

# METAMORPHIC TEXTURES AND STRUCTURES

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## Abstract

### Introduction

How metamorphic textures are formed  
Factors affecting textures

Textures in metamorphic rocks

Structures in metamorphic rocks



## **ABSTRACT:**

Metamorphic textures and structures are captivating features found within rocks that have undergone metamorphism. These transformations occur deep within the earth's crust due to intense heat and pressure. Through this process, rocks develop unique textures and structures that provide valuable insights into the geological history of our planet. Exploring and understanding metamorphic textures and structures allows us to unravel the complex story of earth's ever-changing landscapes.

## INTRODUCTION:

Metamorphic textures and structures are features found in rocks that have undergone metamorphism. Metamorphism is a process involving changes in mineralogy, texture and structure due to high temperature and pressure. When rocks undergo metamorphism, they can develop unique features. For example foliation is a common texture where minerals align in parallel layers. Metamorphic rocks can have a wide range of textures and structures and studying helps us understand the earth's history and processes.



How metamorphic textures are formed:

Recrystallisation: Existing minerals change their crystal structure without melting, forming new grains with specific orientations and size. Phase change:

Transforms one mineral into another mineral with the same composition but with a different structure.

Plastic deformation: Rocks experience stress and strain, resulting in changes such as foliation(layering) or lineation(alignment) of mineral grains. Control

metamorphism: Near igneous intrusions, rocks experience high temperatures and lower pressures, leading to distinct mineralogy, texture and sometimes the development of new minerals.

# STRUCTURES AND TEXTURES:

Structures are larger scale features, at times requiring a whole outcrop to fully describe

such as foliated, lineated, cleavage, layered or banded, schistose, gneissose, slaty, crenulated or small-scale regular folds

## Slide 3: Types of Structures

**\*Foliation\*** : A pervasive planar fabric resulting from the alignment of mineral grains under directed pressure.

**\*Lineation\*** : Linear features within the rock, which can be mineral grains, elongated fossils, or stretched minerals.

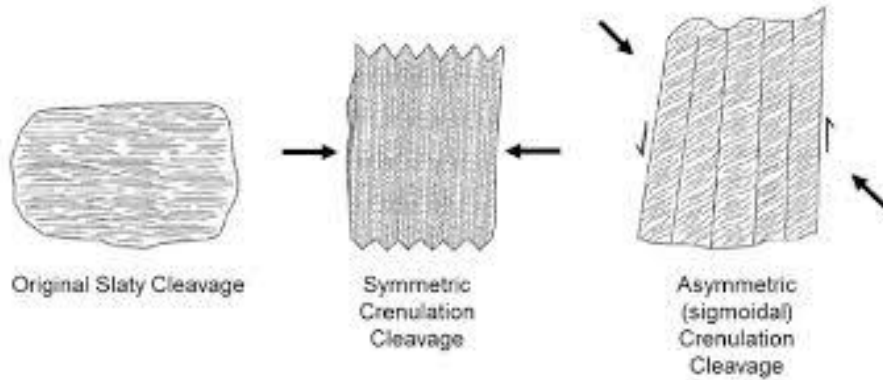
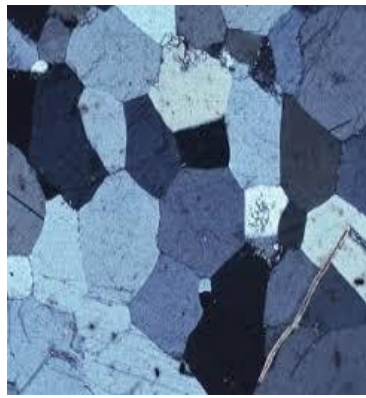
**\*Fold Structures\*** : Deformational features caused by the bending or buckling of rock layers under compressional stress.

