Glossary

This glossary contains simple explanations of a selection of the more important technical terms used in Chapter 1 and in the Introduction, Highlights and Conclusions sections of Chapters 2 to 7. These explanations do not pretend to be scientific definitions. Rock groups are usually explained in terms of their chemistry rather than by reference to their precise mineral content. Only major mineral groups are included. Stratigraphical terms are omitted as they are related to their contexts within the tables and figures. Bold face indicates a further glossary entry.

Throughout the glossary and the volume as a whole the following grain (i.e. crystal) sizes are assumed for the igneous rocks:

coarse-grained — grains over 3mm on average

medium-grained — grains between 1 and 3mm on average

fine-grained — grains under 1 mm on average (including non-crystalline glass)

Acid: coarse- to fine-grained **igneous rocks** relatively enriched in silica (SiO_2 nominally over 66%) which was originally thought to reflect the proportion of 'silicic acid'. An alternative term is 'silicic'.

Agglomerate: a volcaniclastic rock composed of large, often angular rock and mineral fragments (clasts).

Alkali-feldspar: see **feldspar**.

Allivalite: a coarse-grained **ultrabasic igneous rock** composed largely of the minerals plagioclase **feldspar** and **olivine**.

Amygdale: a **vesicle** infilled by minerals.

Aphyric: **igneous rocks**, especially those which are generally fine-grained, which contain no particularly large crystals; = non-**porphyritic**.

Arkose: sandstone containing abundant fragmental grains (**clasts**) of alkali-**feldspar**.

Aureole: the metamorphic rocks adjacent to an igneous intrusion.

Basalt: a fine-grained, **basic igneous rock** consisting largely of the minerals plagioclase **feldspar**, **pyroxene(s)** +/– Olivine. Usually a lava or a **dyke**.

Basic: coarse- to fine-grained **igneous rocks** relatively enriched in the 'bases' of early chemistry i.e. MgO, FeO, FeO_2, FeO_3CaO etc; silica (SiO_2) relatively low (nominally 45–53%.

Benmoreite: a fine-grained **igneous rock**, usually a lava, consisting essentially of soda-rich alkali-**feldspar**; see also **hawaiite**.

Bole: the iron-rich (sub-)soil produced by the surface weathering of **basalts**.

Breccia: a **volcaniclastic**, sedimentary, or fault-related rock composed of very large, usually angular rock fragments (**clasts**).

Caldera: a very large, approximately circular, fault-bounded basin formed by the collapse of a volcano.

Clast: a fragment.

Cone-sheet: a cone-like **igneous** intrusion which dips towards its centre, i.e. which closes downwards on projection. (cf. **ring-dyke**).

Crinanite: an alkali-(especially soda-)rich **dolerite** (or **gabbro**).

Diapir: a body, e.g. of **igneous rock/magma** which has risen through other rocks in consequence of its lower density and/or greater plasticity.

Diorite: a coarse-grained, lime-rich **intermediate igneous rock** containing plagioclase **feldspar** and various ferromagnesian silicate minerals.

Dolerite: a medium-grained, **basic igneous rock** containing plagioclase **feldspar** and **pyroxene(s);** usually a **dyke** or **sill.**

Dyke: a sheet-like body of **igneous rock** which cross-cuts the structure of the rocks it intrudes; often steeply inclined and composed of **dolerite** or **basalt** (cf. **sill).**

Eucrite: a coarse-grained, **ultrabasic igneous rock** containing plagioclase **feldspar, pyroxene(s)** and **olivine.**

Eutaxitic: the 'streaky' fabric (i.e. gross texture) exhibited by an **ignimbrite.**

Feldspars: a series of alumino-silicate minerals between lime-soda-rich (plagioclase) and potash-soda-rich (alkali-feldspar) end-members; the most abundant minerals in the earth's crust.

Felsite: medium- to fine-grained, equigranular, **acid igneous rock** consisting largely of **alkali-feldspar** and **quartz;** often a **dyke** or **sill.**

Gabbro: a coarse-grained, **basic igneous rock** consisting largely of plagioclase **feldspar, pyroxene(s) +/**– **olivine;** usually in large intrusions.

Gneiss: a coarse-grained, often banded **metamorphic rock**

Granite: a coarse-grained, **acid igneous rock** consisting largely of alkali-feldspar and **quartz;** usually in large intrusions.

Granophyre: a medium- to coarse-grained **acid igneous rock** which often displays a complicated, angular ('graphic') intergrowth between **quartz** and alkali-feldspar; usually in large intrusions.

Granulite: an even-grained granular **metamorphic rock**

Harrisite: a coarse-grained, **ultrabasic igneous rock** which displays branching crystals of **olivine.**

Hawaiite: a variety of **trachybasalt** rich in soda. Hawaiite, **mugearite** and **benmoreite** form a compositional series between alkali-basalt and **trachyte;** all usually occur as lava flows.

