

STRUCTURE OF METAMORPHIC ROCKS

Structure is a term used for large- scale features that occur on the hand sample, outcrop or even regional scale. Structure of a metamorphic rock depends on the interrelations of various Textures within the same rock unit and are frequently dominated by the directive forces due to the unequal pressure.

Holmes has suggested a convenient grouping of metamorphic structures into-

- Cataclastic,
- Maculose,
- Schistose,
- Granulose,
- Gneissose.

Cataclastic structure results from the crushing and granulation of minerals and rocks (cataclasis), through the application of stress at low temperatures, with but little new mineral formation, except along planes of considerable movement, and at places where heat has been locally generated in the upper zones of earth's crust. Due to this, resistant minerals in rocks may remain unaffected, while the softer minerals are powdered to fine material.

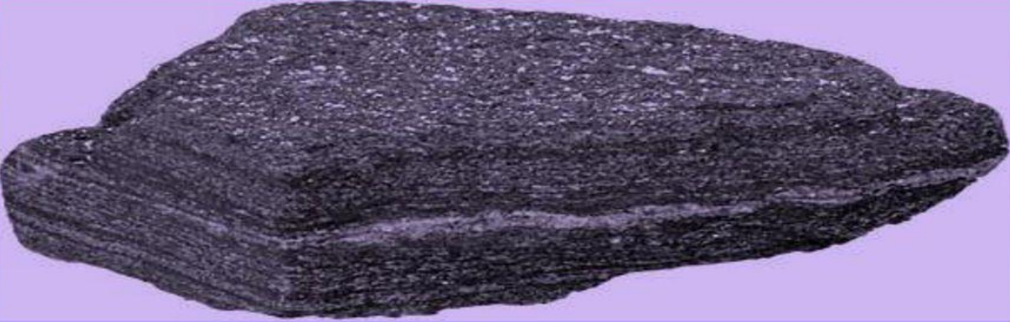


Maculose structure is characterized by a spotted appearance of the rock that may be caused due to the formation of large-sized crystals called porphyroblasts within an otherwise fine grained rock as a result of thermal metamorphism of argillaceous rocks like shale.



Schistose structure is due to the predominance in a metamorphic rock of flaky, lamellar, tabular, rod-like, and highly-cleavable minerals, such as mica, chlorite, talc, and amphiboles, which, under the dominant influence of directed pressure in dynamo-thermal metamorphism, form layers, felts, and folia arranged in more or less parallel bands.

SCHISTOSE STRUCTURE



- ❑ **One of the most obvious structural features of most of the metamorphic rocks is the alignment of platy or flaky minerals in parallel layers. The rock with schistose structure is made up of broadly parallel or sub-parallel layers of flaky, platy or rod-like minerals making it very weak in the direction of parallelism.**

Granulose structure is due to the predominance of equidimensional minerals, such as quartz, feldspar, pyroxene, calcite, etc., in a metamorphic rock. The cleavable lamellar or rod-like minerals are either absent or present only in subordinate amount; and granulose rocks, therefore, do not possess the property of schistosity. They are formed as a result of recrystallization of pre existing rocks under uniform pressure and high temperatures.

Granulose Structure



Gneissose structure This is a banded structure in which the minerals have been segregated into discontinuous bands, each of which is dominated by one or two minerals. These bands range in thickness from 1 mm to several centimeters. The individual mineral grains are macroscopic and impart a striped appearance to a hand specimen. Light-colored bands commonly contain quartz and feldspar, and the dark bands are commonly composed of hornblende and biotite. Accessory minerals are common and are useful in applying specific names to these rocks. A rock with a gneissic structure is called a *gneiss*.