**\*Shear Zones\*** : Zones of intense deformation characterized by lateral movement along fractures.

FUN FACT 🤪👉 :

FOLIATION ARE STRUCTURES THAT DESCRIBE TEXTURES 😂

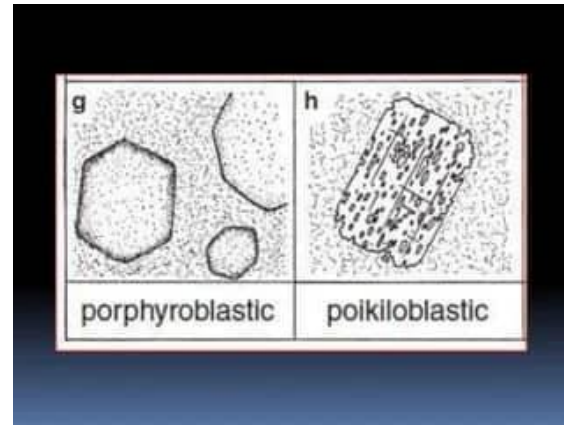
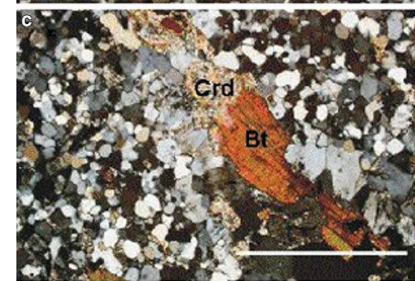
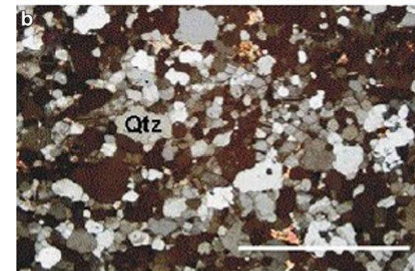
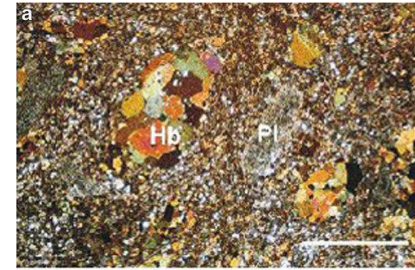
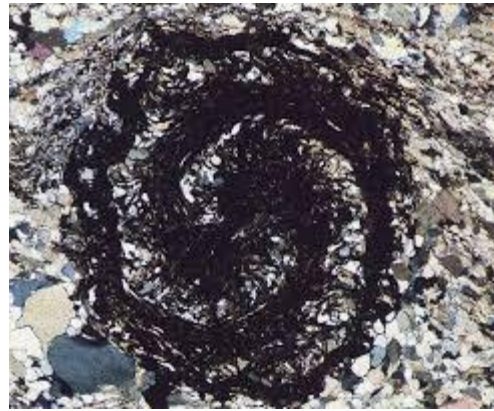
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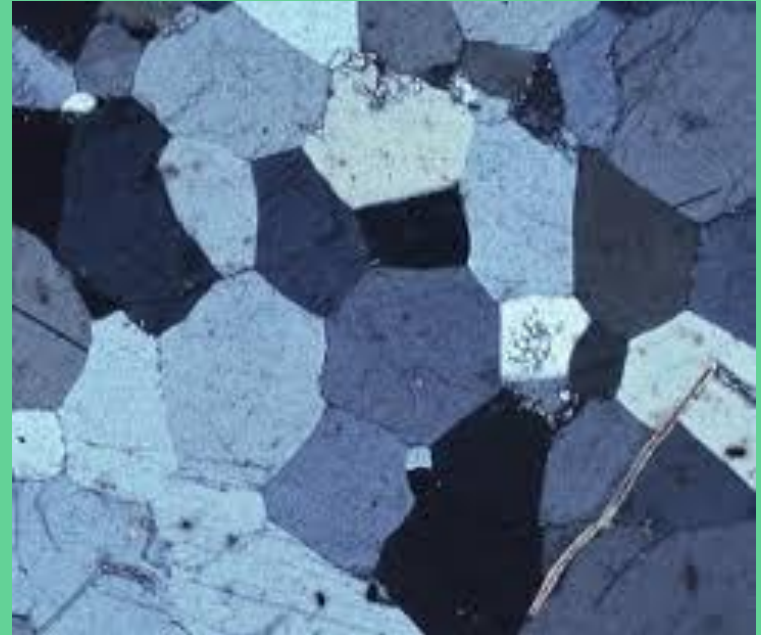
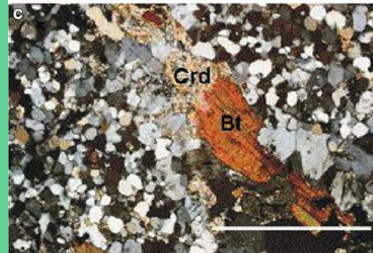
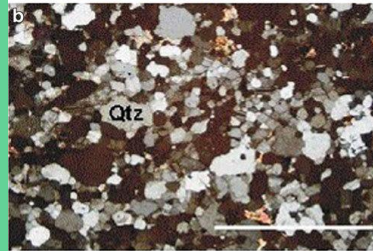
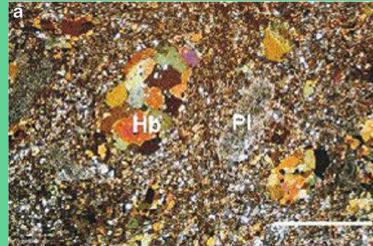
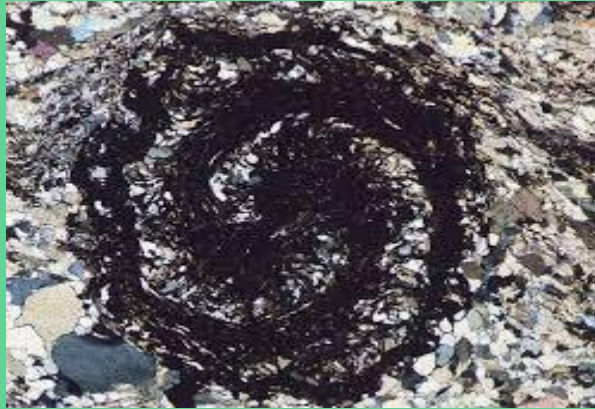
# METAMORPHIC TEXTURES

