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ERA-MIN2

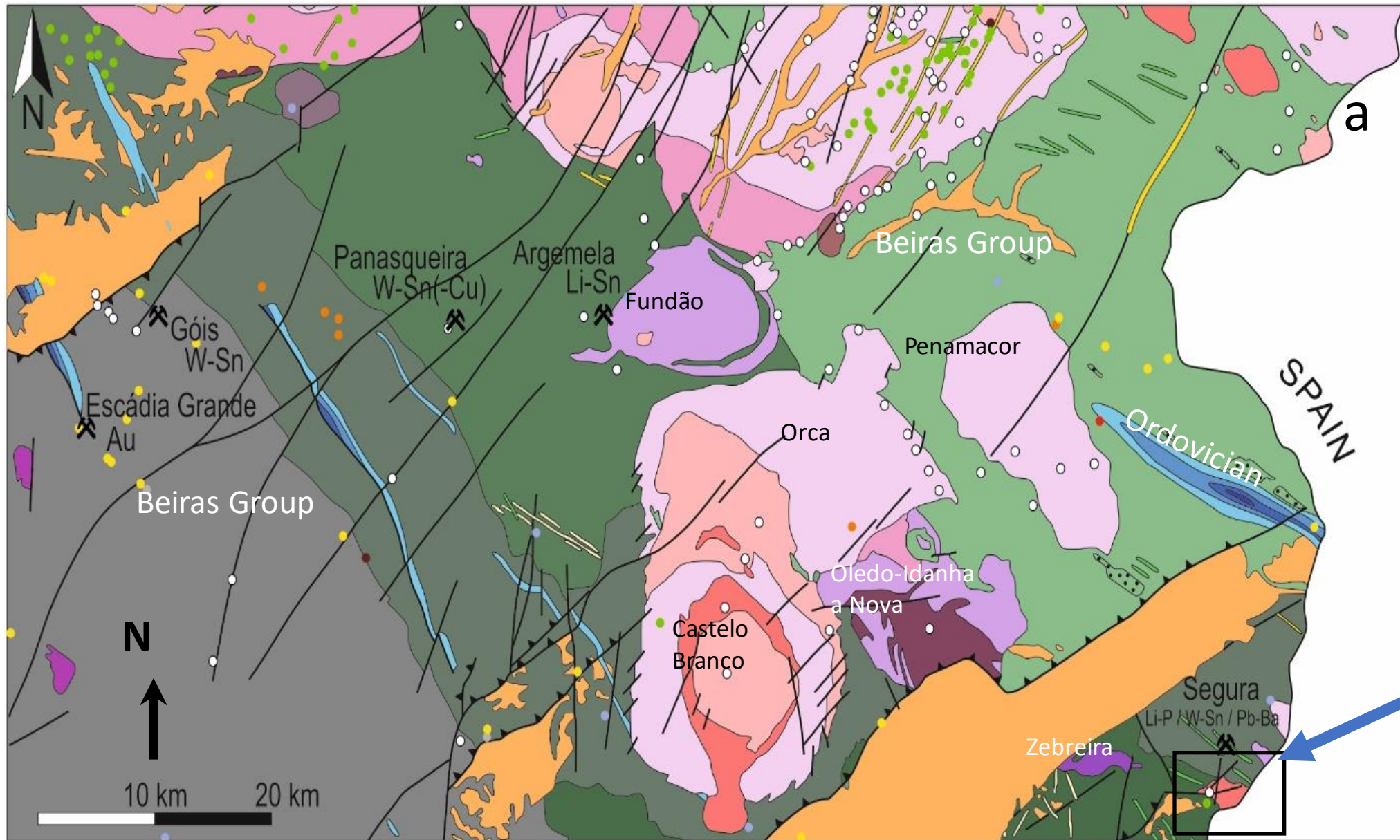
RESEARCH & INNOVATION PROGRAMME ON RAW MATERIALS
TO FOSTER CIRCULAR ECONOMY

ERA-MIN Joint Call 2019 (EU Horizon 2020 ERA-NET Co-fund Project ERA-MIN2, Grant agreement N° 730238)



Geochemical and mineralogical features of the Li-rich aplite-pegmatite system of Segura

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A. Lecomte, I. Martins, I. Dias da Silva,
A. Mateus



- Sn
- Cu
- U
- Pb
- Zn
- Sb
- Au
- Fe

a

SPAIN

Ordovician

Beiras Group

Penamacor

Orca

Oledo-Idanha
a Nova

Castelo
Branco

Segura

Li-P / W-Sn / Pb-Ba

Zebreira

Fundão

Argemela
Li-Sn

Panasqueira
W-Sn(-Cu)

Góis
W-Sn

Escádia Grande
Au

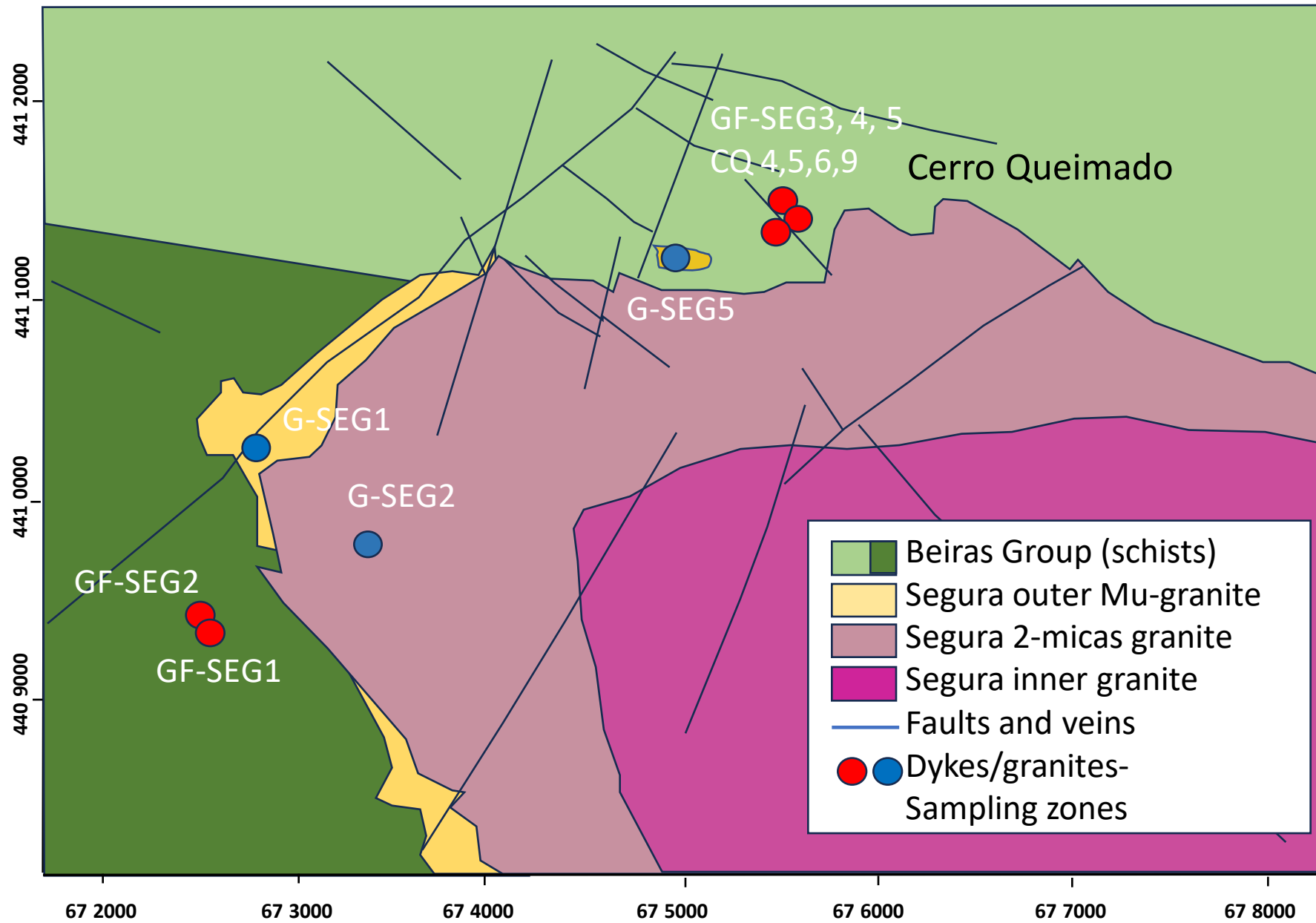
Beiras Group

N

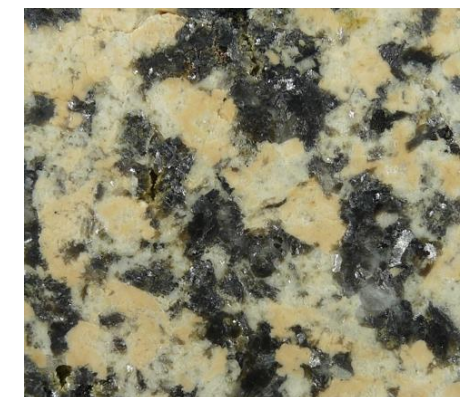
N

10 km

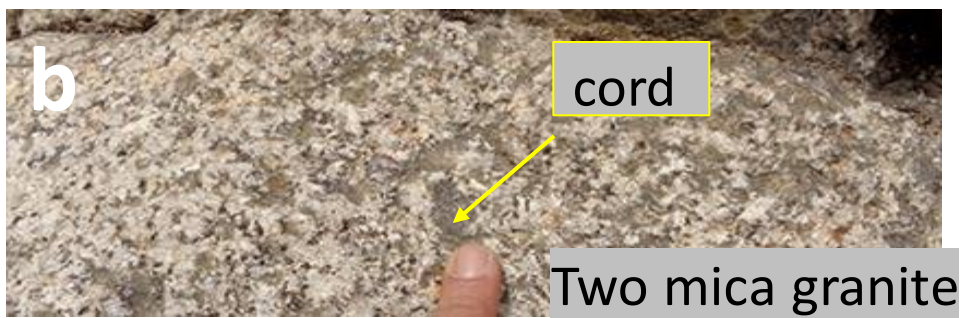
20 km



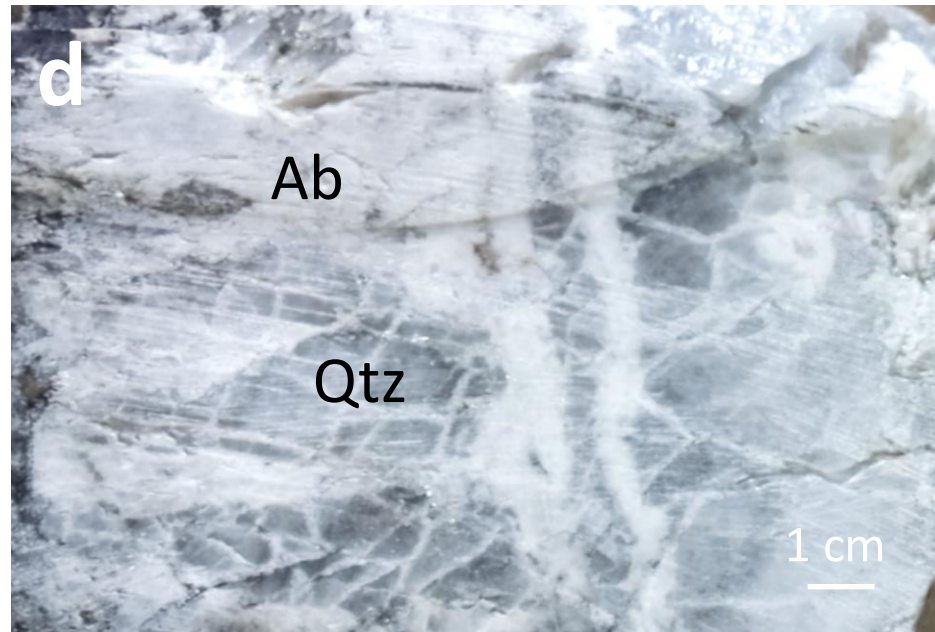
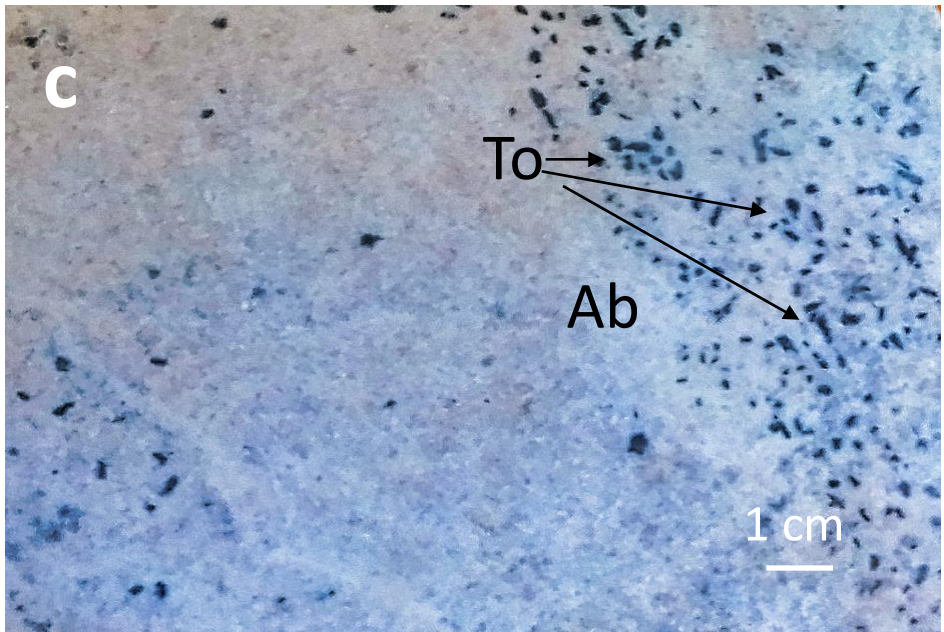
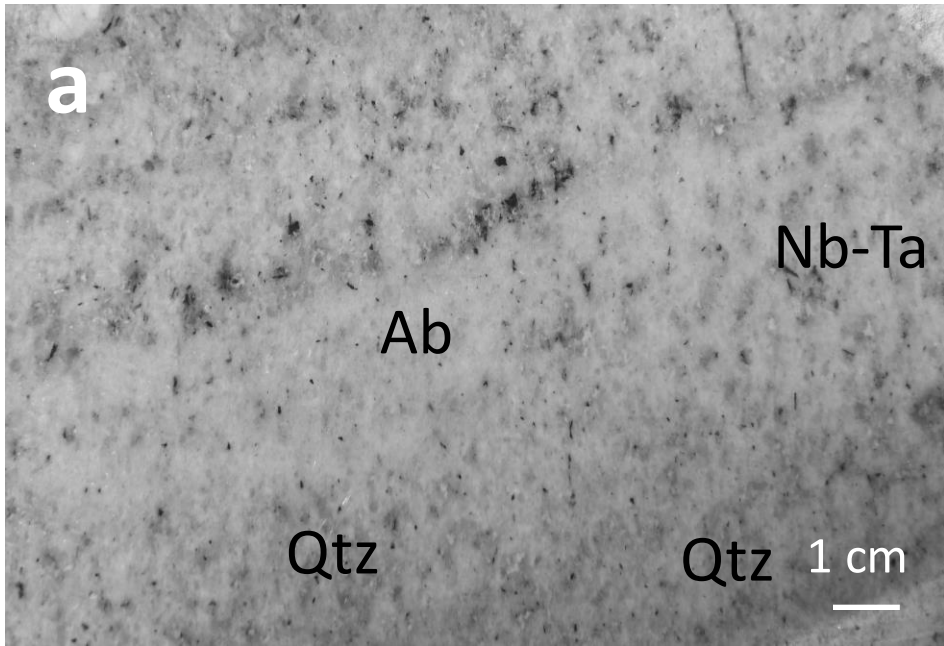
SEG facies Mu

