

## Appendix G

### GLOSSARY

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- ACTINIDE:** one of the elements following actinium (atomic number 89) in the Periodic Table
- ALKALINE EARTHS:** the elements in Group 2A of the Periodic Table (beryllium, magnesium, calcium, strontium, barium)
- AMPHIBOLE:** one of a group of common minerals with the general formula  $A_{2-3}B_5(Si,Al)_8O_{22}(OH)_2$ , in which A = Ca, Na, K; B = Mg, Fe, Al
- ANATEXIS:** the melting of a preexisting rock by natural processes
- ANION:** a negatively charged ion, produced when a neutral atom accepts one or more additional electrons
- ANTICATHODE:** the target in an electron tube for the production of X-rays
- ATOMIC NUMBER (Z OR AN):** the number of protons in the nucleus of an atom, or the total number of electrons in the neutral atom
- BIOSPHERE:** the sum total of living matter
- BIOTITE:** brown or black mica, with the formula  $K(Mg,Fe)_3(AlSi_3O_{10})(OH)_2$
- CATION:** a positively charged ion, produced by the loss of one or more electrons from a neutral atom
- CHROMITE:** the principal mineral of chromium, with the formula  $(Mg,Fe)(Cr,Al)_2O_4$
- DIFFERENTIATION:** the physical segregation of one type of material from another; a homogeneous or intimately mixed body becomes segregated into two or more phases of different composition
- DOCENT:** in Europe, a qualified university teacher, approximately equivalent to associate or assistant professor in North America
- DOLOMITE:** calcium-magnesium carbonate,  $CaMg(CO_3)_2$ , or a rock consisting essentially of this mineral
- ELEMENT:** a substance containing a single type of atom (all atoms having the same atomic number Z)
- EQUILIBRIUM:** the state of a chemical system in which the phases do not undergo any change with the passage of time
- FELDSPAR:** a group of minerals, including the alkali feldspars, with compositions ranging from

$\text{KAlSi}_3\text{O}_8$  to  $\text{NaAlSi}_3\text{O}_8$ , and the plagioclase feldspars, with compositions ranging from  $\text{NaAlSi}_3\text{O}_8$  to  $\text{CaAl}_2\text{Si}_2\text{O}_8$

**GALENA, GALENITE:** lead sulfide,  $\text{PbS}$ ; the principal ore of lead

**GEOBAROMETRY:** the measurement of the pressure of formation of a rock

**GEO THERMOMETRY:** the measurement of the temperature of formation of a rock

**GNEISS:** a metamorphic rock, in which bands or lenses of granular minerals alternate with bands or lenses of flaky or prismatic minerals

**GONIOMETER:** an instrument for measuring the angles between crystal faces

**HALF-LIFE:** the time necessary for half the atoms of a radioactive substance to disintegrate

**HYDROLYSIS:** the reaction between water and a chemical compound, often resulting in the precipitation of a metal hydroxide

**HYDROSPHERE:** the discontinuous shell of water—fresh, salt, and solid—at the surface of the Earth

**HYDROTHERMAL:** refers to hot aqueous solutions circulating in the Earth's crust, or to veins and mineral deposits crystallized from such solutions

**ION:** an atom with a net electrical charge, due to the acquisition or loss of electrons

**IONIC POTENTIAL:** the ratio of an ion's charge to its radius

**ISOTOPE:** atoms of an element whose nuclei differ in the number of contained neutrons

**KILOBAR (kbar):** a unit of pressure equal to 1000 bars (one bar is approximately one atmosphere); it has been superseded in the SI system by the pascal (Pa),  $1 \text{ bar} = 10^5 \text{ Pa}$

**LANTHANIDE:** one of the fourteen elements following lanthanum in the Periodic Table

**MAGMA:** a rock melt within the Earth's crust; lava is magma poured out of volcanoes

**METAMORPHISM:** the sum of the processes working within the Earth's crust to cause the recrystallization of rocks. Contact metamorphism is produced by the heat and pressure of intruding magma; regional metamorphism covers extensive areas, usually in association with mountain-building processes

**MIGMATITE:** a composite rock consisting of igneous and metamorphic material; the term was introduced by J. J. Sederholm in 1907 to describe such rocks in the Precambrian of Finland

**NEUTRON:** an uncharged nuclear particle

**OROGENY:** the process of the formation of mountain chains: the Caledonian orogeny, dated as late Silurian, extended from Scotland (Caledonia) and Ireland northeastward through Scandinavia

**PARAGENESIS:** a characteristic association or occurrence of minerals

**PEGMATITE:** an extremely coarse-grained igneous rock, usually found as irregular dikes, lenses, or veins

**PETROLOGY:** the scientific study of rocks

**PHOSPHORESCENCE:** the emission of light by a substance after irradiation

**PLAGIOCLASE:** see feldspar

**POLYCYTHEMIA:** an excess of red cells in the blood

**POLYMORPH:** one of alternative crystal structures a substance can adopt

**PROTON:** a positively charged nuclear particle

**PYROLUMINESCENCE:** the emission of light by a substance when heated

**PYROXENE:** one of a group of minerals with the general formula  $R_2Si_2O_6$ ; in the common pyroxenes R = Ca, Fe, Mg and some of the Si may be replaced by Al

**PYROXENITE:** a rock consisting largely of pyroxene

**REFRACTORY:** having a high melting point

**SCHIST:** a metamorphic rock that can be split into thin slabs, due to the parallelism of flaky or prismatic minerals such as the micas or amphiboles

**SILICOSIS:** a lung disease caused by the inhalation of fine-grained quartz

**SPECTROGRAPH:** an instrument designed to photograph a spectrum, the collection of individual wavelengths of light

**SYENITE:** an igneous rock consisting largely of alkali feldspar with minor amounts of biotite and/or amphibole; it may contain a little quartz, but if more than 10% is present the rock grades into granite

**TRIBOLUMINESCENCE:** the emission of light when a substance is crushed

**UNIT CELL:** the simplest polyhedron, containing one or more formula units, which by repetition forms a crystal structure

**VALENCY:** the number of chemical bonds that an element can utilize in forming a compound

**XENOLITH:** a foreign inclusion in an igneous rock

