



# FORMATION OF CORONA STRUCTURES FROM THE TROCTOLITIC GABBROS OF CHAINIGUND, KARGIL, LADAKH, NW HIMALAYAS, INDIA: PETROLOGICAL IMPLICATIONS

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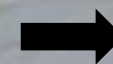
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Abstract DoI  
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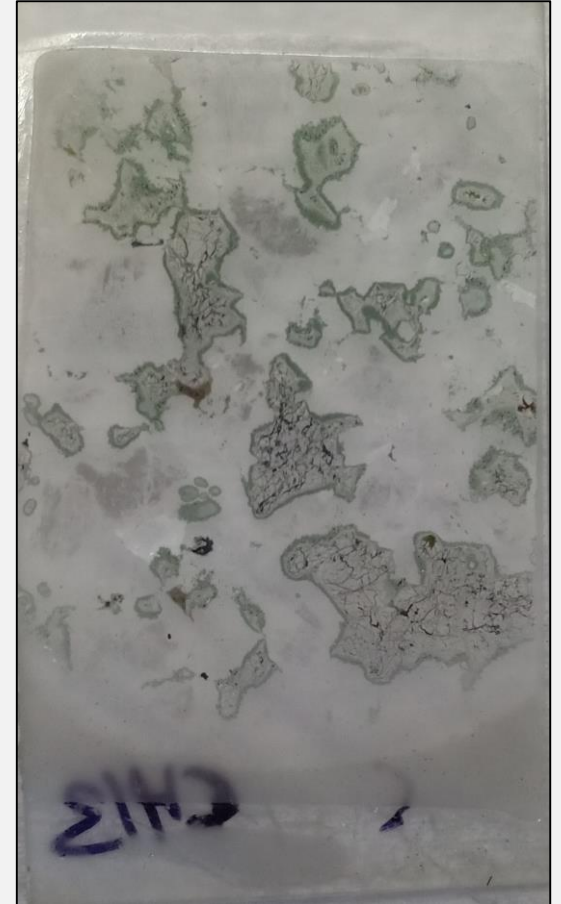
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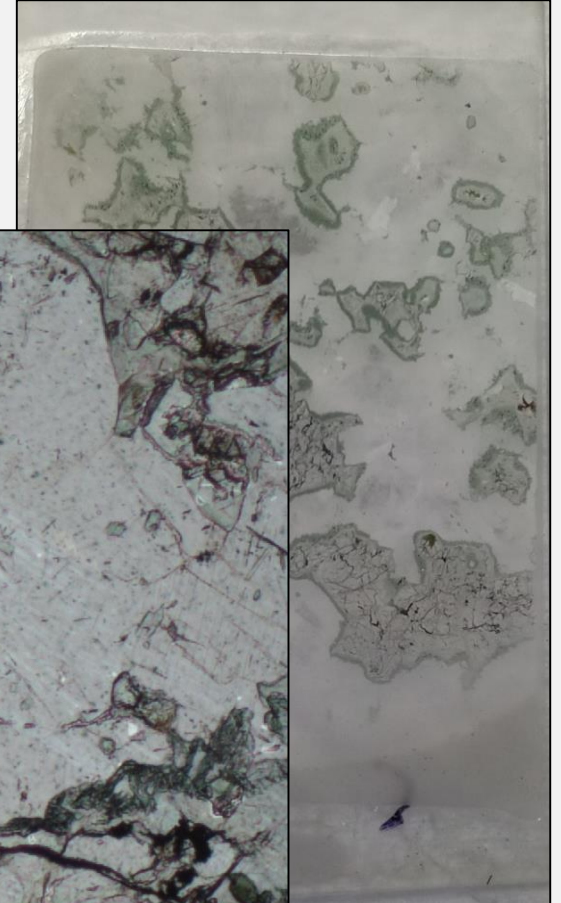
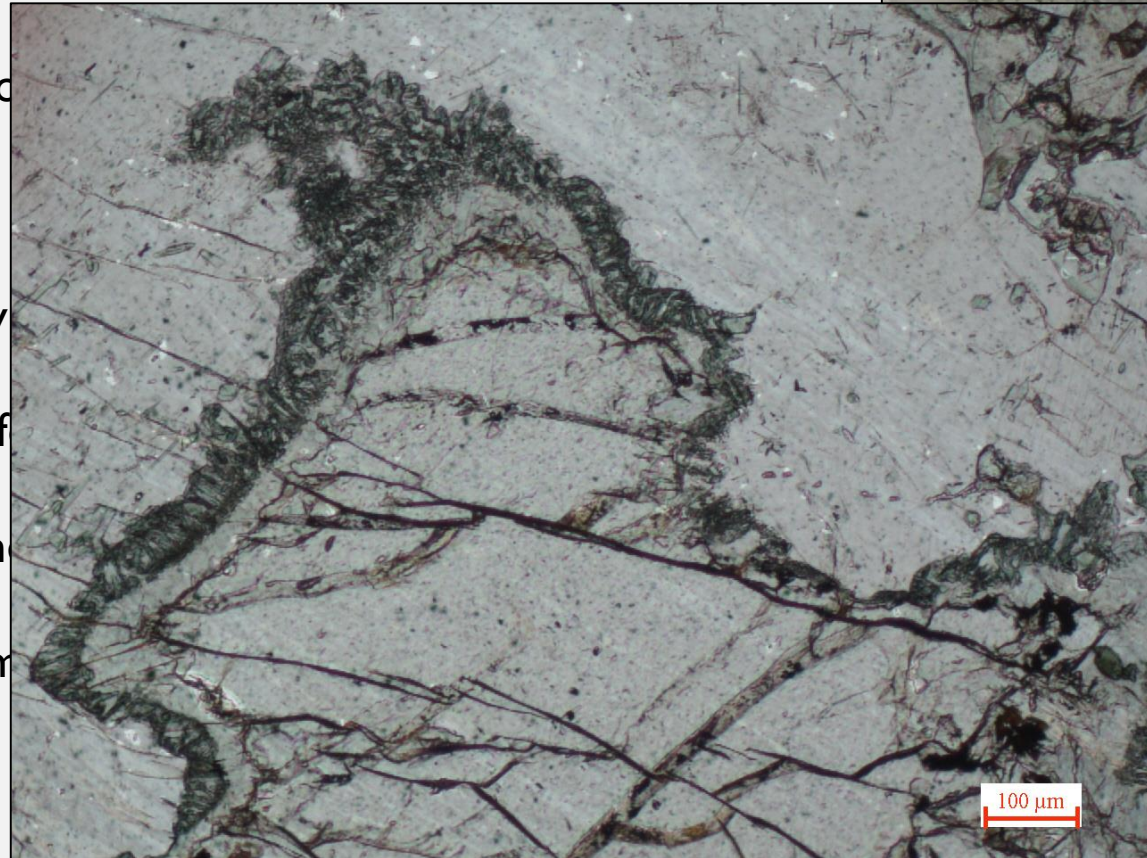
# CORONA STRUCTURES – WHAT ARE THEY?

