



Introduction to Granite

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Granite & Granitoid

The term "**Granite**" is derived from latin word "**Granum**" meaning "grain" because of its granular nature.

□ Mineralogically:

- ✓ **Essential minerals** - Quartz , Feldspar
- ✓ **Accessory minerals** – Biotite, muscovite , amphibole.
- ✓ Other accessories are **zircon, apatite, ilmenite, magnetite, sphene, pyrite** etc.

□ Texturally

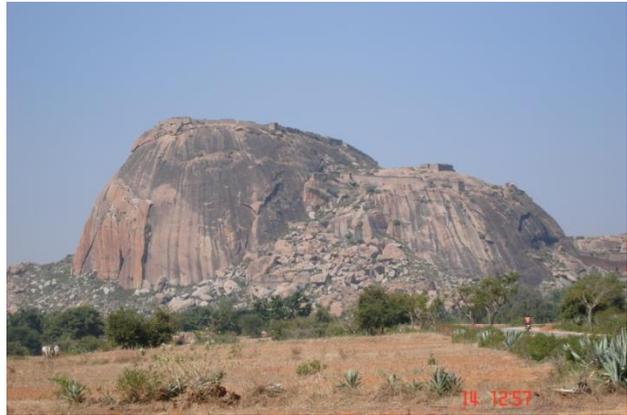
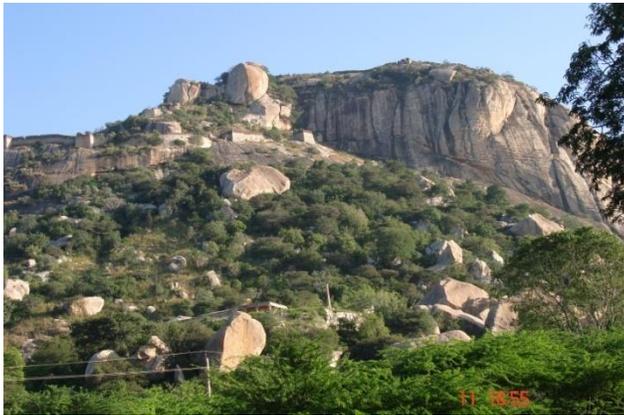
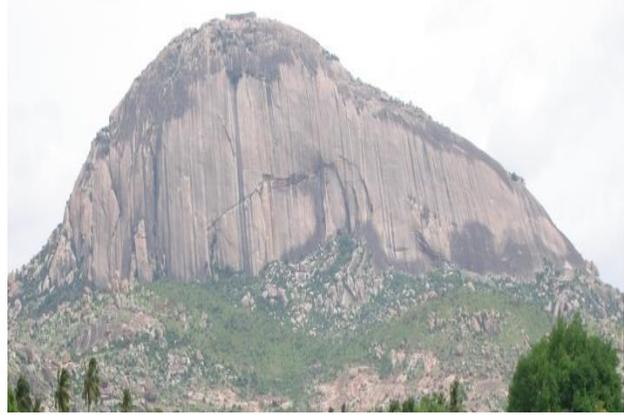
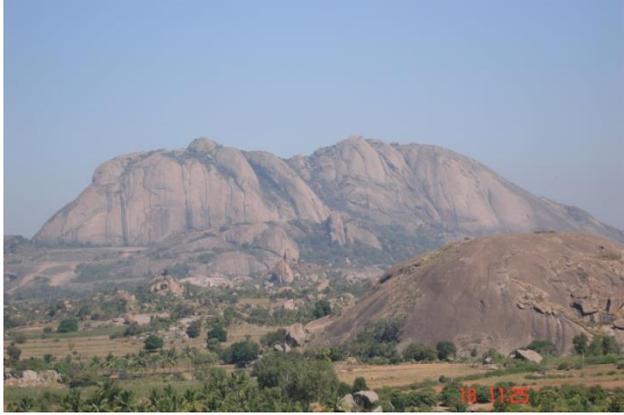
- ✓ **Medium to coarse grained rock crystalline plutonic rock generally exhibiting hypidiomorphic texture and intergrowth textures (perthite, Antiperthite, Myrmekite, Graphic, Granophyric, Rapakivi).**