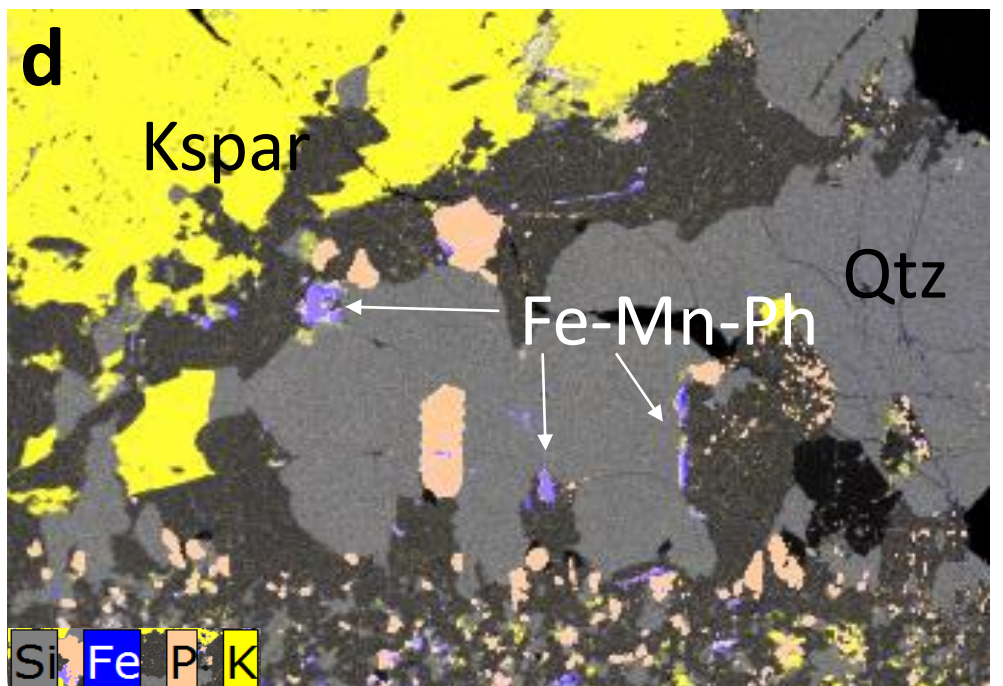
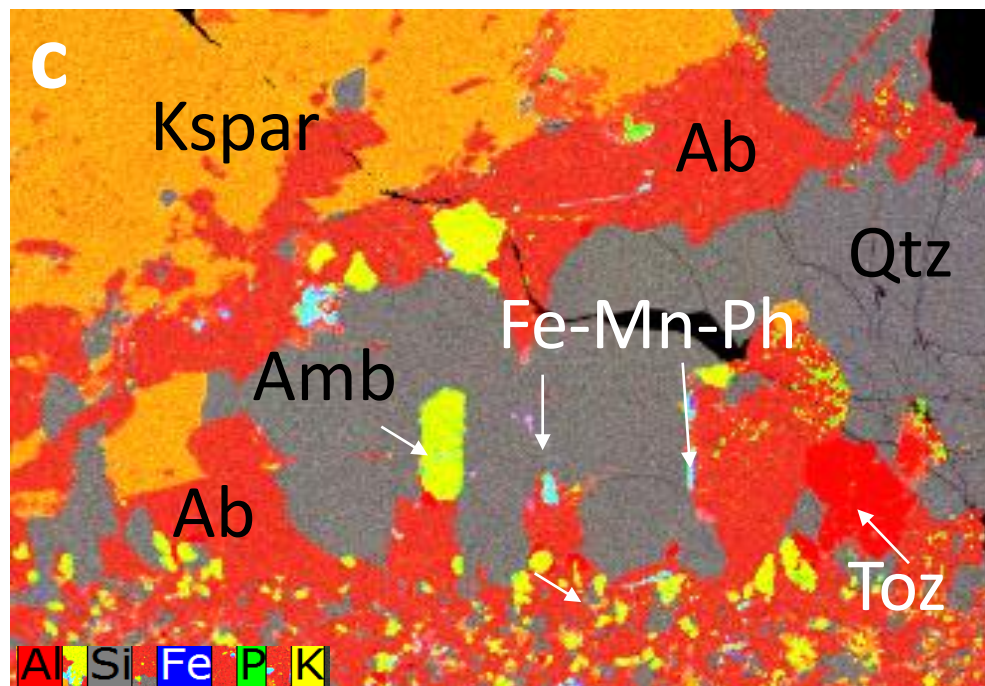
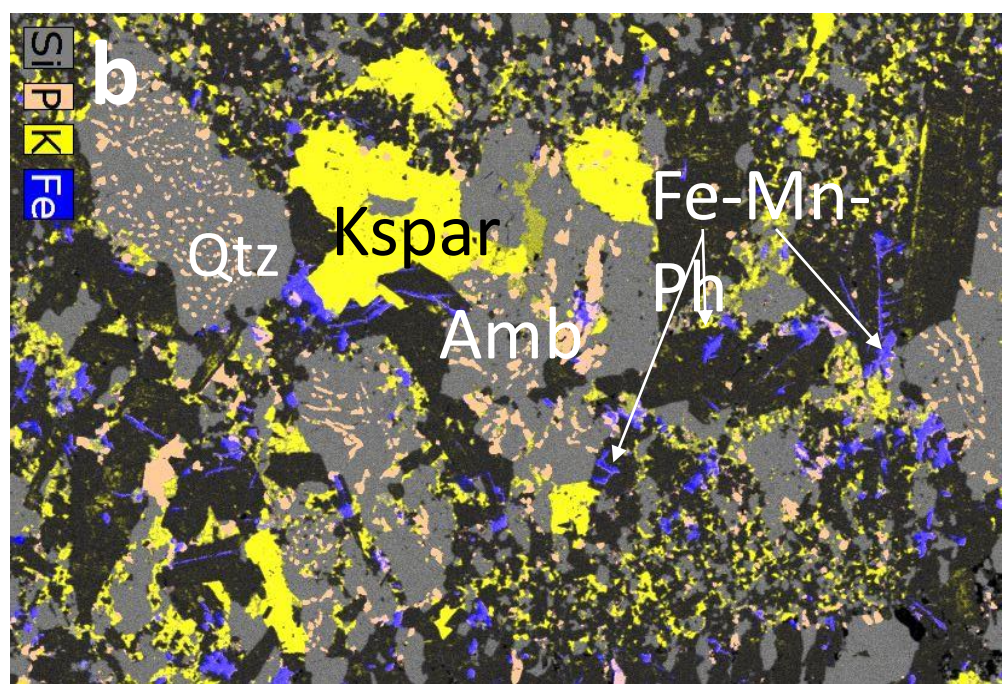
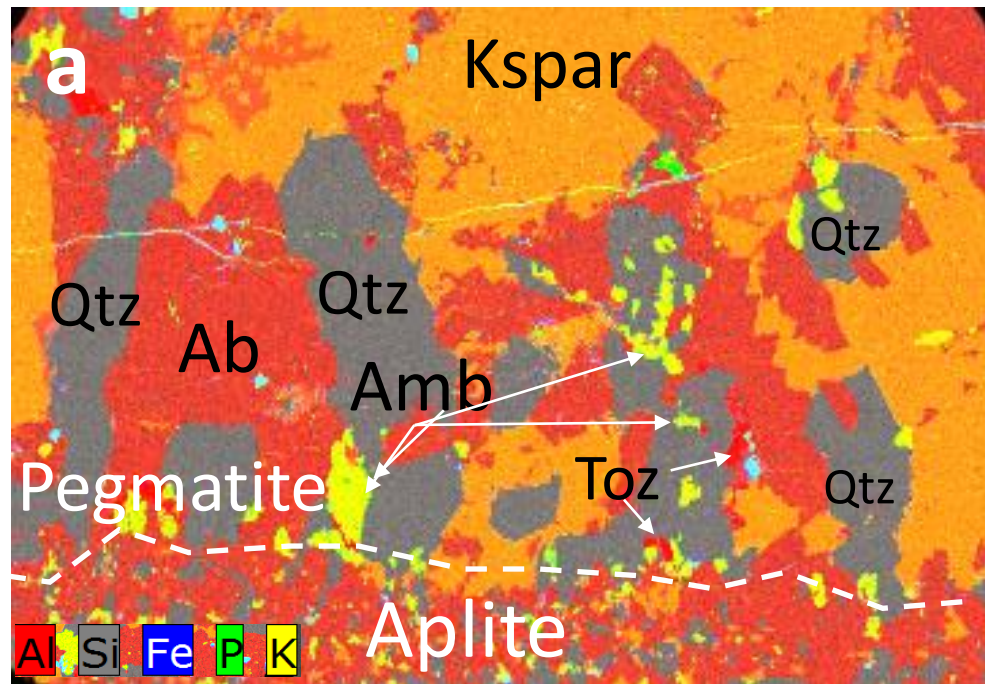


Inner facies

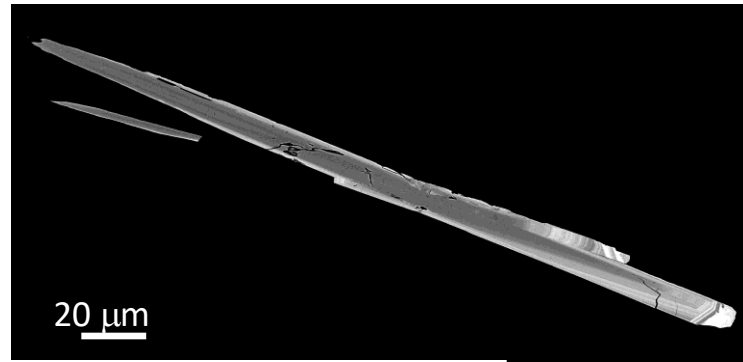




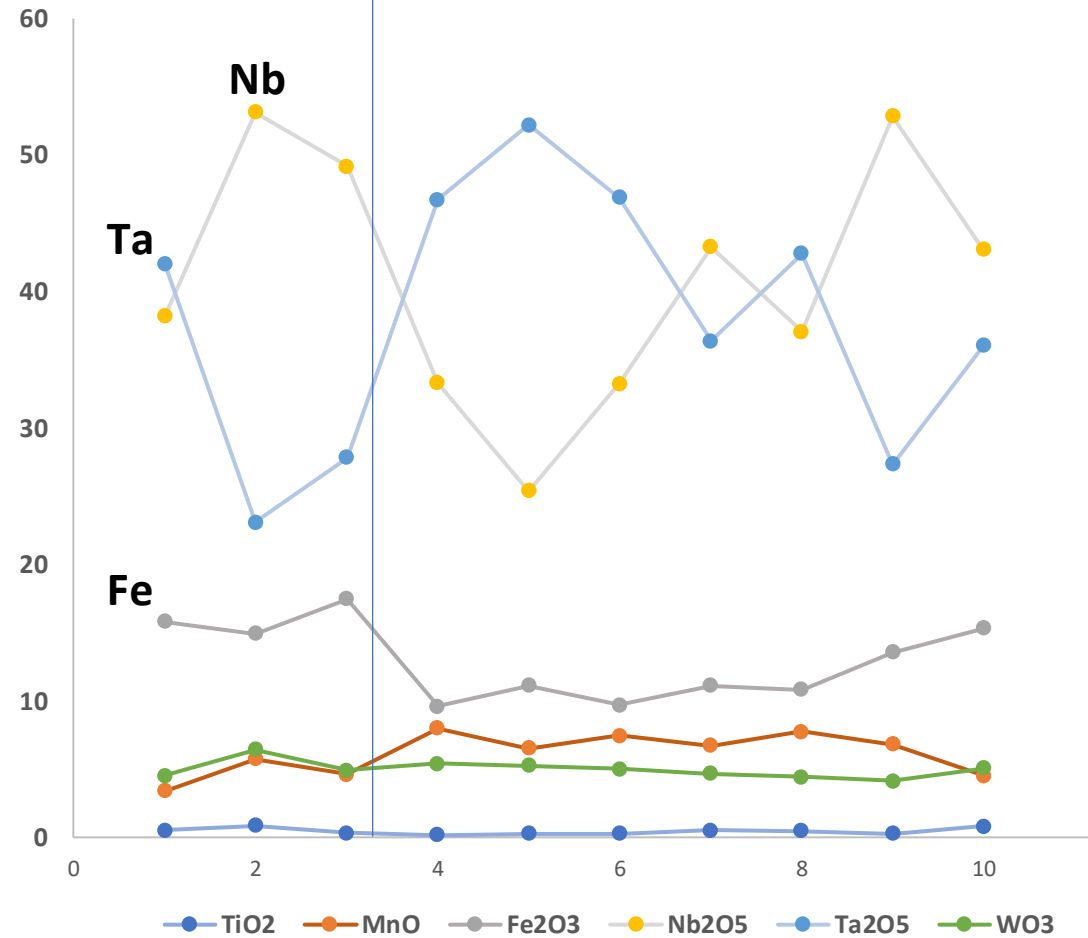
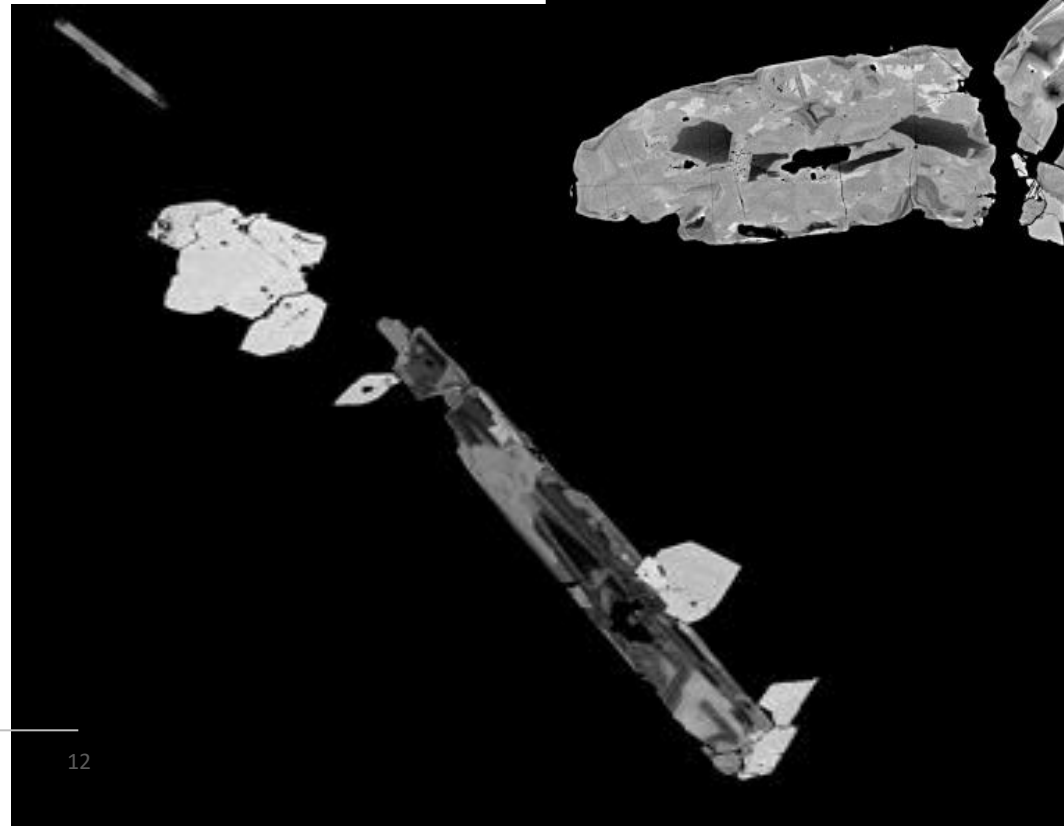


