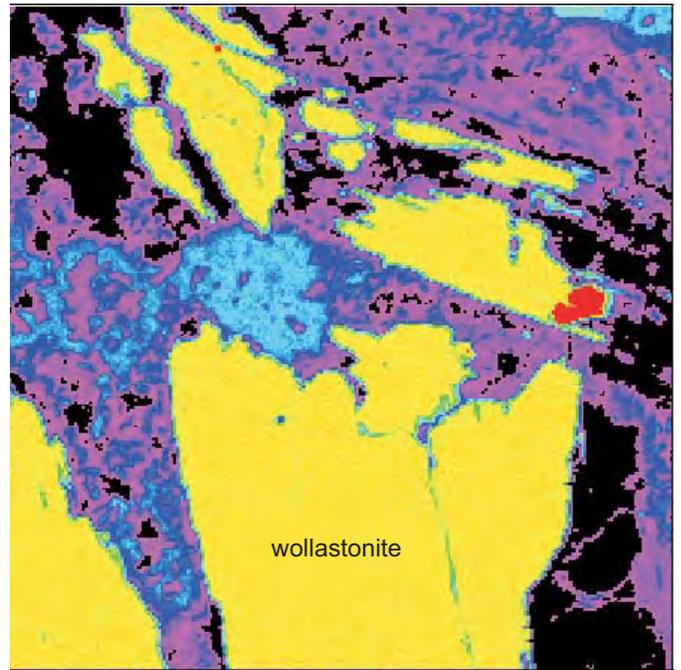
Ttn2 inner-3; EMP element distribution F  
Appendix Figure 1; page 8; Ttn2 (7 days; F)



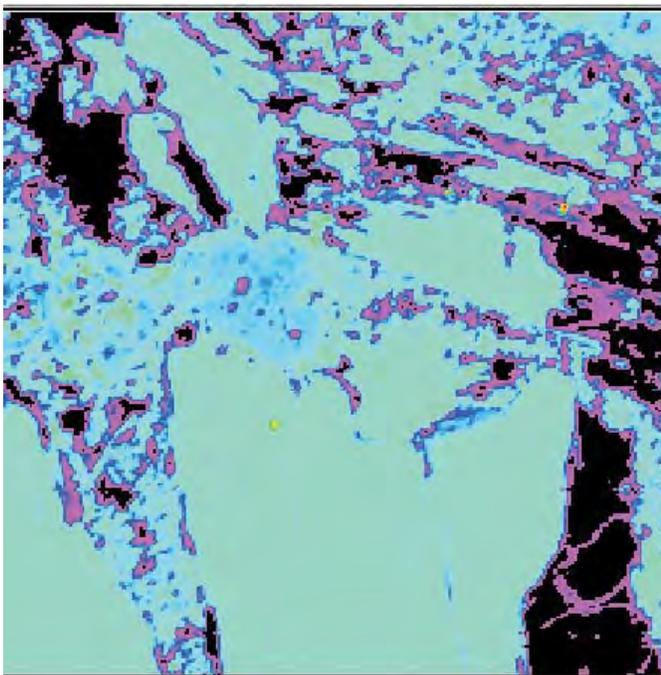
Ttn2 inner-3; EMP element distribution Fe



