

Appendix 8:
Electron microprobe data of samples from the Cornudas Mountains
X-ray Maps and SEM EDS

in:

Geology and Mineral Deposits of the Cornudas Mountains, Otero County, New Mexico

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Open-file Report 619

New Mexico Bureau of Geology and Mineral Resources

<https://geoinfo.nmt.edu/publications/openfile/details.cfml?Volume=619>

- All images below were mapped for REE abundances. The color scale does change some to maximize REE mineral visibility.

55615-01-15

The 3 samples below have been mapped and calculated.

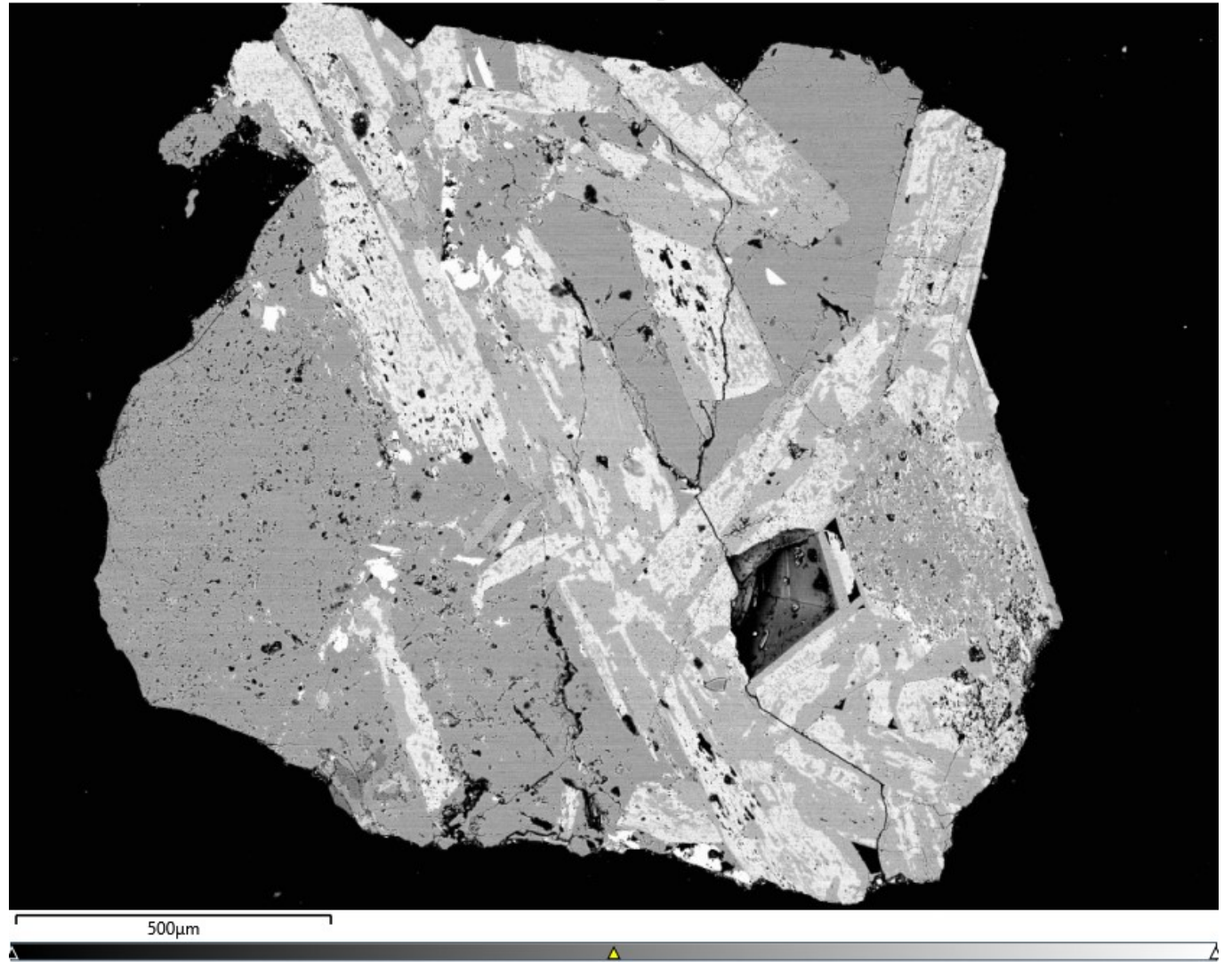
I use aluminum to maximize the REE mineral visibility.

Silica is too abundant and makes imaging difficult.

Because these samples were crushed it was easier to map individual grains and calculate mineral abundance. Not all grains contained REE minerals and were not mapped. Some areas were magnified to better assess abundance.

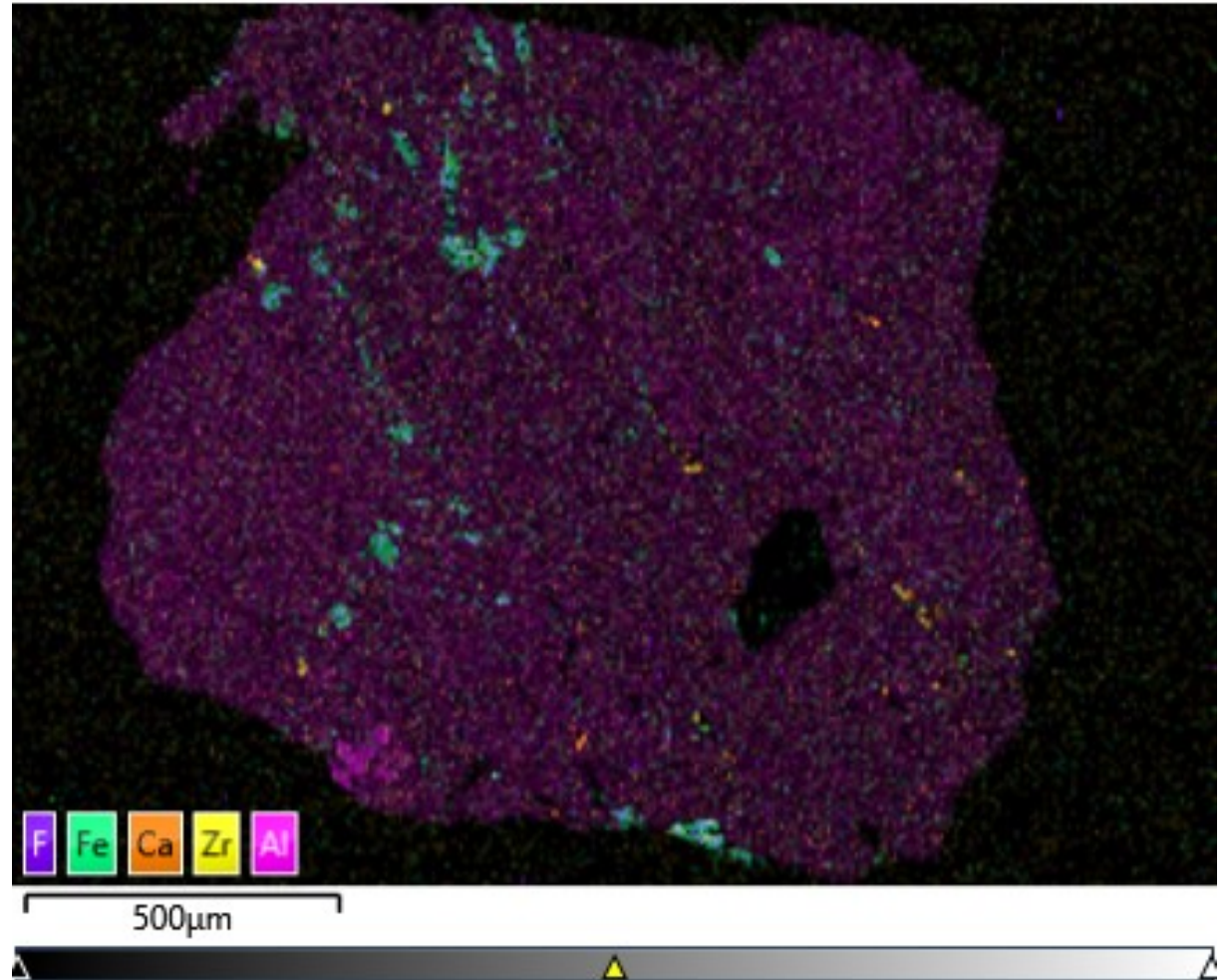
55615-01-15-01

Electron Image 1



- Blue/Green- Arfvedsonite
- Icy Blue- bastnaesite (none)
- Orange/yellow- Calciocatapleiite
- Red-monazite- rare
- Purple- Al rich mineral

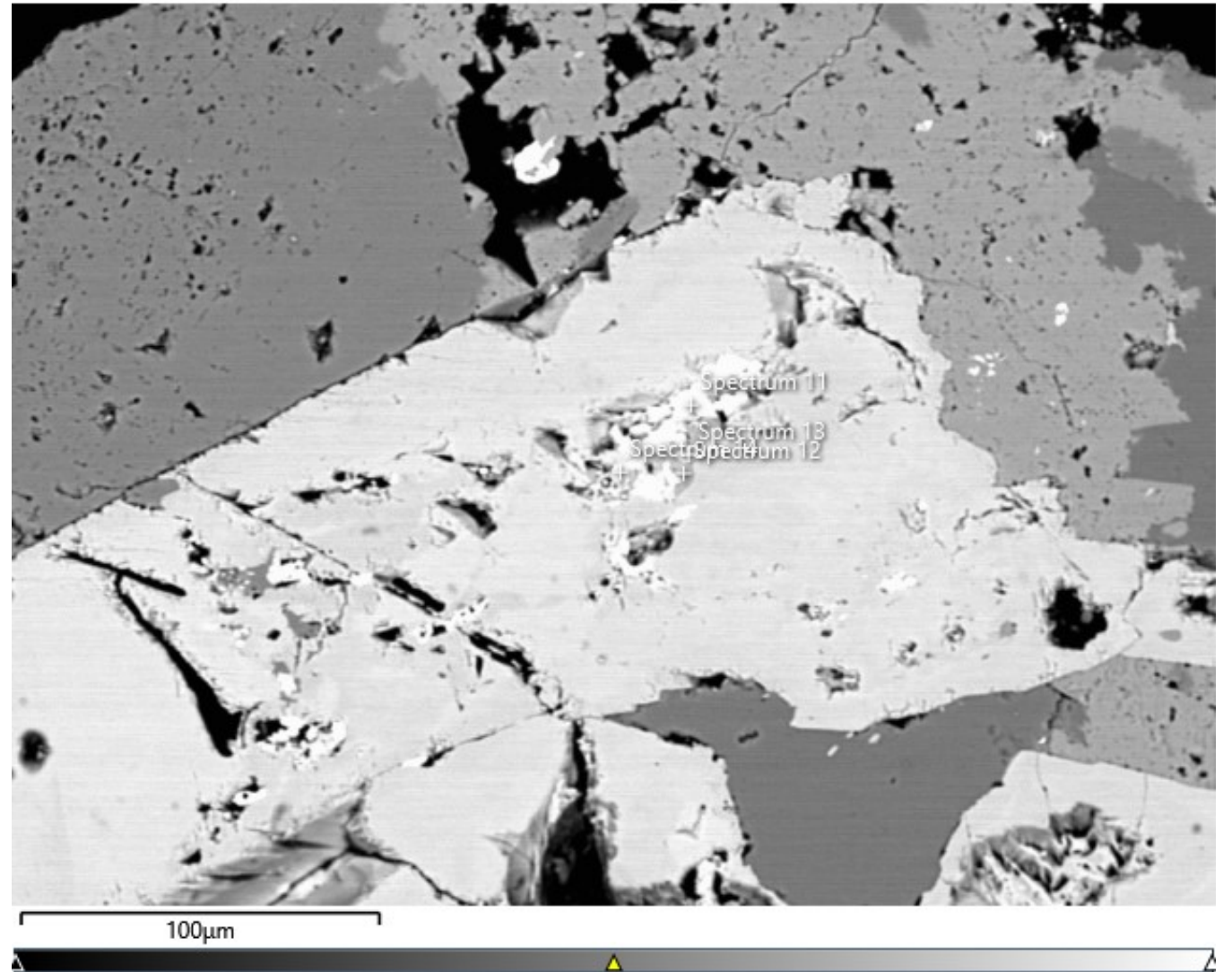
EDS Layered Image 2



- Note how small and dispersed the REE minerals are at this scale
- ~2mm across the grain

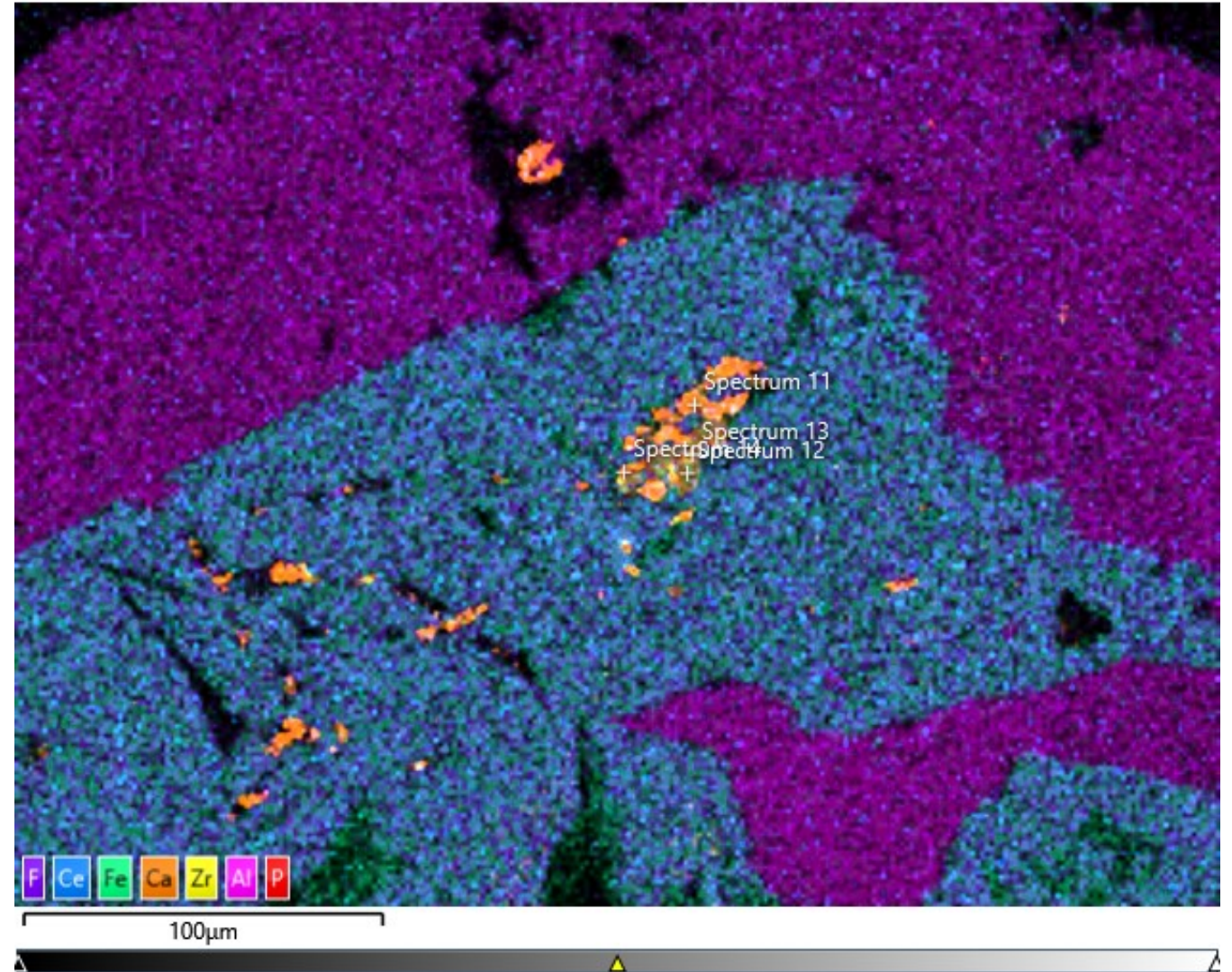
55615-01-15-04

Electron Image 4



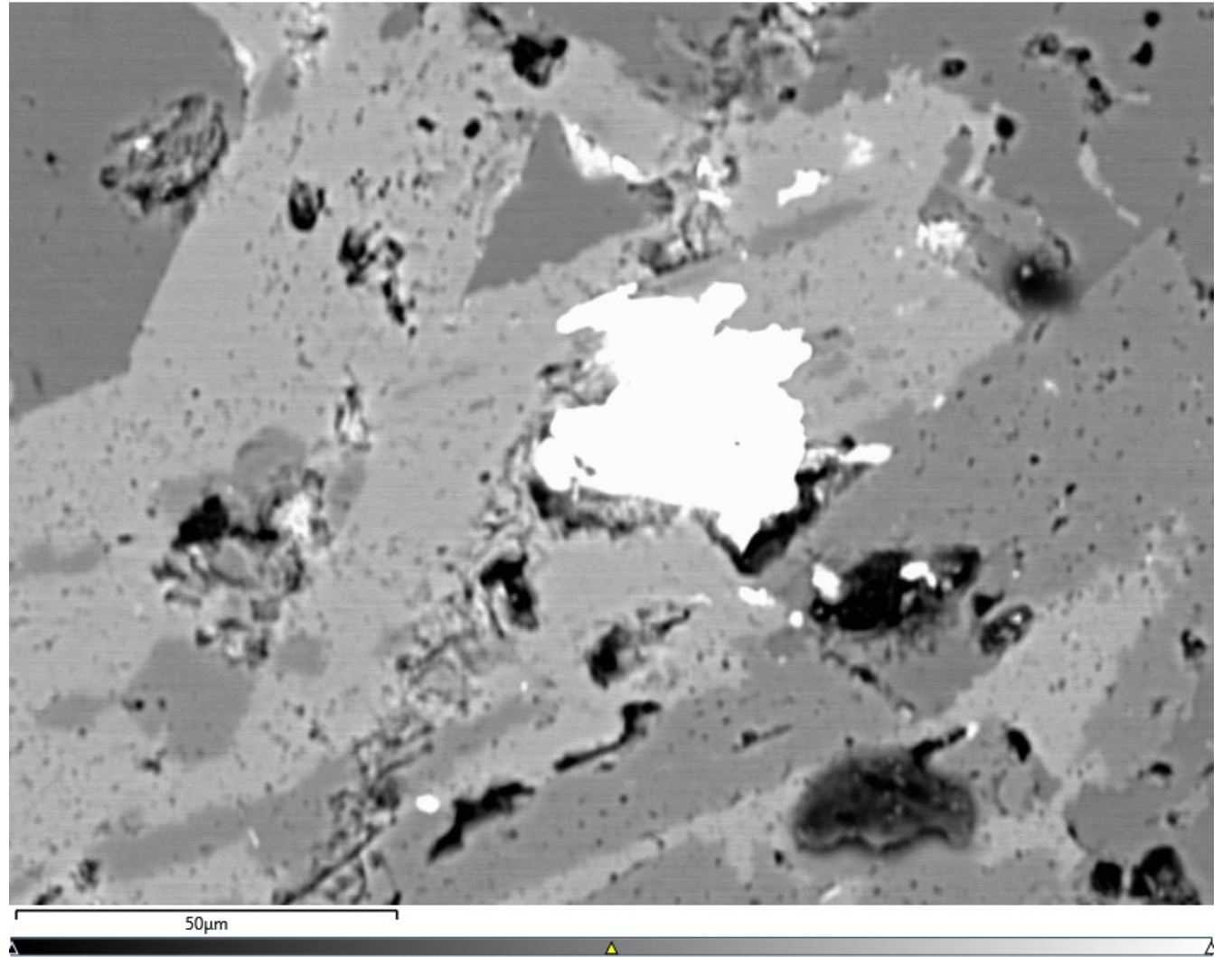
- Blue/Green- probably Arfvedsonite
- Blue- bastnaesite rare
- Orange/yellow- Calciocatapleiite
- Red-monazite- non
- Purple- Al rich mineral