- ❑ Corona Structures also known as symplectite rims or kelyphatic rims are the disequilibrium structures formed between the two reacting minerals.
- ❑ Structurally they have a central mineral around which the reacting phases forms a complete rim or a partially complete rim and /or a symplectite which is a vermicular intergrowth of minerals.



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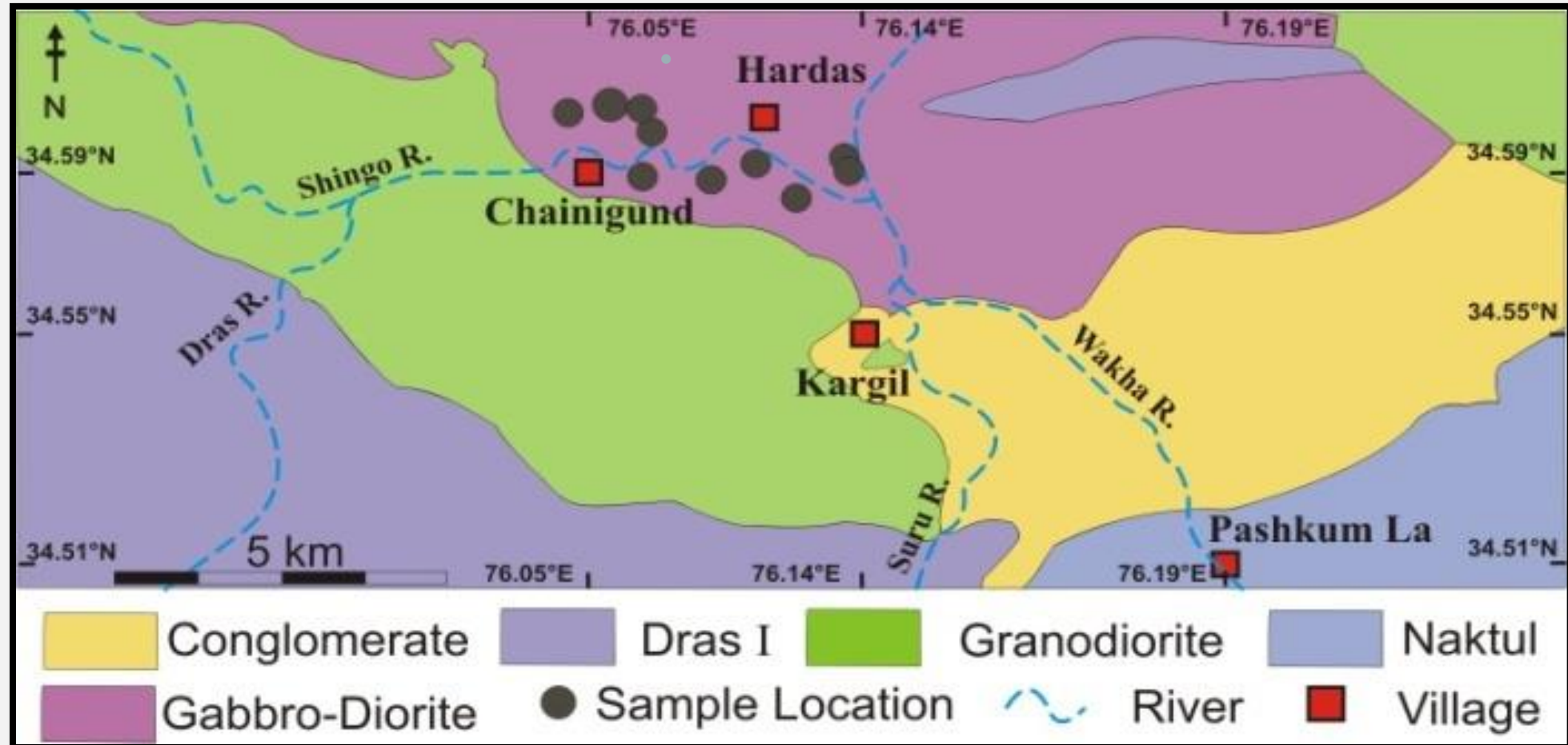
Corona structures