Ttn2 outer-2; EMP element distribution Al

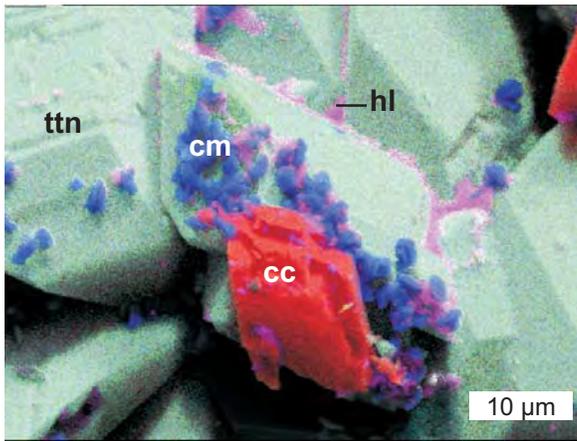


Ttn2 outer-2; EMP element distribution Ca

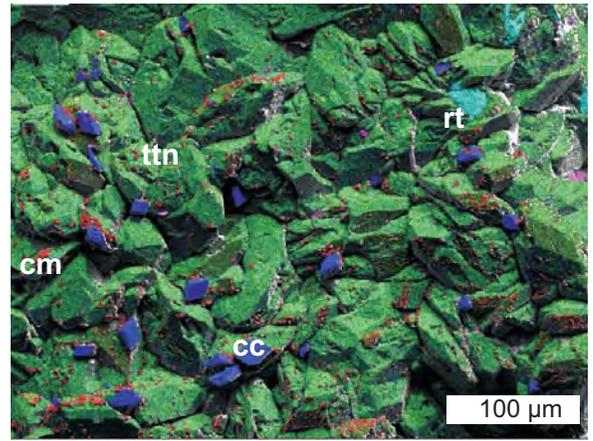


Ttn2 outer-2; EMP element distribution Si

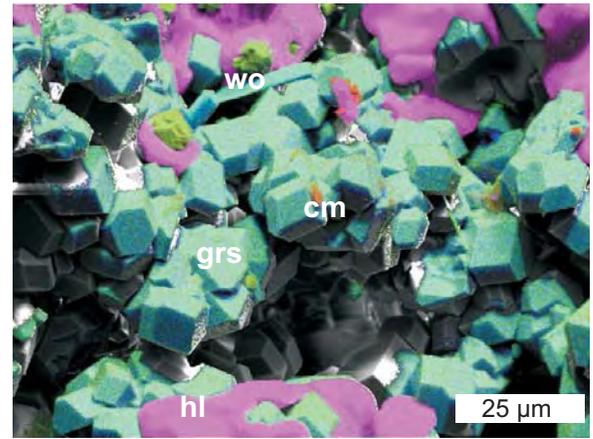




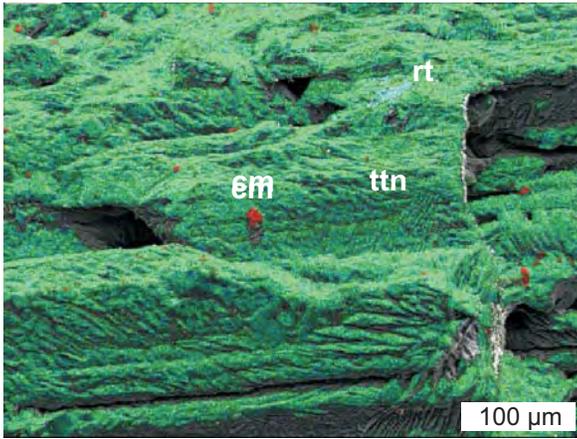
Ttn8-inner-detail



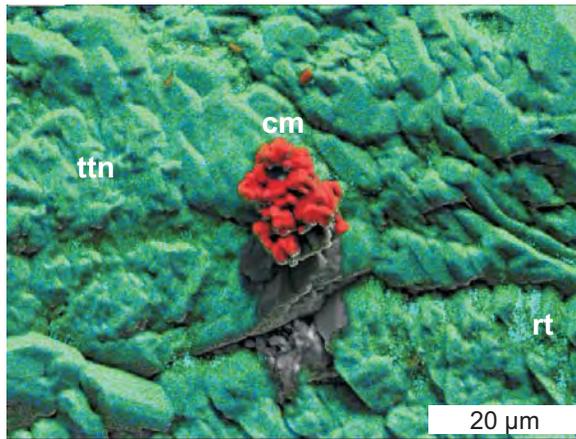
Ttn8-inner-1



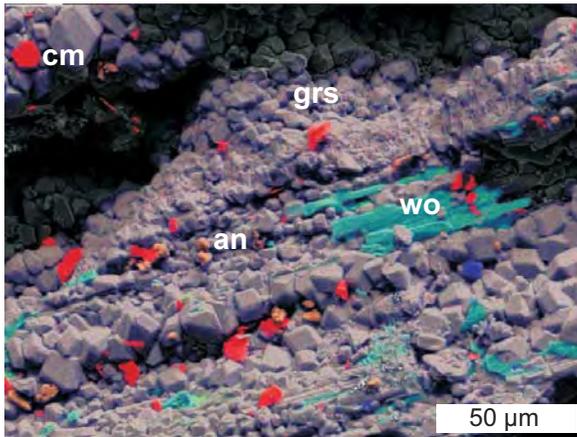
Ttn8-outer



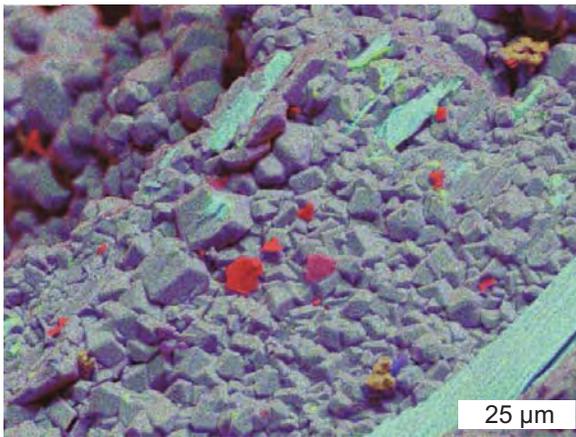
Ttn1-inner-1



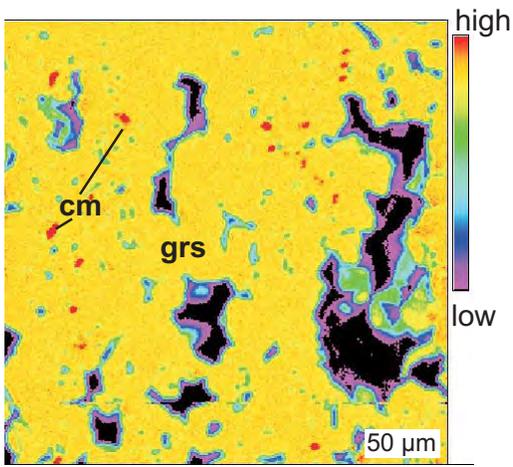
Ttn1-inner-1-detail



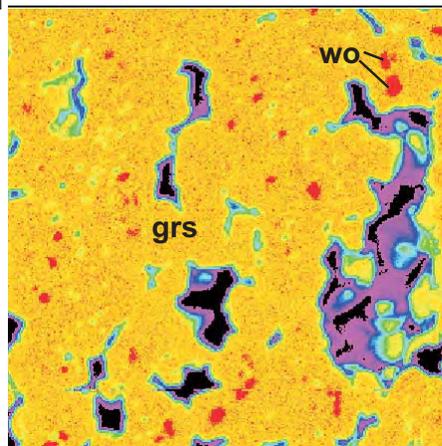
Ttn1-outer-1



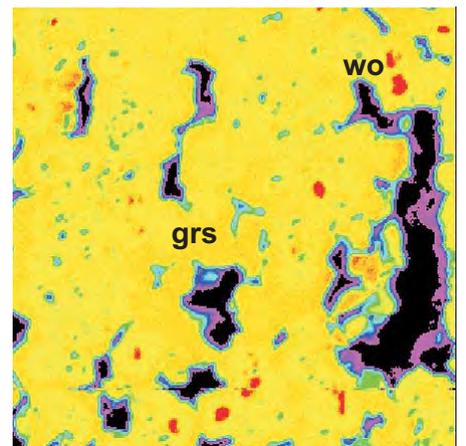
Ttn1-outer-2



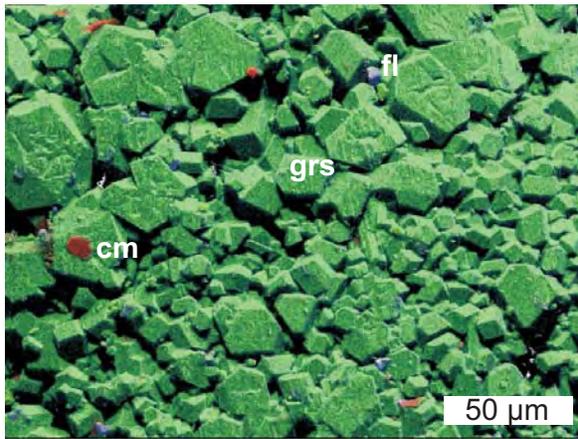
Ttn1-outer  
EMP element distribution map: Al



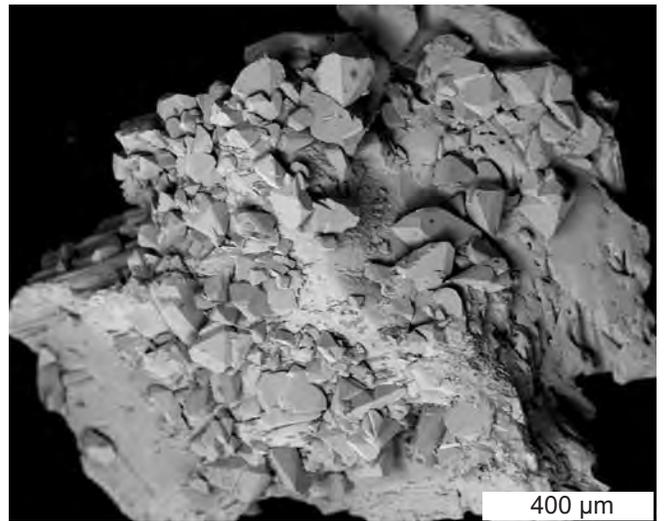
Ttn1-outer  
EMP element distribution map: Ca



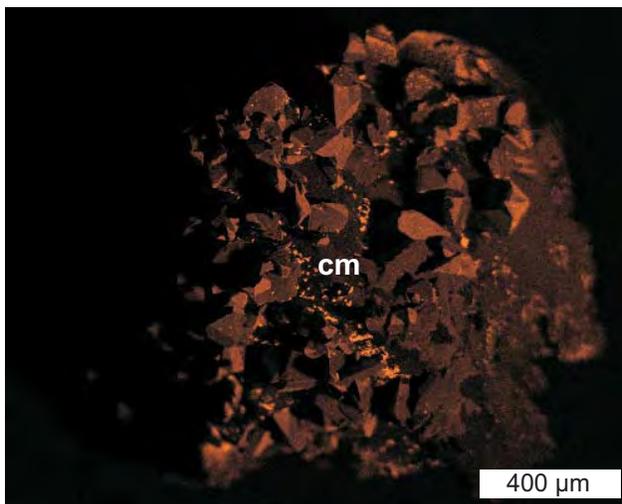
Ttn1-outer  
EMP element distribution map: Si