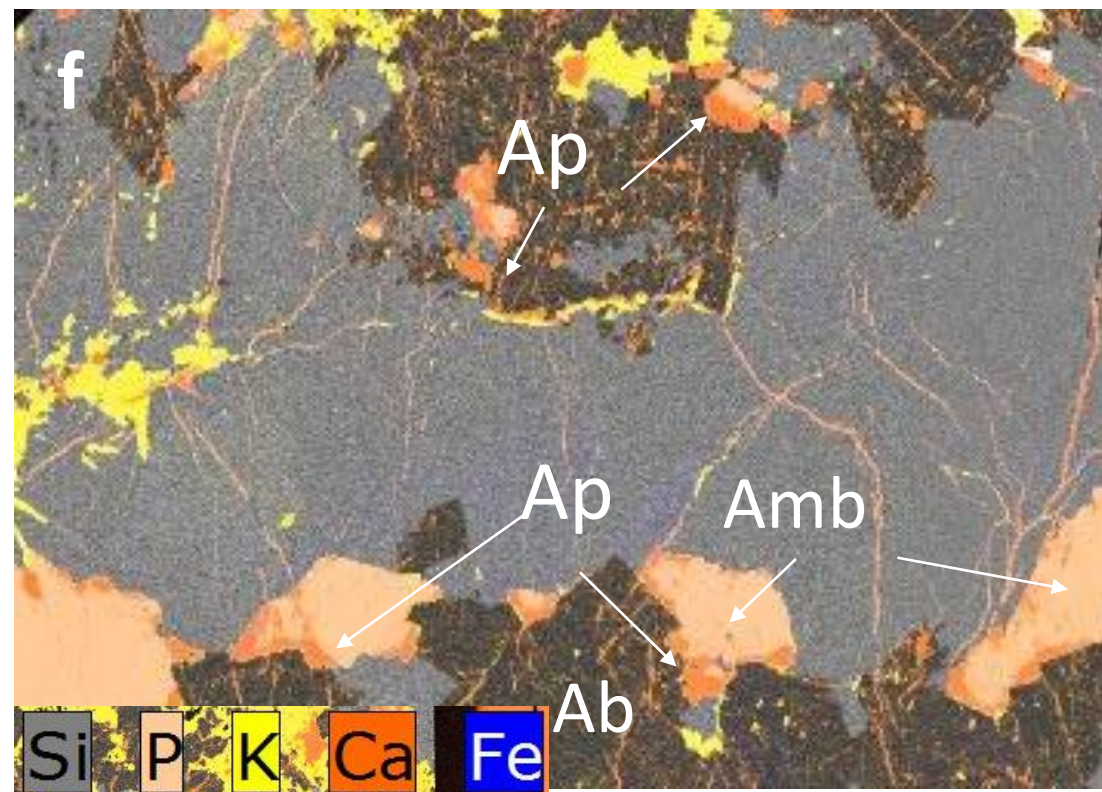
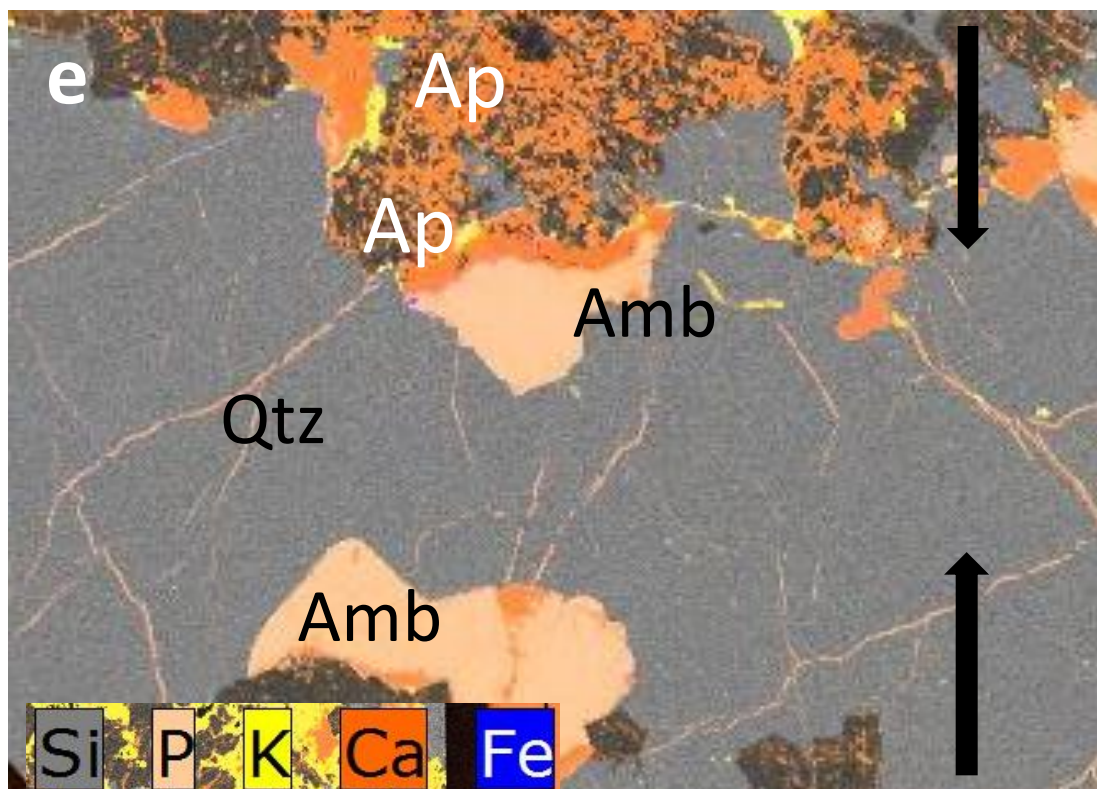


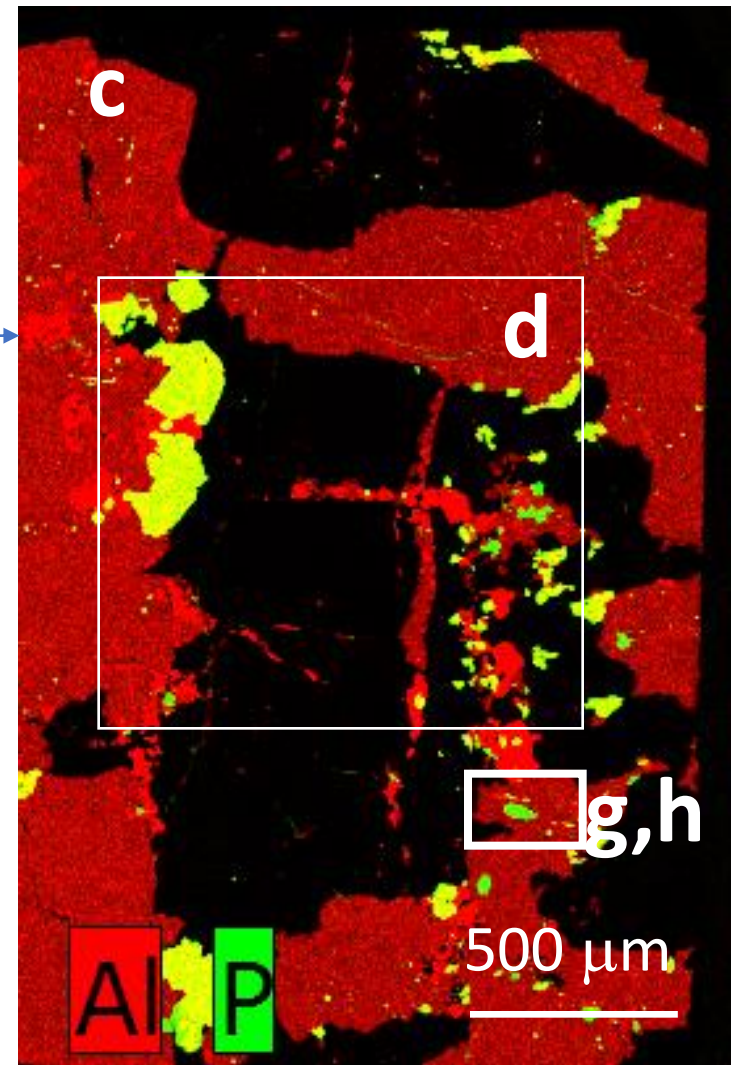
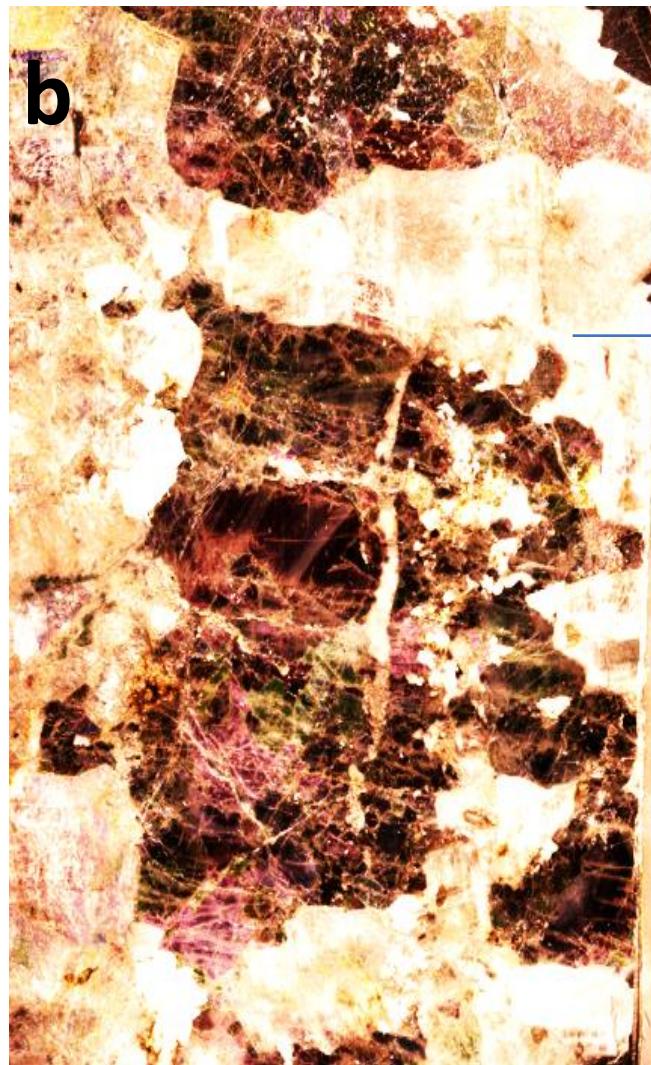
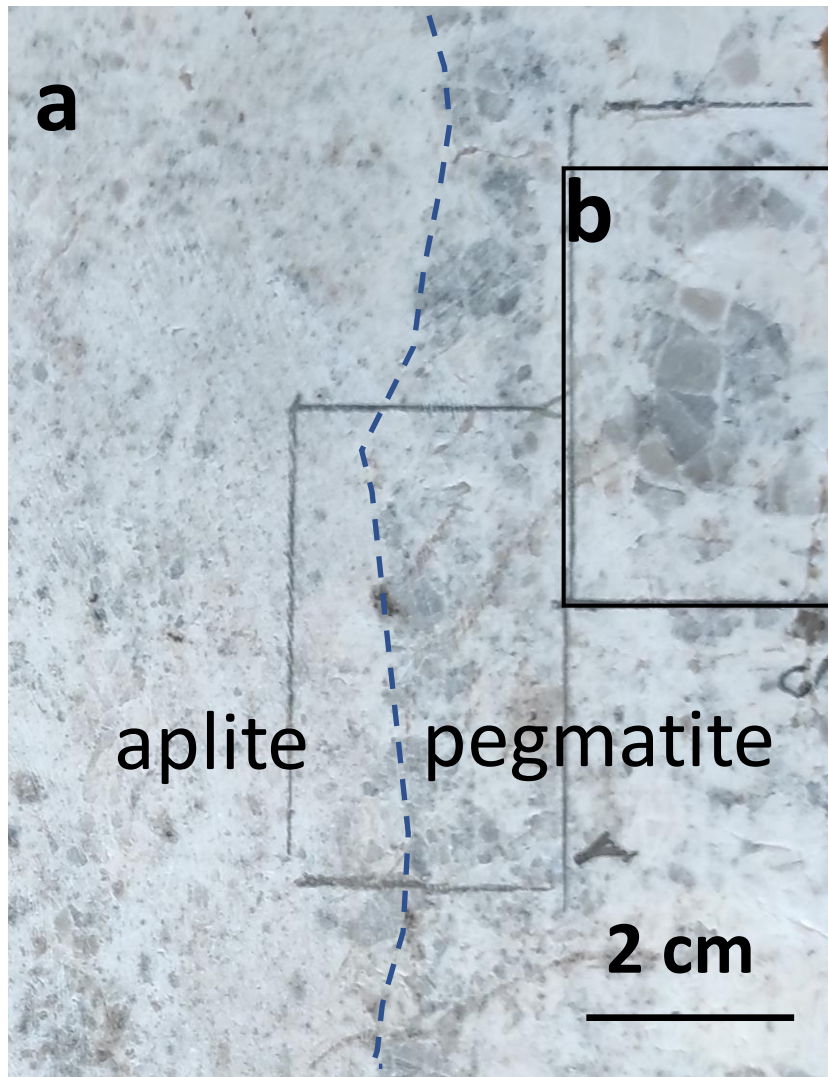
Early magmatic Nb-Ta mineralisation

