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**Lesson 1:3 Definition Assignment: Geochronology**

The purpose of this assignment is to learn to define a technical term to a non- technical audience. We will define our term in three ways: a parenthetical definition, sentence definition and an expanded definition. These three types of definitions will provide different levels of detail for the reader depending on how in depth they would like to understand the subject.

Definition of "Geochronology"

***Parenthetical Definition:***

Geochronology (determination of age of rocks) is the science of using inherent signatures in rocks to apply dates to the material.

***Sentence definition:***

Geochronology is the science of determining the age of geologic material (fossils, sediments, rocks, etc.) using radioactive isotopes, isotope ratios and magnetism of the earth. It is used to determine the geologic history of earth.

***Expanded definition:***

Geochronology is the science of determining the date of formation of rocks, fossils and sediments using defining characteristics that set them apart from adjacent rock units. Geochronology provides us with absolute dates of the rocks and allows us to accurately determine the successive formation of geologic material. Using geochronology we can determine the geologic history of earth and provide a timeline for major events and disasters (Figure 1) similar to creating a timeline of human history on earth. Advancements in technology such as

Figure 1: Geochronology is used to determine the history of the earth, providing a record of major events on a very large scale.

radiometric dating (see below)

continue to increase our knowledge

of events in geologic history.

Geochronology is not the same

process as biostratigraphy. Biostratigraphy focuses on providing a relative age and placing sedimentary rocks within a time range based on correlation of fossils within a rock unit rather than providing an absolute age determination for the rock as in geochronology. The two processes are combined to provide an accurate record of the history of the earth through the enveloping field of chronostratigraphy.

*Absolute vs. relative age:*

Absolute ages provide a quantitative value for the age of the substance. These dates are obtained through the process of radiometric dating. Relative ages provide a qualitative relationship between the times of formation of two rock units.

*Radiometric Dating:*

Various techniques exist to provide absolute dates for geologic materials. Radiometric dating is the most commonly used technique. It measures the amount of radioactive decay (breakdown of an atom of one material into an atom of another material) of a radioactive isotope with a known half-life (the time it takes for half of the material to decay). Using this data, geochronologists can provide an accurate date to the material. This is most often used in igneous rocks (those solidified from magma).

*Works Cited:*

* *USGS-GD-Scientific Capabilities - Geochronology*. https://geology.cr.usgs.gov/capabilities/gronemtrac/geochron/geochron.html. Accessed 29 Jan. 2017.
* The Editors of Encyclopedia Britannica. “Dating | Geochronology.” *Encyclopedia Britannica*, Encyclopedia Britannica, 11 Apr. 2013, https://www.britannica.com/science/dating-geochronology. Accessed 29 Jan. 2017.
* “Geochronology | Earth Science.” *Encyclopedia Britannica*, Encyclopedia Britannica, 28 Dec. 2011, https://www.britannica.com/science/geochronology. Accessed 30 Jan. 2017.

*Visual:*

* *Geochronology*. https://www.google.ca/search?q=geochronology&safe=off&source=lnms&tbm=isch&sa=X&ved=0ahUKEwipodH48OjRAhXjj1QKHQ5eCOQQ\_AUICSgC&biw=1280&bih=601#imgrc=KEhkwyTaW3cyJM%3A. Accessed 29 Jan. 2017.