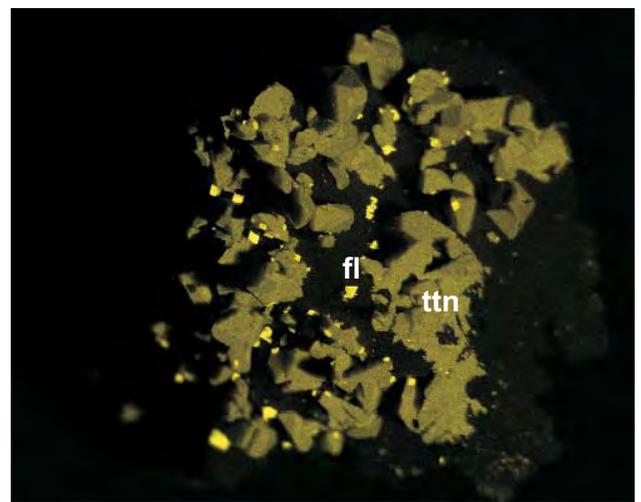
Ttn12-outer



Ttn12-inner-1; SEM image



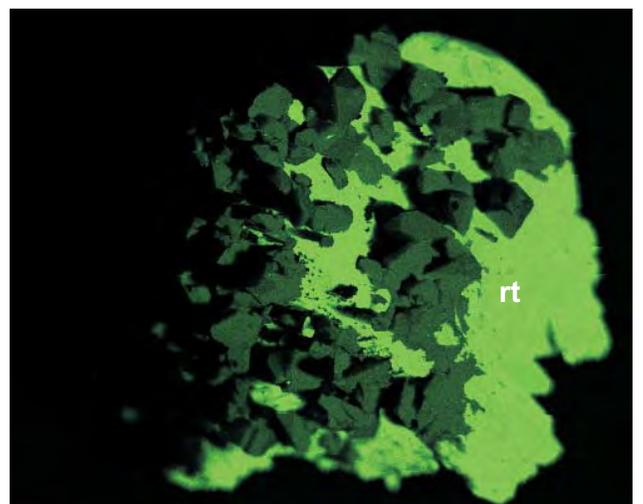
Ttn12-inner-1; SEM element map Al



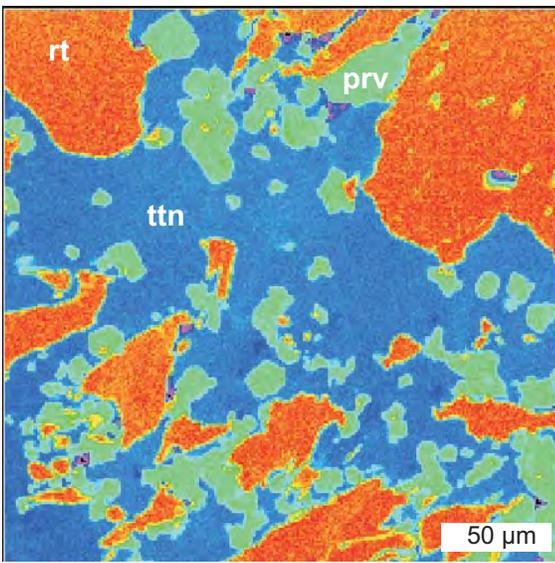
Ttn12-inner-1; SEM element map Ca



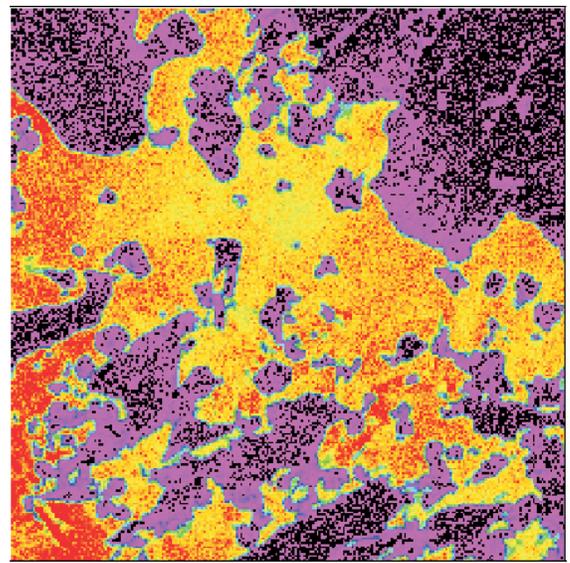
Ttn12-inner-1; SEM element map Si



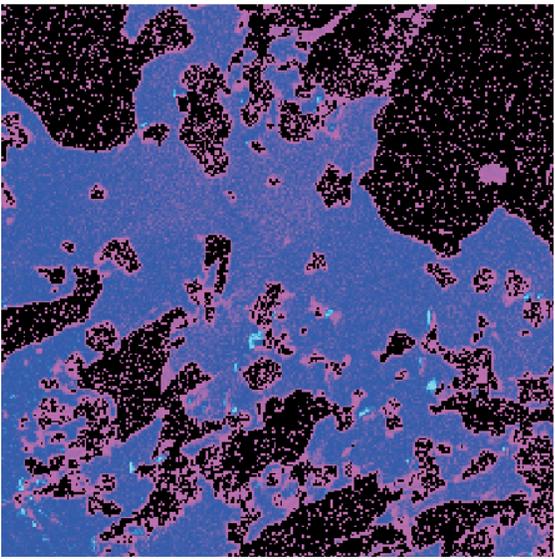
Ttn12-inner-1; SEM element map Ti



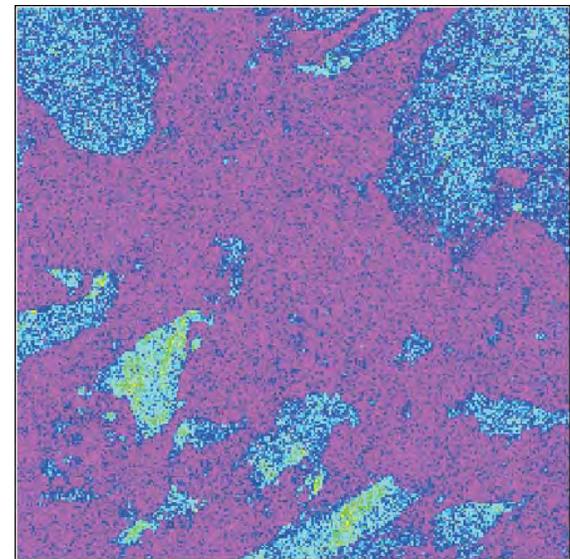
Ttn12-inner-2; EMP element map Ti



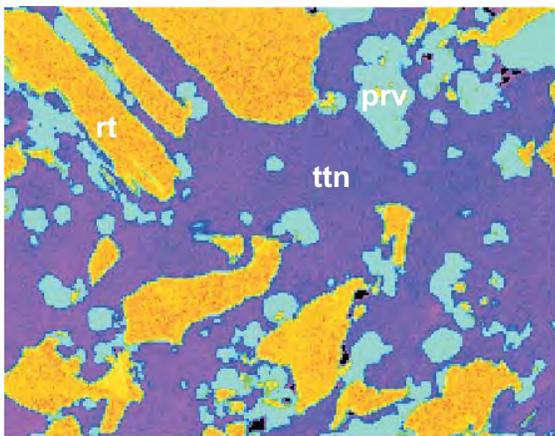
Ttn12-inner-2; EMP element map Al



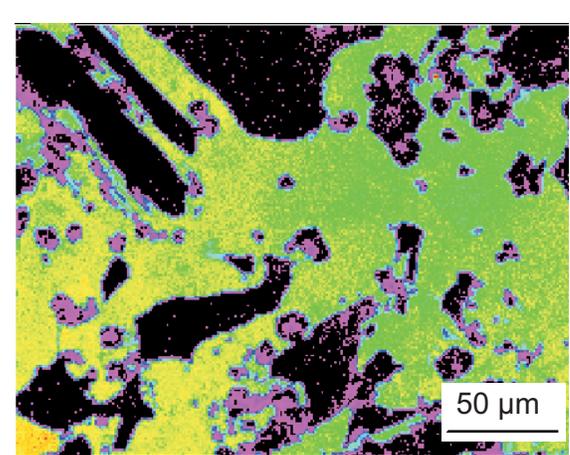
Ttn12-inner-2; EMP element map F



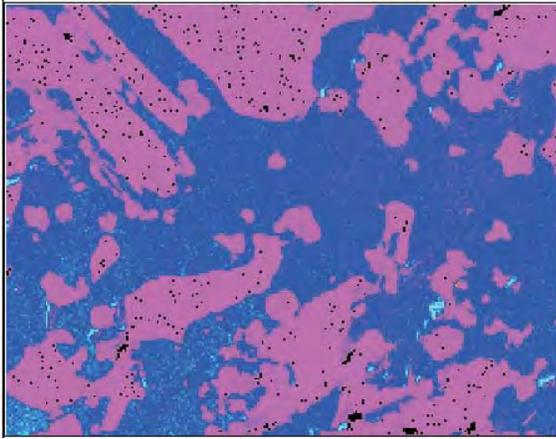
Ttn12-inner-2; EMP element map Fe