**Geology**

Petrography  
&  
Mineral chemistry

Petrographic  
implications

## GEOLOGY & SAMPLE LOCATION MAP



Geological map modified after Reuber 1989



Sharing is  
encouraged



Corona structures

**Geology**

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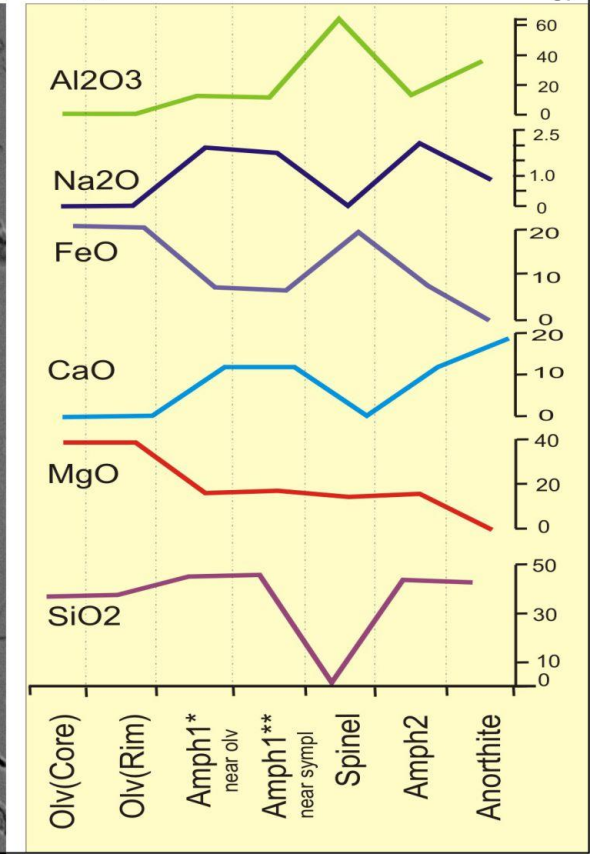