Metamorphic textures demonstrate a great diversity in the shape, size, orientation and spatial arrangement of crystals which result from variable pressure and temperature conditions.

1. Poikiloblastic - has large crystals and numerous small mineral grains.
2. Granoblastic - has a equigranular texture
3. Snowball texture - has curved helical texture from rotation of crystals during growth
4. Xenoblastic - has crystallographic faces which are not well developed
5. Porphyroblastic - contains large crystals and granular mass



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The textures of metamorphic rocks depend on various factors. These factors control the metamorphic mineral content, textures and structures. These factors include:

\*Pressure



TEMPERATURE

My room  
at night



My room  
in the morning



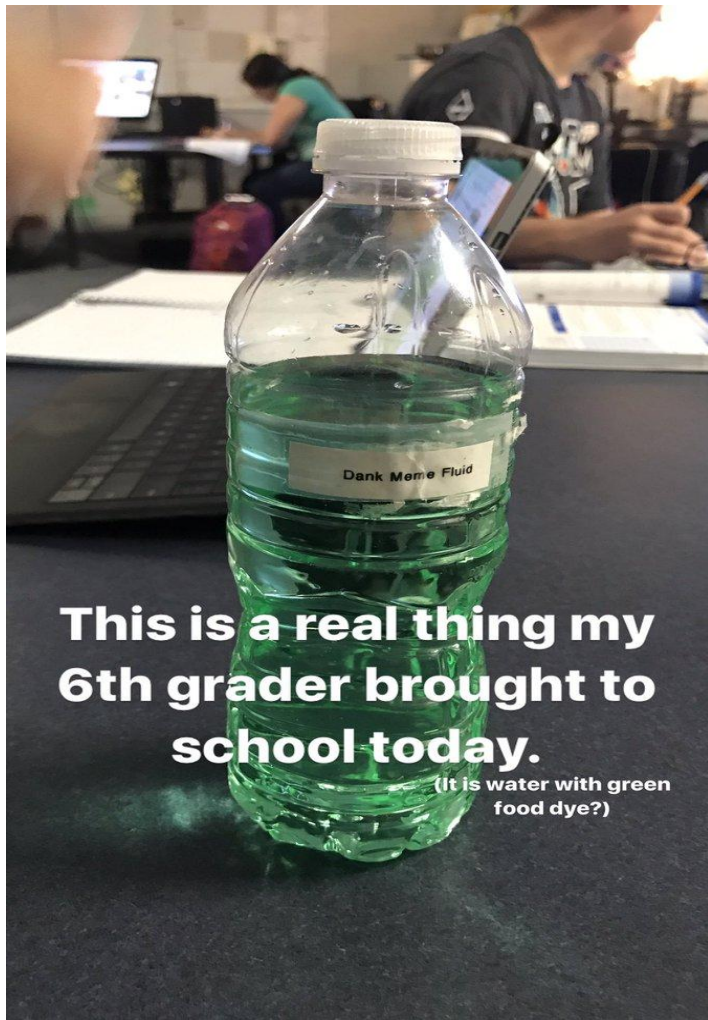
TIME

Tips for time management:  
Don't try to solve everything  
Take some rest



ME:

