

# ROCKS

## **Definition, formation and classification Igneous, sedimentary and metamorphic rocks**

- **Rocks are the materials that form the essential part of the Earth's solid crust.**
- **A rock may be defined as a hard mass of mineral matter comprising two or more rock forming minerals.**



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- **Petrology** (in Greek, *petra* means rock, *logos* means science) deals with science of rocks. It consists of
  - **Petrography** which deals with the description of rocks.
  - **Petrogenesis** which is the study of the origin of rocks.

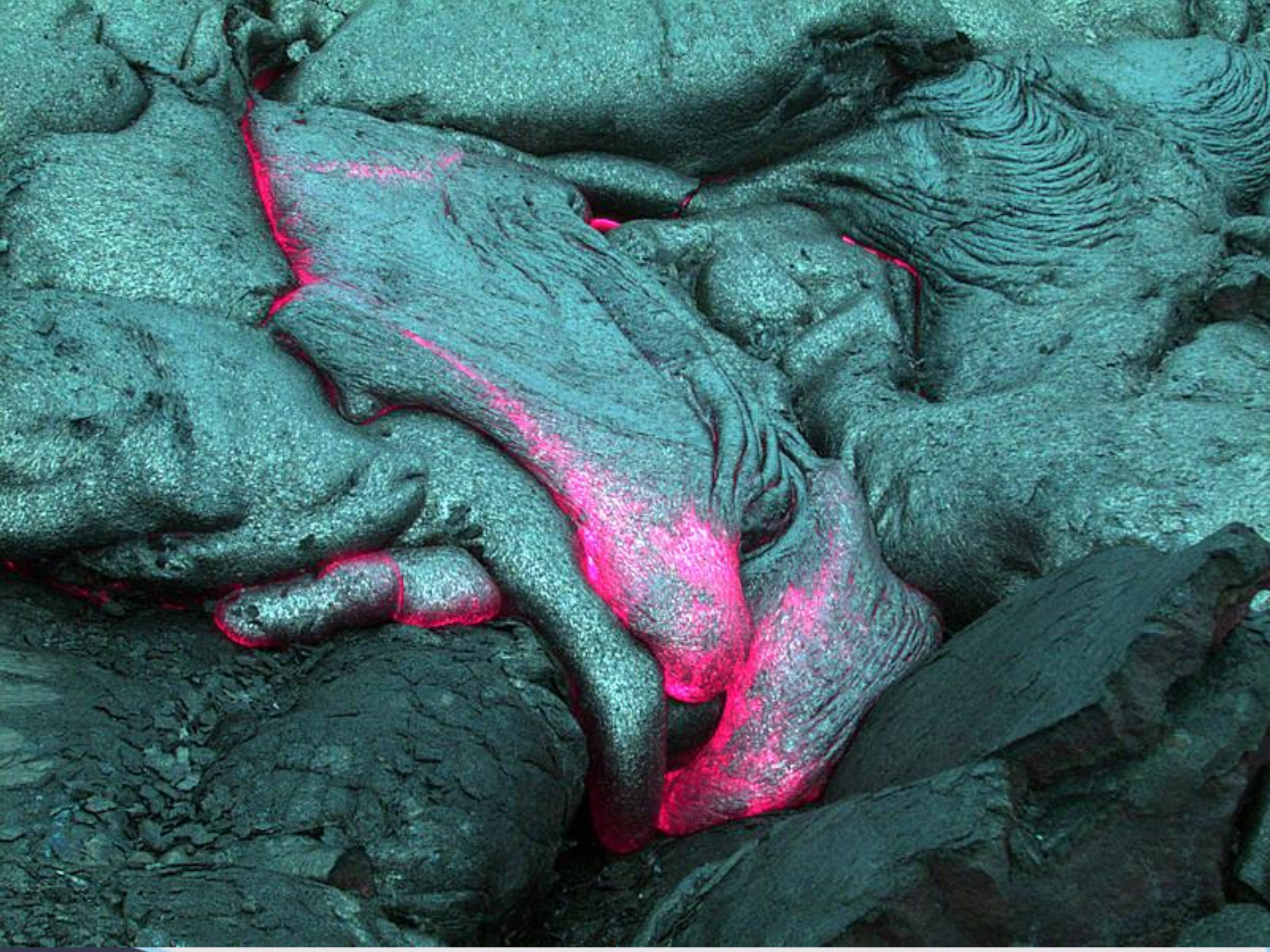


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# Formation of rocks

- Cooling and consolidation of molten magma within or on the surface of earth results in the formation of Igneous or **Primary rocks**









**Based on the mode of origin Igneous rocks are classified as**

- **Extrusive rocks (or volcanic rocks)**
- **These rocks are formed due to the consolidation of magma on the surface of the earth. The magma, when flows on the Earth surface is called LAVA. eg. Basalt**



## Intrusive rocks (or plutonic rocks)

- These rocks are produced due to solidification of magma **below the surface of the earth**. These intrusive rocks solidifies at greater depths. eg. Granite.