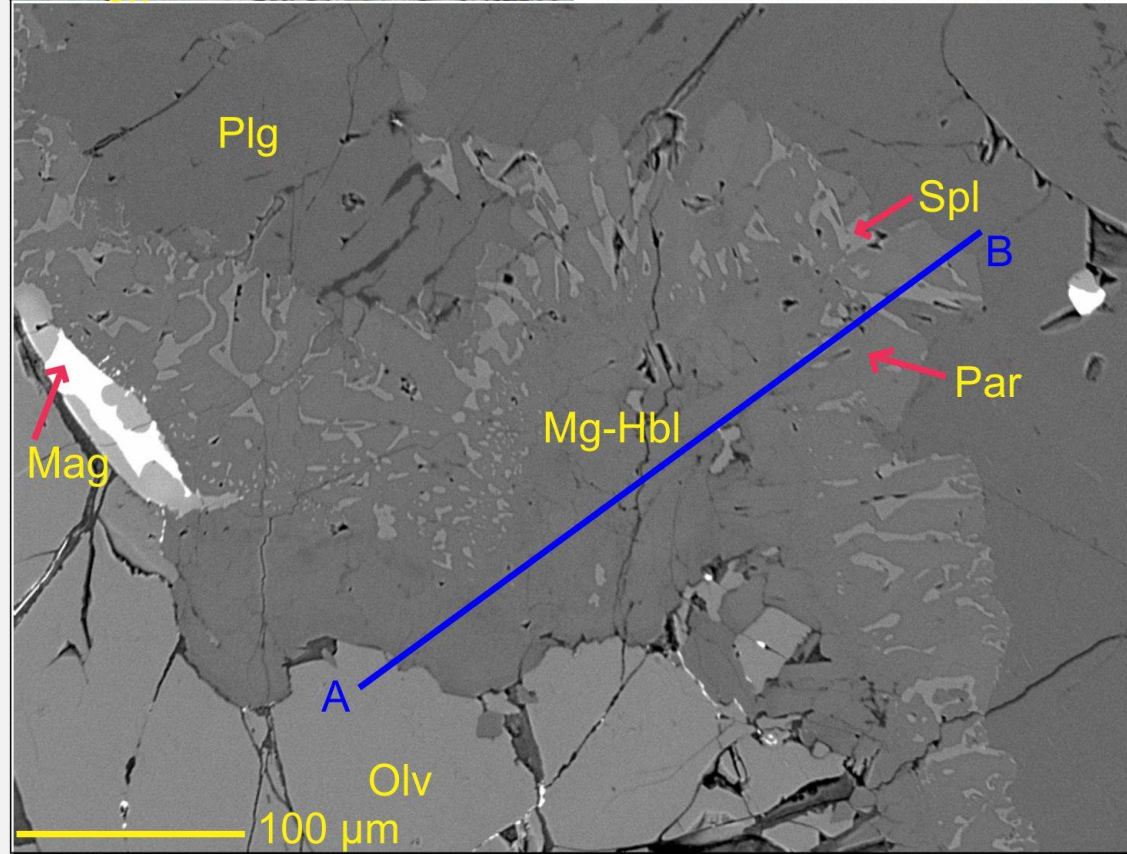
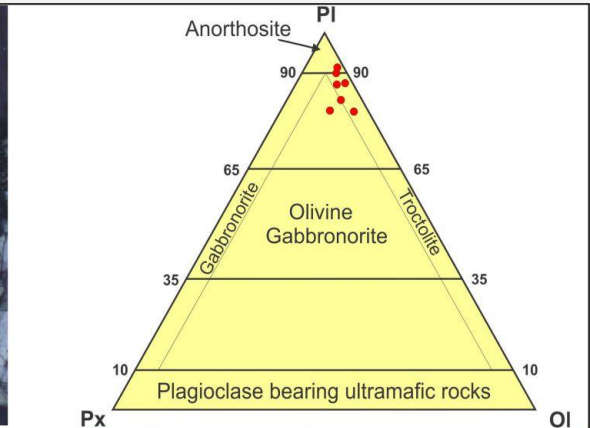
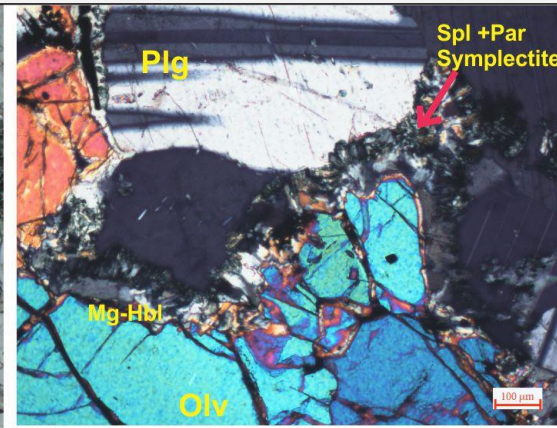
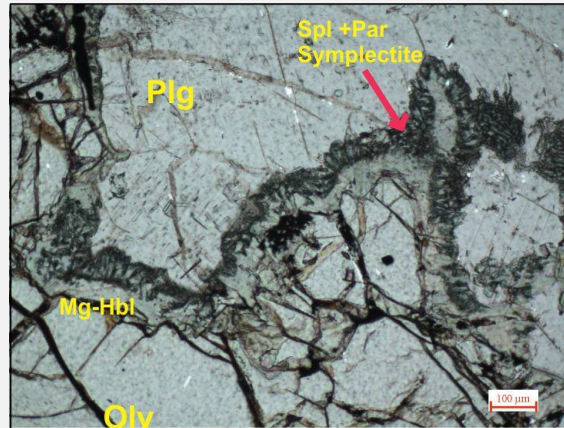
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FIELD  
PHOTOGRAPHS