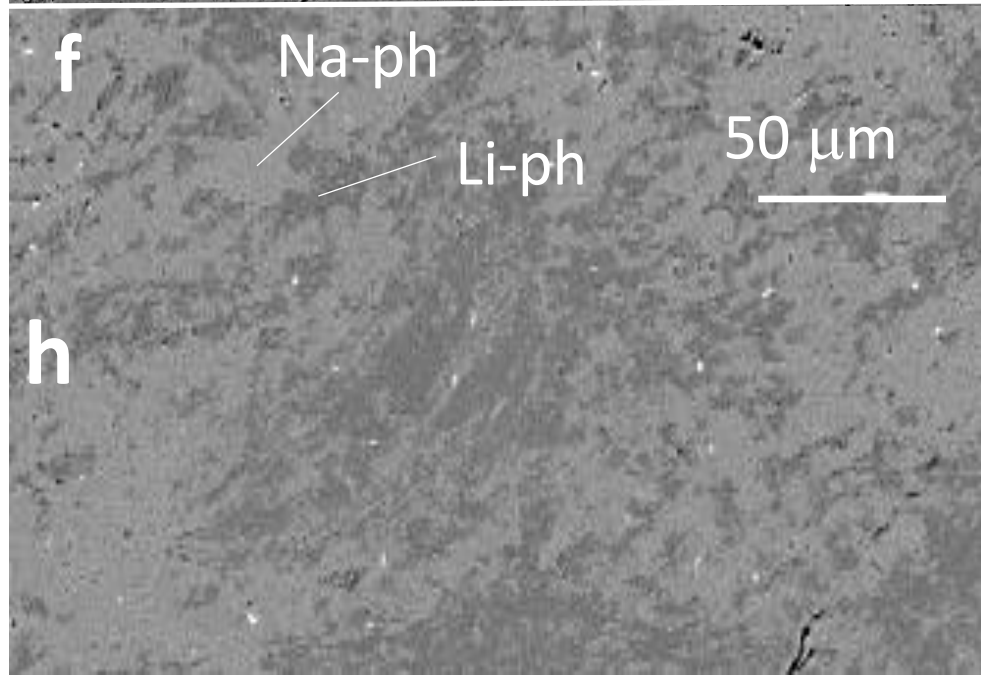
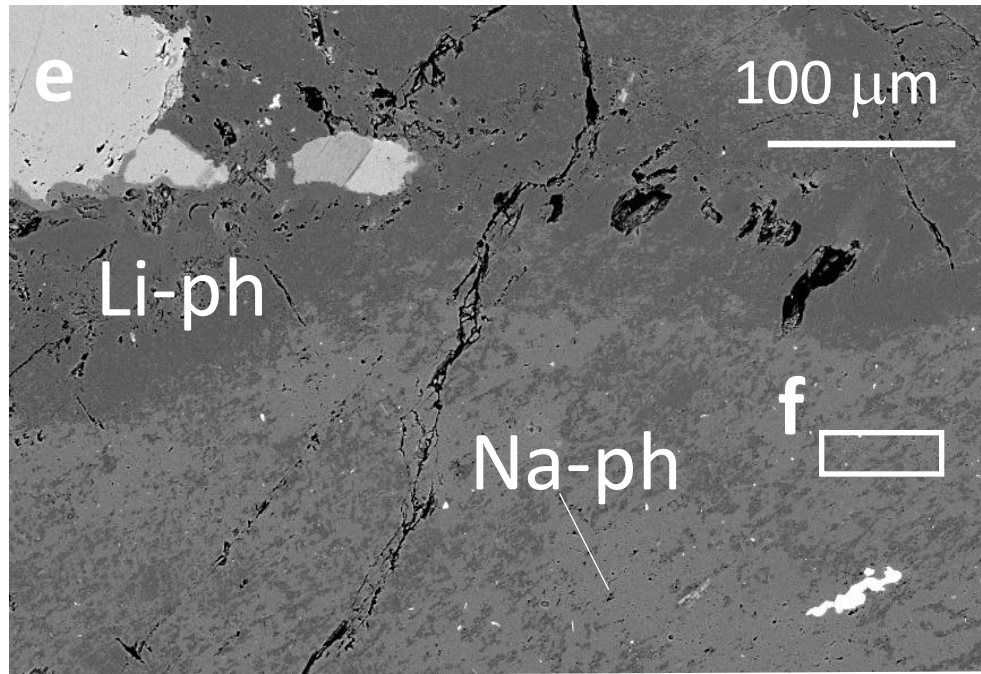
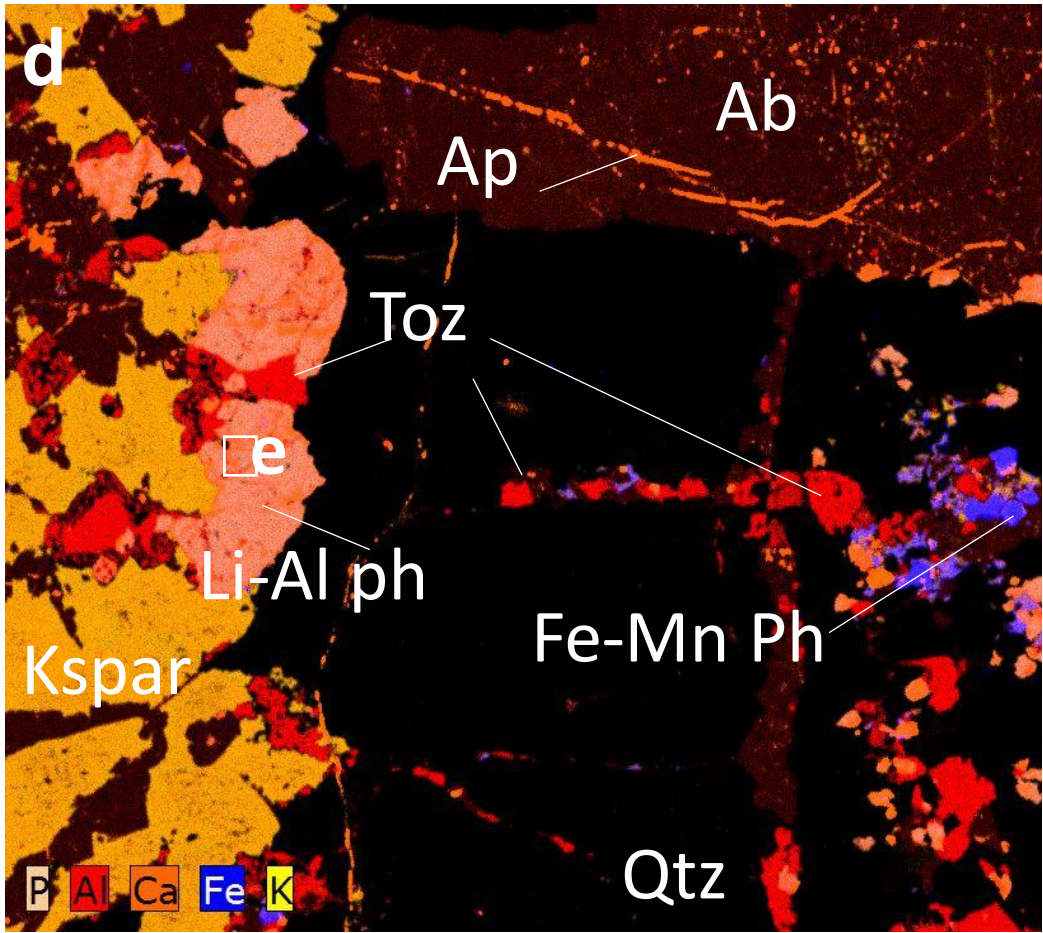