# IGNEOUS ROCK

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**Quartz (mineral)**

**Granite (rock)**



**Biotite (mineral)**




**Feldspar (mineral)**



# Based on chemical composition **Igneous rocks may be divided into**

- Acid rocks :> 65% silica (Granite, Rhyolite)
- Sub acid rocks: 60-65% Silica (Syenite, trachyte)
- Sub basic rocks : 55-60% silica (Diorite, andesite)
- Basic rocks: 45-55% silica (Gabbro, basalt)





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**High Silica content forms light-colored rocks.**





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While lower (but only by about 25%) Silica content forms darker-colored rocks





# Sedimentary or Secondary rocks

- Disintegration and decomposition lead to the breaking down of pre-existing rocks. Transportation and cementation of primary rocks results in the formation of **Sedimentary or Secondary rocks**







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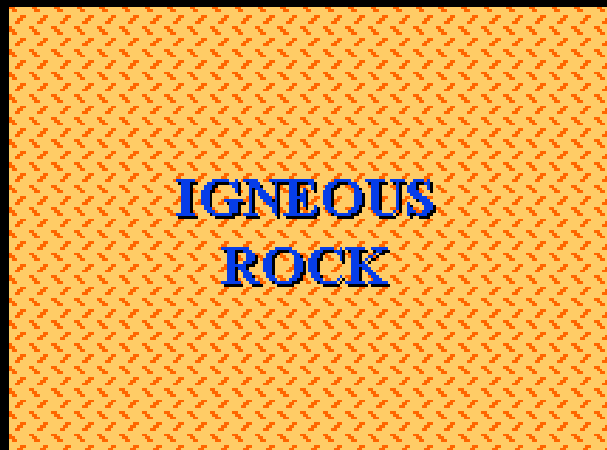
## **Metamorphic rocks**

- The primary and the secondary rocks when subjected to earth's movement and to high temperature and pressure are altered to new rocks called **Metamorphic rocks**

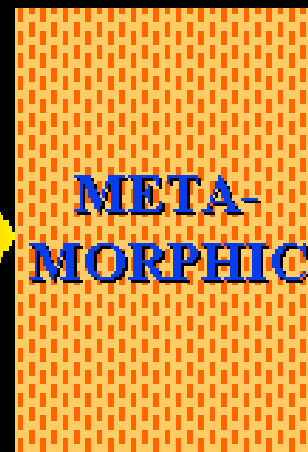
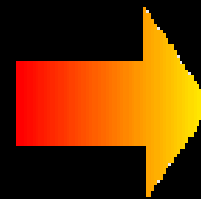
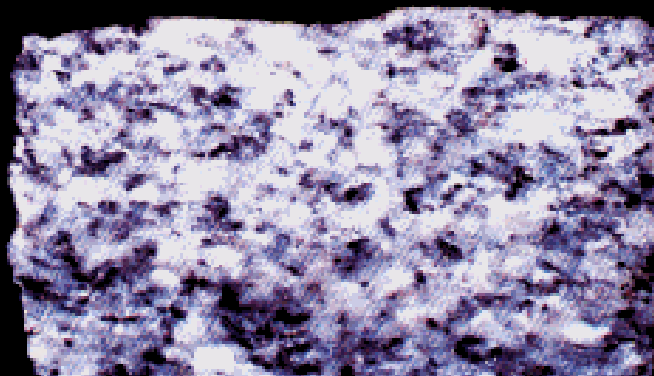
# METAMORPHIC ROCKS

Formed from other rocks

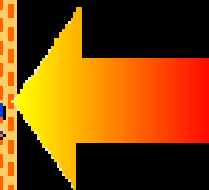
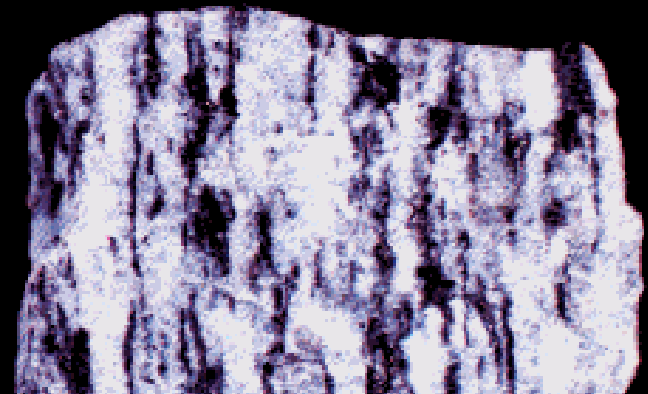
Changed under heat and pressure



GRANITE



GNEISS



Heat  
Pressu