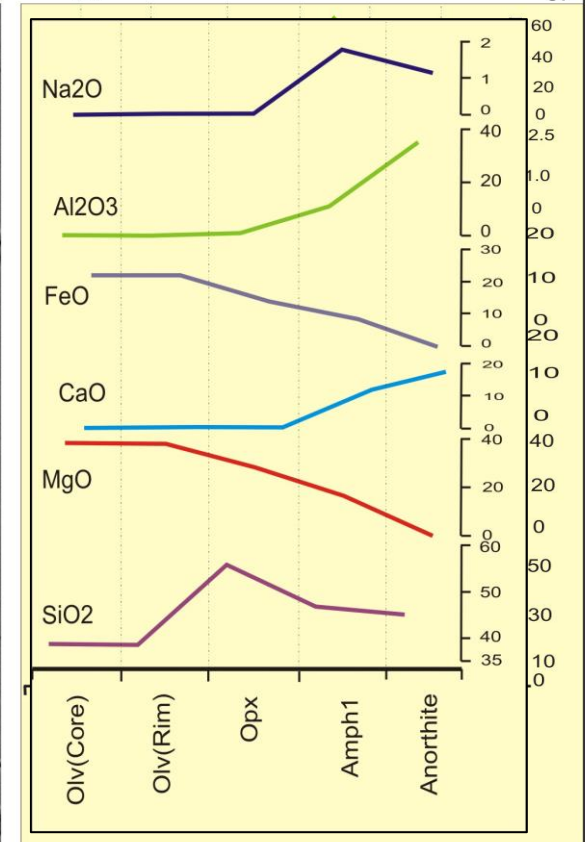
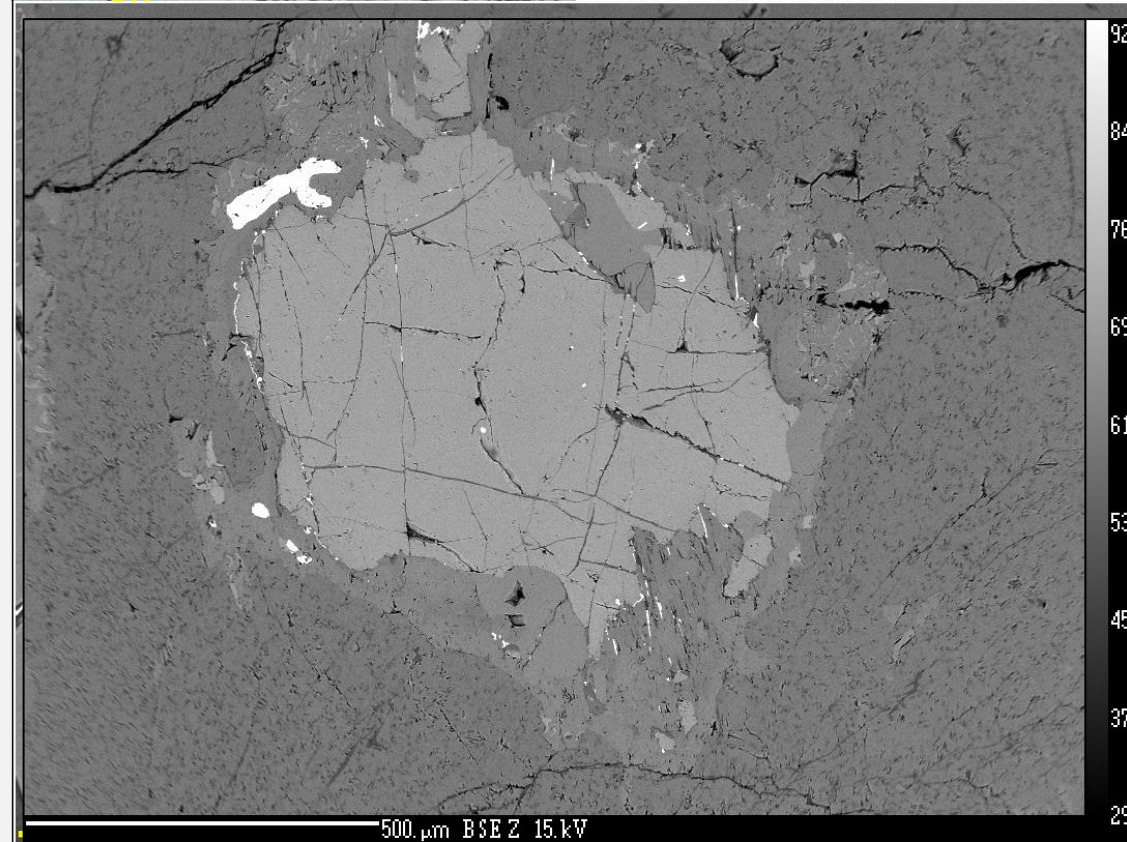
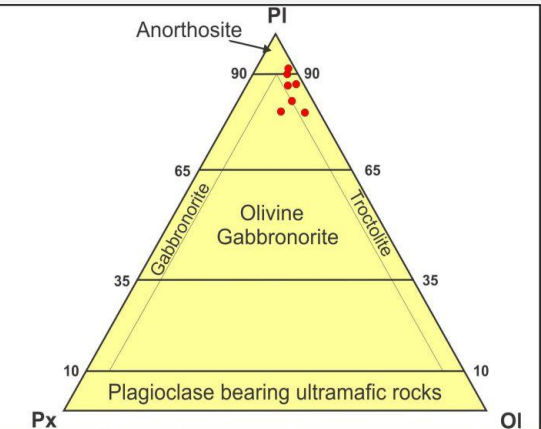