Nb-Ta phase



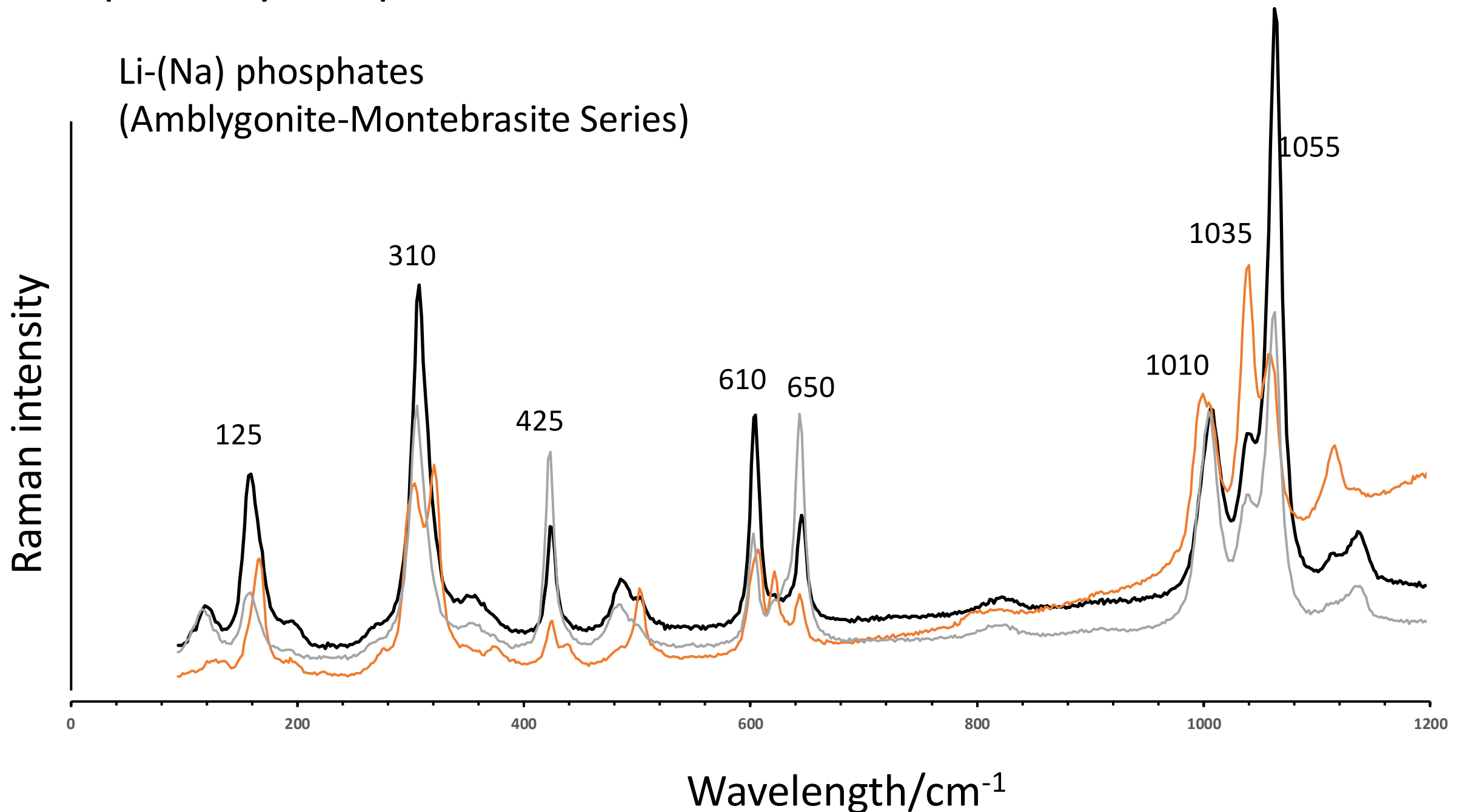


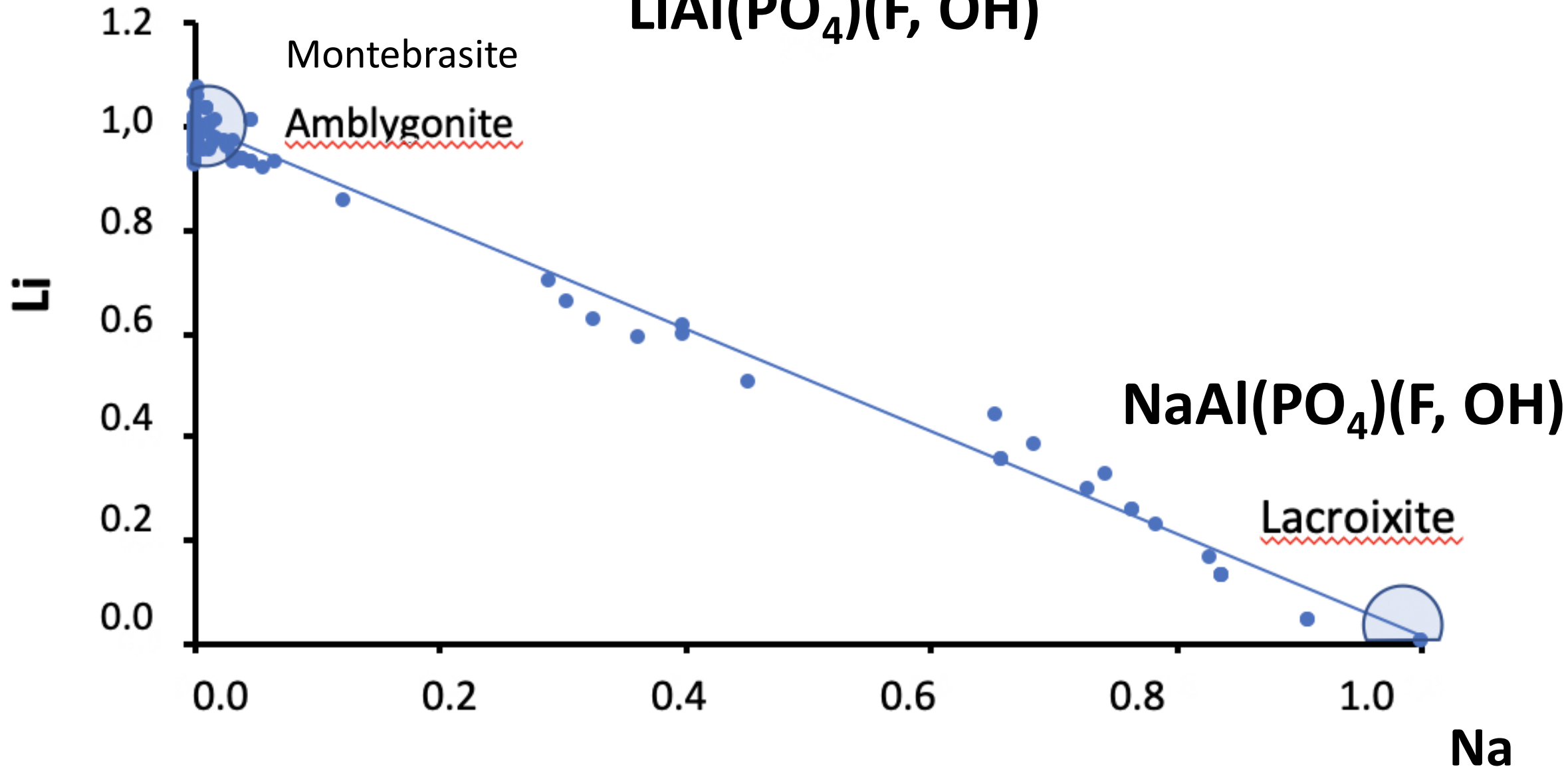
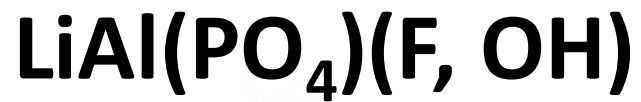




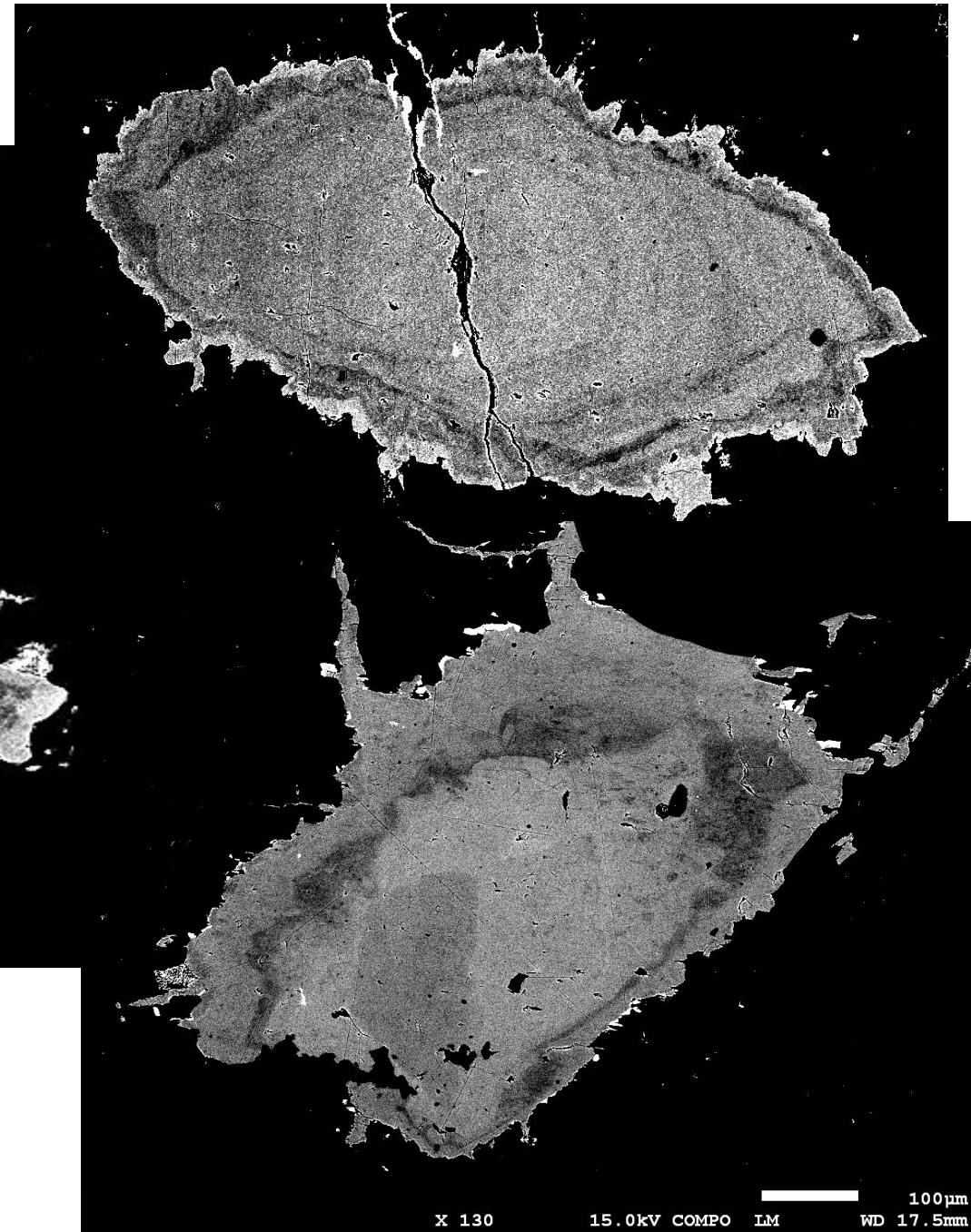
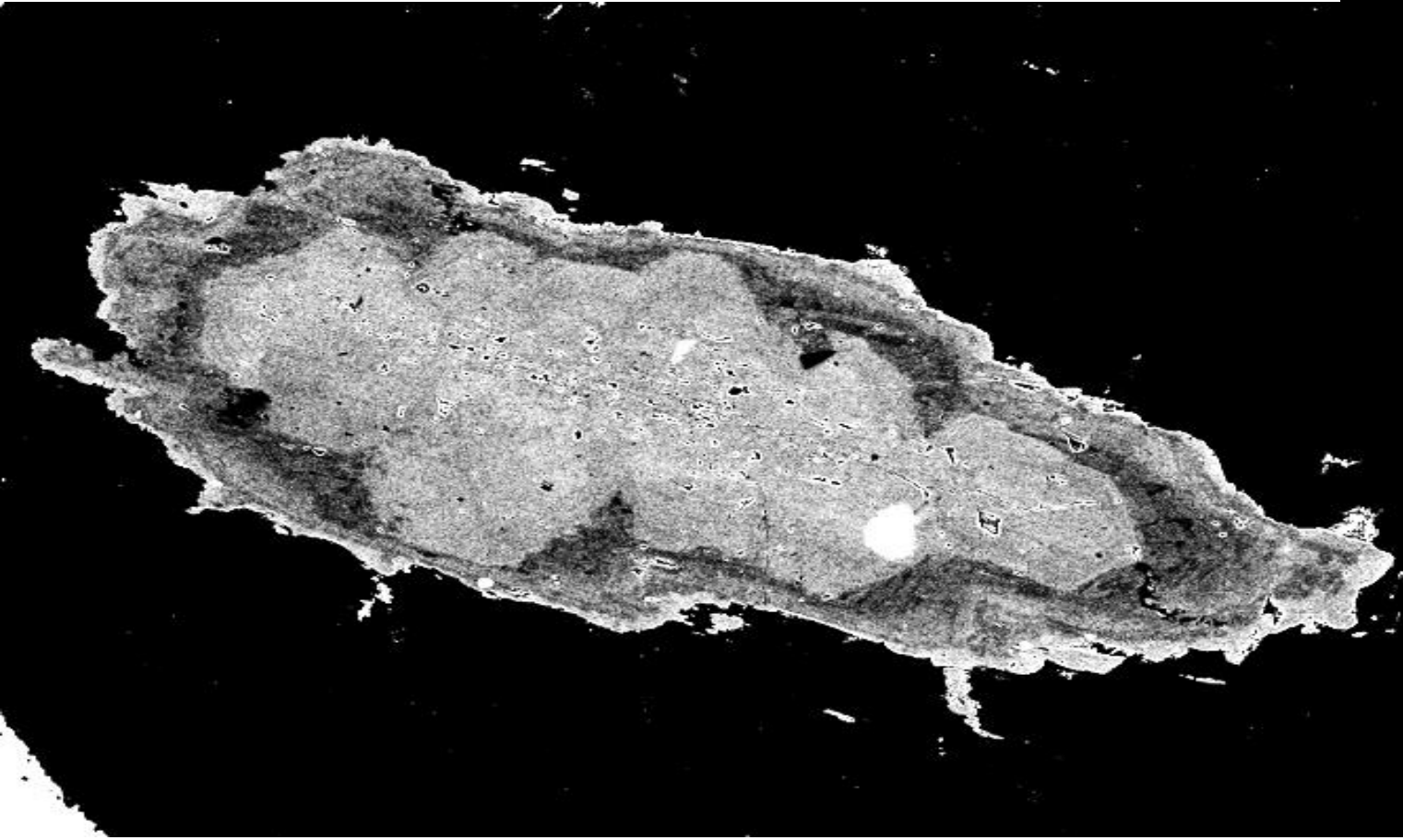
Raman Spectrometry of Phosphates

Li-(Na) phosphates
(Amblygonite-Montebrasite Series)





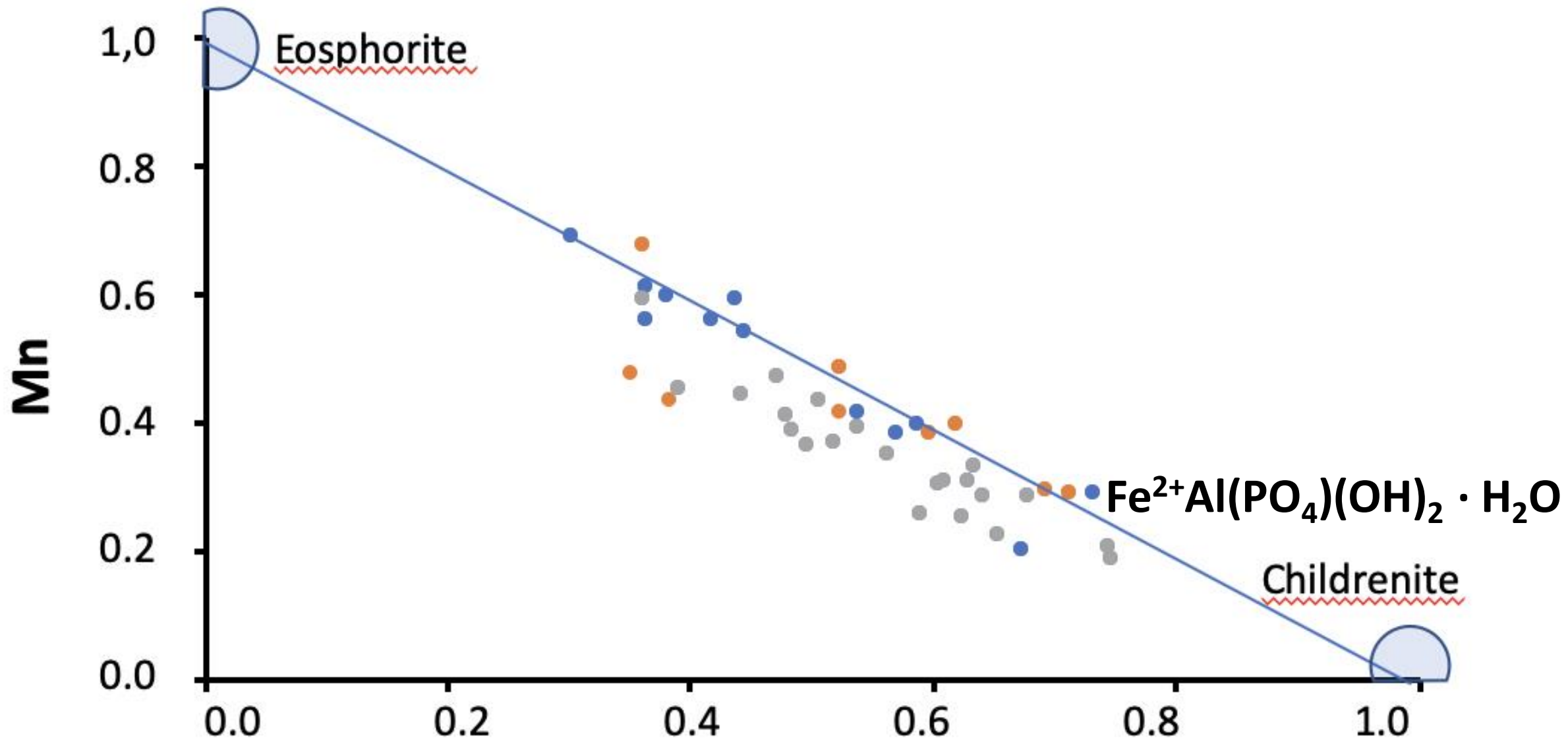
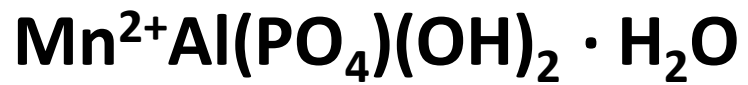
Eosphorite-Childrenite