□ **Chemically :** **SiO₂ - > 65 %, (other oxides vary)**

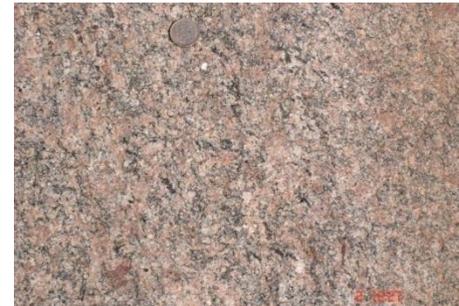
Granites & Granitoids

- ❑ **Granites are the most abundant rocks in Earth's continental crust.**
- ❑ **Granites or granitoids are the terms loosely applied to a wide range of felsic plutonic rocks.**
- ❑ **Granitoid is a field term.**
- ❑ **The term holds a wide variety of rocks viz., granites, granodiorites, tonalites, alkali-feldspar granites etc.**
- ❑ **Exact naming of granitoid is done by counting 'mode' of the minerals under microscope and by expressing in terms of Q (quartz), A (alkali feldspar) and P (Plagioclase) (Streckeisen, 1972).**
- ❑ **Entire gradation of various rock types is seen based on mineral proportion.**
- ❑ **Based on the proportion of feldspars (Albite, Plagioclase & Orthoclase) granitoids are also further classified.**

Granite Plutons– A panoramic view

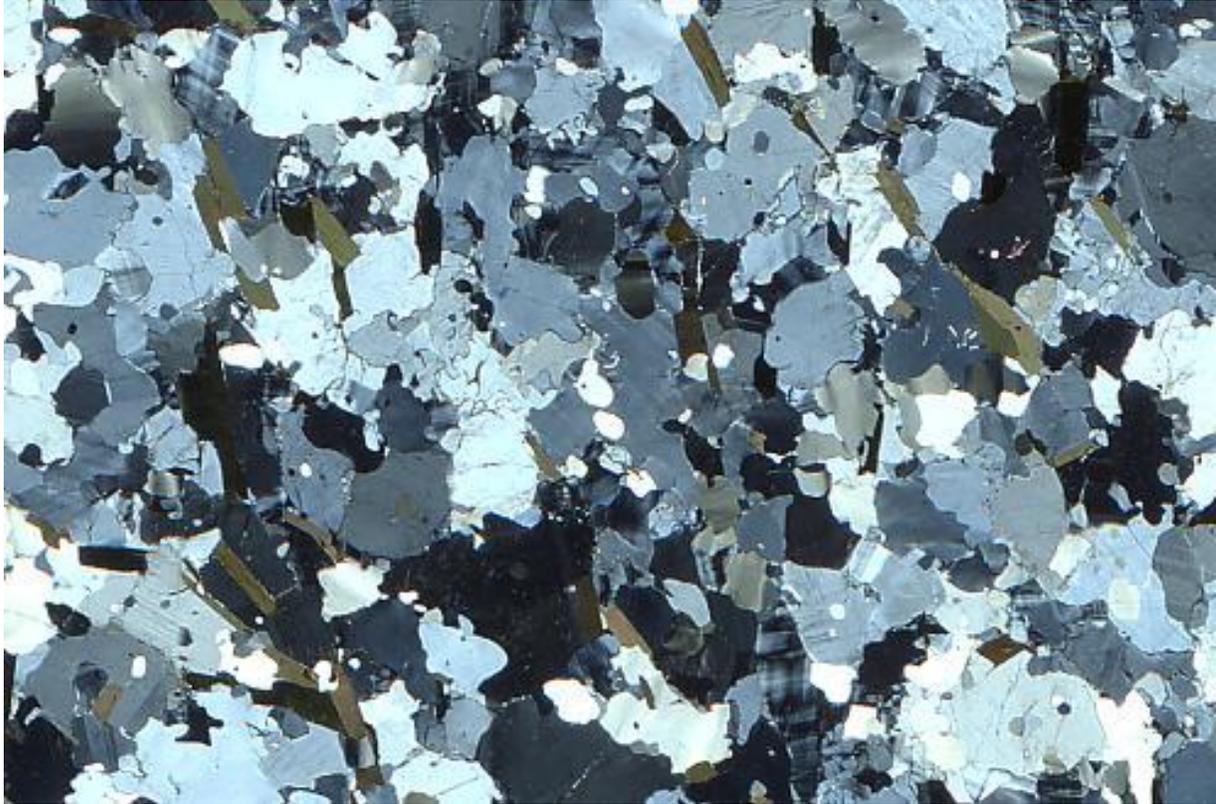


Different facies of the plutons



Rock types

❖ Granite - Quartz - K-feldspar – Plagioclase - Biotite ±
Muscovite (K-feldspar > Plagioclase)



□ Granodiorite - Quartz – Plagioclase – K-feldspar – Biotite ±
Hornblende (Plagioclase > K-feldspar)