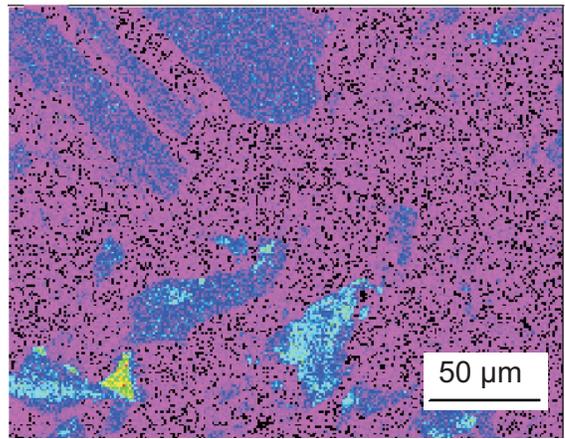
Ttn12-inner-3; EMP element map Ti



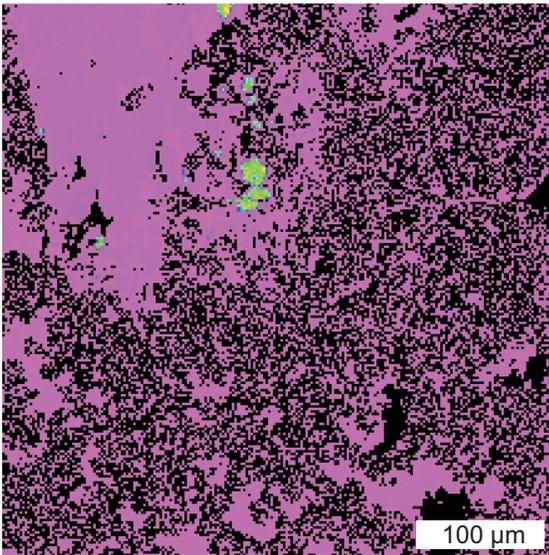
Ttn12-inner-3; EMP element map Al



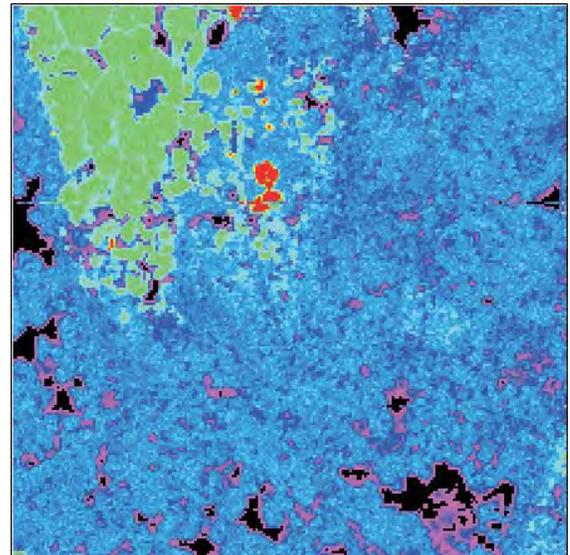
Ttn12-inner-3; EMP element map F



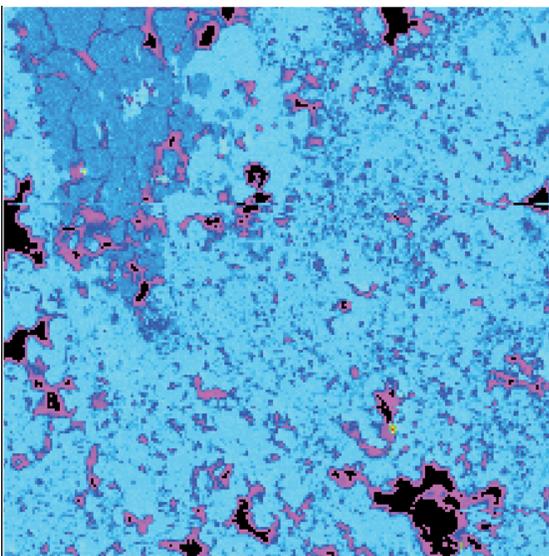
Ttn12-inner-3; EMP element map Fe



Ttn12-outer-2; EMP element map Al



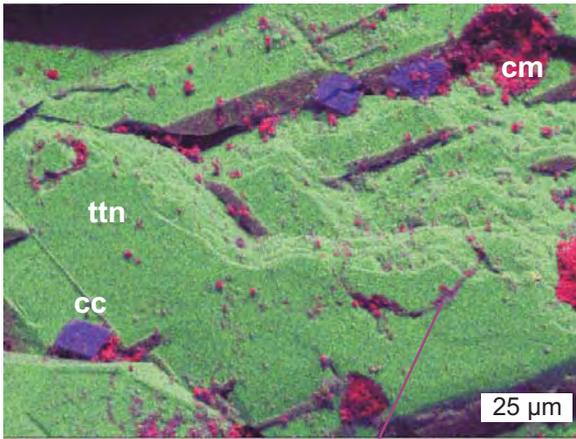
Ttn12-outer-2; EMP element map Ca



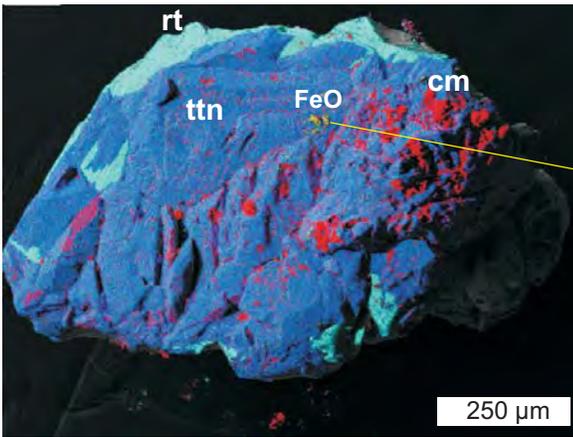
Ttn12-outer-2; EMP element map Si



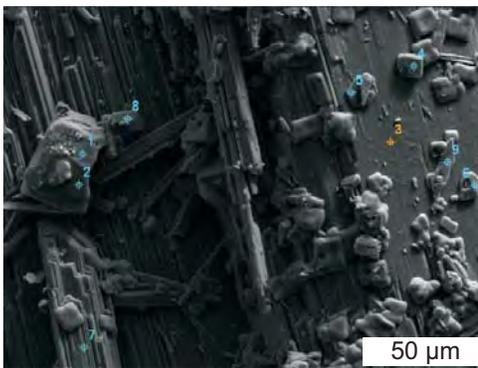
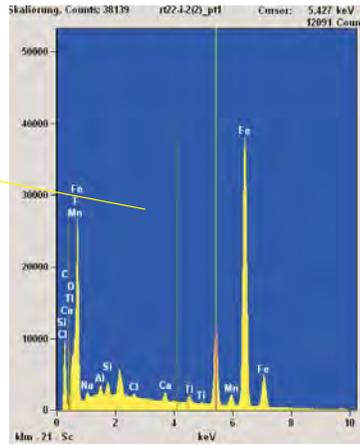
here, we face a problem to identify the minerals  
solution: quantitative analyses