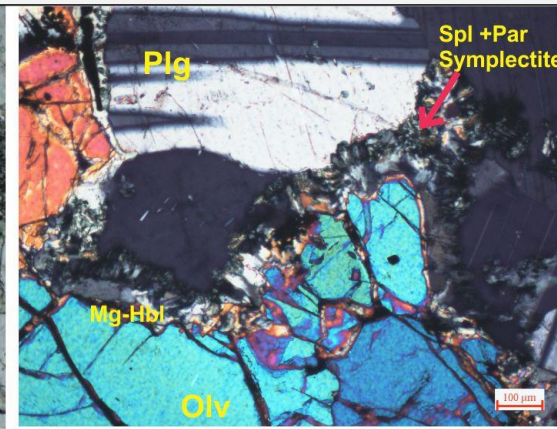
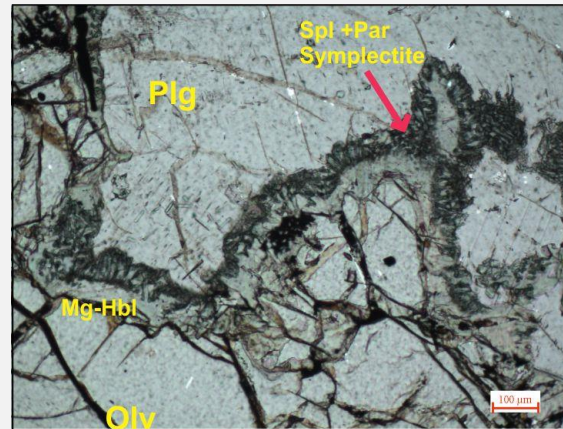