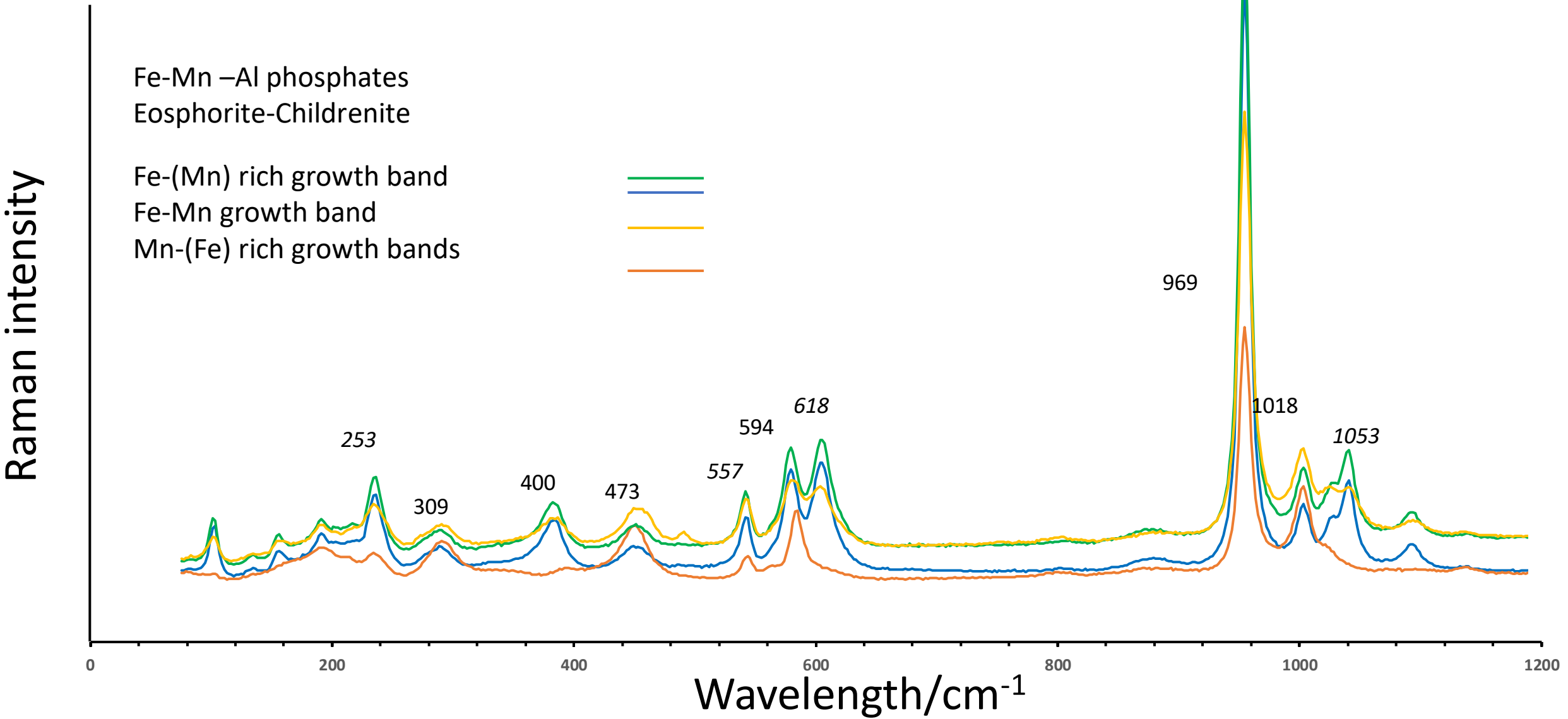
X 130

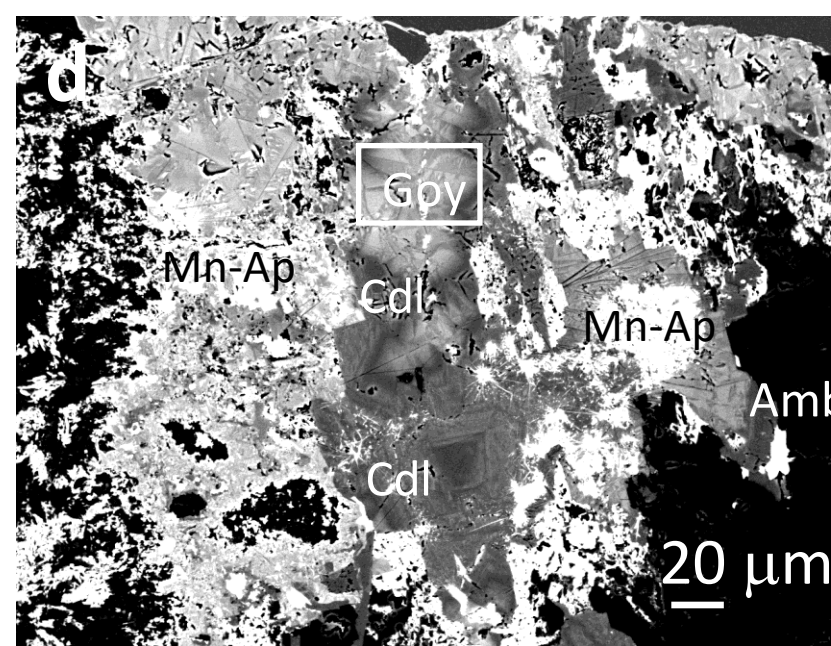
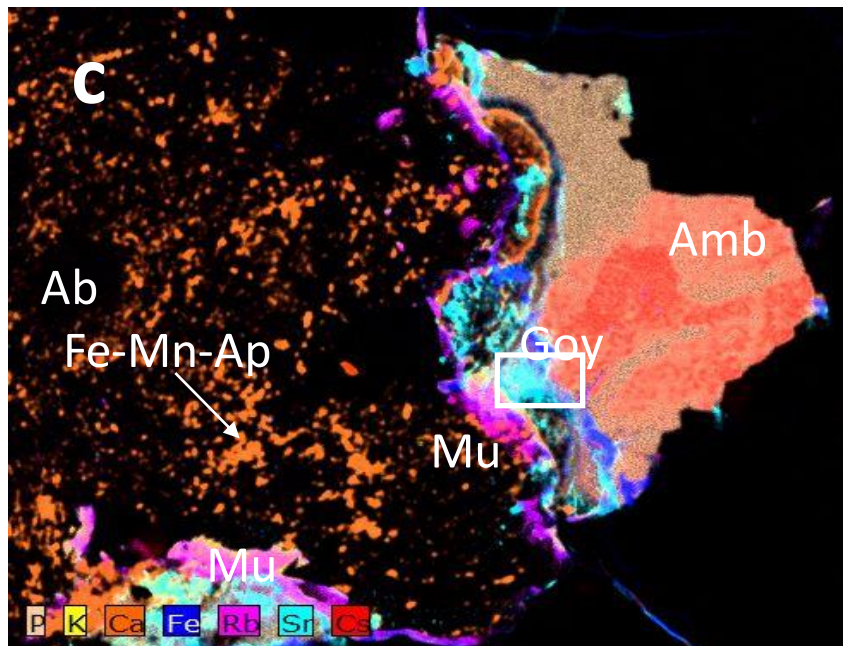
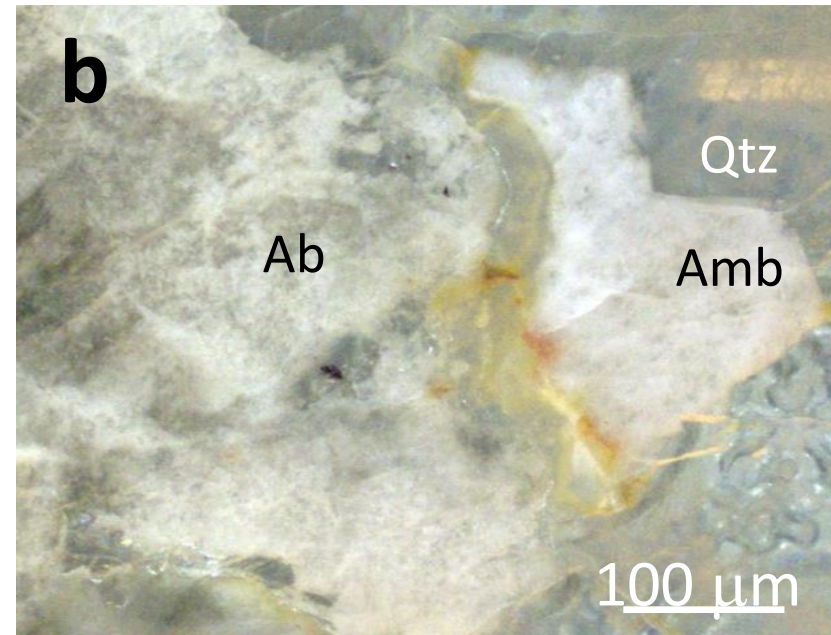
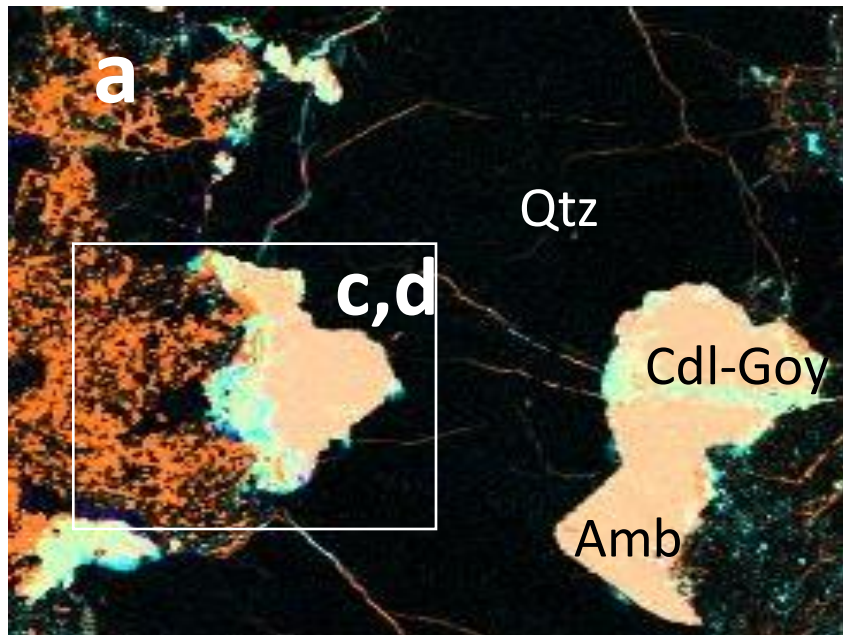
15.0kV COMPO LM