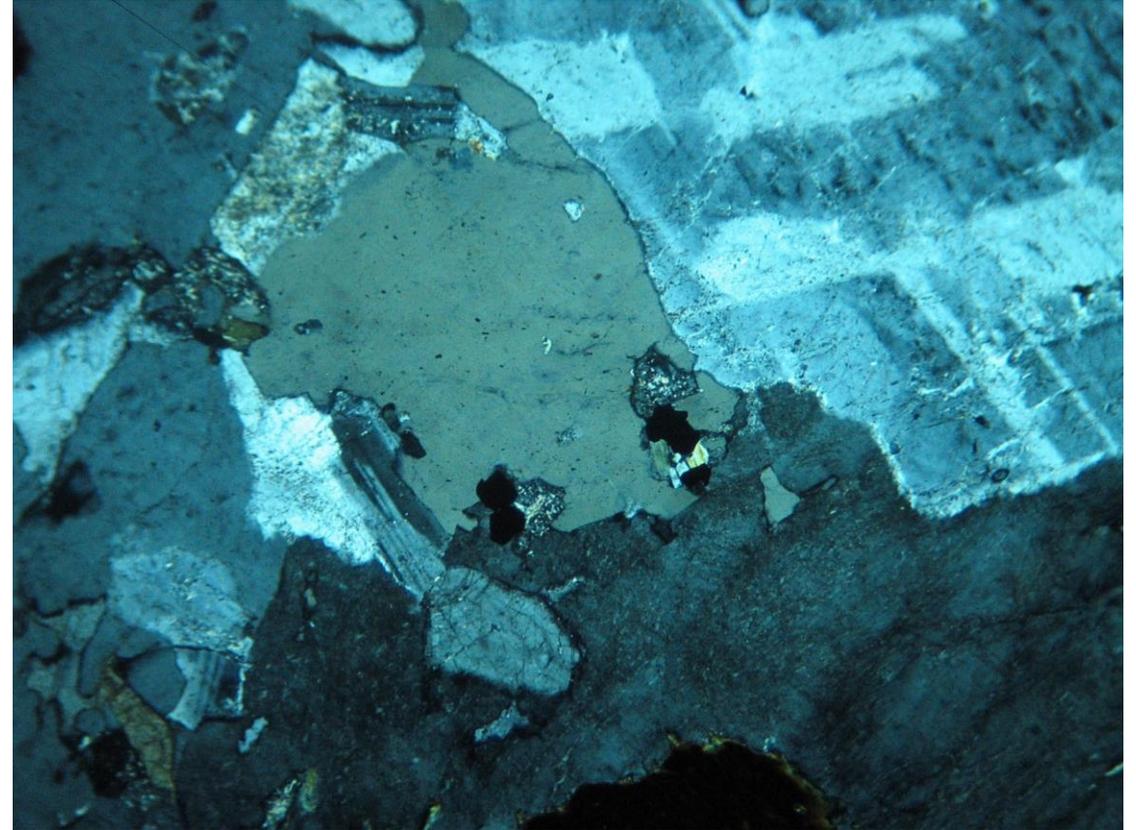


Rock types

- Monzogranite – Quartz – Plagioclase – K-feldspar-Hornblende – Biotite (Plagioclase \approx K-feldspar)

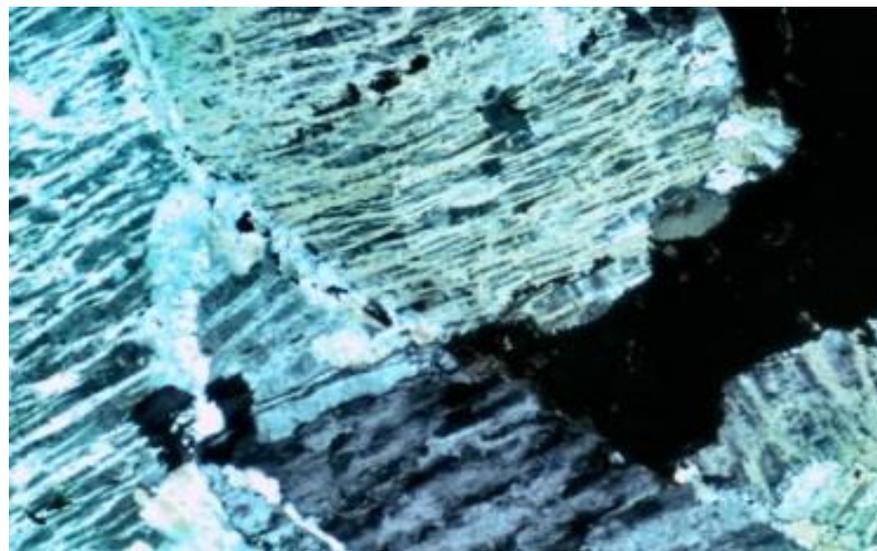
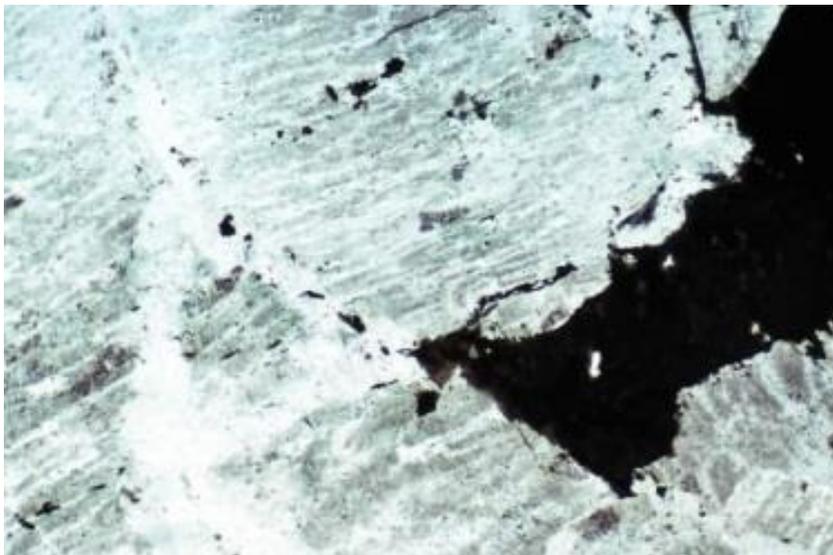