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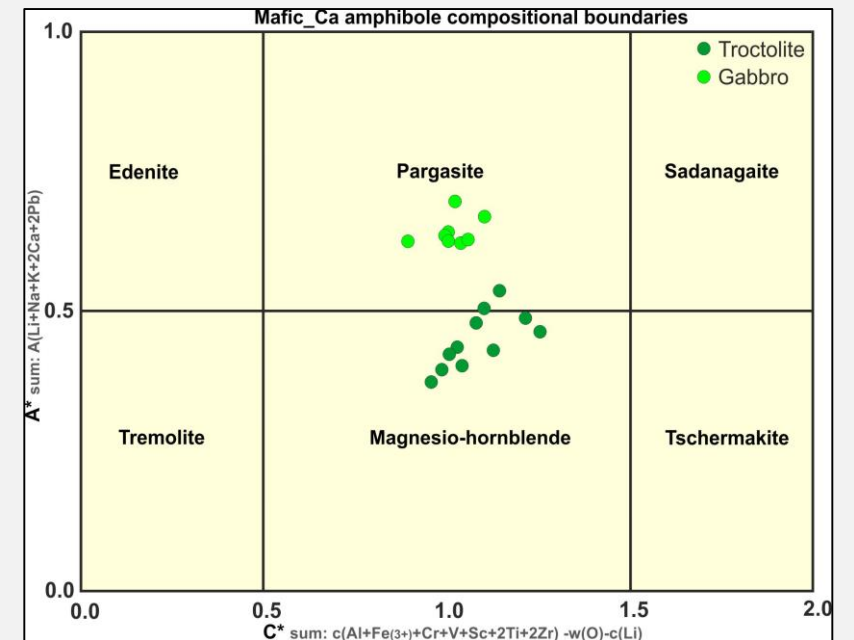
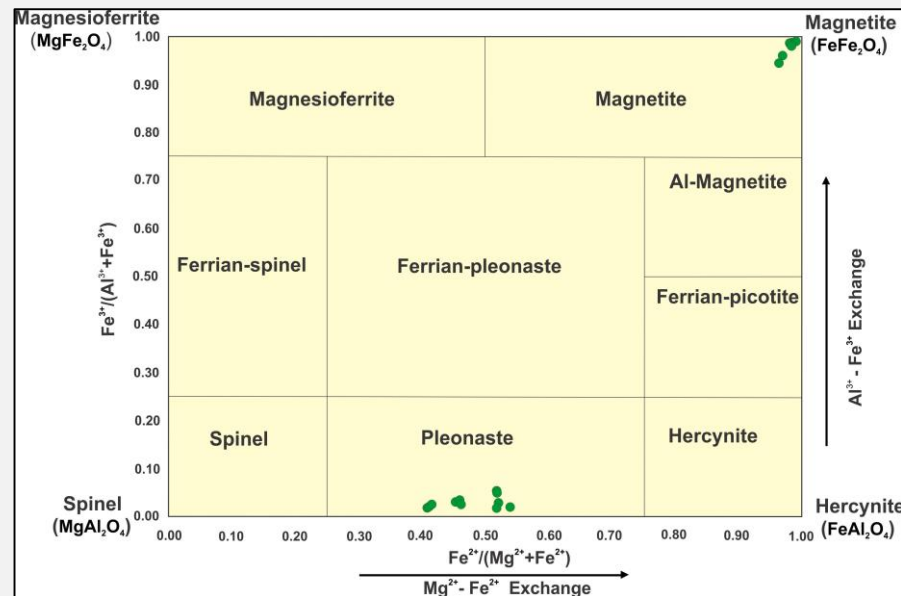
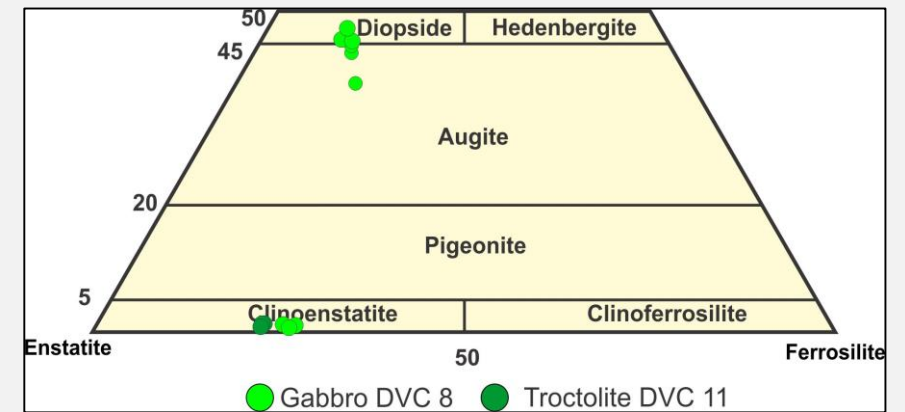
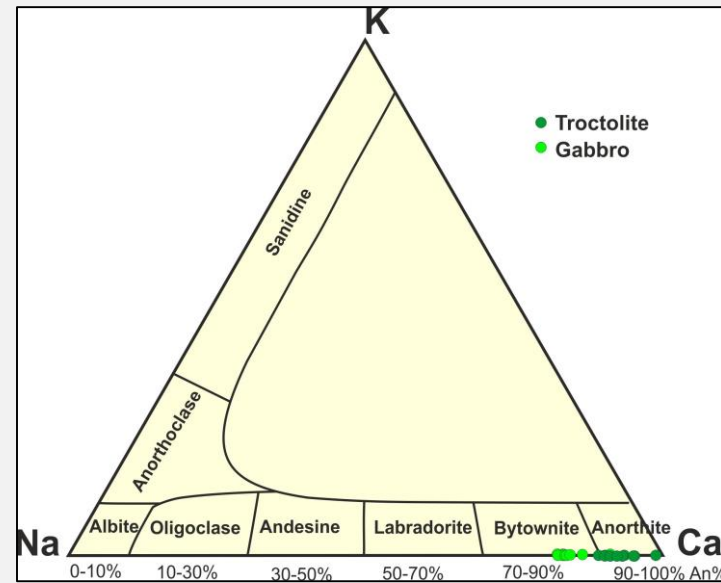
# PETROGRAPHY & MINERAL CHEMISTRY