EDS Layered Image 4



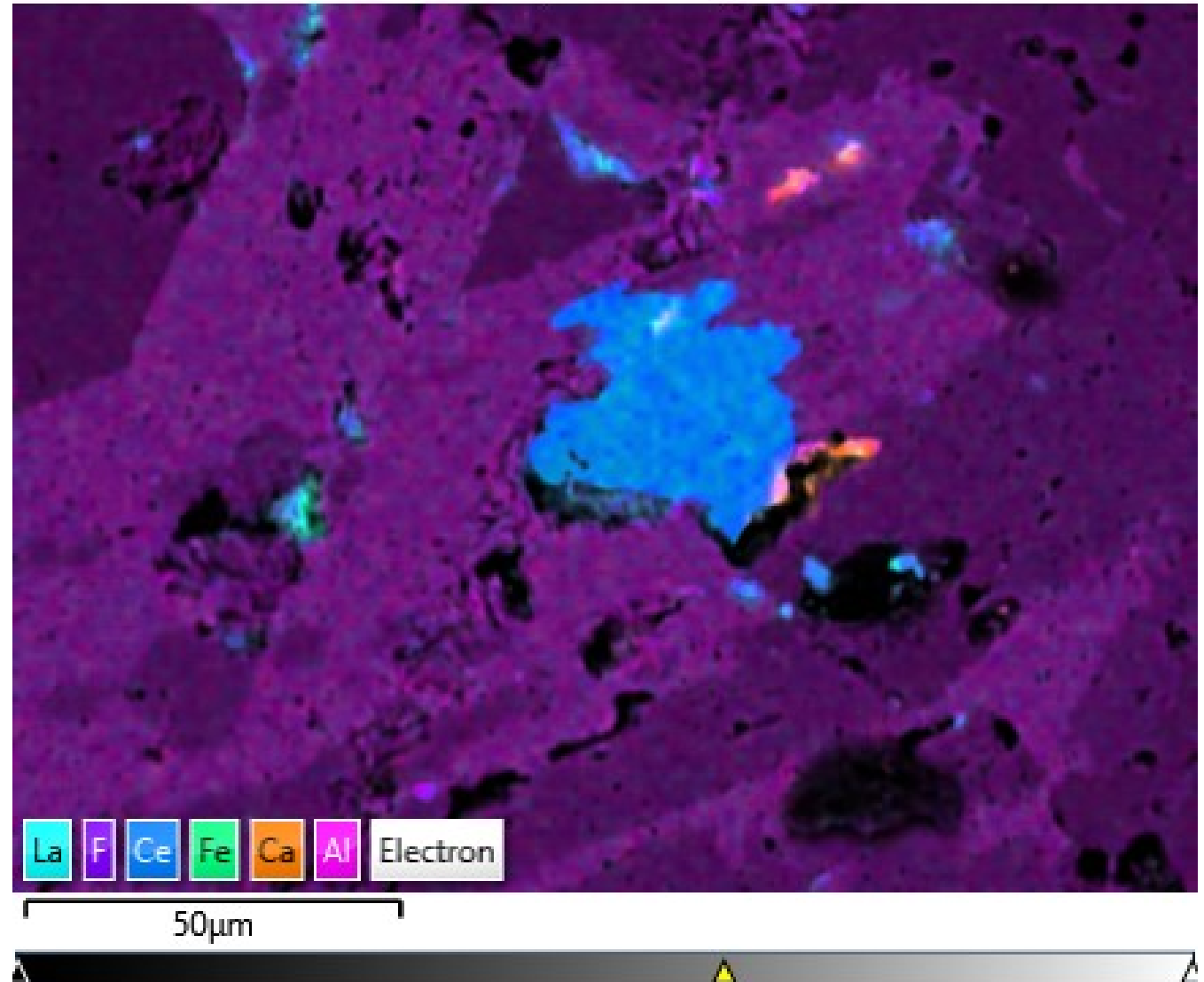
55615-01-15-05

Electron Image 5



- Blue- basnaesite
- Orange/Red- Calciocatapleiite

EDS Layered Image 5



55615-02-35

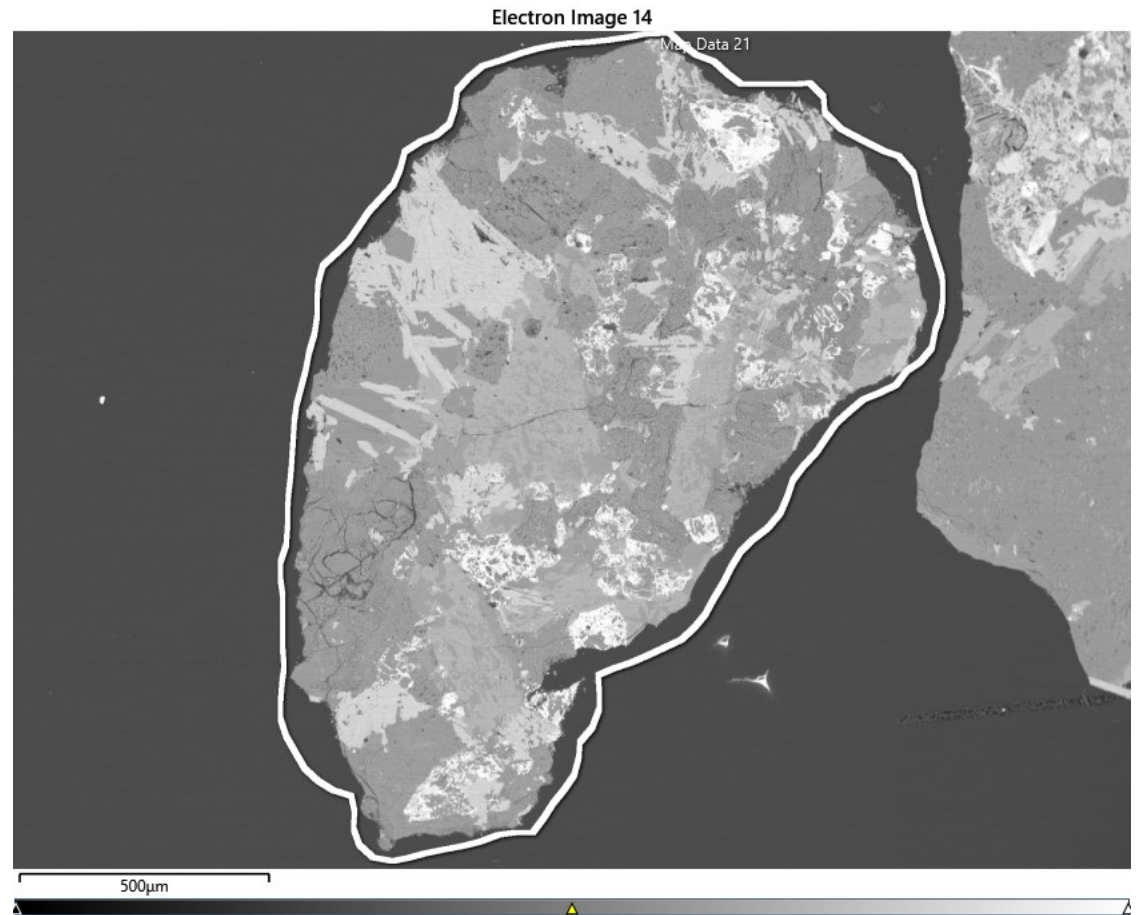
The 5 samples below have been mapped and calculated.

I use aluminum to maximize the REE mineral visibility.

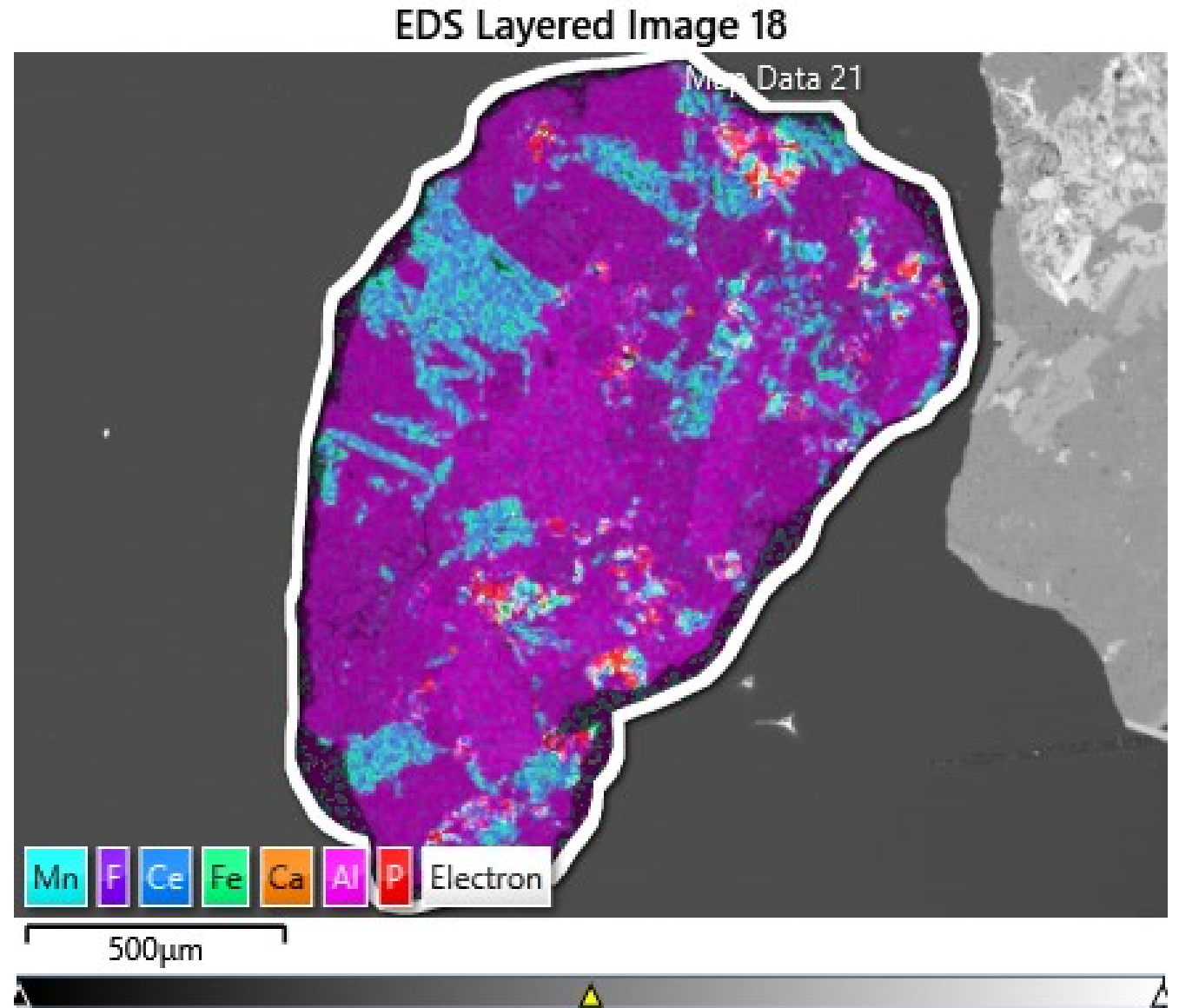
Silica is too abundant and makes imaging difficult.

Because this samples were crushed it was easier to map individual grains and calculate mineral abundance. Not all grains contained REE minerals and were not mapped. Some areas were magnified to better asses abundance.

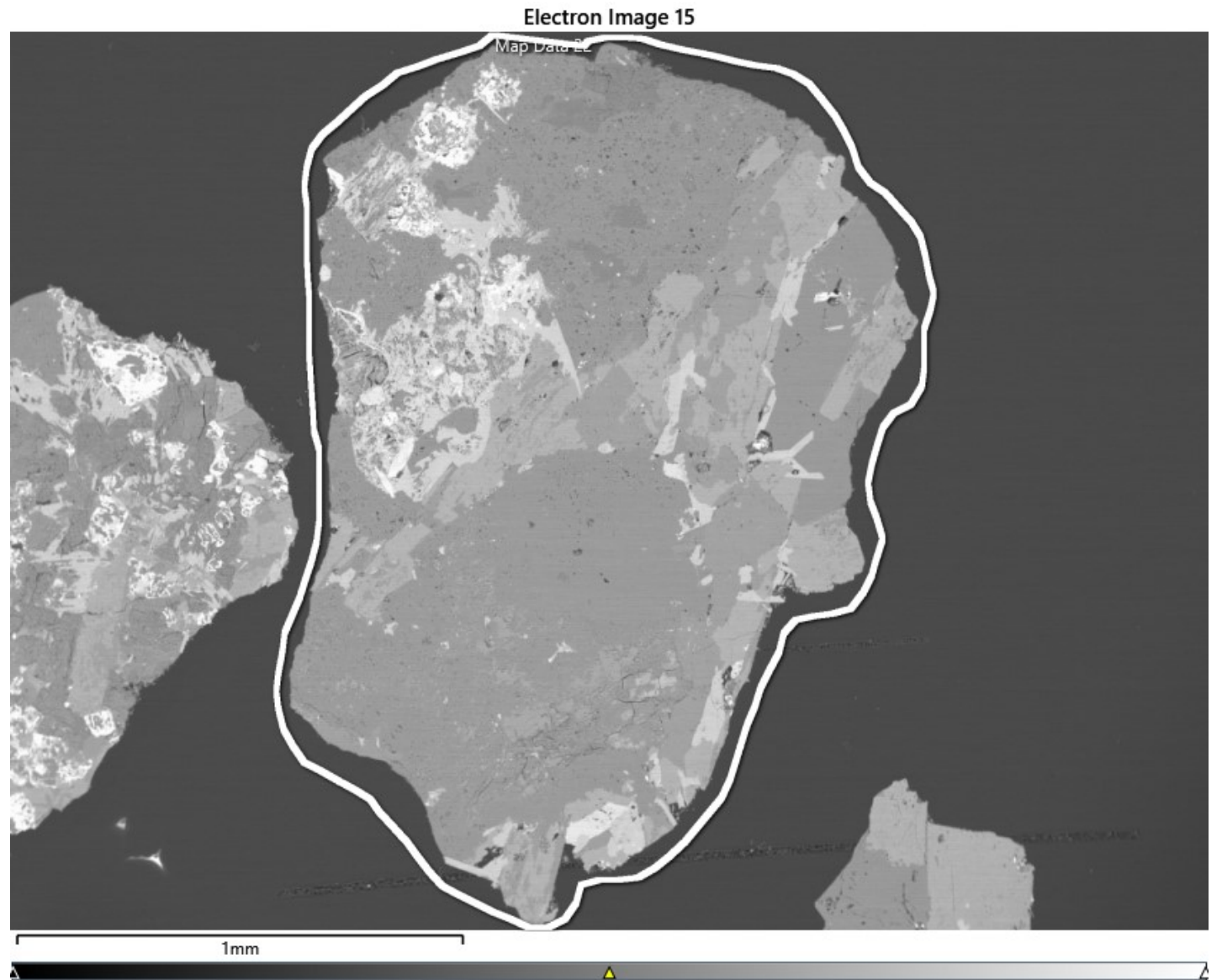
55615-03-35-01



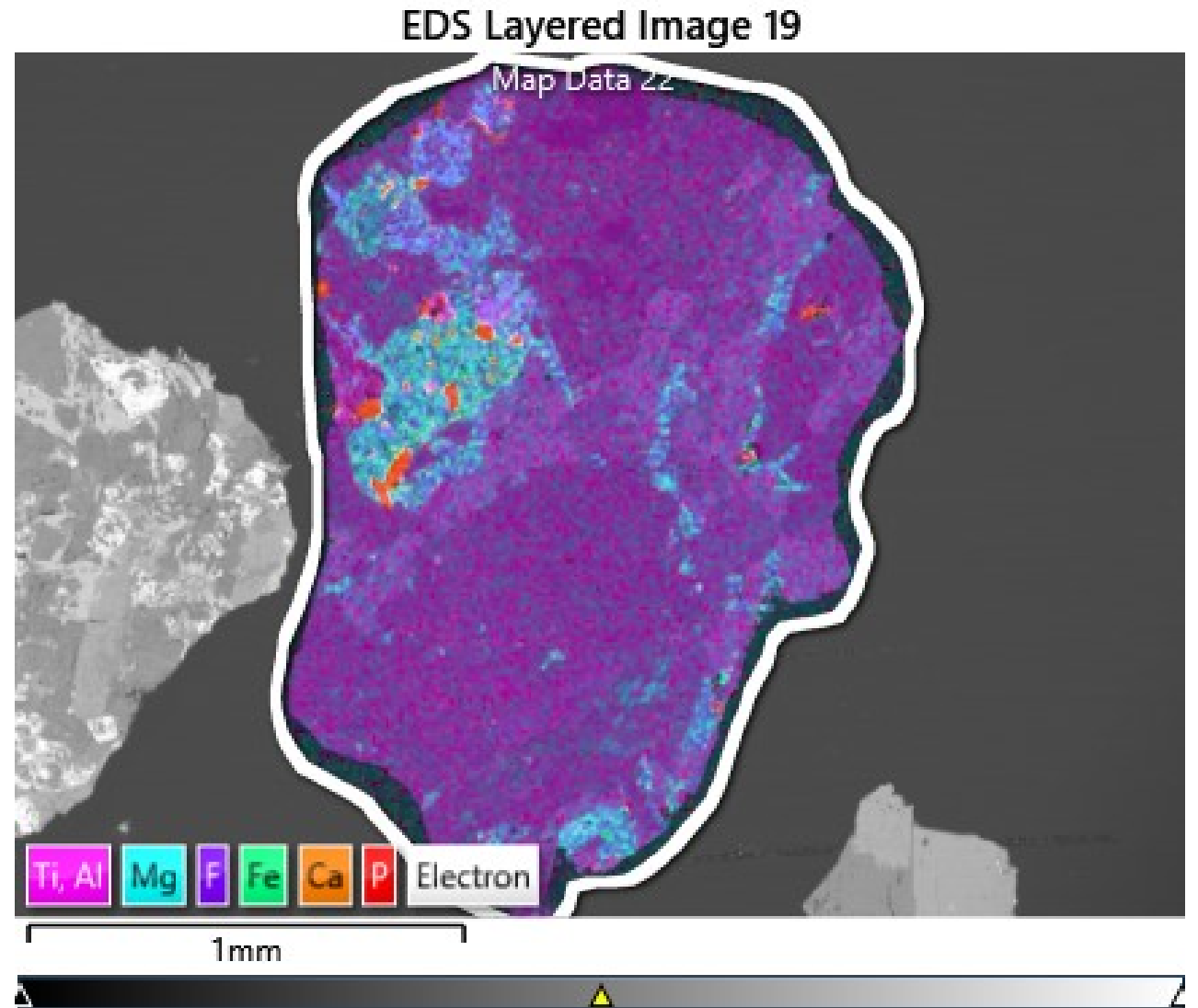
- Blue/Green- probably Arfvedsonite
- Blue- bastnaesite (none)
- Orange/yellow- Calciocatapleiite
- Red-biotite
- Purple- Al rich mineral