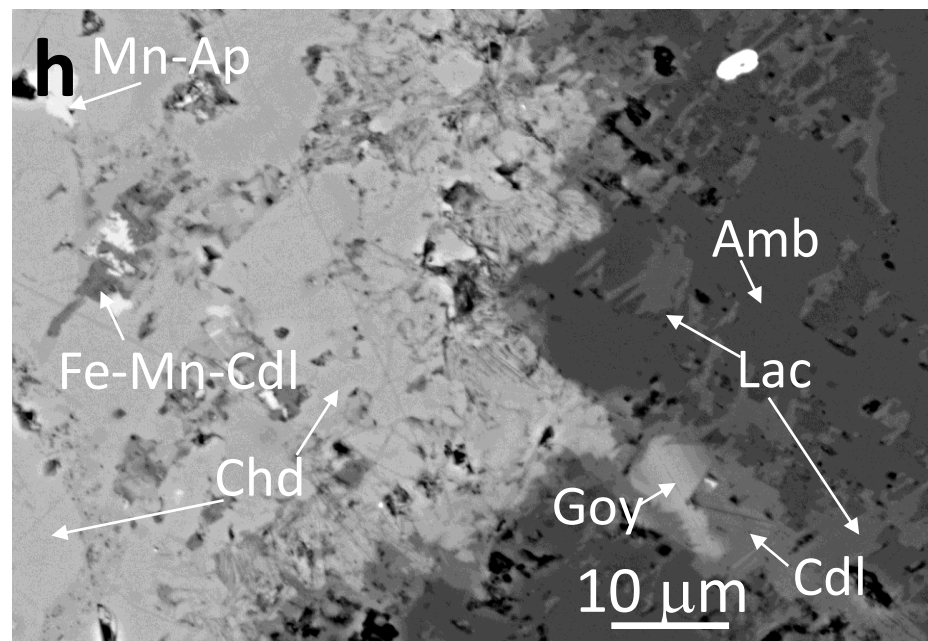
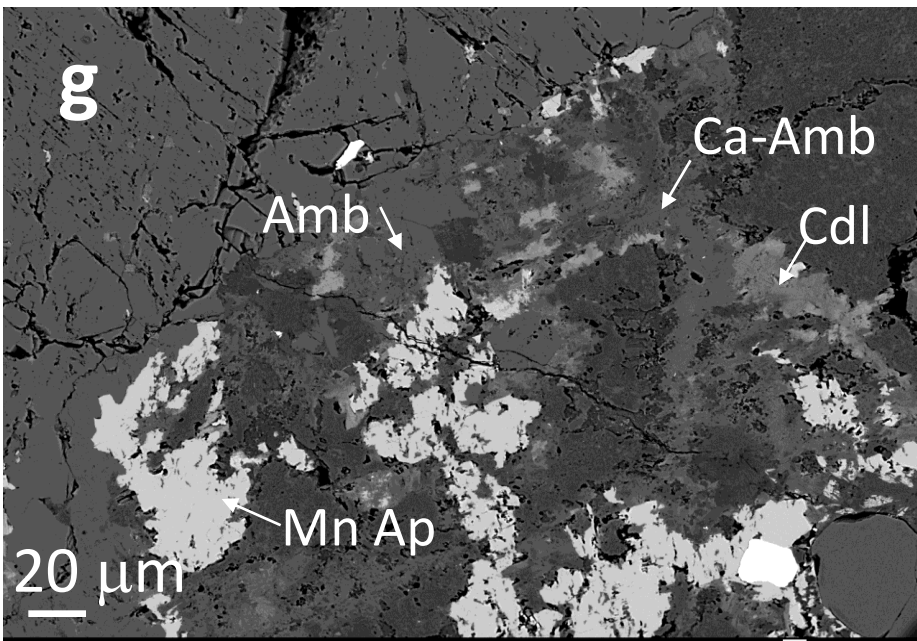
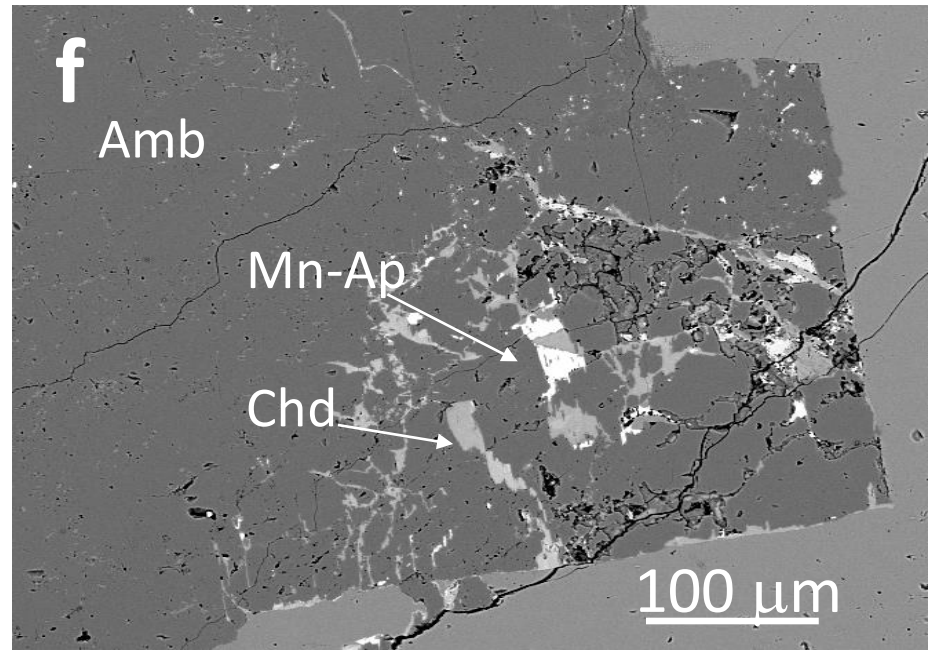
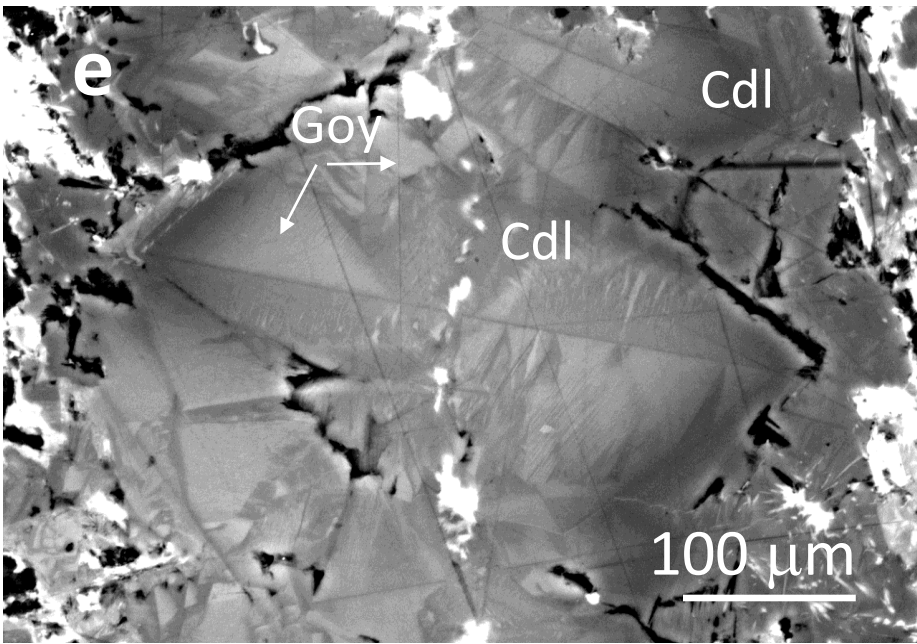
100µm
WD 17.5mm