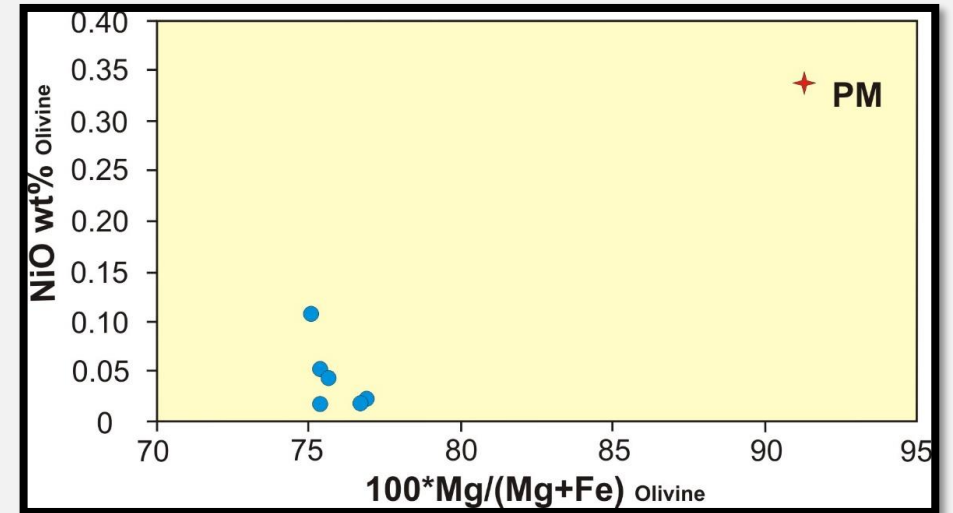
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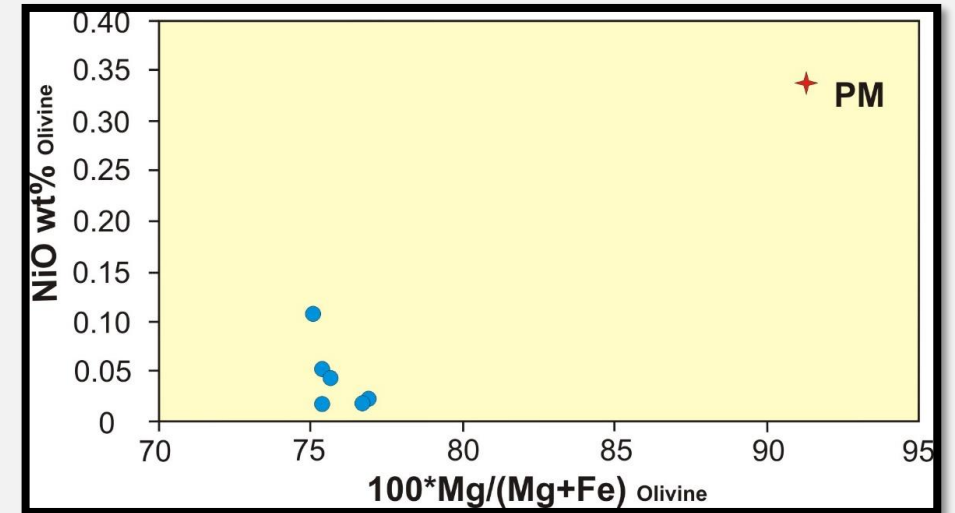
# MINERAL CHEMISTRY



- ❑ As the coronas are restricted to the olivine-plagioclase interface a local or short range diffusion mechanism is favored where Al from plagioclase and Mg from olivine were incorporated into Pleonaste spinel.
- ❑ The symplectitic Pargasites, also displays higher proportions of Fe and Al and lower proportions of Si, Ca compared to Mg-Amph.
- ❑ Further spinel near plagioclase have higher Al and lower Fe than the spinels near magnetites – they have higher Fe.
- ❑ Formation of the Mg-Amph. could be attributed to the diffusion of Ca from plagioclase and Mg from olivine or the precursor clinopyroxenes.
- ❑ Apart from local diffusion of elements, corona as a whole reaction have gained Na and OH as indicated by the presence of Mg- Hornblende and Pargasites.



- ❑ Coronas in troctolites are formed by time constrained, slow retrograde cooling from igneous temperatures as evidenced by adcumulate texture, partially completed reactions, Amph-spl symplectites, presence of late stage oxides such as magnetite and ilmenite.
- ❑ Discontinuous reactions and local or short-range diffusion phenomena thus indicate that the corona structures are a result of metasomatic interaction of cooling magma with the previously formed minerals



## Selected References:

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# Thank You

