Describing Plutonism and Volcanism

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Describing Plutonism and Volcanism

LEARNING OBJECTIVES

- Describe how igneous rocks formed based on the location or crystallization size.
- Describe and differentiate volcanic and plutonic rocks.
- Describe the processes of plutonism and volcanism.
- Cite some examples of rocks for each type.

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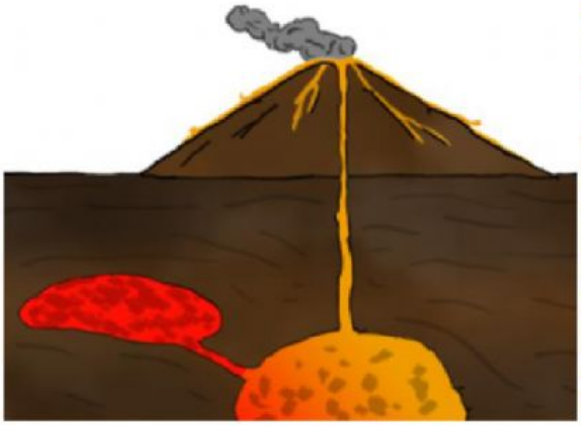
Describing Plutonism and Volcanism

- From the cooling of magma or lava with crystallization
- Types based on
  - Location of formation
  - Crystal size



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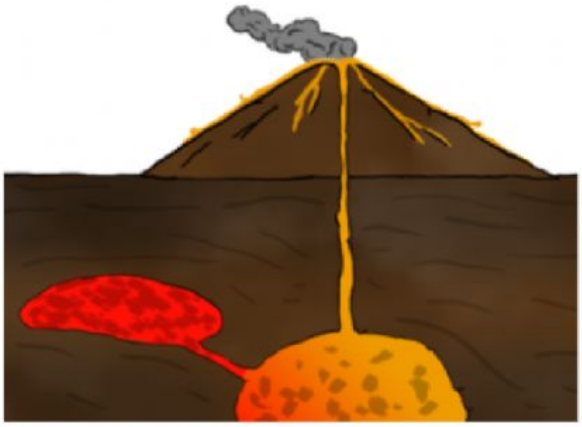
Describing Plutonism and Volcanism

Igneous rock formation

Volcanic and Plutonic rocks

-
  - Extrusive formation
  - Fine-grained
  - from crystallization
-
  - Intrusive formation
  - Coarse-grained
  - from crystallization



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Igneous rock formation

Volcanism

- Formation of igneous rocks from extruded lava during volcanic eruptions
- Produced through the rapid cooling inhibiting growth of crystals
- Produces [redacted] (fine-grained) crystals

Volcanism is the formation of igneous rocks from extruded lava during volcanic eruptions. Rocks are produced through the rapid cooling of lava on the Earth's surface inhibiting growth of crystals. Due to this rapid cooling, volcanic rocks are characteristically fine-grained or Aphanitic.

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Igneous rock formation

Volcanism

- Distinguished based on mineralogical differences (i.e. crystal size)
- **Aphanitic rocks -** fine, microscopic crystals
- Example: [redacted]
  - dark colored
  - microscopic crystals

Rocks can be distinguished based on mineralogical differences. One type of basis of difference is the crystal size. Aphanitic rocks have crystal formations that are only visible with the use of equipment like a microscope. The most common example of volcanic rock is basalt. Basalt is a dark colored volcanic rock that contains microscopic crystals.

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Igneous rock formation

Plutonism

- Cooling within the Earth's crust
- Cools under high pressure over a long period of time
- [redacted] – rocks with large crystals
- **Batholiths** – large pluton rocks

The other type of formation of igneous rocks is through plutonism. Igneous rocks are formed under the Earth's crust. The magma cools under high pressure over time allowing formation of large crystals on formed rocks. Rocks with large crystals are called phaneritic rocks. A bulk of plutonic rocks is called a pluton and a large mass of pluton is called a batholith, discovered as the foundation of modern mountain rang

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Igneous rock formation

Volcanism

- **Phaneritic rocks**
  - formed through slow cooling of magma
  - [redacted] crystals
  - clear and visible
  - differ in sizes and colors
- Example: **Granite**

Phaneritic rocks are formed through the slow cooling of magma, allowing time for crystal formation. The cooling of magma beneath the Earth's surface creates phaneritic rocks with crystals that are large, clear, and visible. Phaneritic rocks differ in sizes and colors. The most common example of phaneritic rock is granite. It exhibits large crystals even under naked eye inspection.

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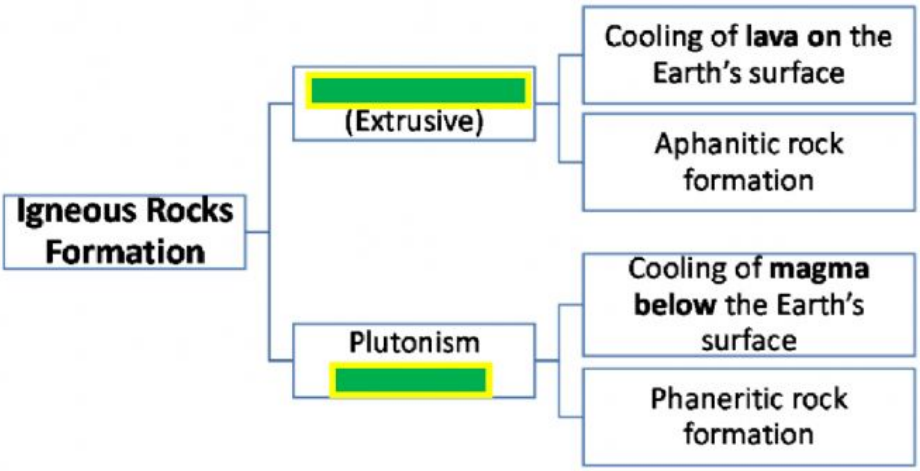
SUMMARY



Formation of igneous rocks may be determined by the location of their formation, or the size of the crystals formed. Volcanic rocks are formed on the Earth's surface through volcanism. Plutonic rocks are formed below the earth's surface through Plutonism.