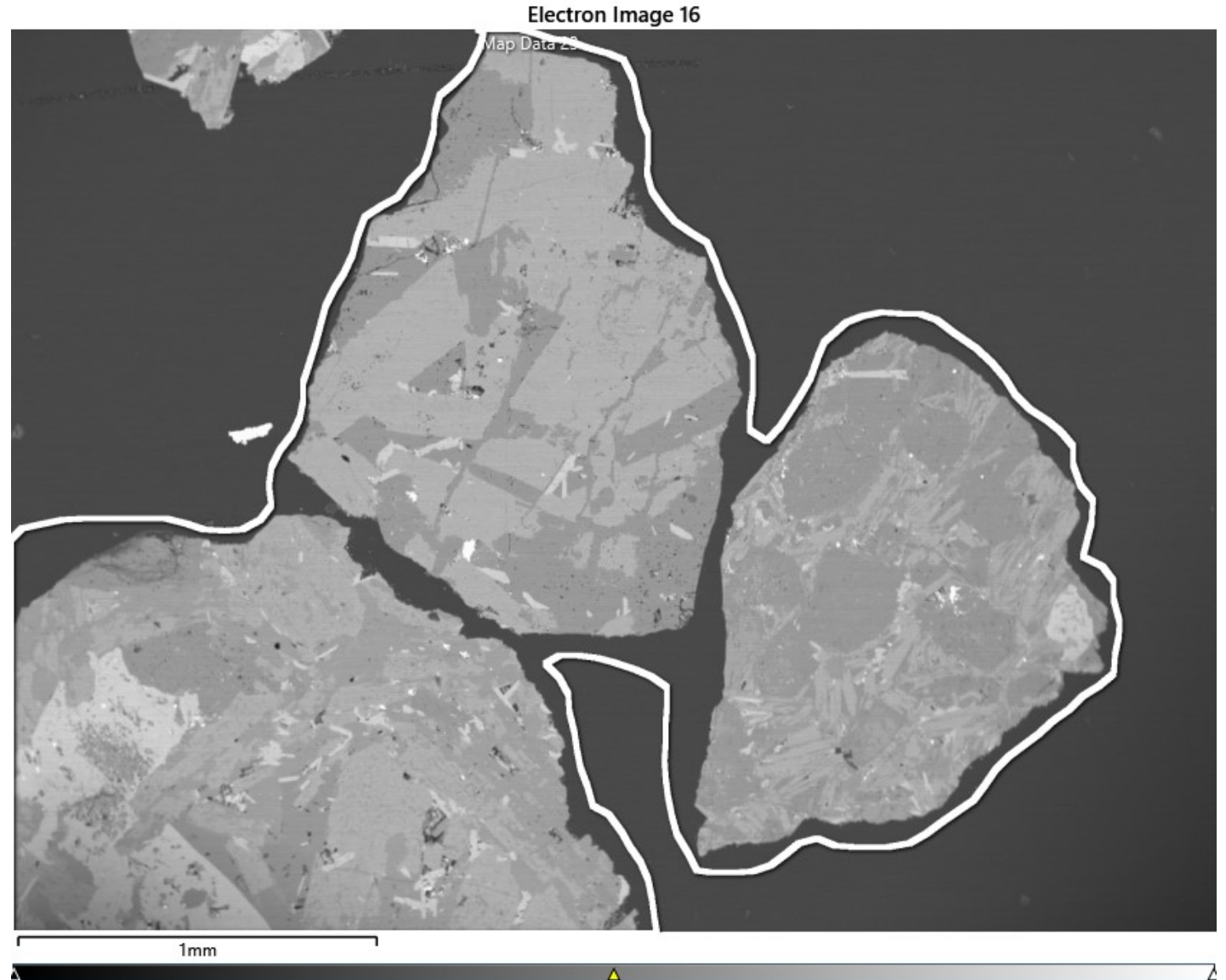
55615-02-35-02



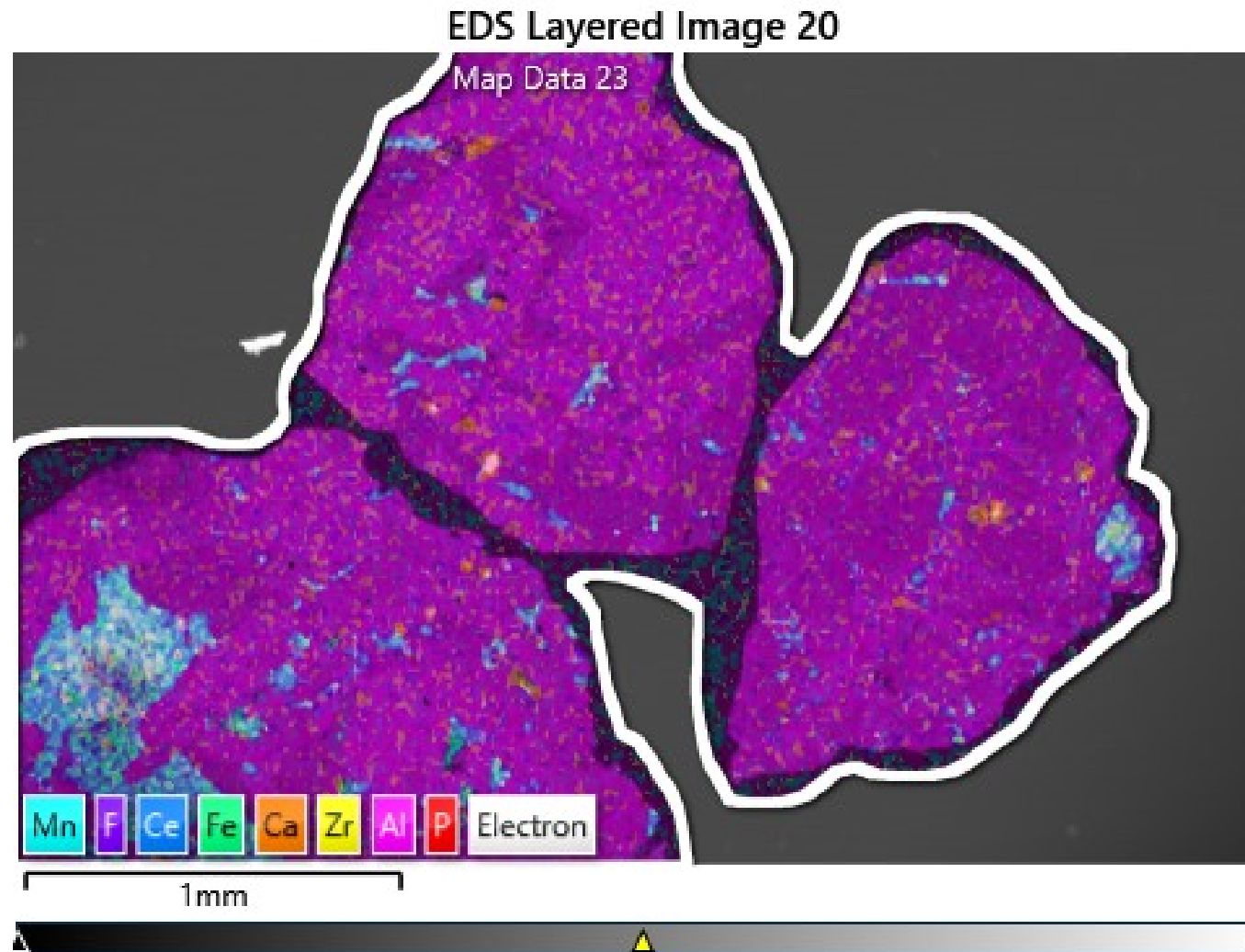
- Blue/Green- probably Arfvedsonite
- Blue- bastnaesite (none)
- Orange/yellow- Calciocatapleiite
- Red-monazite- rare
- Purple- Al rich mineral



55615-02-35-03



- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite (none)
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral

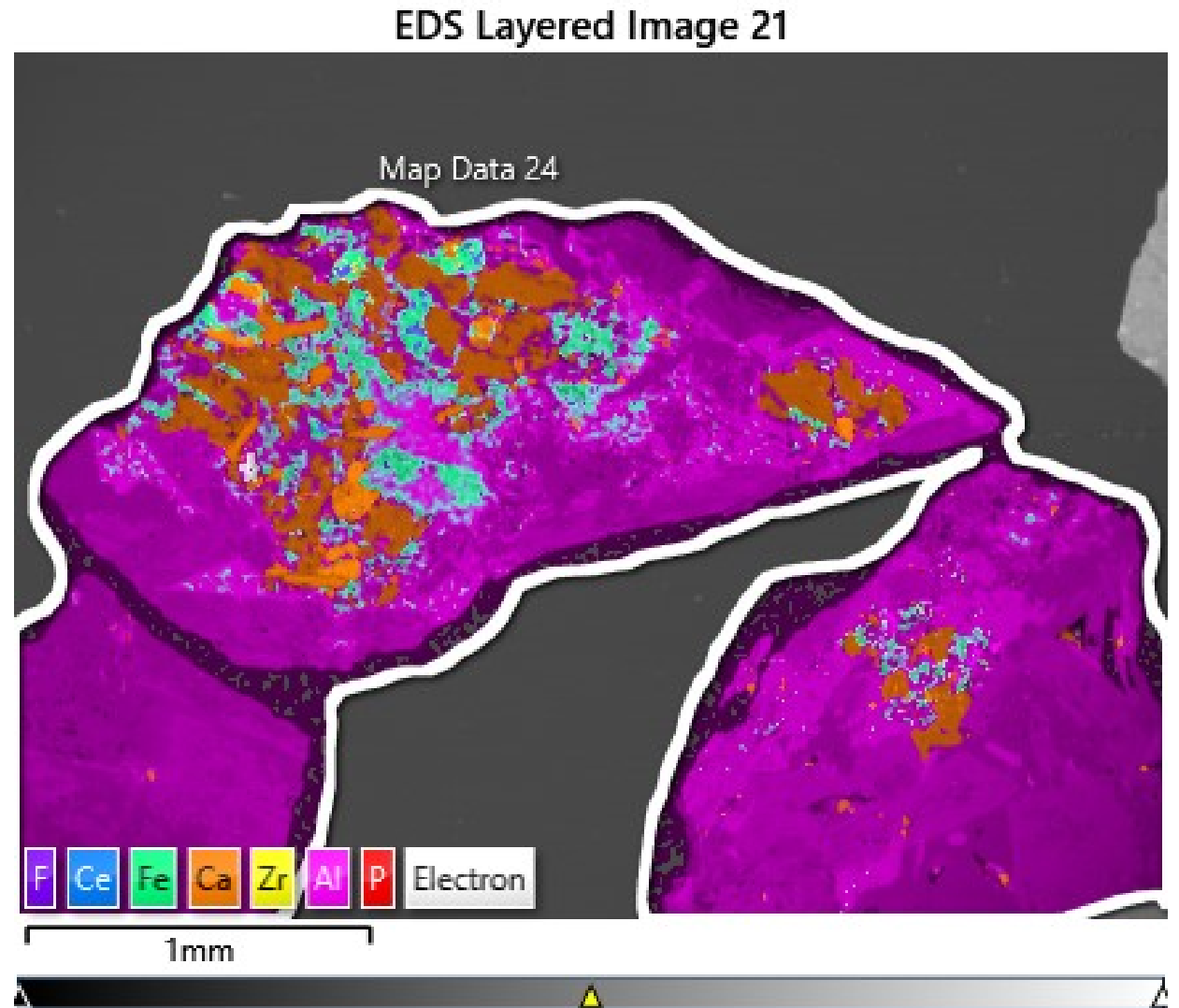


55615-02-35R-02

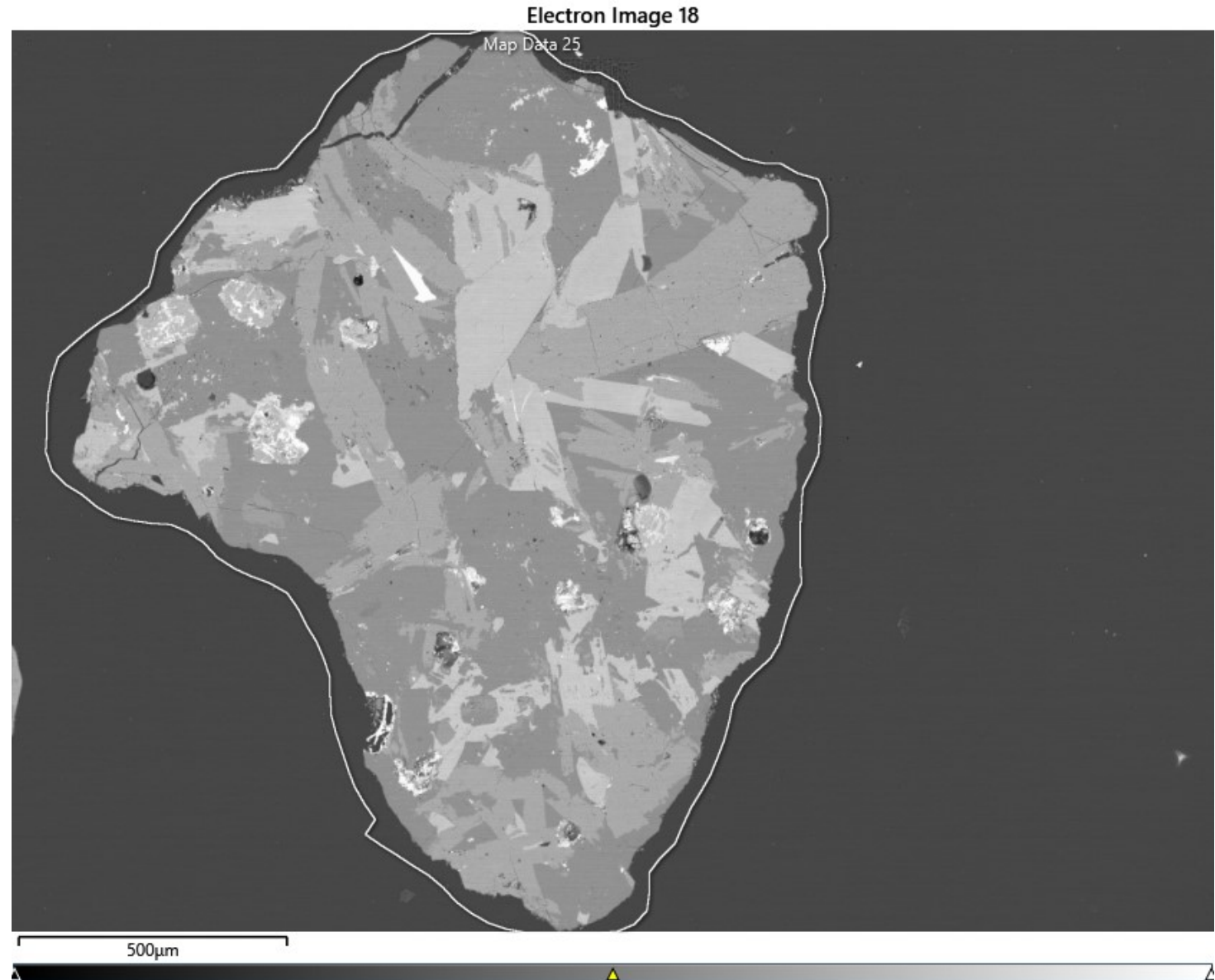
Electron Image 17



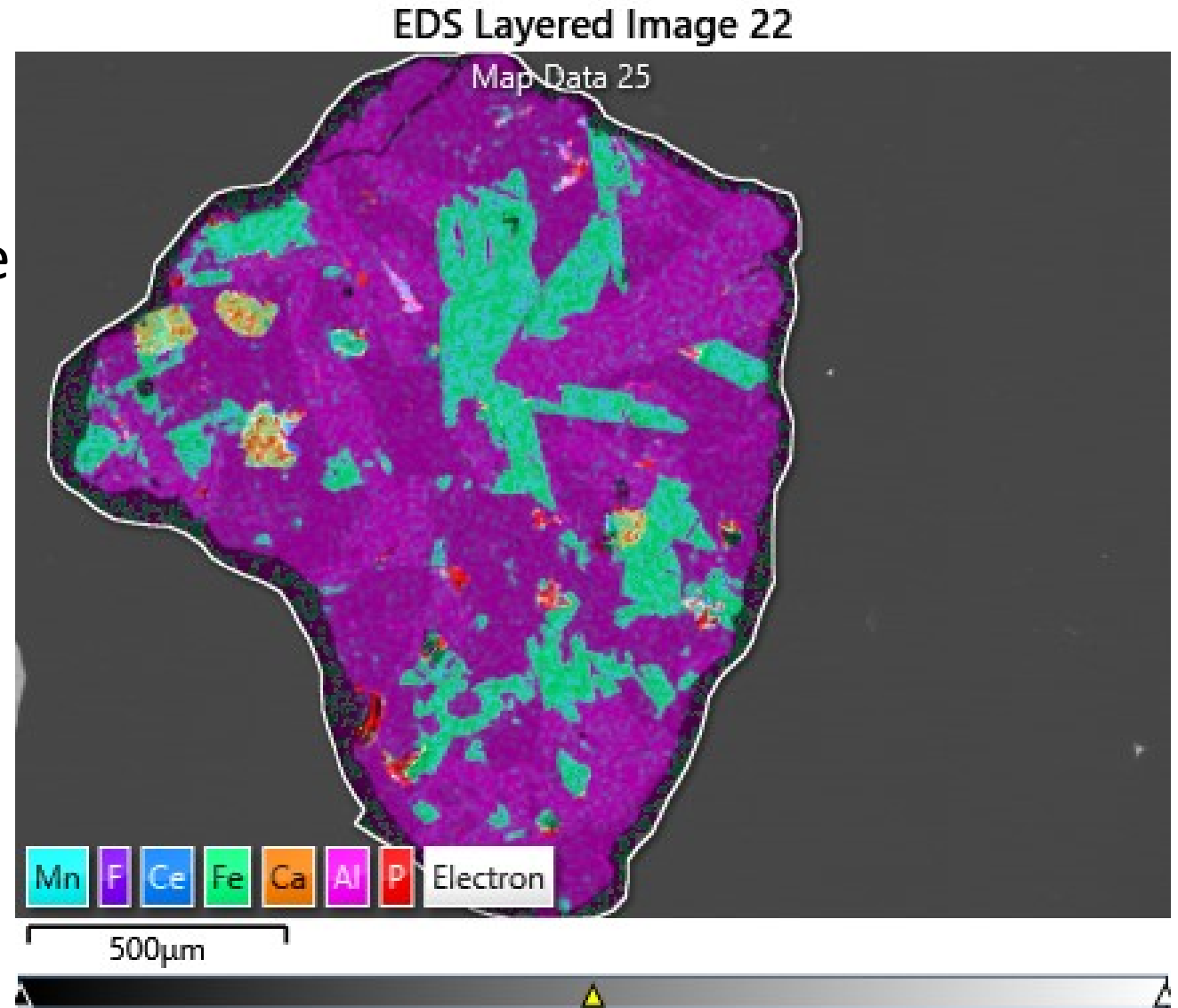
- Blue/Green- probably Arfvedsonite
- Blue- bastnaesite (none)
- Orange/yellow- Calciocatapleiite
- pink-monazite- rare
- Purple- Al rich mineral



55615-02-35R-02



- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink- monazite - none
- Purple- Al rich mineral



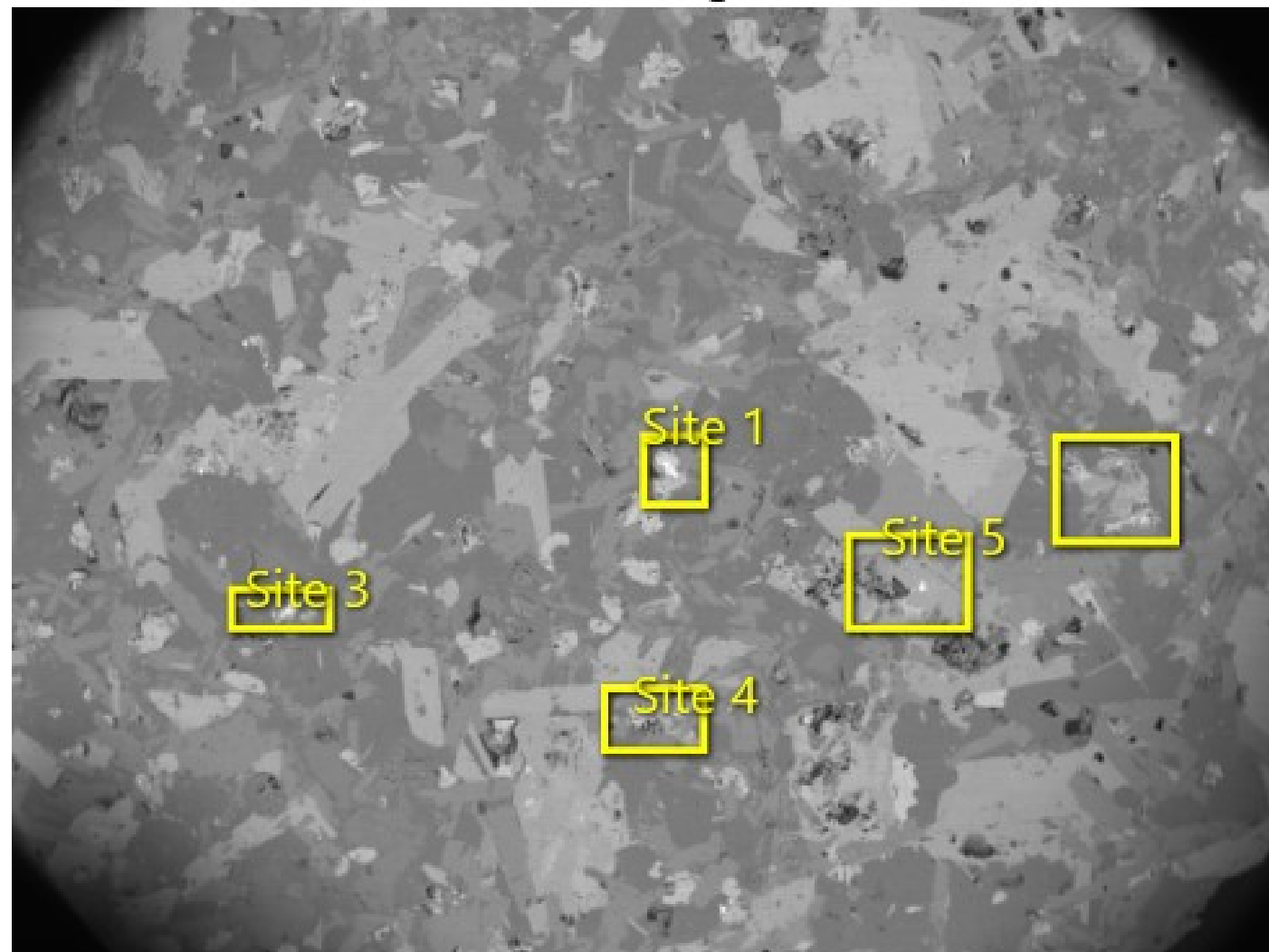
N-WMEB

All images below have been mapped and calculated for REE mineral abundance. It was more accurate to focus on areas with high contrasting minerals. Mapping the whole samples would have been exceedingly difficult and time intensive given the fine grain nature of the REE minerals.

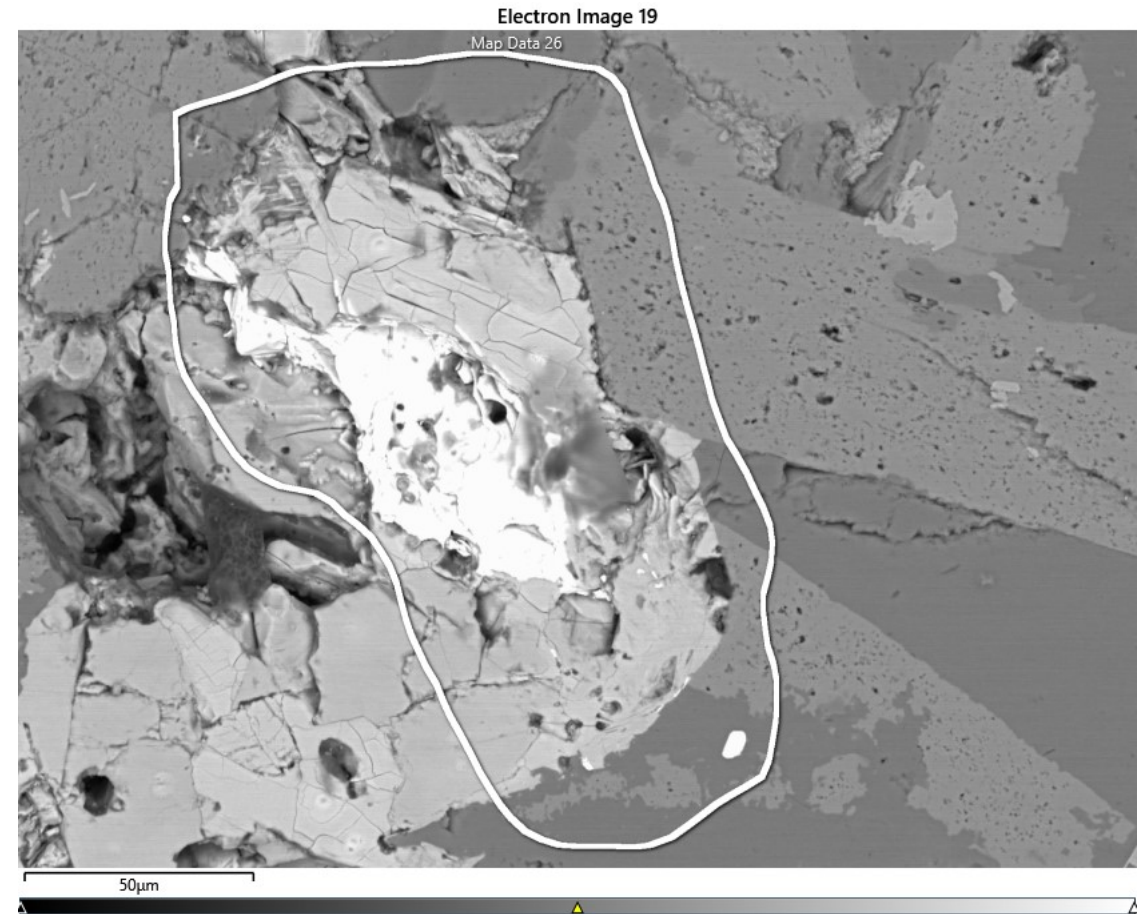
I use aluminum to maximize the REE mineral visibility.