RT22-inner-detail some halite

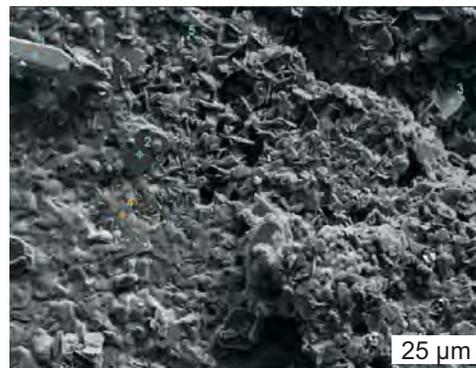


RT22-inner-2



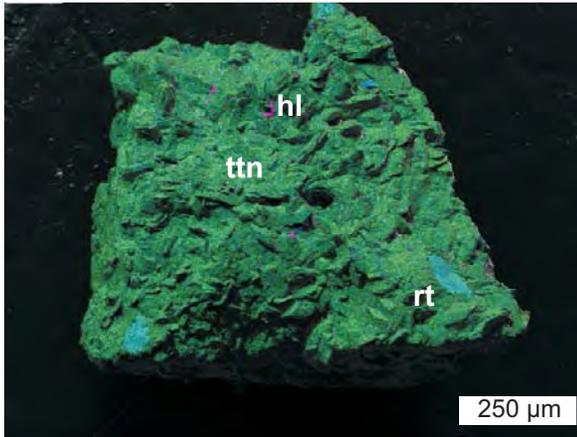
RT22-outer

mainly wollastonite, some calcite,  
new wollastonite and corundum

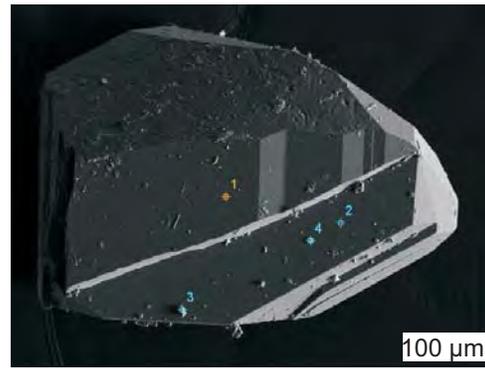


RT22-outer

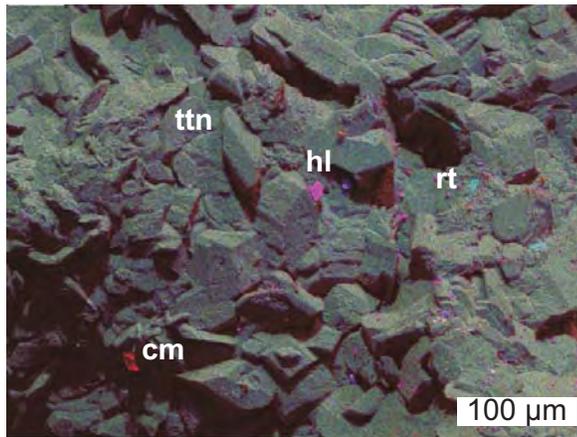
mainly corundum and halite crust



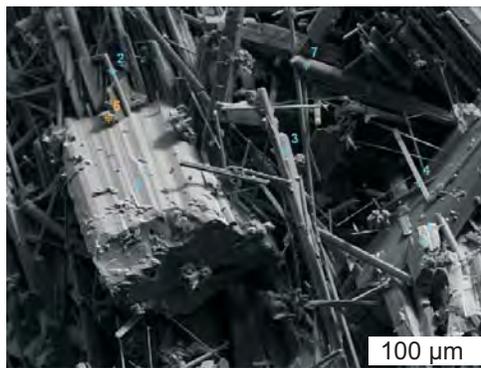
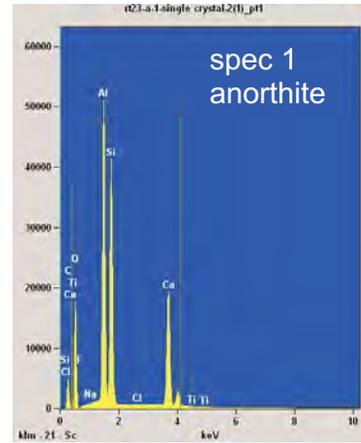
RT23-inner-2



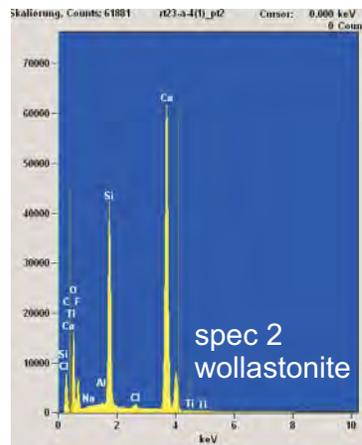
RT23-outer single-crystal anorthite



RT23-inner-1



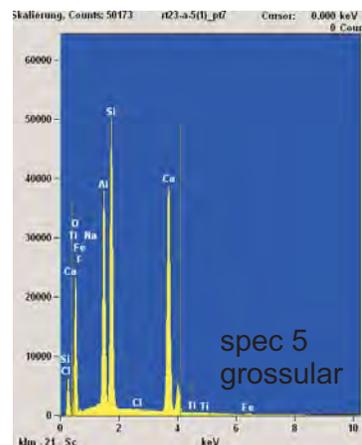
RT23-outer-4



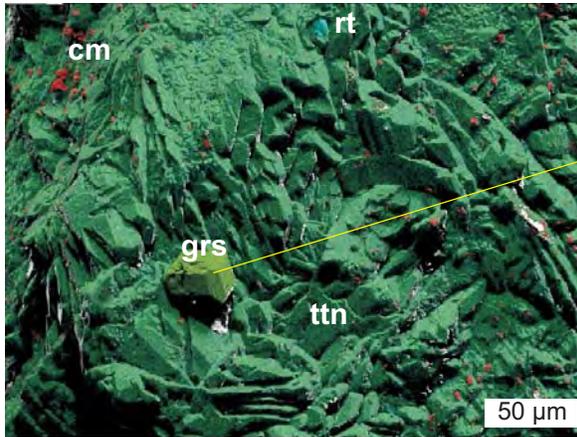
mainly wollastonite and new grown wollastonite fibres 25 µm