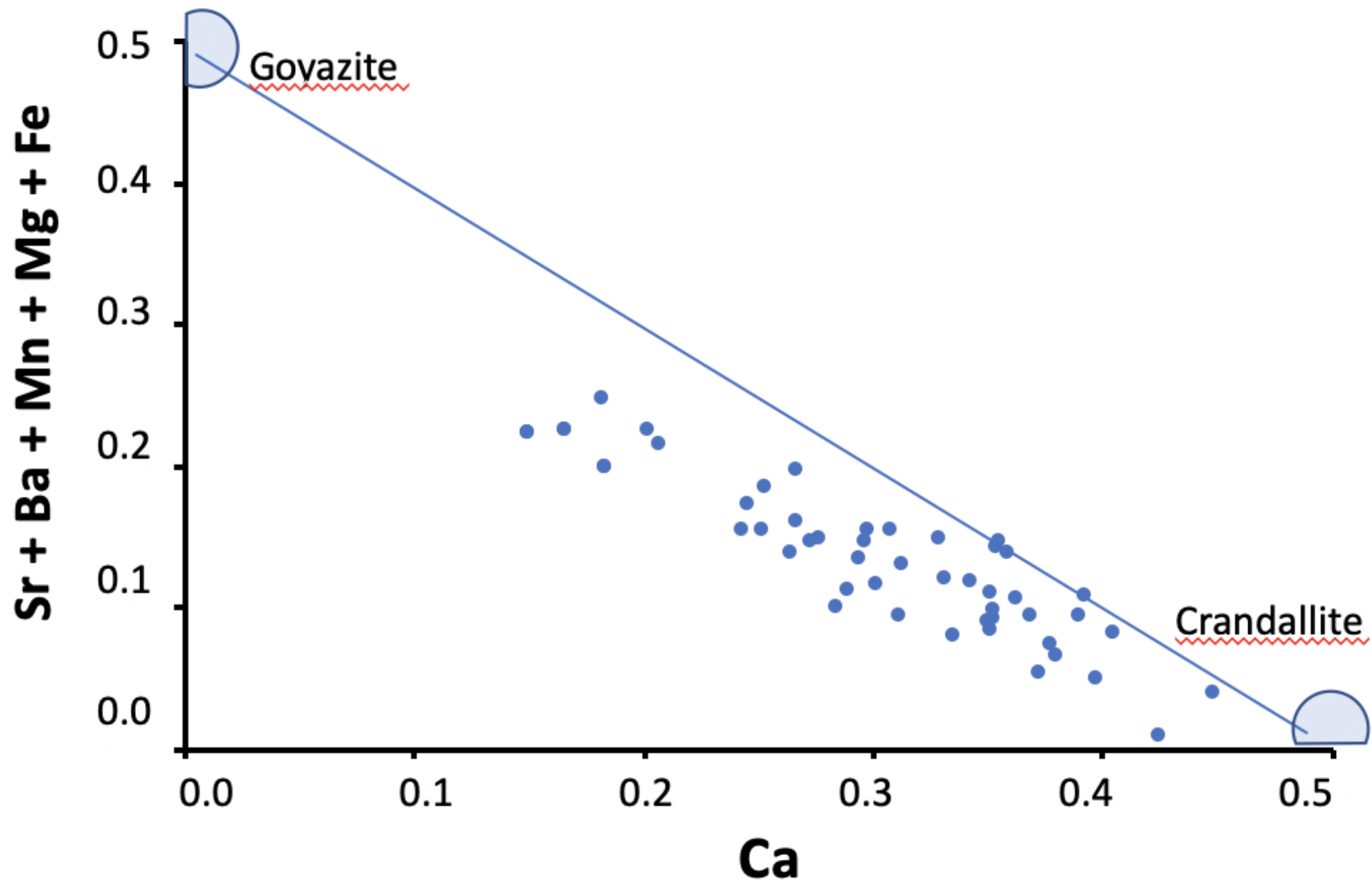


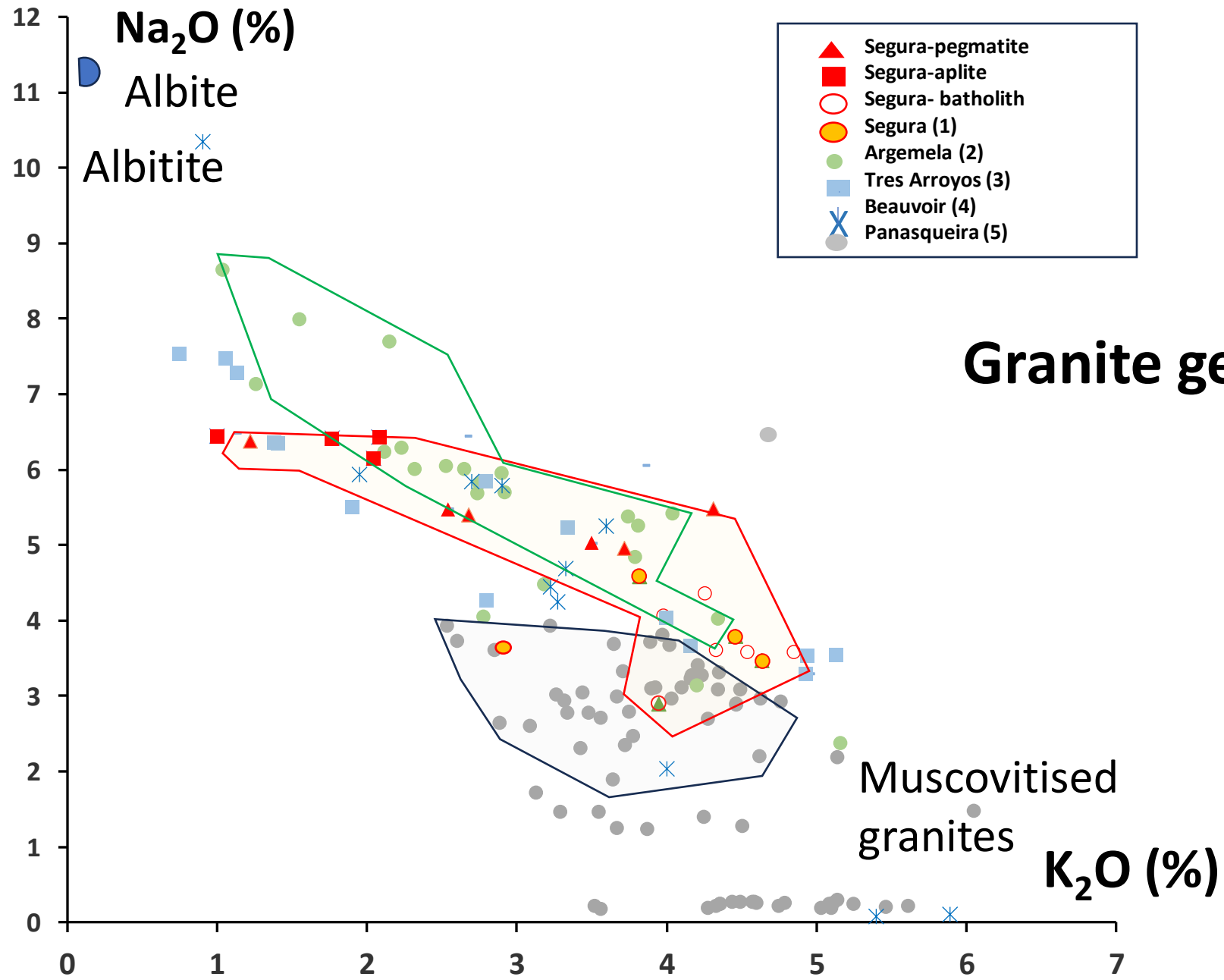
Raman Spectrometry of Phosphates

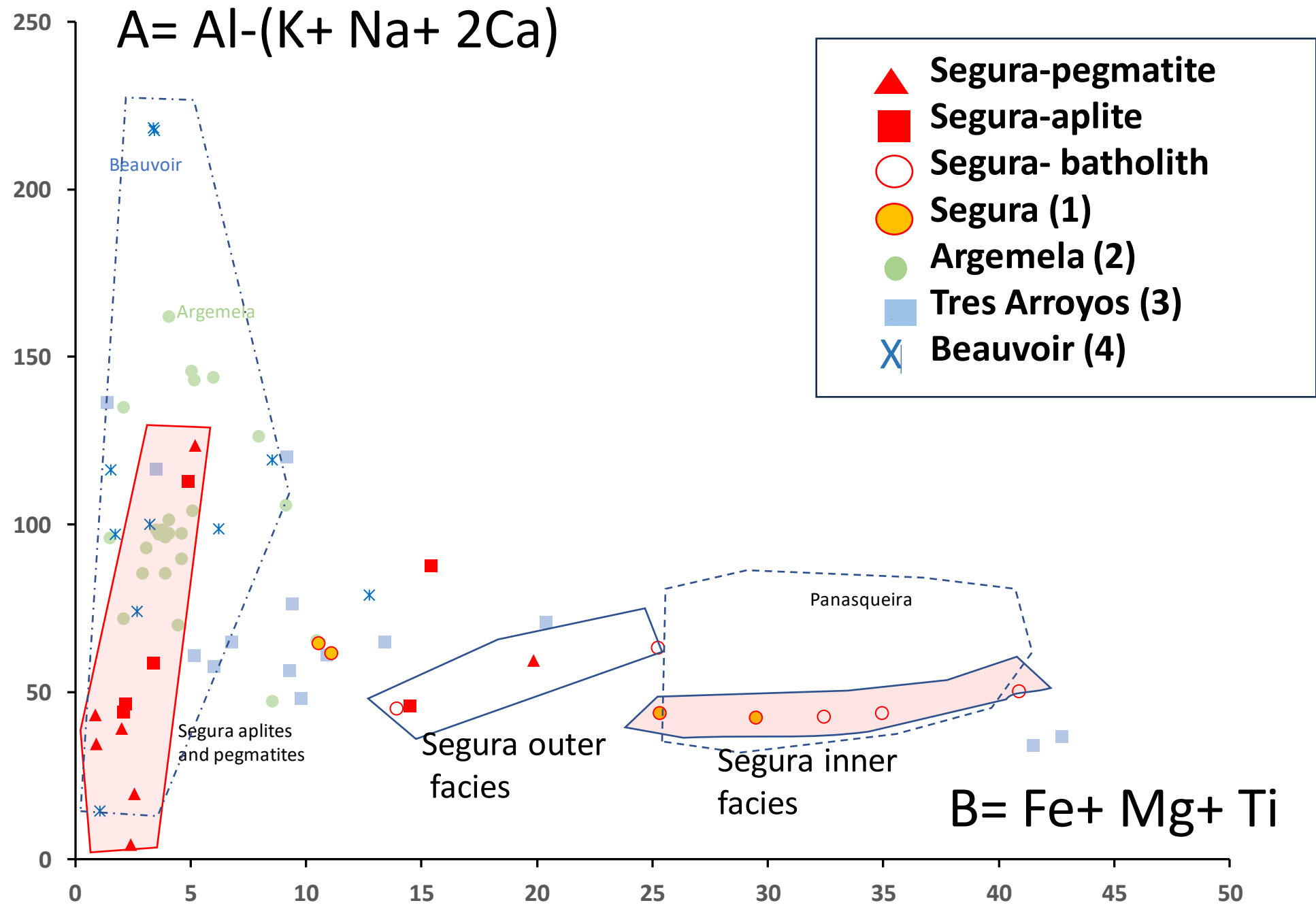


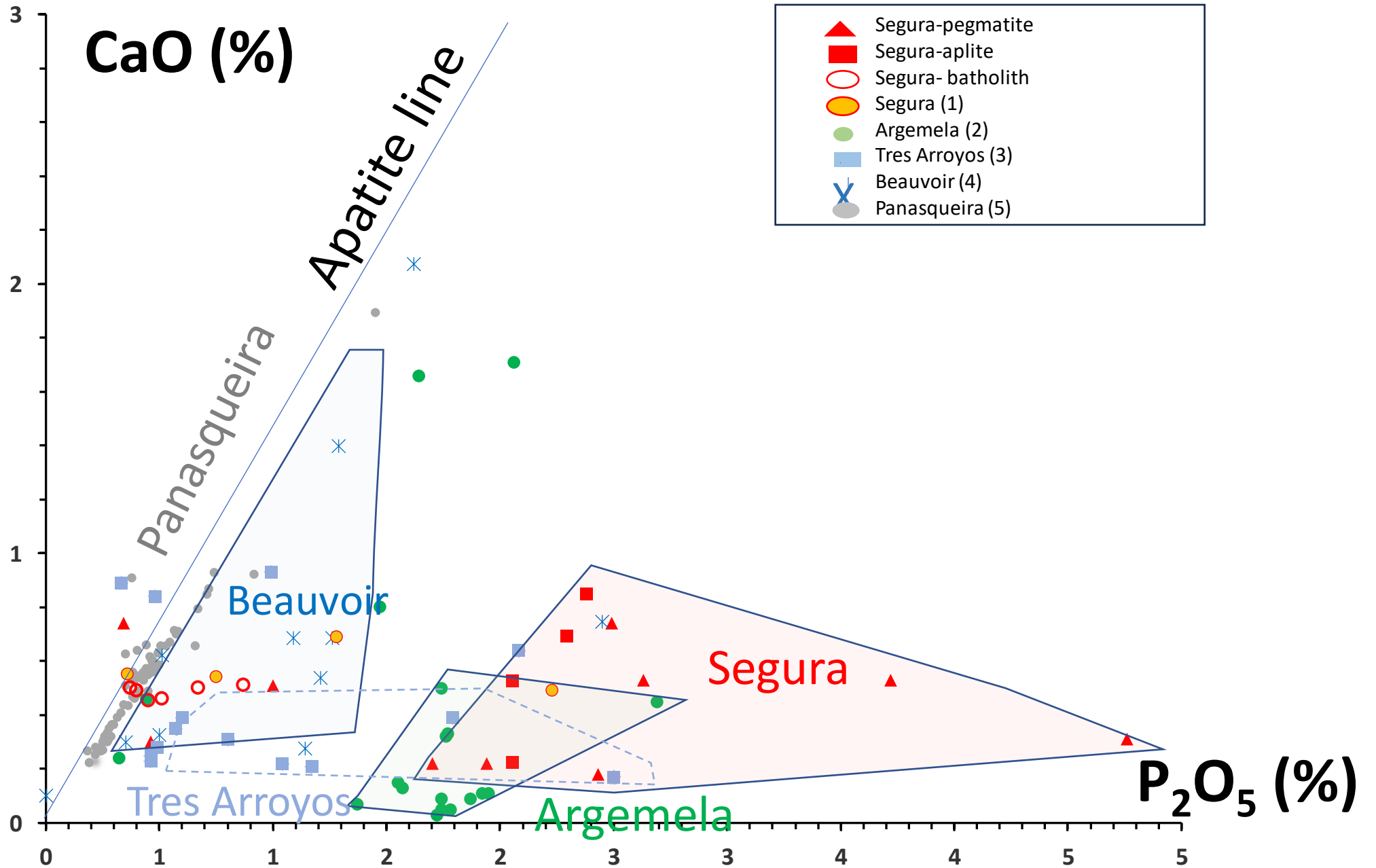


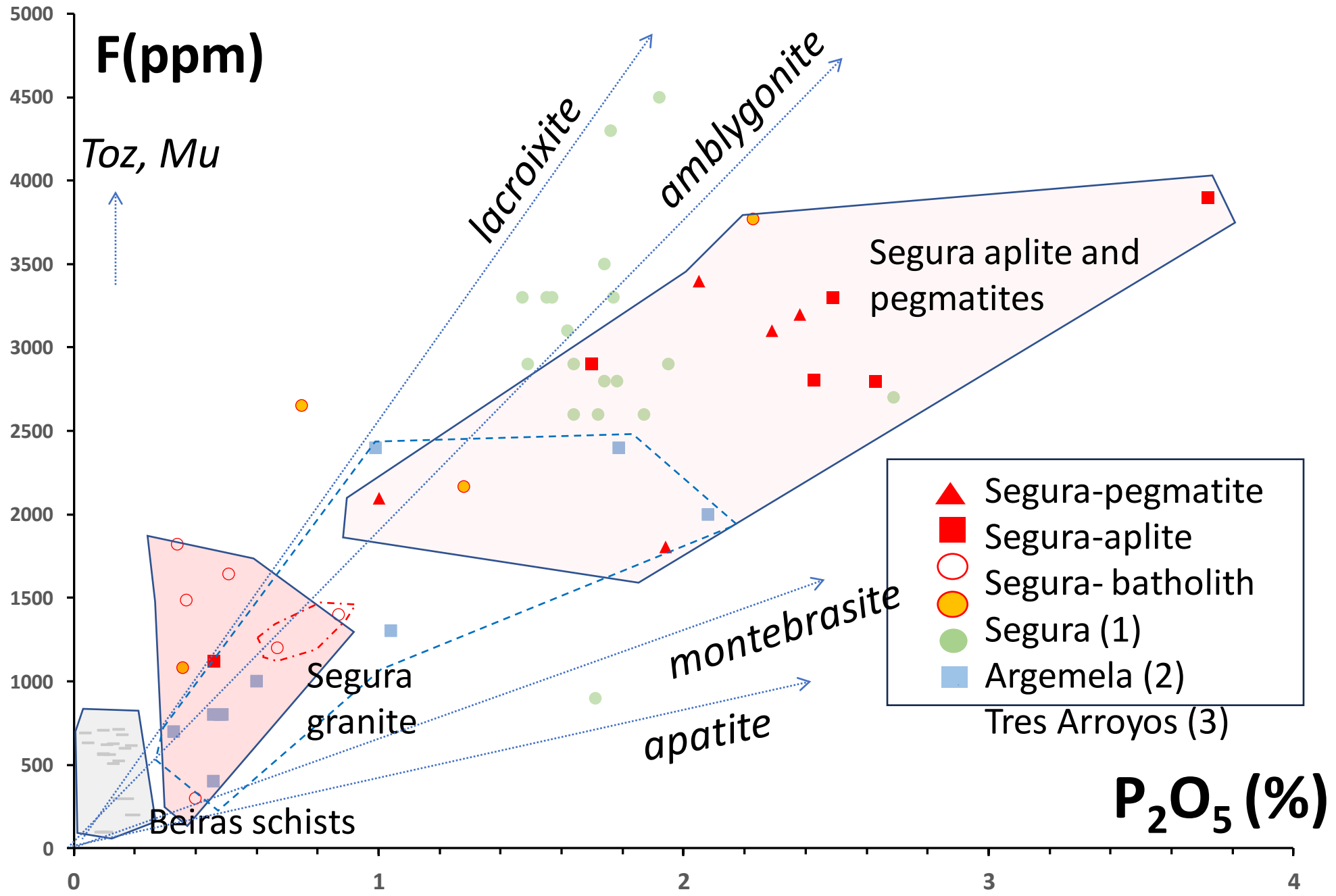


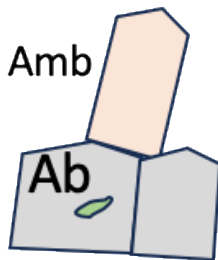
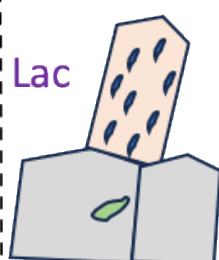
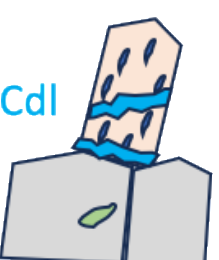
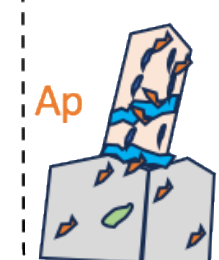


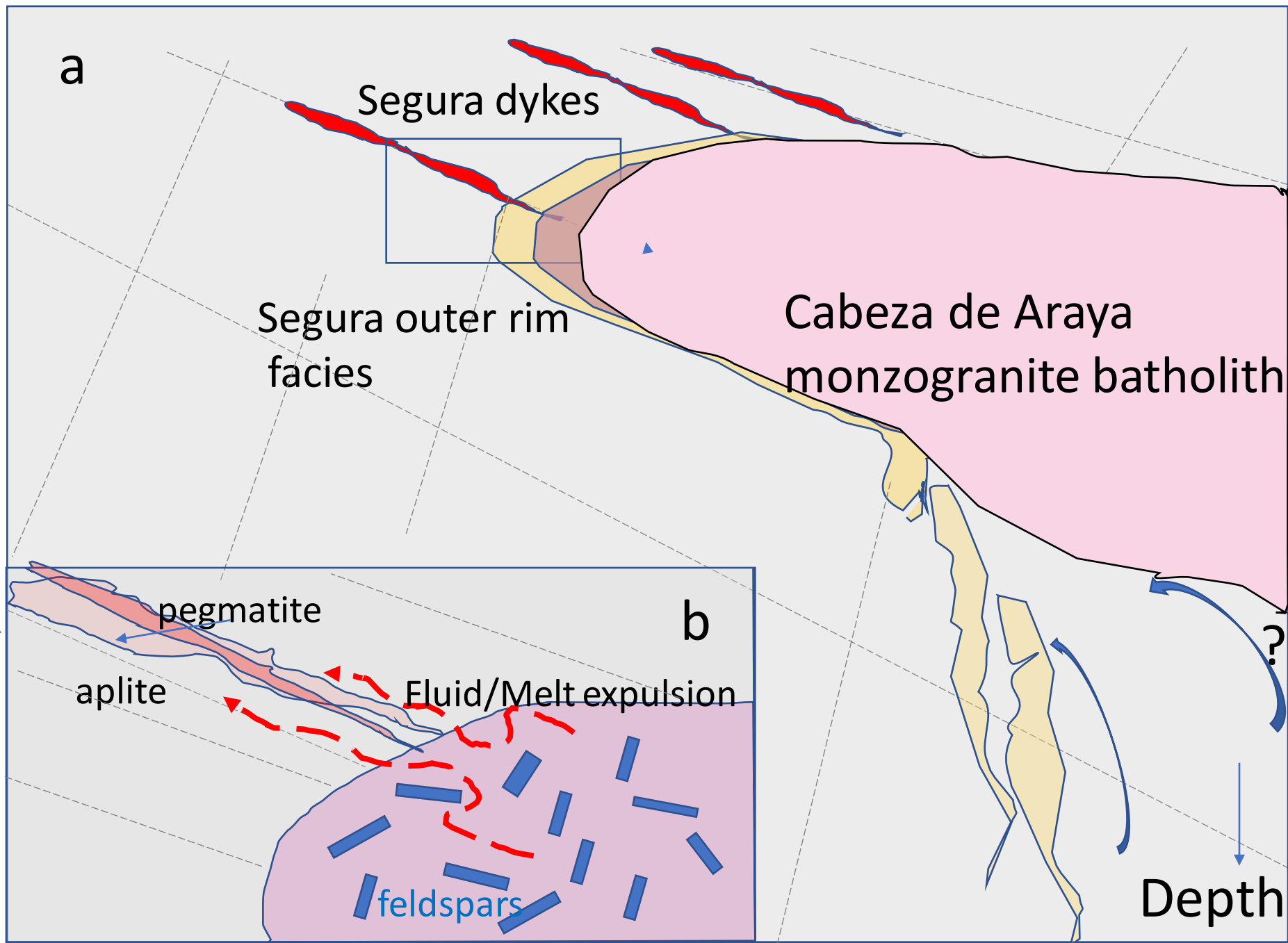








Magmatic	Magmatic/hydrothermal	Hydrothermal		
Aplite	Pegmatite	Microfracturing		Late stage
Albite 1 Quartz Microcline Muscovite1	Albite 2 (euhedral) Microcline	Euhedral quartz	Quartz in fissure	Feldspar alteration
(Topaz) Nb-Ta (Sn) oxides	Topaz 1			Lepidolite
Amblygonite	Amblygonite (euhedral)	Amblygonite replacement Lacroixite	Amb./Lac. Replacement Crandallite-Goyazite	Topaz 2 Cassiterite 2
Eosphorite endlichite	Eosphorite endlichite			Apatite
		+ Na	+ Ca, Sr	+ Ca
				



Aplites and pegmatites of Segura

- magma and fluids particularly enriched in **P, F, H₂O and lithium**
- **enrichment factors of 1.5 to 5** for these elements compared with peraluminous granites or monzogranites
- made possible by favourable processes such as **extracting the supercritical molten phase** from the melt crystallizing feldspars.
- close to the main injection site of the muscovite-rich granite, which is **off-centre from that of the Cabeza de Araya** monzogranite.
- The **opening of foliation planes or fractures perpendicular to this plane required subhorizontal stresses** during a major compression event linked to the opening of the main muscovite granite feeder drain from deep zones where partial melting of the metasediments occurs.
- contribution of calcium indicates **the late involvement of hydrothermal fluids external to the magmatic system.**