Silica is too abundant and makes imaging difficult.

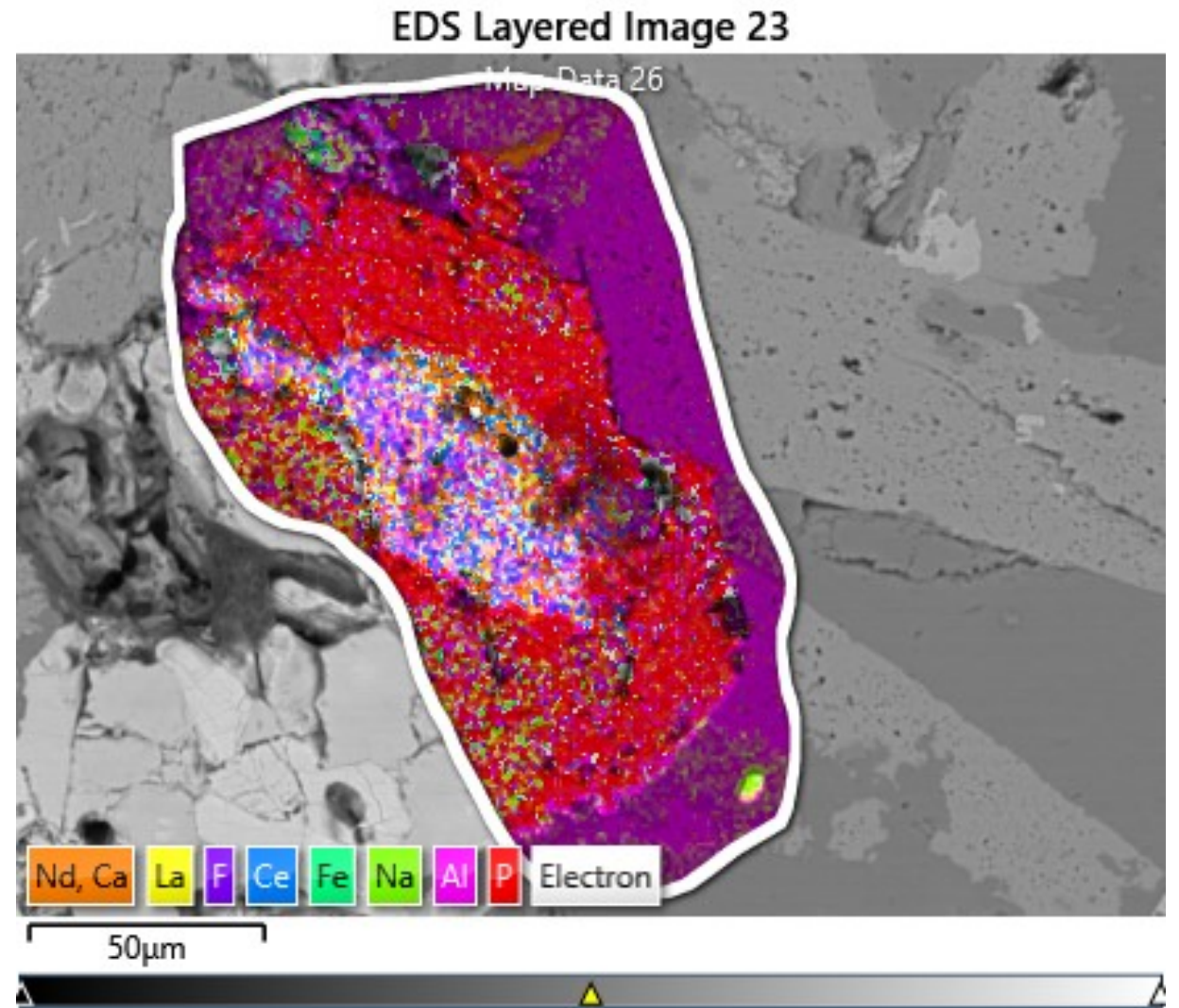
Electron Image 20



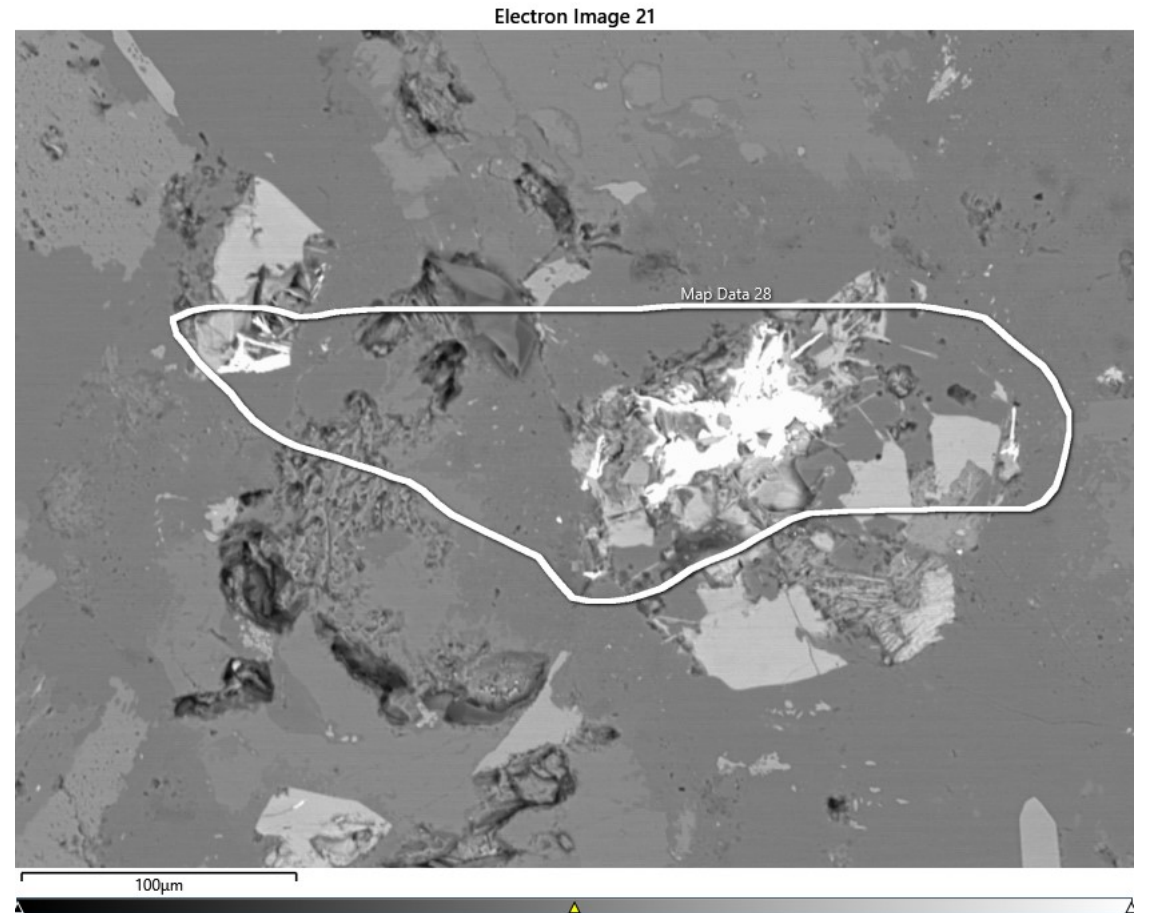
N-WMEB-01



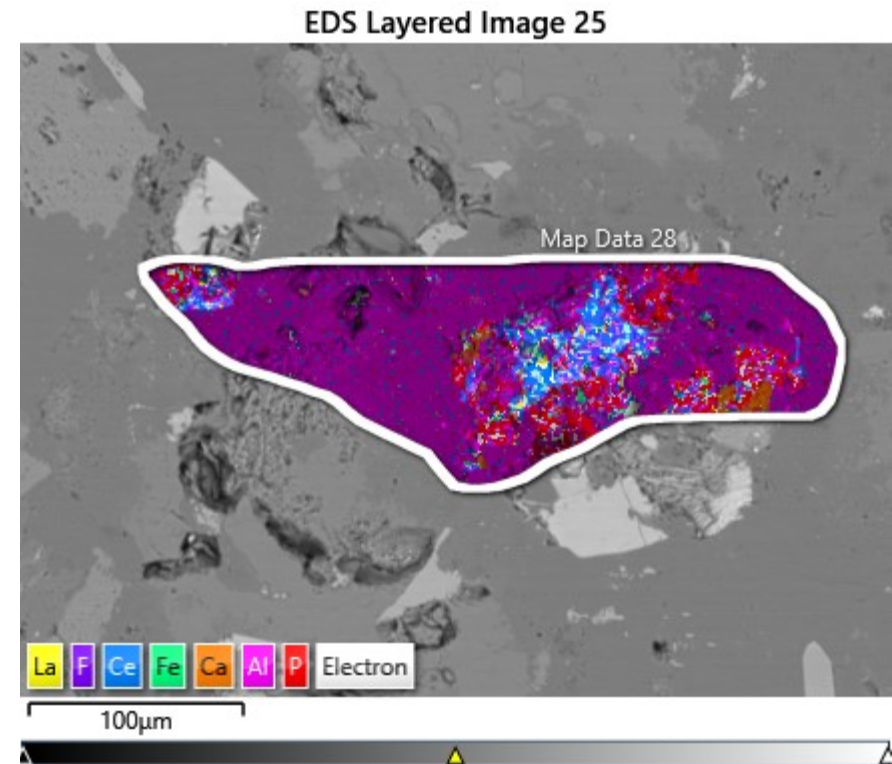
- Icy Blue and purple- bastnaesite
- Purple- Al rich mineral
- Red- biotite?



N-WMEB-03



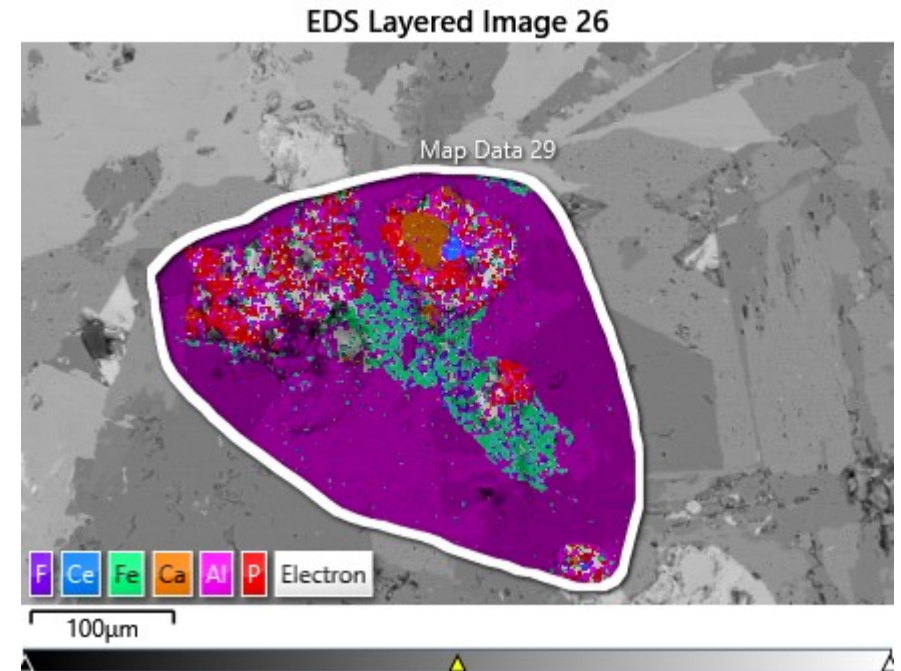
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Purple- Al rich mineral



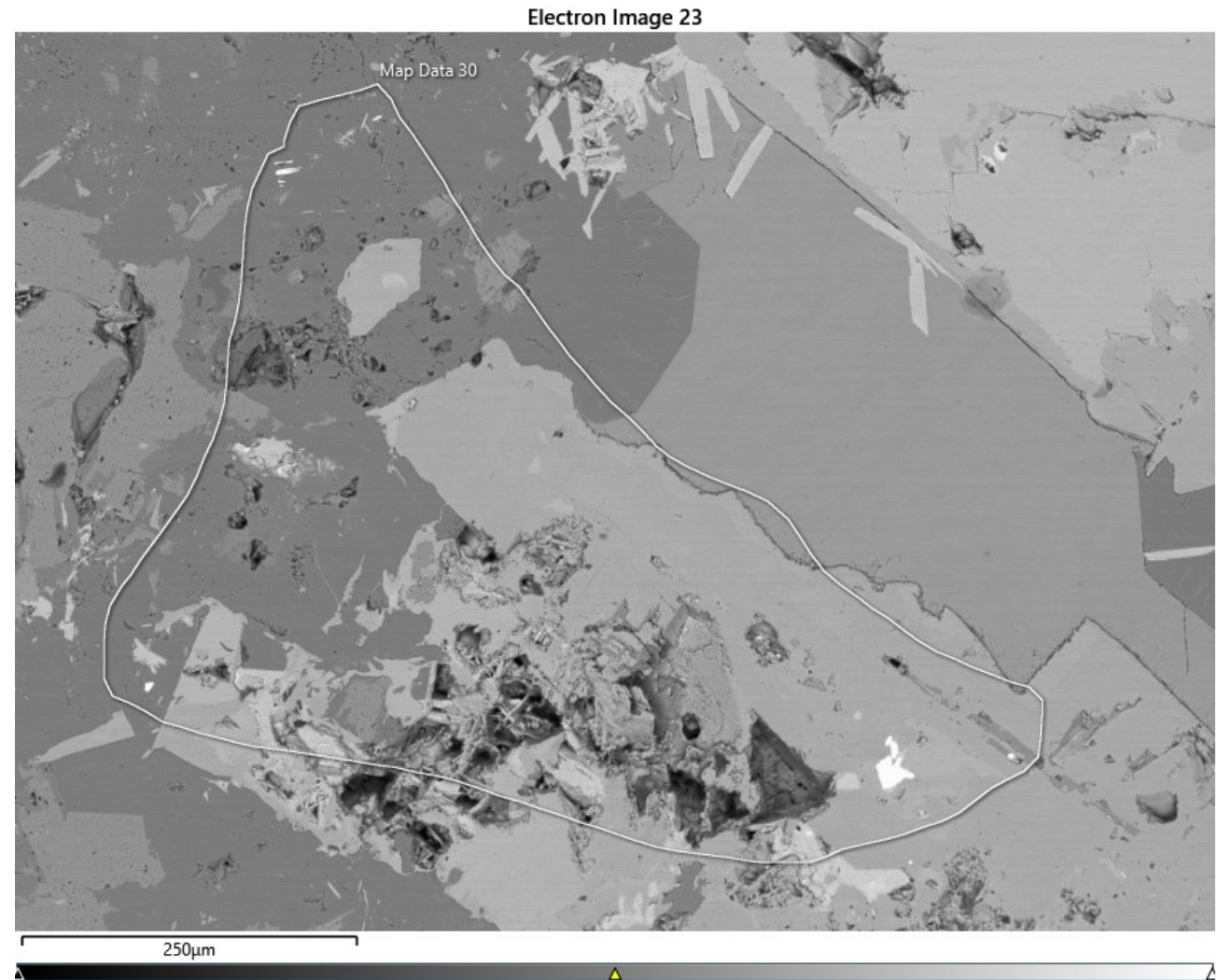
N-WMEB-04



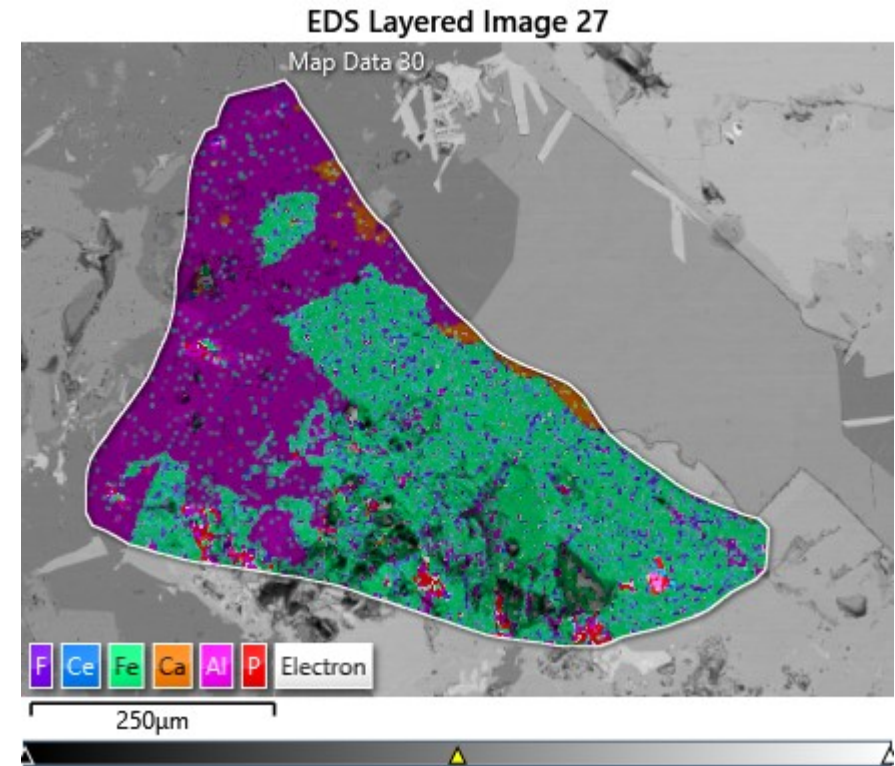
- Blue/Green- arfedsonite and biotite
- Icy Blue- basnaesite (none)
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral