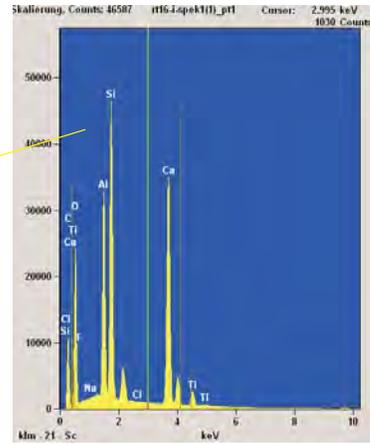
RT23-outer-5 grossular on wollastonite



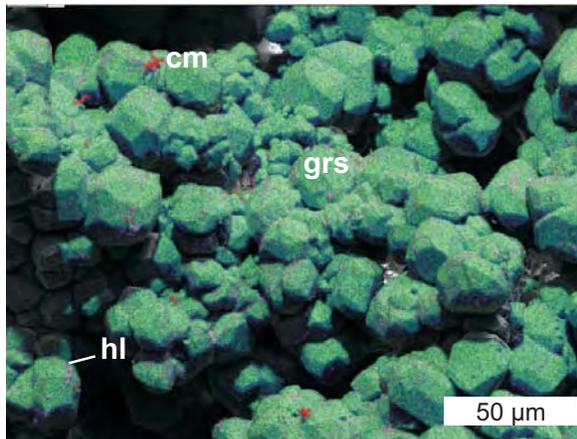
Appendix Figure 1; page 16;  
RT23 (30 days; F)



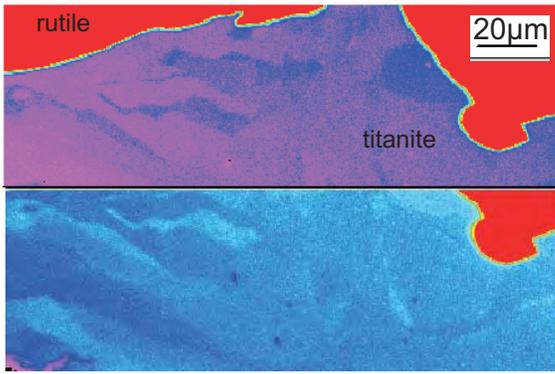
RT16-inner



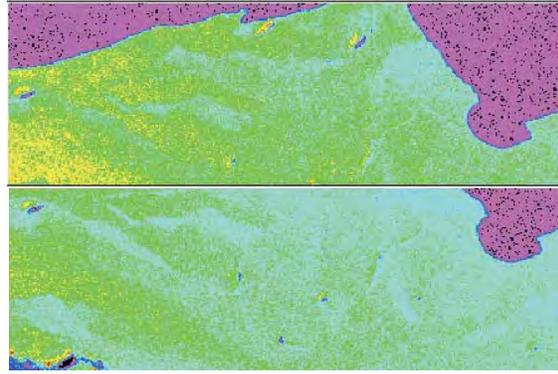
The grossular spectrum shows some Ti



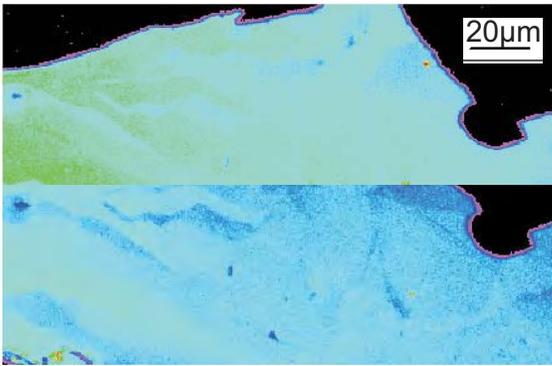
RT16-outer



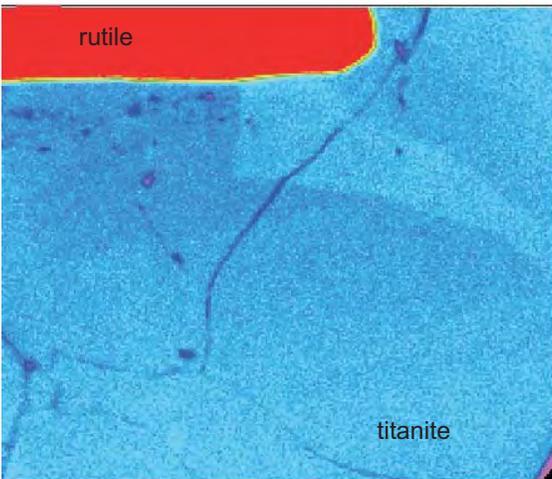
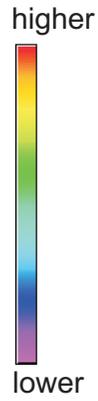
RT17-inner; EMP element map Ti



