

### **DEFINITIONS TOPIC III MINERAL WEATHERING AND FORMATION**

Alteration - part of the mineral structure is inherited by the weathering product.

Bowen reaction series - sequence of crystallization of the common minerals forming igneous rocks.

Congruent (stoichiometric) dissolution - elements released into solution in proportion to their mole fractions in the structure.

Exfoliation - when surface layers of a primary mineral peel away from the parent mass.

Ferromagnesium minerals - primary minerals made up of Fe and Mg (e.g. Pyroxene, olivine)

Heterogenous nucleation - is the formation of crystal nuclei at surfaces of a different solid that is present before initiation of precipitation.

Homogenous nucleation - formation of crystal nuclei from ions in solution when solutions are supersaturated with respect to a solid phase.

Hydration - the binding of an ion or a molecule to one or more water molecules.

Hydrolysis - a reaction between an ion and water in which an oxygen-hydrogen bond is broken.

Incongruent (nonstoichiometric) dissolution - meaning that a portion of the mineral structure is dissolving selectively.

Neoformation - elements that are dissolved from primary minerals precipitate as new low-temperature minerals.

Oxidation - the loss of an electron by an atom, ion, or molecule leading to an increase in oxidation number.

Primary Mineral – a mineral that has not been altered chemically since deposition and crystallization from molten lava.

Reduction - the gain of electrons by an atom, ion, or molecule leading to a decrease in oxidation state.

Secondary Mineral – a mineral resulting from the decomposition of a primary mineral or from the reprecipitation of the products of decomposition of a primary mineral.