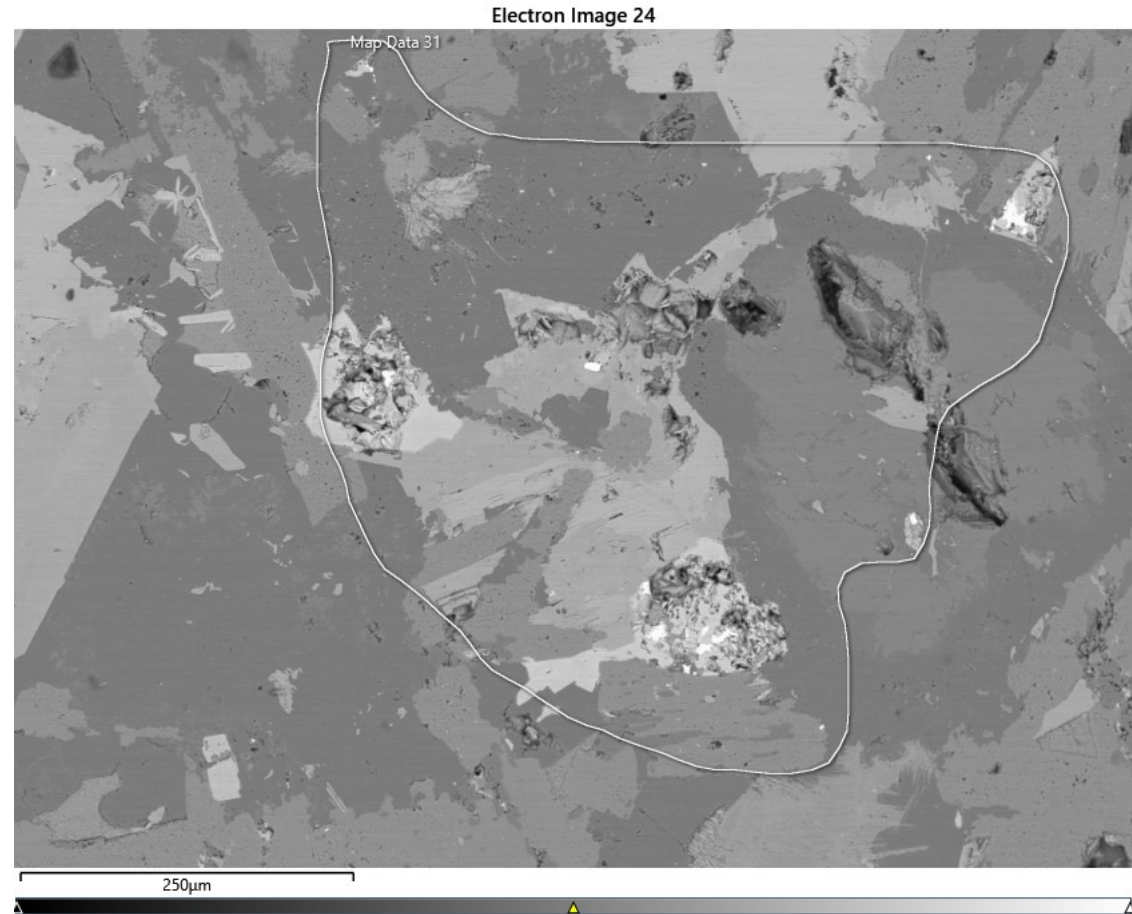
N-WMEB-05



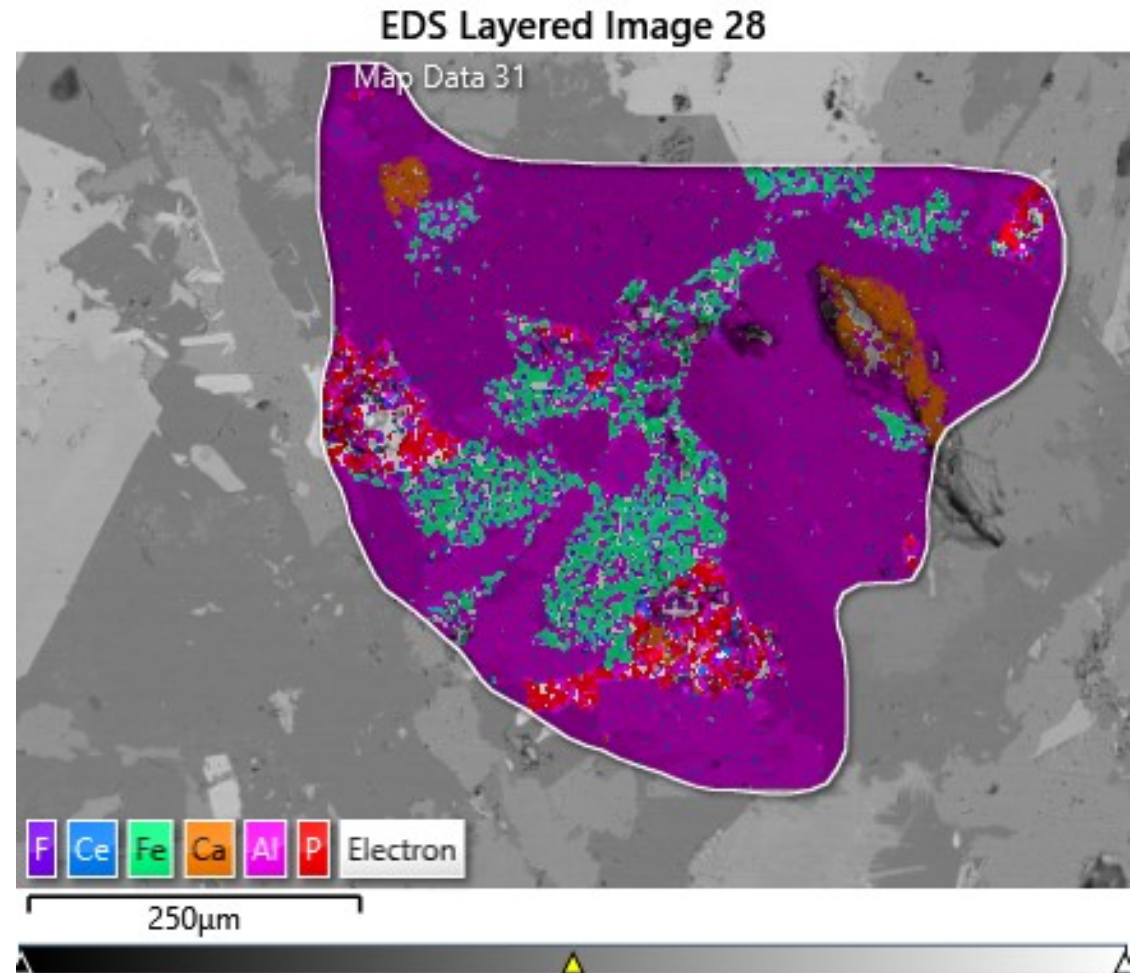
- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Red/pink-monazite
- Purple- Al rich mineral



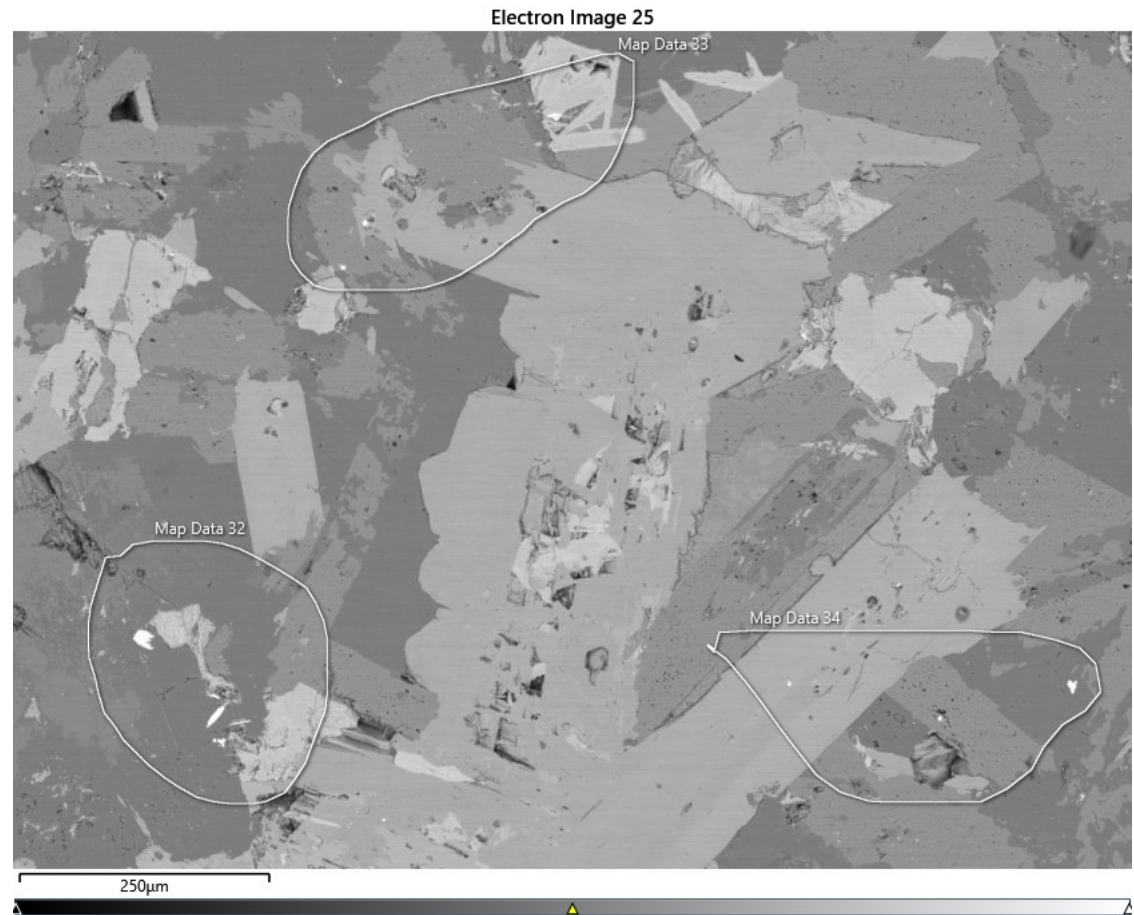
N-WMEB-06



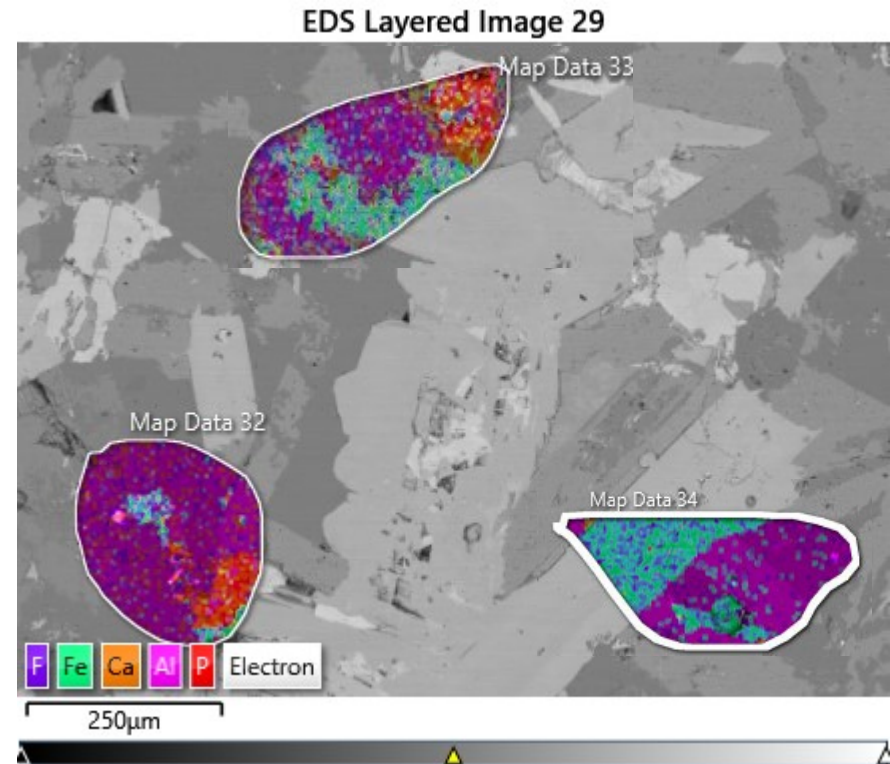
- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite (none)
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral