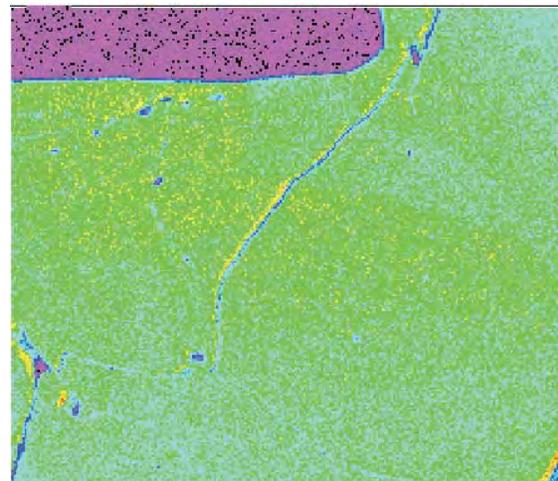
RT17-inner; EMP element map F



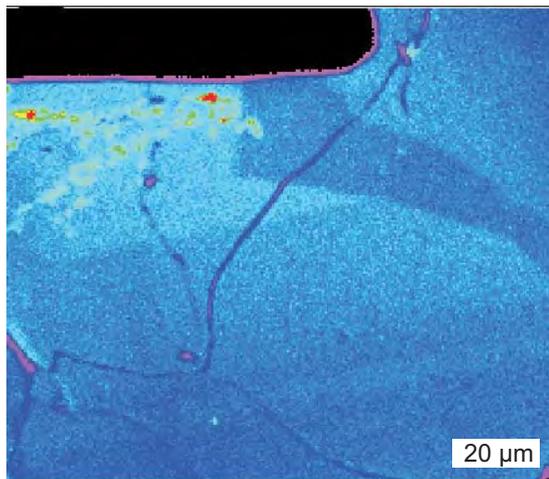
RT17-inner; EMP element map Al



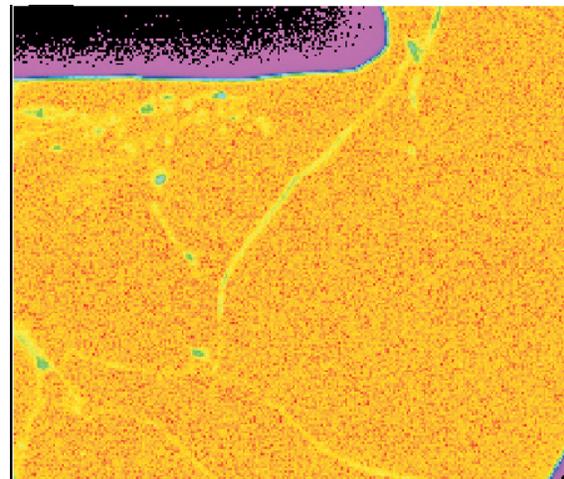
RT17-inner; EMP element map Ti



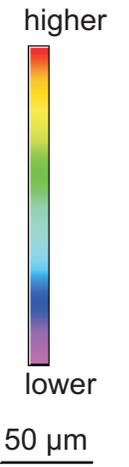
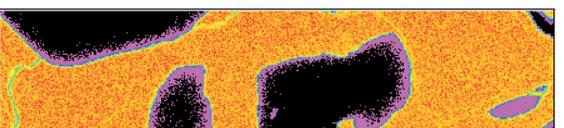
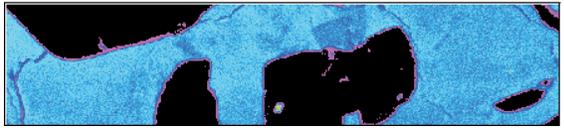
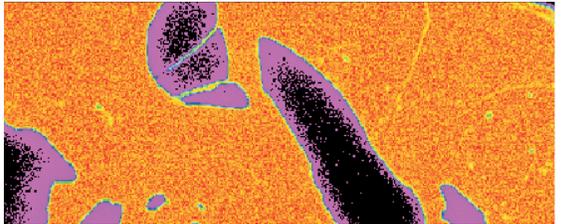
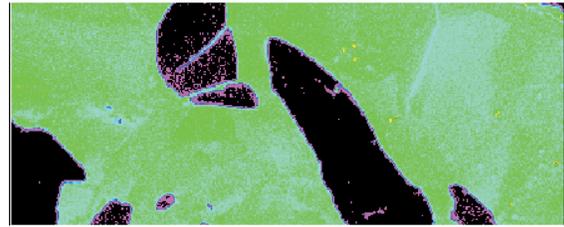
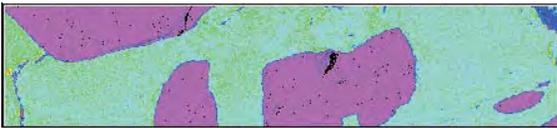
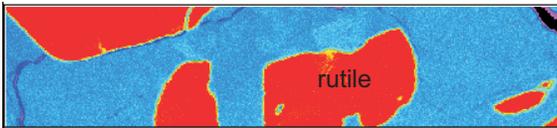
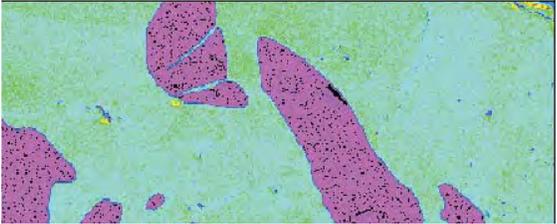
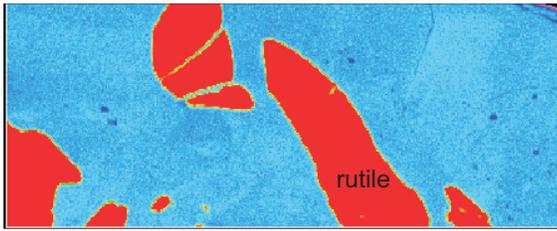
RT17-inner; EMP element map F

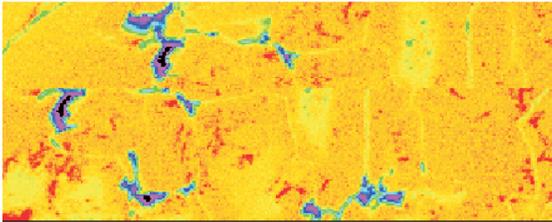


RT17-inner; EMP element map Al

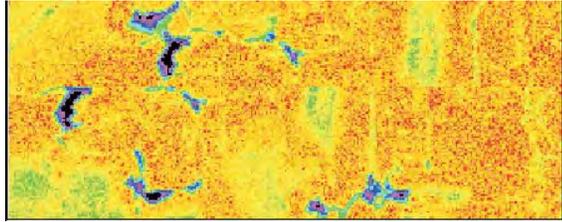


RT17-inner; EMP element map Ca



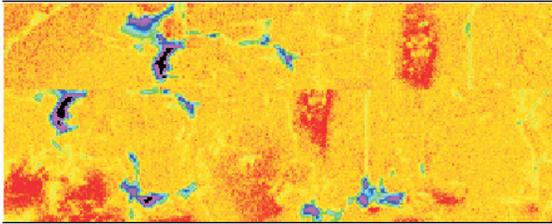


RT17-outer; plagioclase  
EMP element map Al

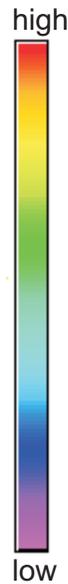
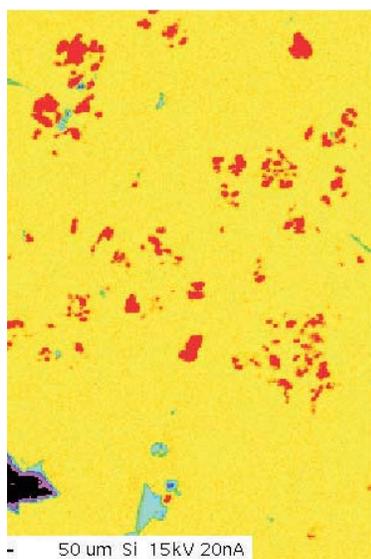
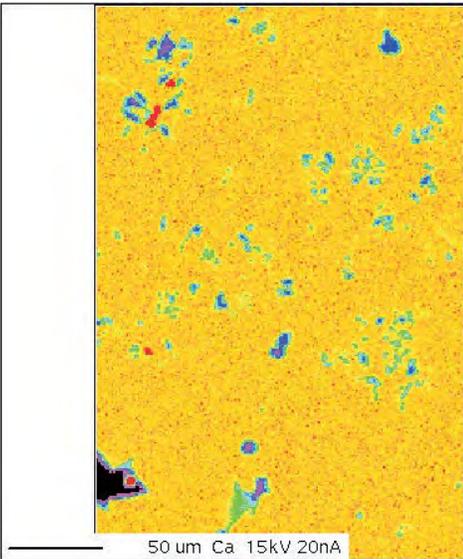


RT17-outer; plagioclase  
EMP element map Ca

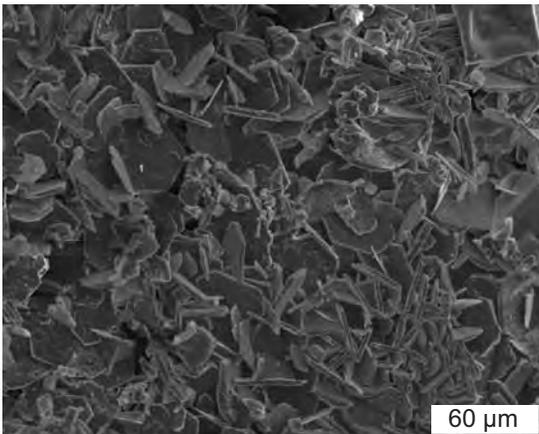
50  $\mu$ m



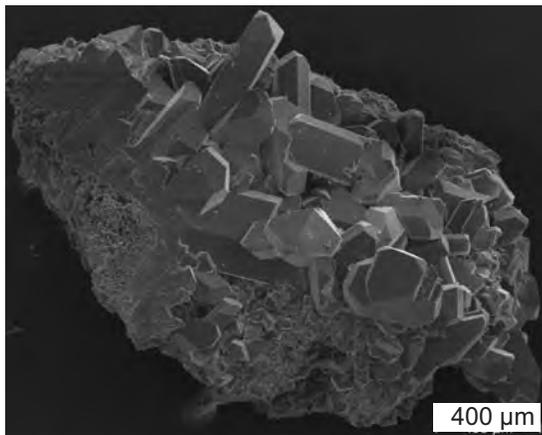
RT17-outer; plagioclase  
EMP element map Si



