**Rock Cycle**

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The rock cycle is a crucial geological concept that defines the perpetual process of recycling and transformation of rocks on the surface of the earth. This process entails the formation, alteration, and ultimate breakdown of various types of rocks through a complex series of interconnected procedures. The rock cycle involves the formation of three different types of rocks, including igneous, sedimentary, and metamorphic rocks. Igneous rocks form from the solidification of magma (Bucher, 2023; Giuliani et al., 2019). Sedimentary rocks originate from the steady accumulation and compaction of small sediment particles while metamorphic rocks form as a result of changes happening on pre-existing rocks after being subjected to high pressure and temperatures.

Being the main players during the rock cycle process, igneous rocks are grouped according to their respective textures and compositions. Texture in rocks entails the arrangement of mineral grains according to their size while composition describes the kinds and amounts of present minerals in igneous rocks. This unique classification extends to textures in various igneous rocks, with each availing intuitions into the existing forming conditions. For instance, aphanitic rocks are characterized by fine-grained textures that result from the rapid cooling of the magma while phaneritic rocks exhibit a coarse-grained texture stemming from the slow cooling process. According to Giuliani et al. (2019), porphyritic rocks are characterized by large crystals that appear in a finer matrix with vesicular rocks containing cavities or voids from potentially trapped gas bubbles. Glassy rocks do not have a significantly discernible crystal structure as compared to other rocks while pegmatitic rocks are characterized by exceptionally coarse-grained texture that is common during the last stage of igneous rock formation process.

The composition of igneous rocks depends on the present types of minerals. The most common minerals in igneous rocks include feldspar (KAlSi3O8), mica (XY2-3Z4O10(OH)2), Calcite (CaCO3), quartz (SiO2), and pyroxene (XYSi2O6) (Bucher, 2023). The specific minerals present in igneous rocks reflect the various conditions under which the rocks were formed.

Igneous rocks are further classified according to their chemical or mineral composition as ultramafic, mafic, intermediate, and felsic. Ultramafic rocks are characterized by high levels of ferromagnesian minerals while mafic rocks reveal high concentration levels of iron and magnesium. According to Giuliani et al. (2019), intermediate rocks have a balanced composition of minerals while felsic rocks have a high level of silica with lighter mineral content.

Further examination of specific igneous rocks exhibits their origin and mineral composition. According to Bucher (2023) peridotite is an intrusive ultramafic igneous rock, gabbro is an intrusive mafic igneous rock, basalt is an extrusive mafic igneous rock, andesite is an extrusive igneous rock that is characterized by intermediate in composition between felsic and mafic rocks. Diorite is an intrusive igneous rock, intermediating between the mineral composition of mafic gabbro and felsic granite. Granite intrusive is a felsic igneous rock while rhyolite is an extrusive felsic igneous rock.

There are three types of volcanos, which include active, dormant, and extinct volcanoes. An active volcano entails a volcano that has recently erupted recently or has the potential to erupt in the future (Bucher, 2019). A dormant volcano has not erupted in a long time but have the potential to erupt again in the future. Extinct volcanos are those that have not erupted for long and show no signs of erupting again.

**References**

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