N-WMEB-07

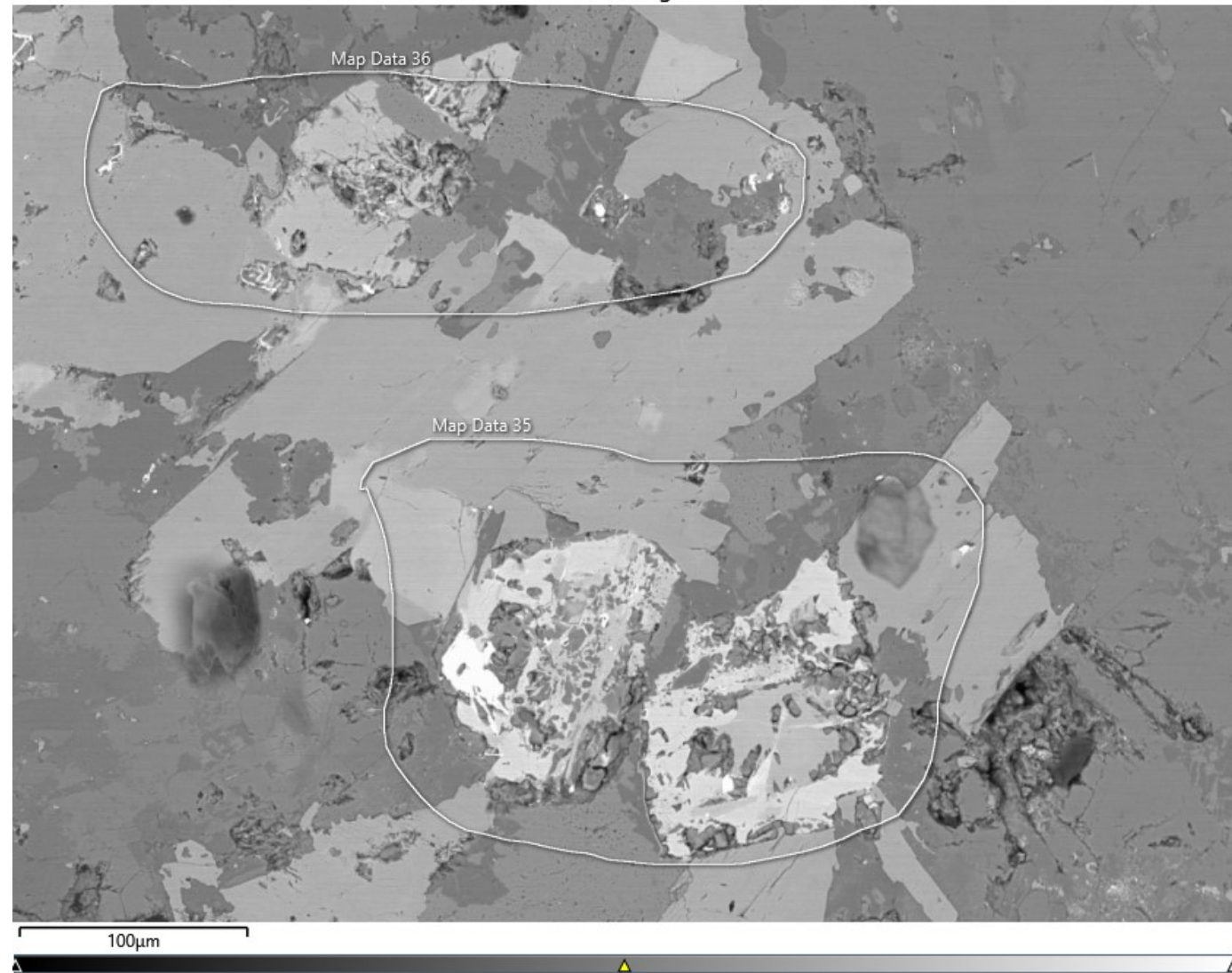


- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral

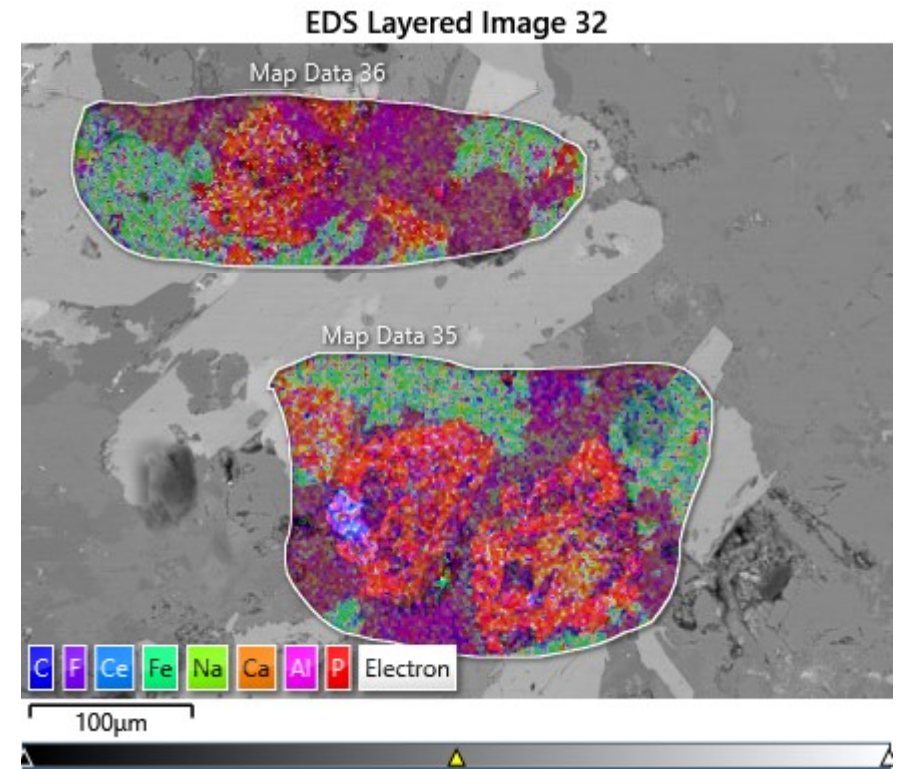


N-WMEB-08

Electron Image 27



- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral

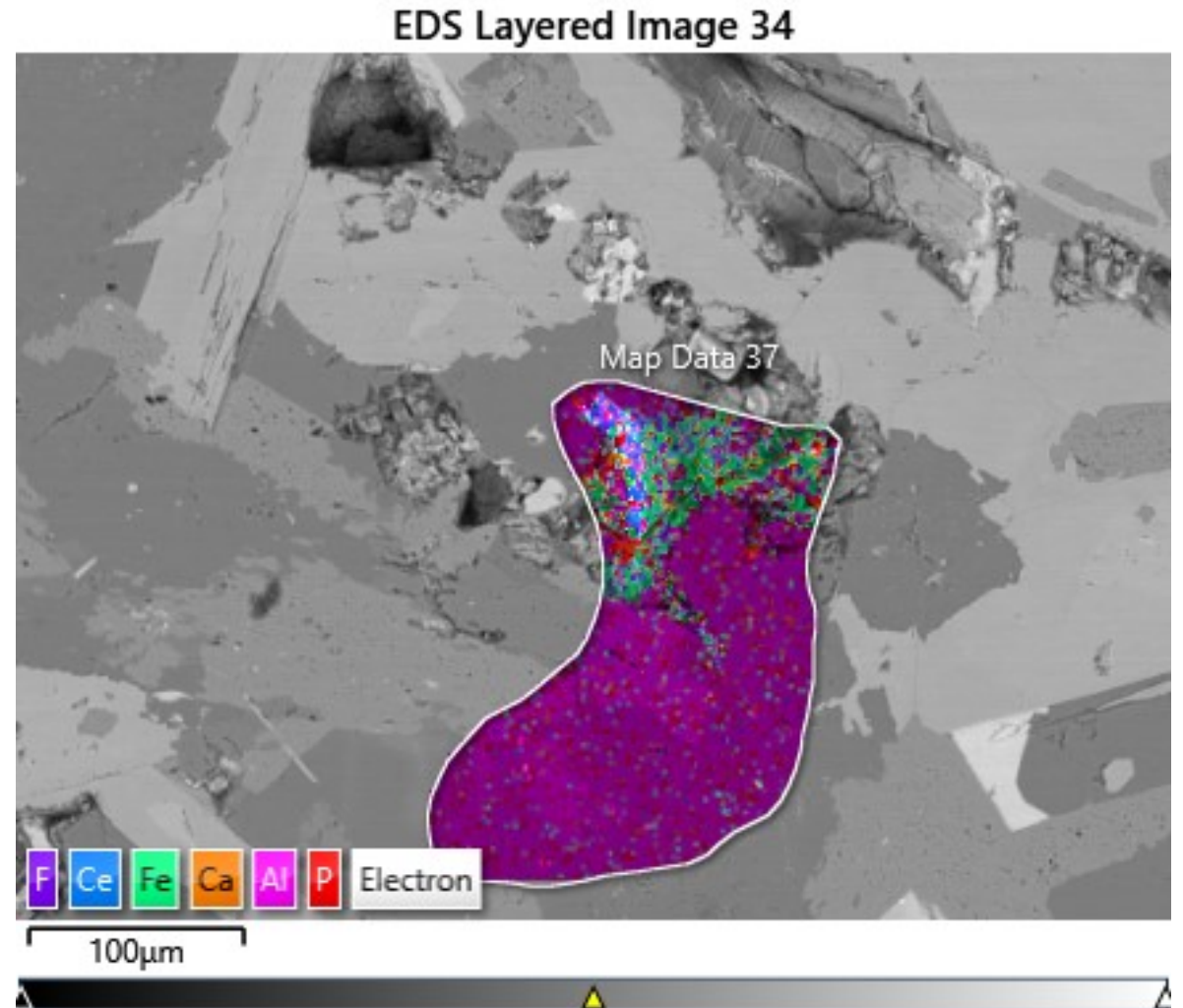


N-WMEB-09

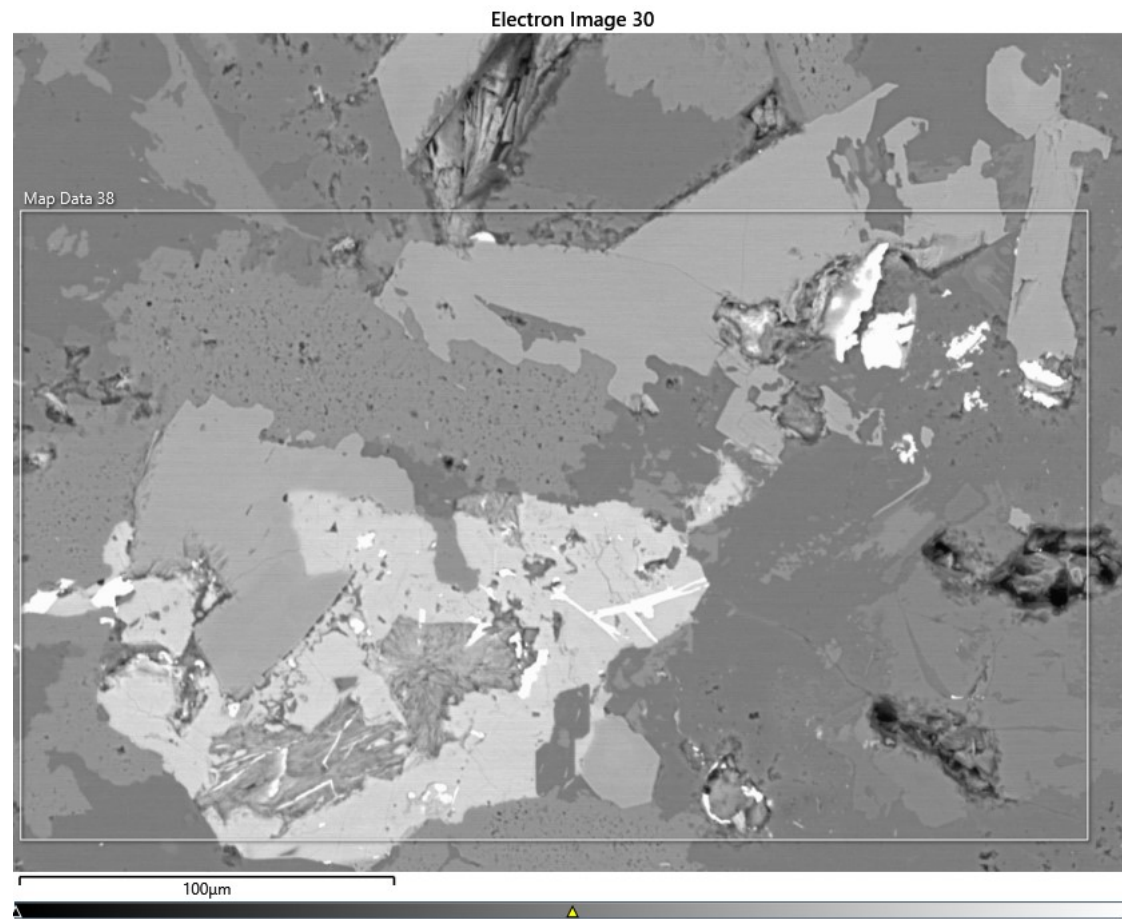
Electron Image 28



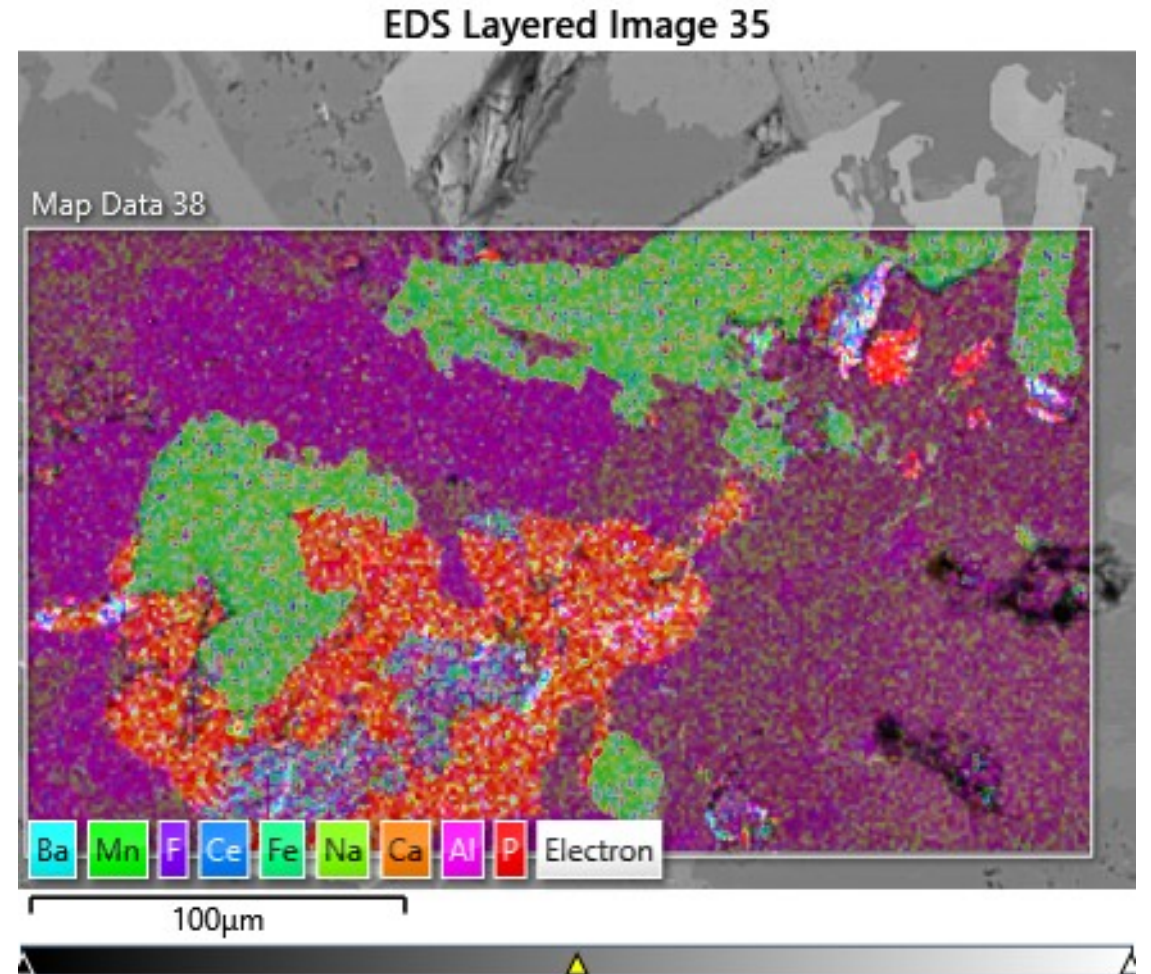
- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral



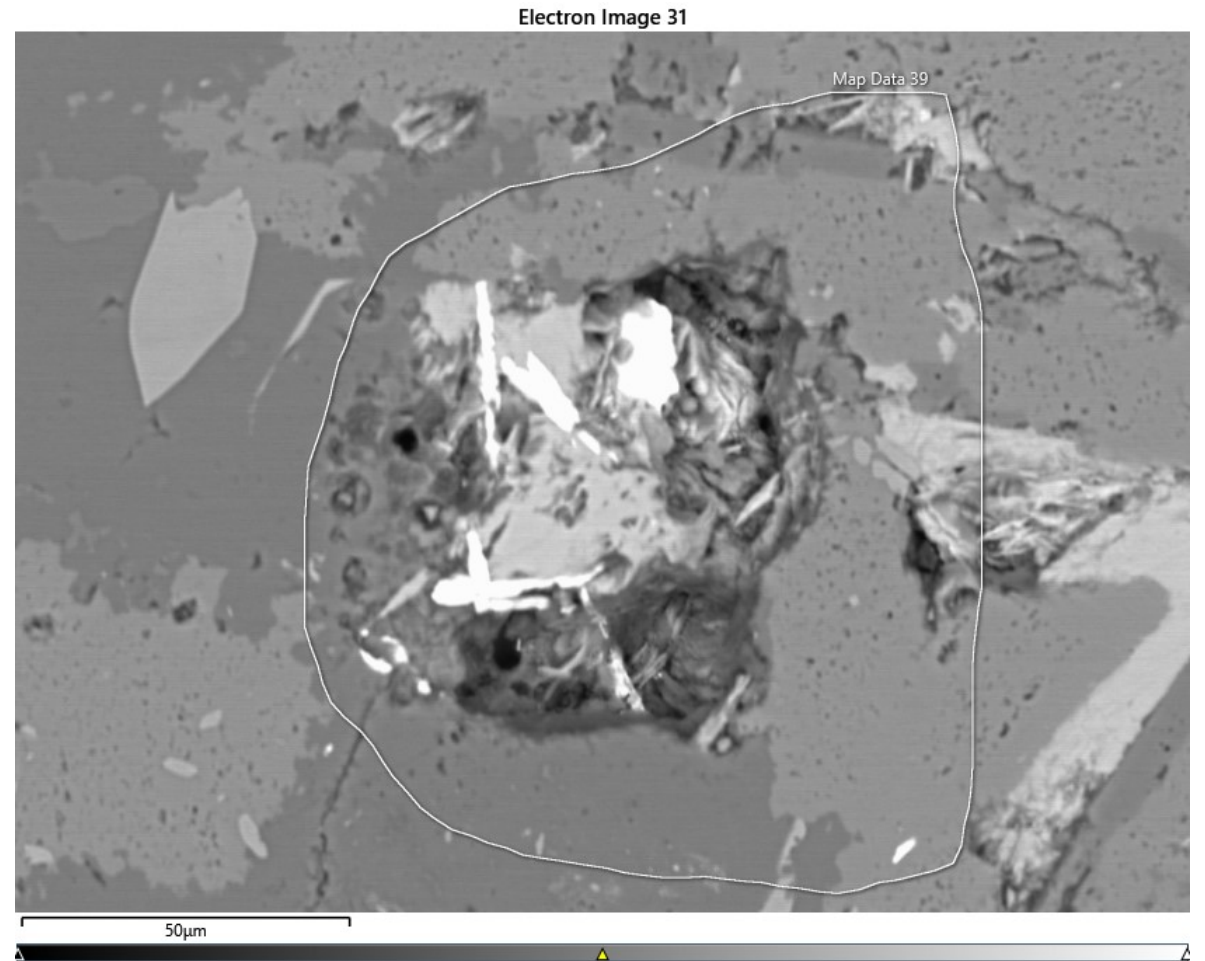
N-WMEB-10



- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral
- Green- agerine?

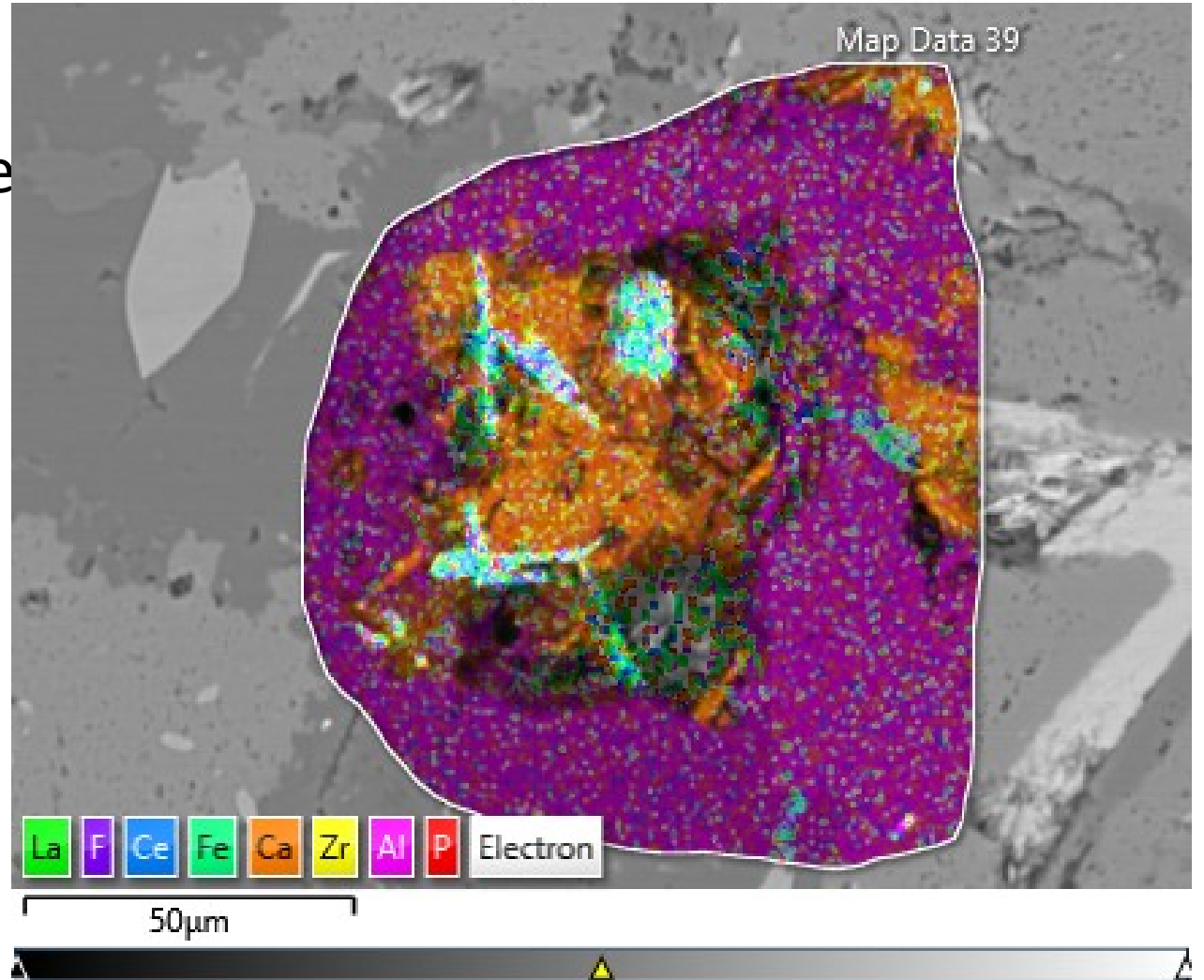


N-WMEB-11



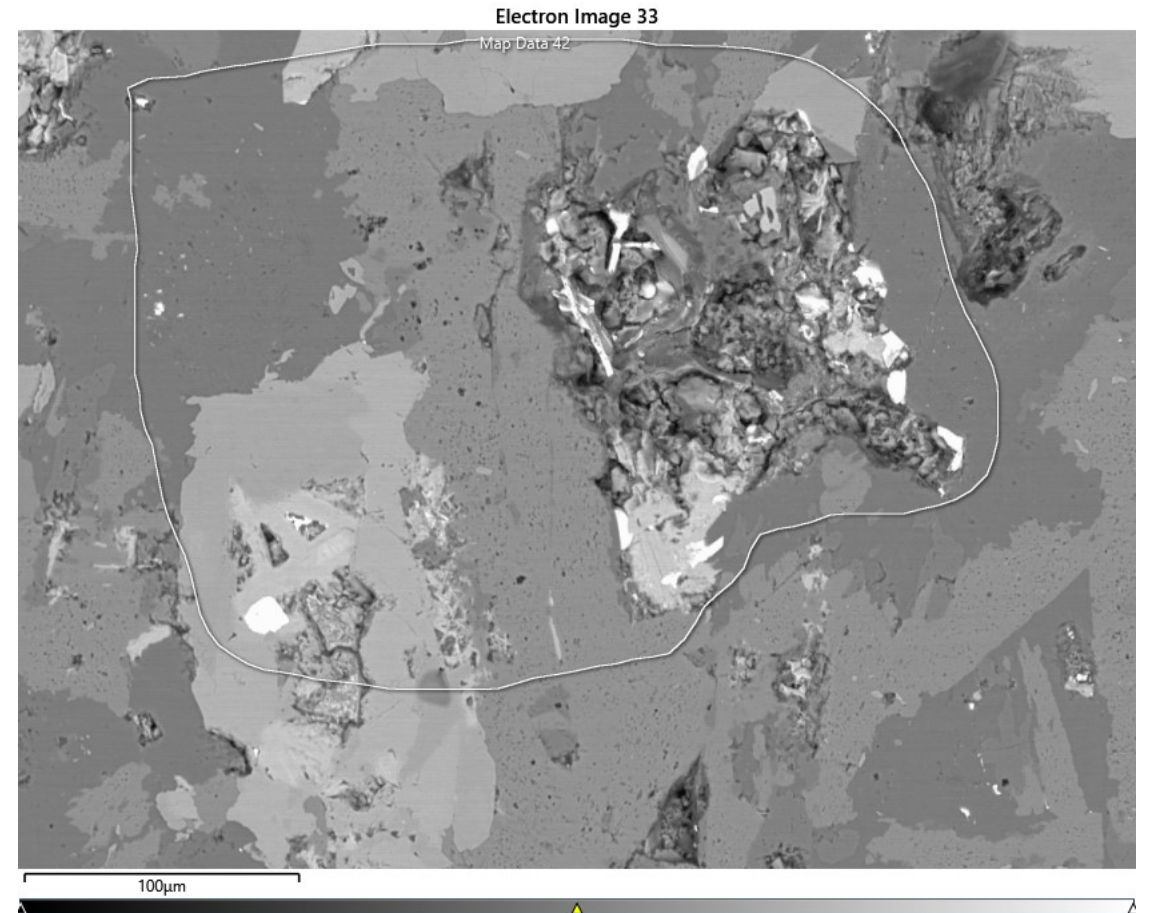
EDS Layered Image 36

Map Data 39

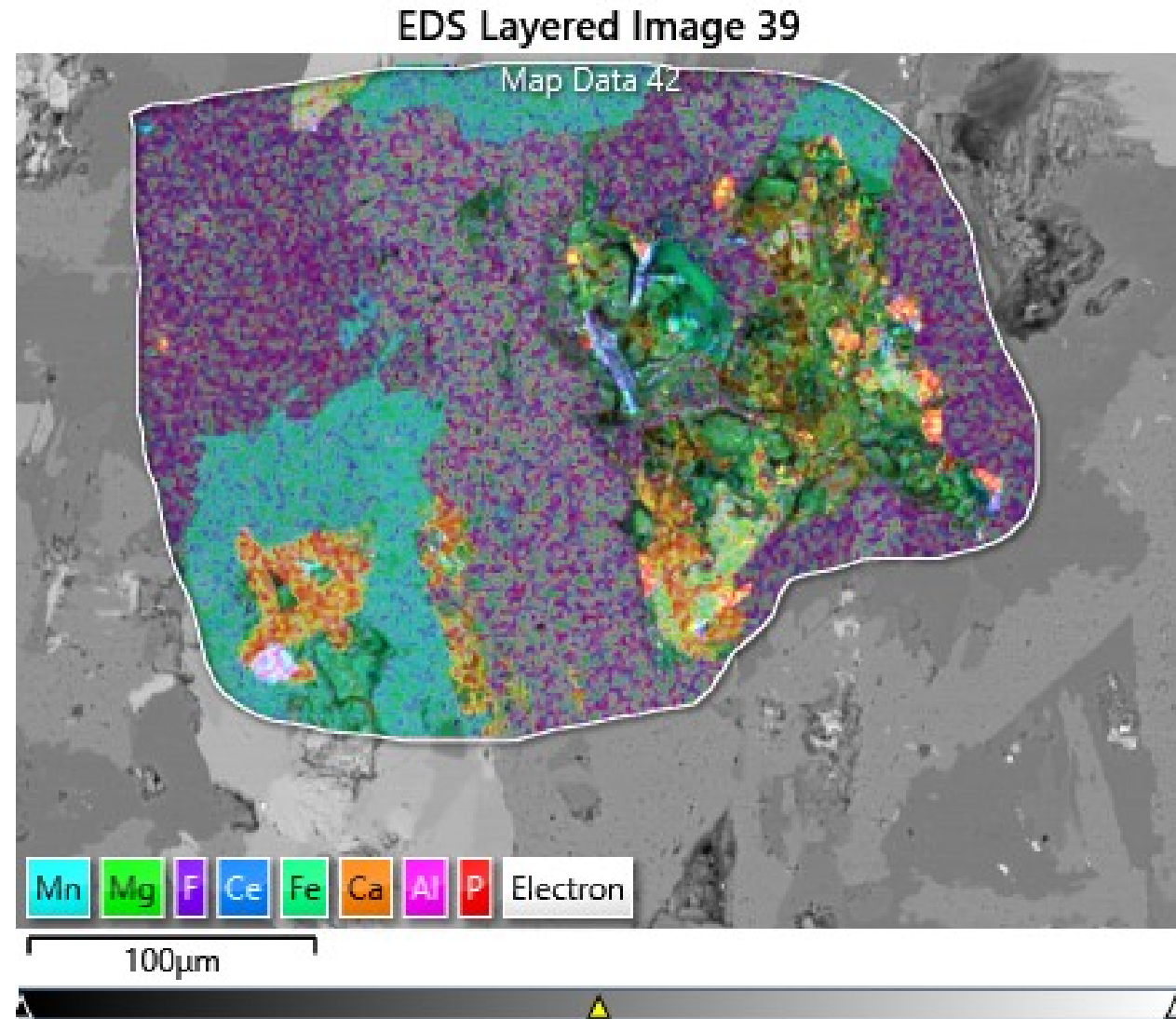


- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral

N-WMEB-12



- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral



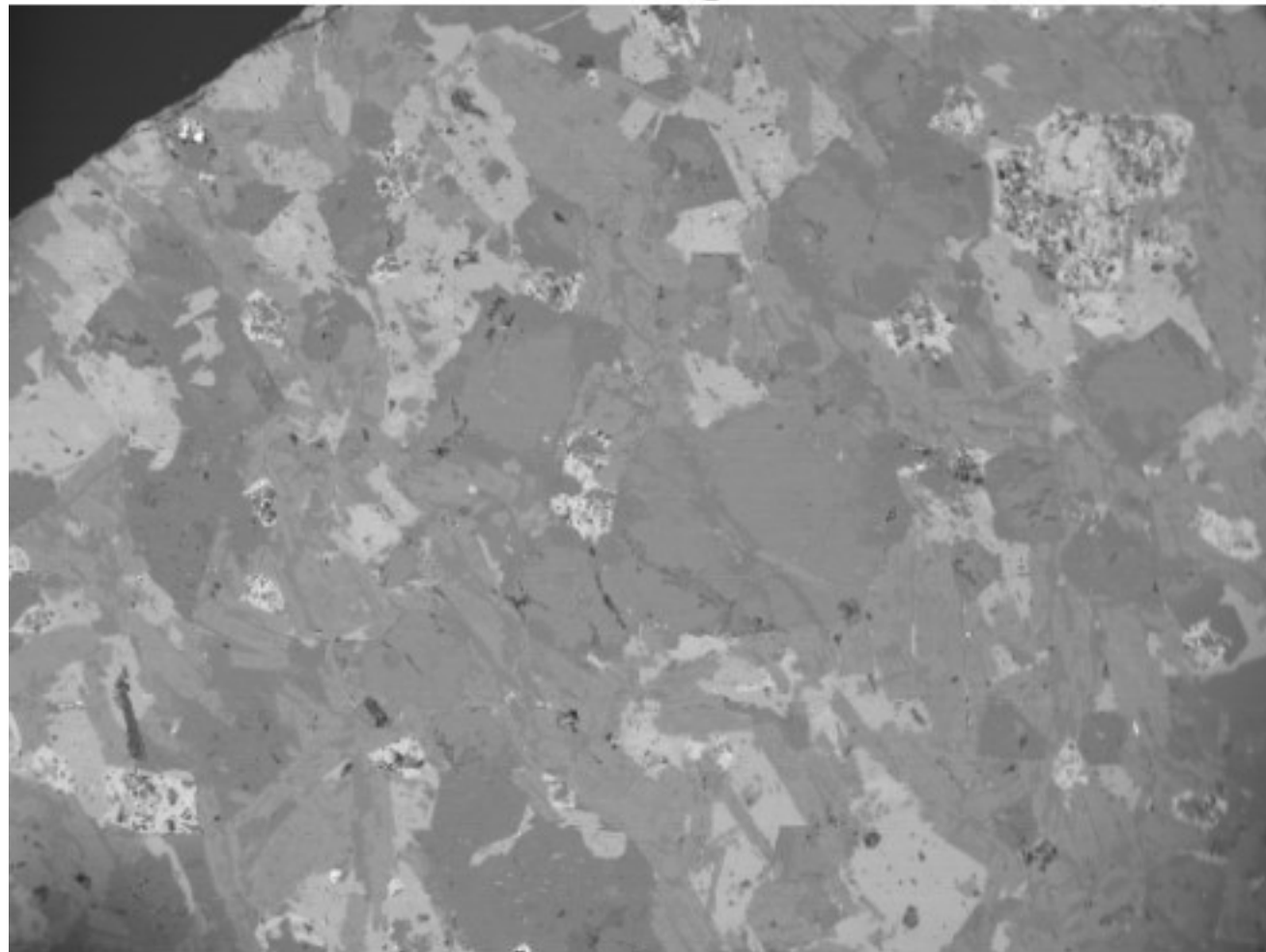
S-WMEB

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I use aluminum to maximize the REE mineral visibility.

