

Structures of Metamorphic Rocks

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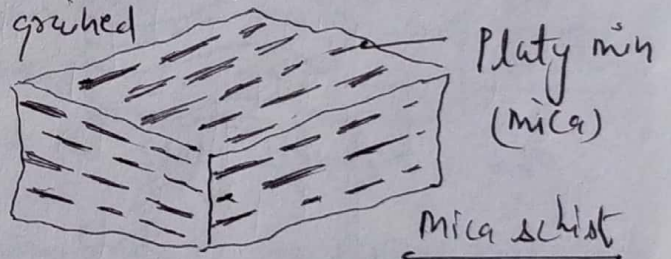
There are some important structures present in metamorphic rocks i.e.

- (a) Cataclastic structure
- (b) Schistose structure
- (c) Gneissose structure
- (d) Maculose structure
- (e) Granulose structure
- (f) Slaty structure
- (g) Hornfelsic structure
- (h) Boudinge structure

(a) Cataclastic structure - It is characterised by the development of extremely fine rock mass under the influence of severe crushing and shearing effects of stresses operating during metamorphism. Cataclastic structure is mainly found in crush breccia, mylonite & slate.

(b) Schistose structure :- The parallel arrangement of platy or flaky minerals brought about by recrystallization during regional metamorphism, is called foliation and the minerals are known as foliated minerals. A foliated rock which is coarse grained and is largely composed of flaky and platy minerals, is called schist.

The foliation of schist is called schistosity & structure is schistose.

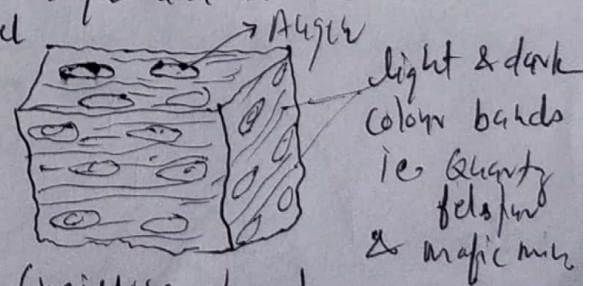


(c) Gneissose structure :- When the rock have been recrystallized under conditions of high grade metamorphism, the light and dark minerals may segregate into alternate bands parallel to schistosity.

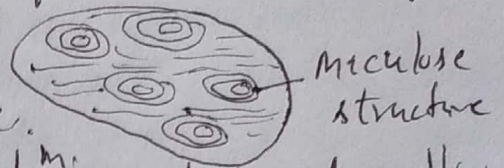
Such coarse grained metamorphic rock showing banded or streaked appearance, is called Gneiss and the structure is called Gneissose structure.

The light coloured bands are composed of Quartz and feldspar, while dark coloured bands contain ferromagnesian minerals or mafic minerals like augite, olivine etc.

The gneissose texture is indicative of an advanced degree of metamorphism under combined action of high temp, pressure & active participation of fluids.

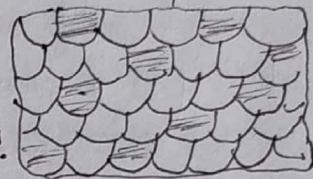


(4) Maculose structure:- These structures are developed due to incomplete recrystallization of the constituent minerals of metamorphic rocks. It is characterised by a spotted appearance of the rock that may be caused due to the formation of large-sized crystals within fine grained groundmass. This type of structure is known as maculose structure. This structure is a typical product of thermal metamorphic contact metamorphism.



maculose structure

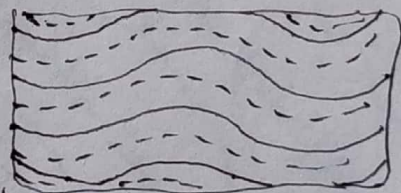
(5) Granulose structure:- This structure is characterized by an essentially granular character of the constituent minerals of metamorphic rocks. The individual grains may be irregular in outline but are interlocking. The flaky minerals are either absent or present only in smaller amounts. Granular structure is produced due to predominance of equidimensional minerals such as quartz, feldspar, pyroxene & calcite.



Granulose texture in Marble

Rocks with granular structure are termed as granulites and this structure is characteristic of metamorphic rocks such as marbles & Quartzites.

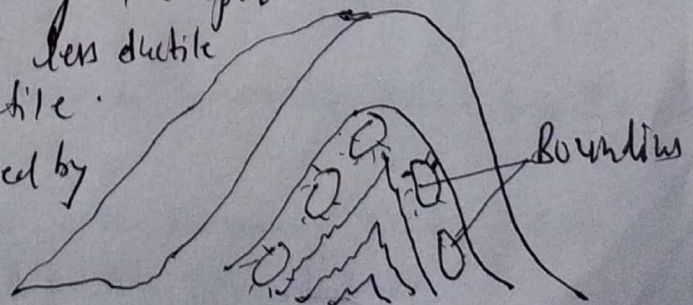
(6) Slaty structure:- This structure is commonly developed in shales that have undergone slight metamorphism. The slaty structure is caused due to parallel orientation of flaky minerals mainly micas and chlorite. Slaty rocks split readily into thin sheets & the slaty structure is also known as slaty cleavage.



slaty structure

(7) Hornfelsic structure:- This structure is characteristic of the contact meta rock called hornfels. It is formed due to the predominance of equidimensional minerals such as feldspar, andalusite, cordierite & quartz.

(8) Boudinage structure:- In this case the minerals are stretched and separate into sausage shaped. The surroundings are often deformed by ductile flow, thus the less ductile or elongated, are surrounded by ductile flow. Boudins are structures formed by the layer-parallel extension in



extensional regime & the process is known as boudinage. Such structures are also called pinch & swell structures & process by which they form is known as necking.