\*Fluids



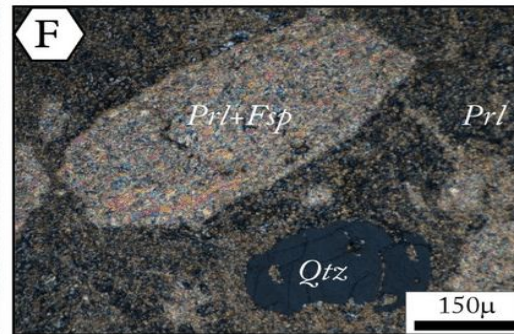
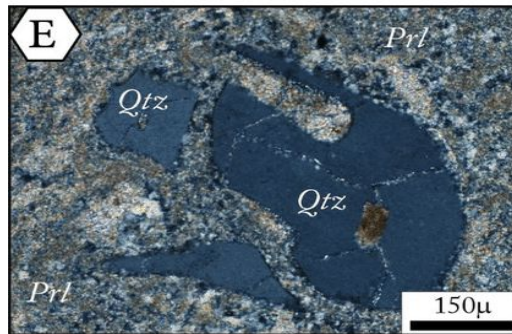
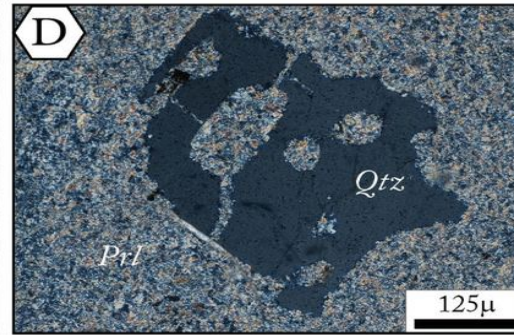
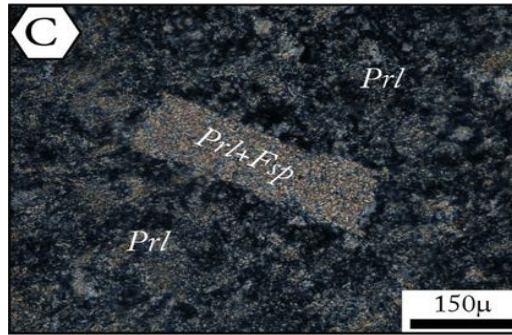
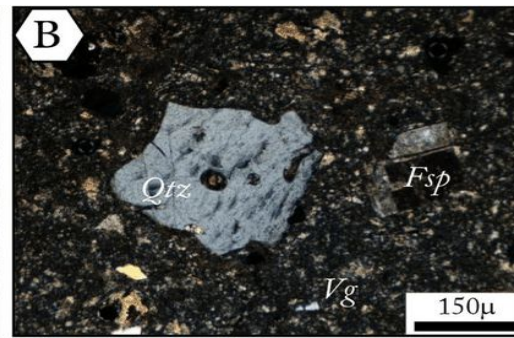
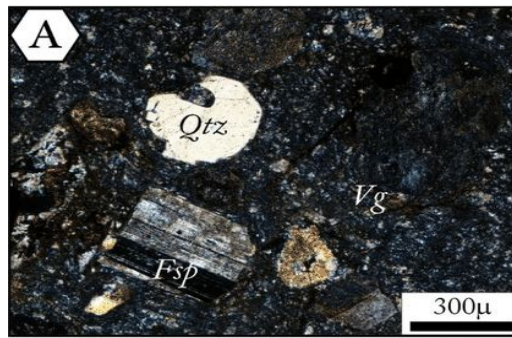
**This is a real thing my  
6th grader brought to  
school today.**

(It is water with green  
food dye?)

\*Tectonic forces



\*Composition of the protolith



**THANK YOU**

**THANK YOU VERY  
MUCH**