Silica is too abundant and makes imaging difficult.

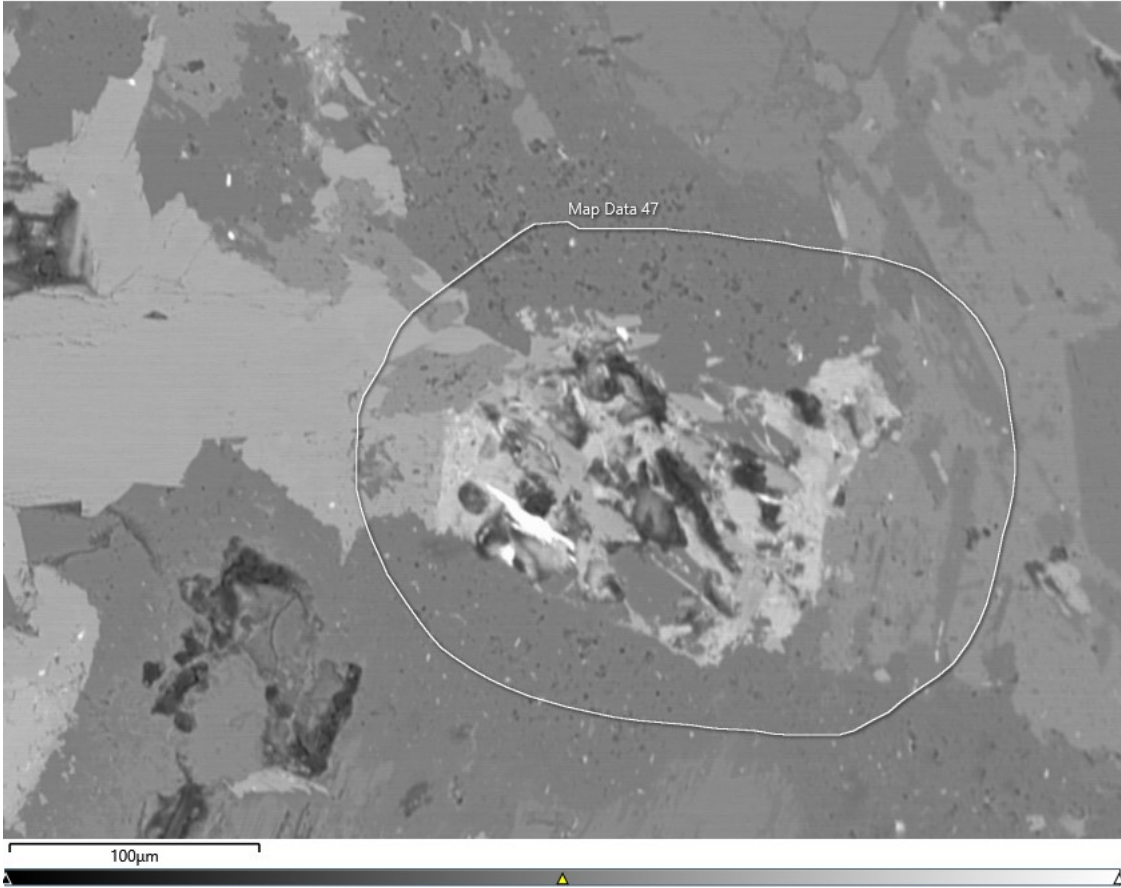
Electron Image 34



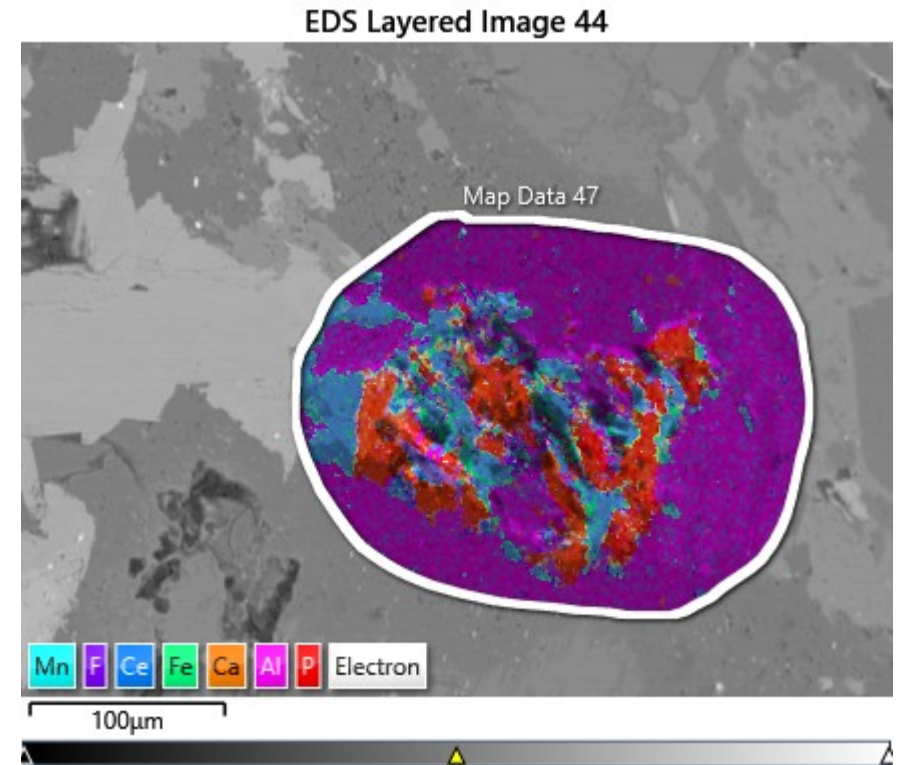
1mm

S-WMEB-01

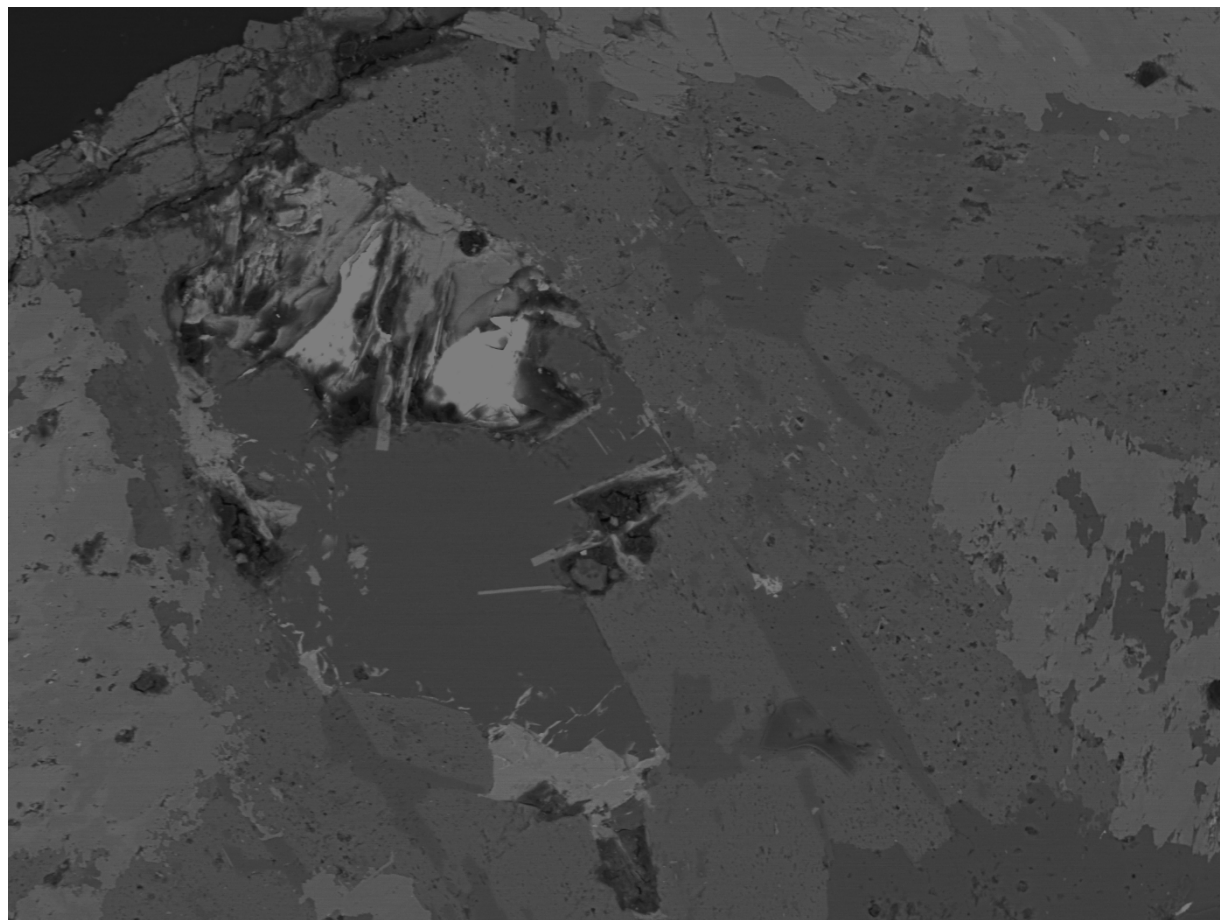
Electron Image 38



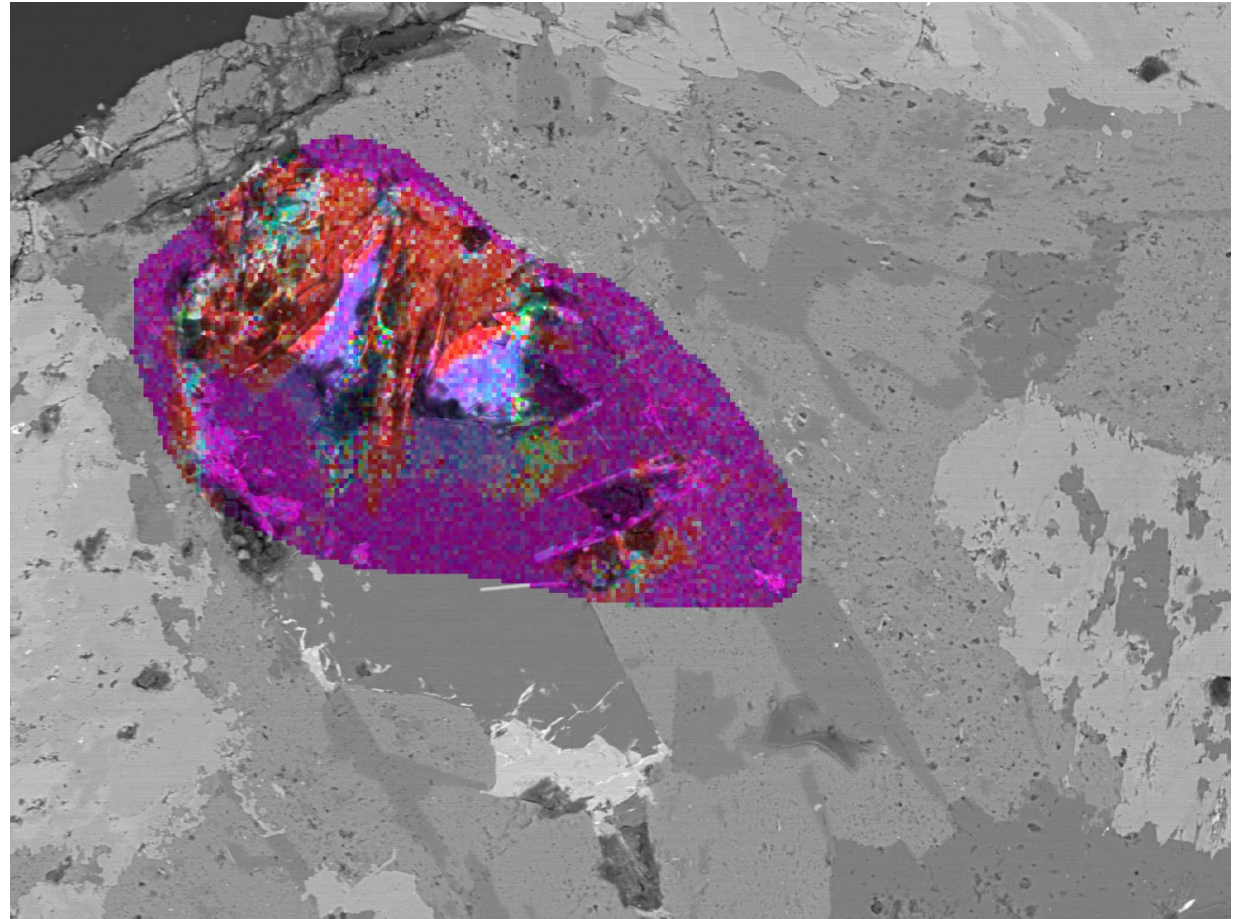
- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral



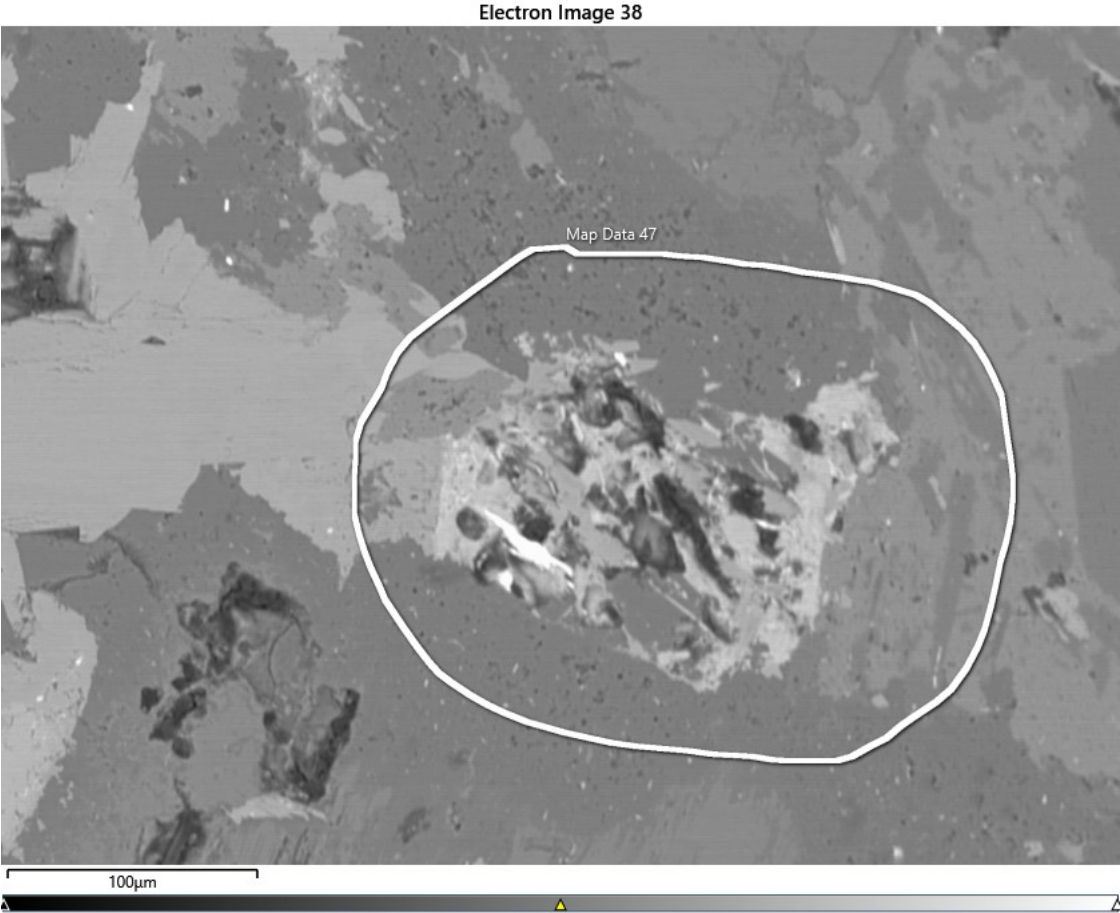
S-WMEB-01



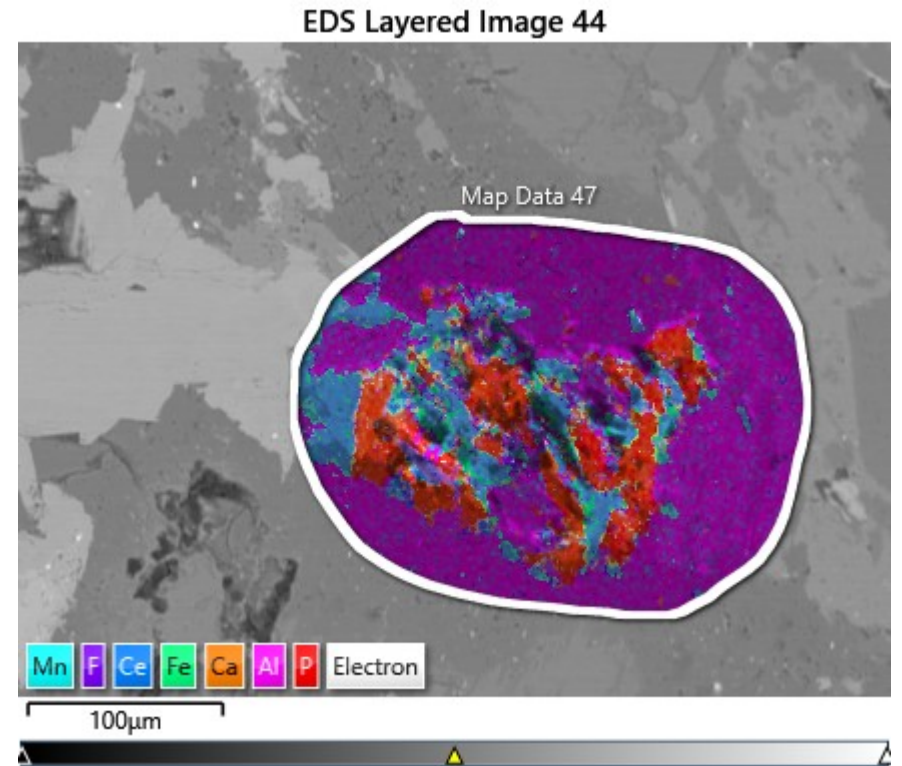
- Icy Blue- basnaesite
- Light red - Calciocatapleiite
- Purple- Al rich mineral