- ❖ Quartz monzonite – Quartz – Plagioclase – K-feldspar – Hornblende – Biotite \pm Clinopyroxene

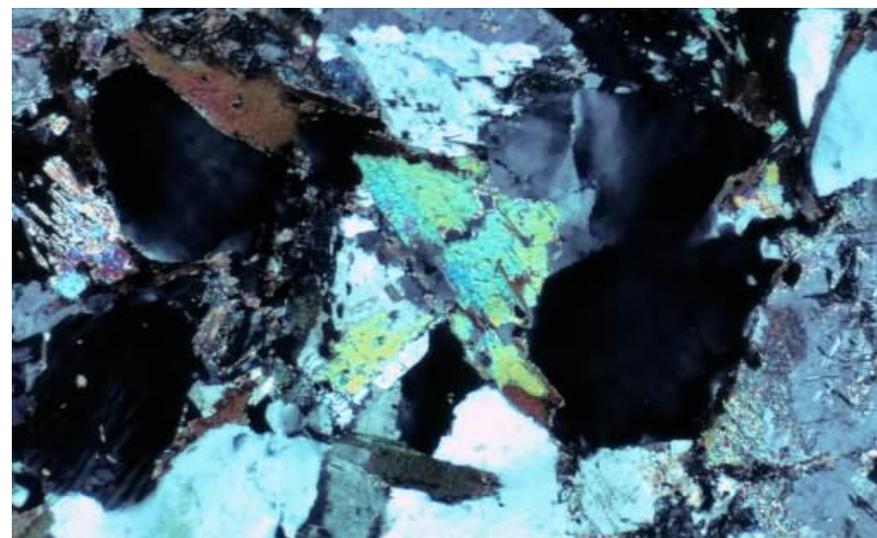
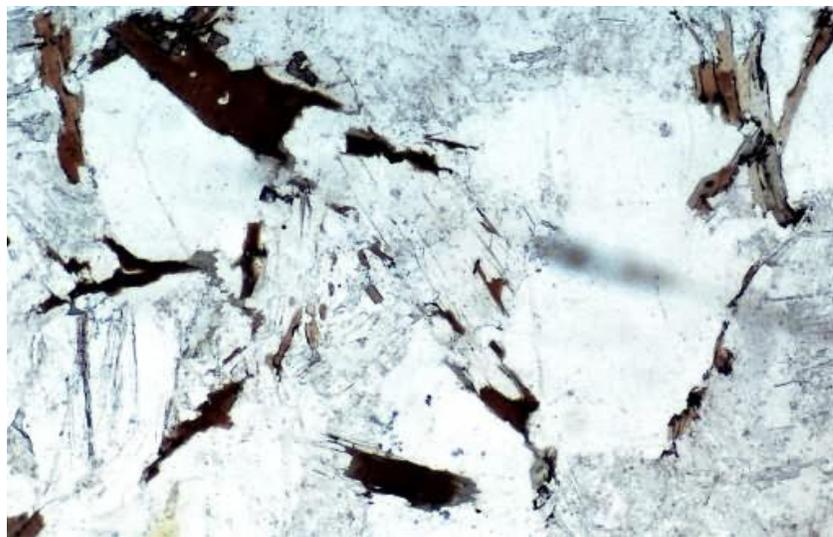


Hypersolvus versus Subsolvus Granites ; A Mineralogical Distinction

*Hyper
solvus – one
feldspar,
usually
perthitic*



*Subsolvus
– two
feldspars*



Significance: difference in water pressure, temperature, and/or depth of crystallization. This distinction has petrogenetic implications.



**THANK
YOU**