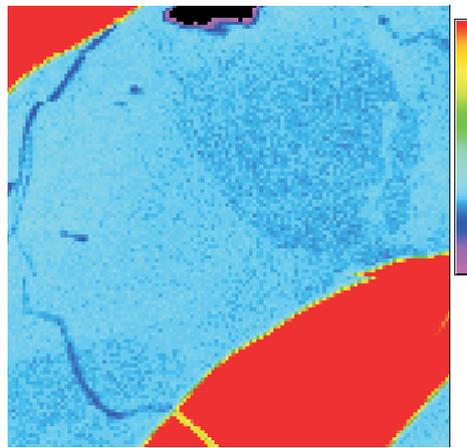
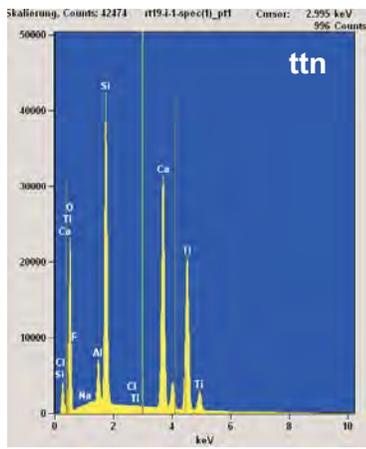
RT17-outer; grossular garnet; EMP element maps Ca - Si



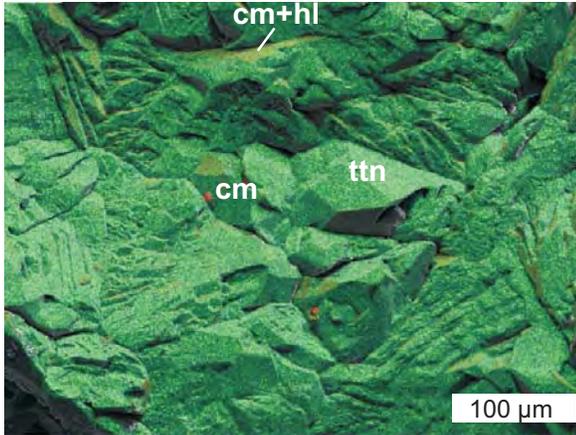
RT17-outer; SEM image,  
corundum (and some halite)



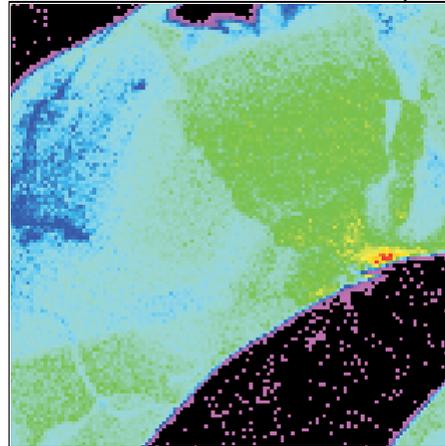
RT17-outer; SEM image, plagioclase



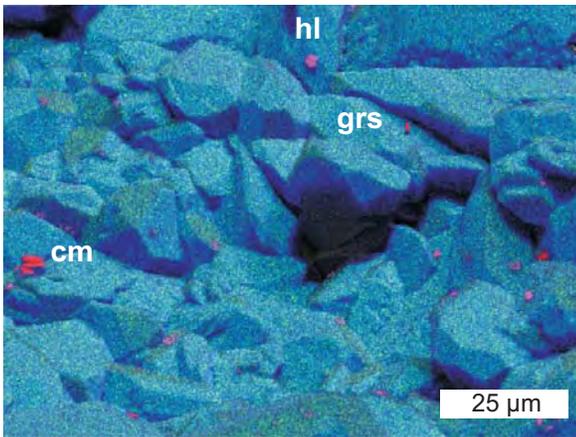
RT19-inner:  
EMP element distribution map Ti



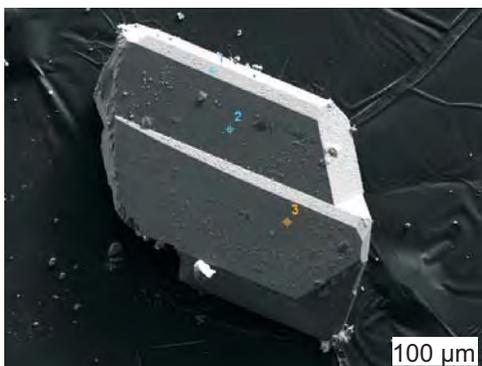
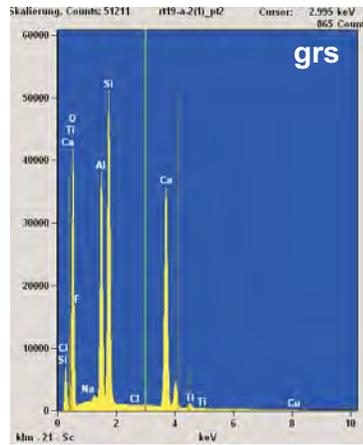
RT19-inner



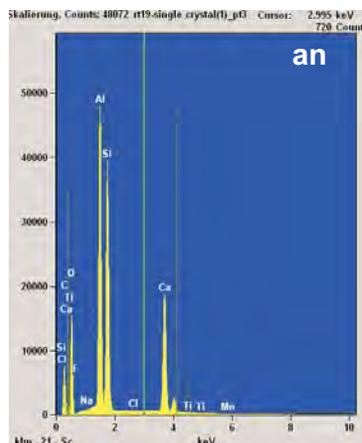
RT19-inner:  
EMP element distribution map Al

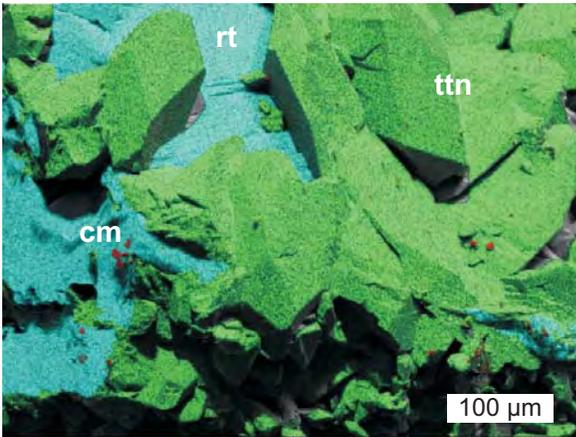


RT19-outer-1

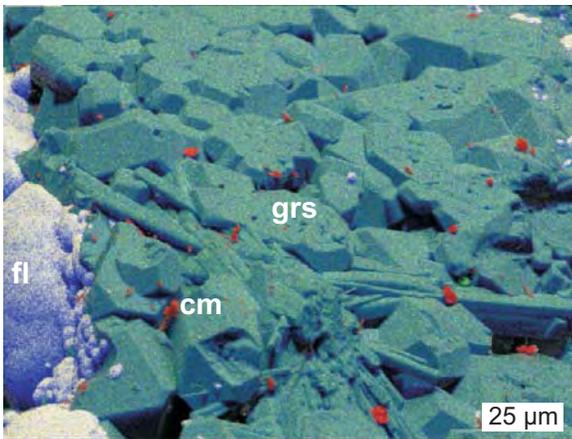


RT19-outer-2 solitary anorthite

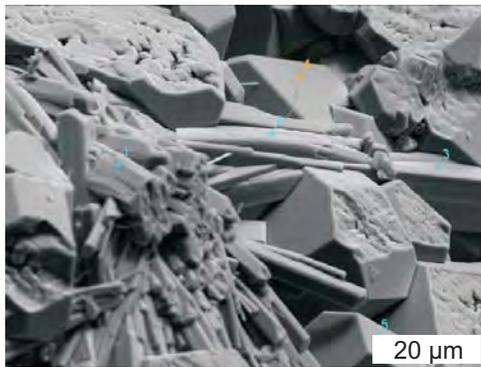




RT20-inner-1



RT20-outer-1



RT20-outer-1