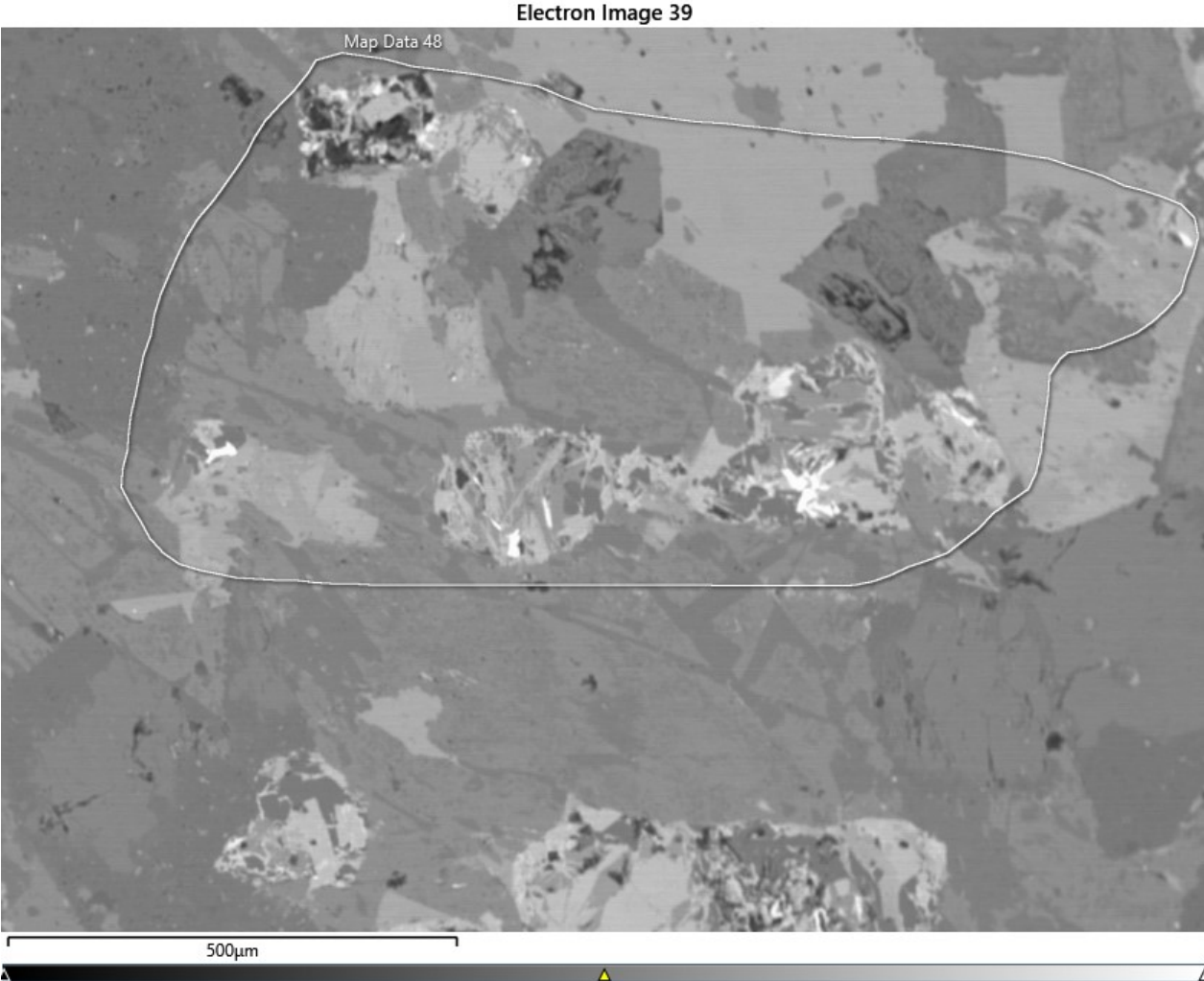
S-WMEB-02



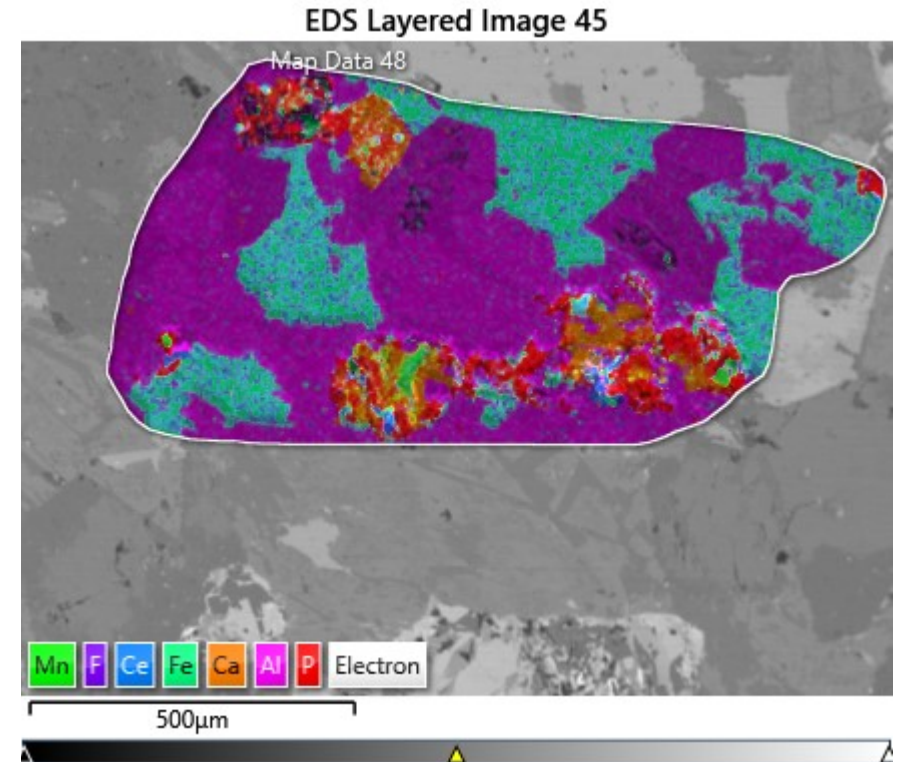
- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral



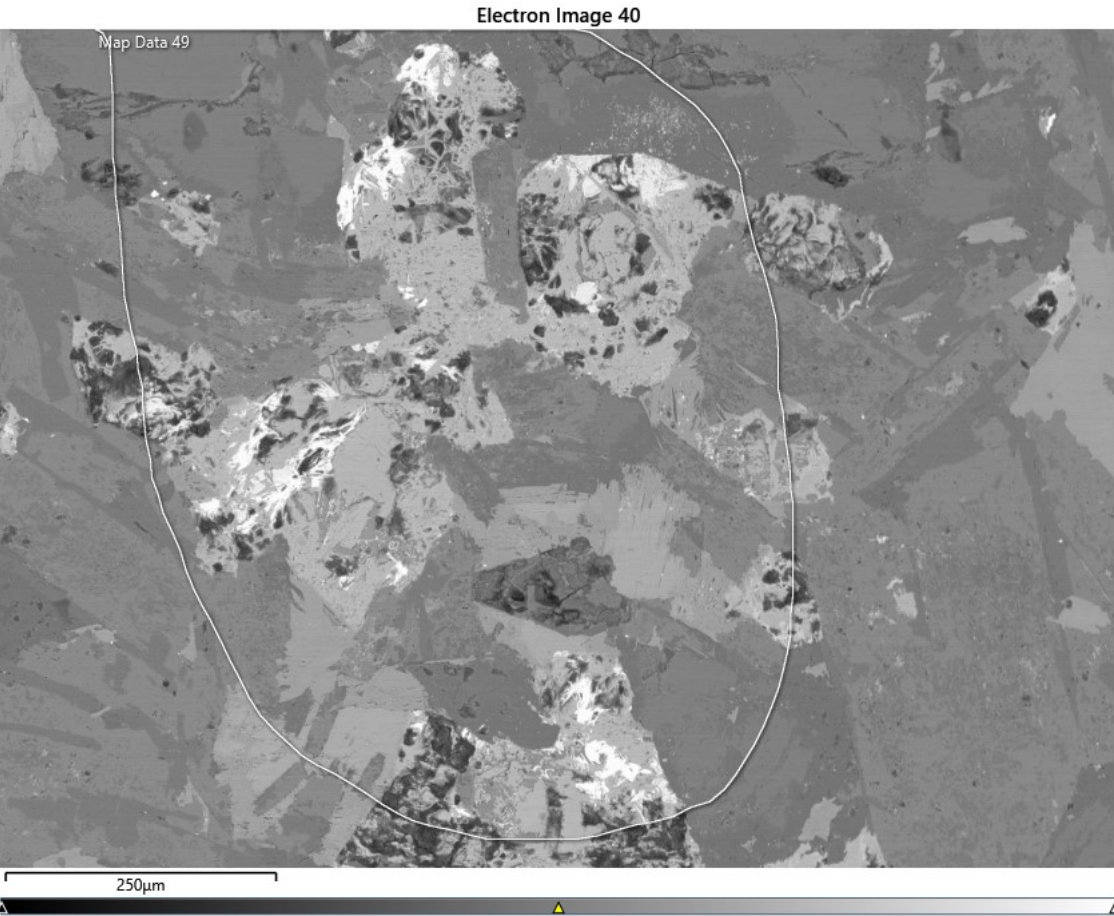
S-WMEB-04



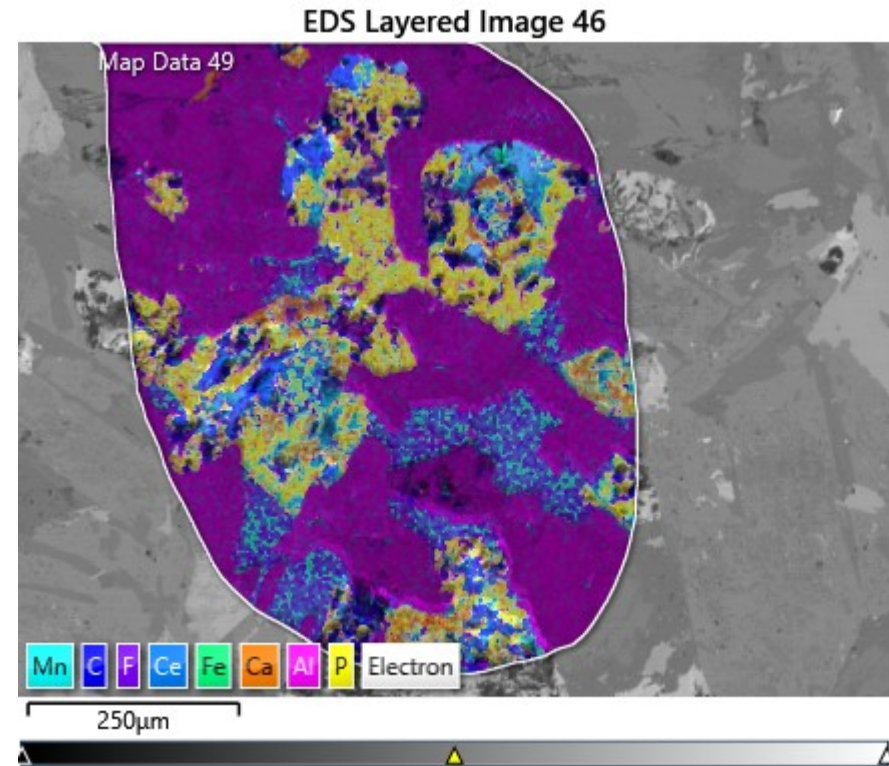
- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink- monazite
- Purple- Al rich mineral



S-WMEB-05



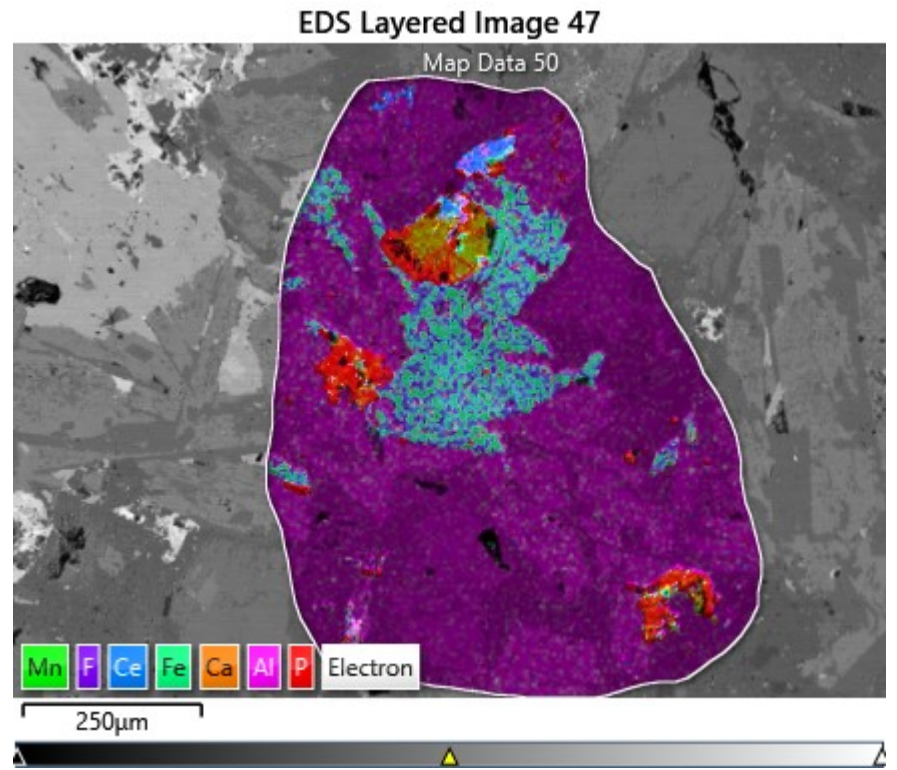
- yellow- biotite
- purple/blue- arfvedsonite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral



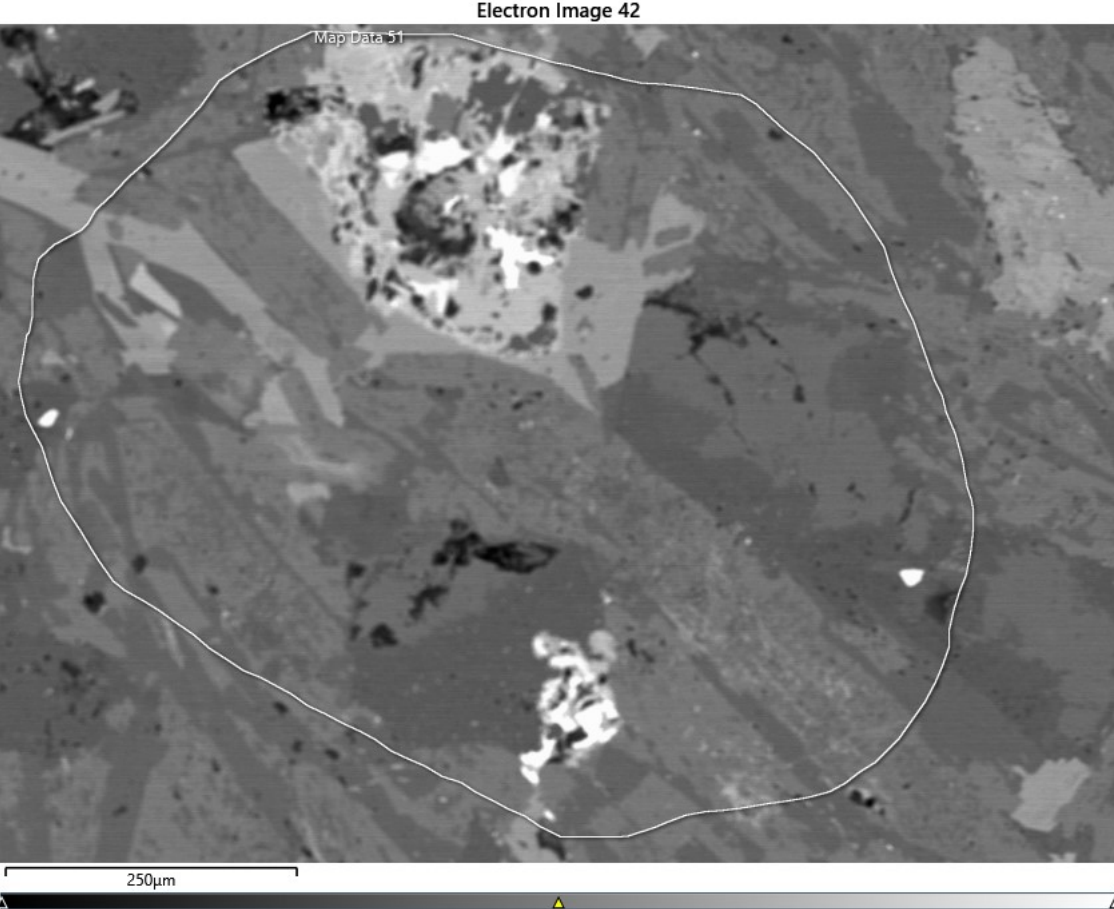
S-WMEB-06



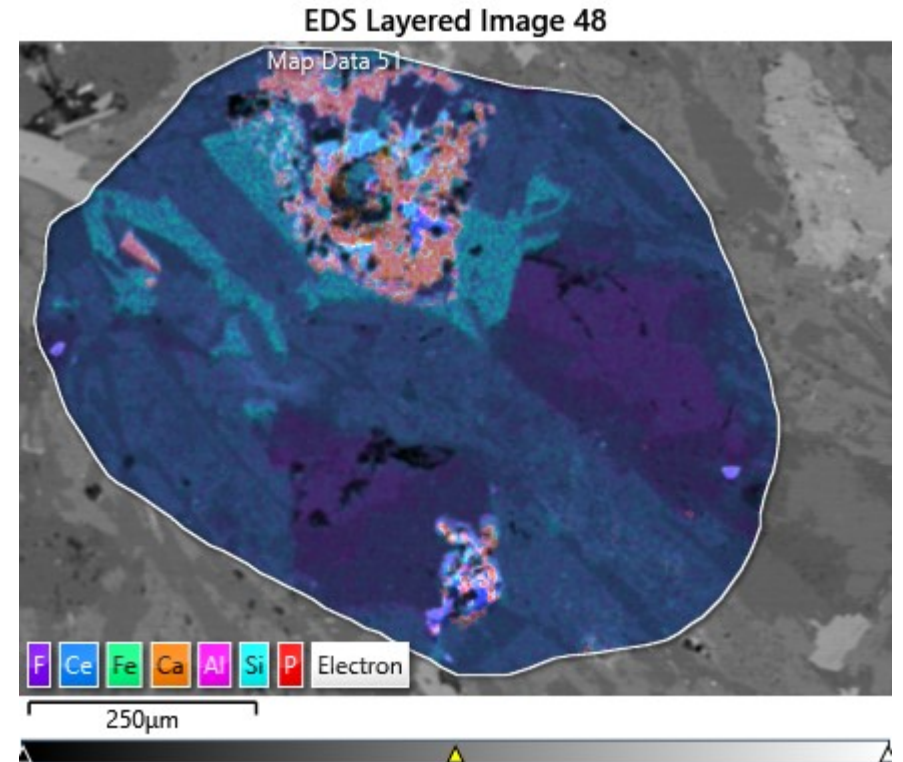
- Blue/Green- Arfvedsonite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red-biotite
- Purple- Al rich mineral



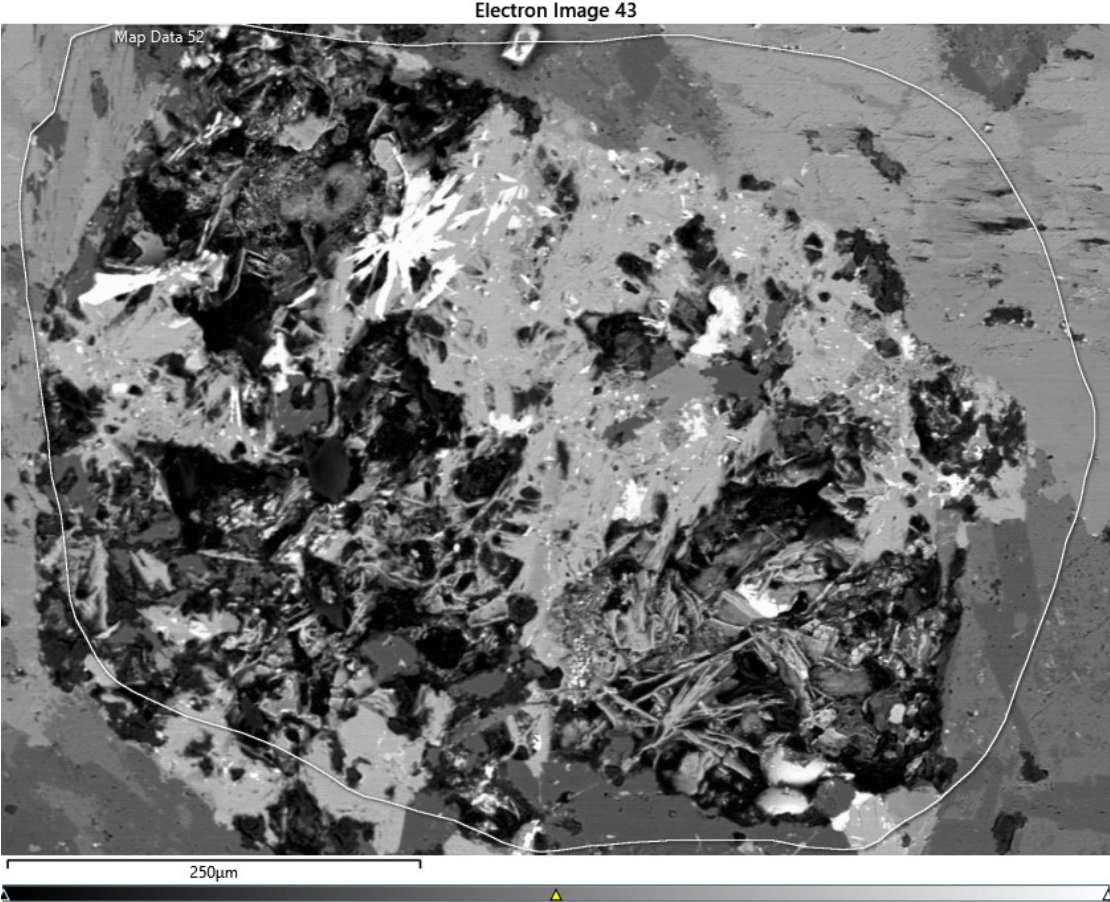
S-WMEB-07



- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple/blue – Si and Al rich mineral



S-WMEB-08



- Blue/Green- Arfvedsonite and biotite
- Icy Blue- bastnaesite
- Orange/yellow- Calciocatapleiite
- Red/pink-monazite
- Purple- Al rich mineral