Hornfels: a well-baked, hard **metamorphic rock**

Hyaloclastite: volcaniclastic rock composed of quenched, glassy fragments **(clasts)** formed when magma cools and shatters on coming into contact with water.

Hydrothermal: to do with hot water.

Igneous Rocks: rocks which have solidified (usually crystallized) from molten rock **(magma).**

Ignimbrite: a lava-like sheet of **volcaniclastic rock** formed by the compaction and welding of an ash-flow (see also **tuff** and **eutaxitic).**

Intermediate: coarse- to fine-grained **igneous rocks** intermediate in compositions between **acid** and **basic.**

Laterite: a red (sub-)soil rich in iron and alumina.

Lherzolite: a **peridotite** consisting largely of olivine and **pyroxenes;** commonly exhibits a **metamorphic** texture indicating (re-) crystallization deep in the earth.

Mafic: see **basic.**

Magma: molten rock; referred to as lava when on the earth's surface.

Metamorphic Rocks: rocks whose texture and mineralogy have been changed in the solid, i.e. without melting, by heat and/or pressure.

Metasomatism: a group of processes by which rocks change their chemical composition in the solid, i.e. without melting.

Meteoric Water: water derived directly from the atmosphere.

Mullite: a very high-temperature alumino-silicate mineral.

Mugearite: see **hawaiite.**

Olivine: a silicate mineral enriched in magnesium (and/or iron).

Pegmatite: applied to very coarse-grained varieties of **igneous rocks;** however, 'pegmatite' normally implies very coarse-grained **granite.**

Peridotite: a coarse-grained, **ultrabasic igneous rock** consisting largely of **olivine** and **pyroxene(s).**

Petrography: (the study of) the mineralogy and texture (fabric) of rocks.

Phyric: denotes the type(s) of the large crystals in a **porphyritic igneous rock** (usually a lava), e.g. **feldspar-phyric.**

Picrite: a lava of **ultrabasic** composition, particularly enriched in **olivine.**

Pitchstone: a rhyolite composed largely of volcanic glass.

Plagioclase: see **feldspar.**

Porphyrite: an **igneous rock,** often of **intermediate** composition and of medium grain-size, which displays **porphyritic** texture.

Porphyritic: the texture of those **igneous rocks,** often lavas, in which large crystals (megacrysts, phenocrysts) are surrounded by a matrix of smaller crystals and/or glass. **Pyroclastic:** see **volcaniclastic.**

Pyroxenes: the most abundant ferromagnesian silicate minerals in the earth's crust, e.g. augite and hypersthene.

Quartz: a mineral composed entirely of silica (SiO_2)

Rheomorphism: the processes by which a rock is (re-)melted.

Ring-Dyke: a near-cylindrical **igneous** intrusion which tends to close upwards on projection (cf. **cone-sheet).**

Skarn: a rock containing iron-rich and other minerals sometimes found at the contact between an **igneous** intrusion and its **aureole,** especially where this contains limestones; **metasomatism** is often invoked.

Sill: a sheet-like body of **igneous rock** which, in general, does not cross-cut the structure of the rocks which it intrudes; often gently inclined, medium-grained and composed of **dolerite** or **basalt** (cf. **dyke).**

Syenite: a coarse-grained, **intermediate igneous rock** consisting largely of **alkali-feldspar** and various ferromagnesian silicate minerals; usually in large intrusions.

Teschenite: an alkali-rich **gabbro.**

Tholeiite: basalt relatively enriched in silica $(SiO)_2$ and deficient in the alkalis (NaO_2 and K_2O).

Trachybasalt: basalt containing both plagioclase and **alkali-feldspar.**

Trachyte: a fine-grained, **intermediate igneous rock** consisting largely of alkali-feldspar and various ferromagnesian silicate minerals; usually a lava or **dyke.**

Transitional Basalt: basalt transitional between alkali-basalt and **tholeiite.**

Tridymite: a high-temperature equivalent (para-morph) of **quartz.**

Troctolite: a coarse-grained **basic igneous rock** consisting largely of **olivine** and plagioclase **feldspar.**

Tuff: consolidated volcanic ash (see also **volcaniclastic rocks).**

Tuffisite: a Tuff-like rock usually formed by the **hydrothermal** breakdown of volcanic rocks close to a rock fracture.

Ultrabasic Rocks: coarse- to fine-grained **igneous rocks** which are particularly enriched in 'bases' (see also **basic)** and relatively deficient in silica (SiO_2 nominally under 45%).

Vesicles: gas bubble cavities in consolidated lavas.

Volcaniclastic Rocks: rocks made up of volcanic fragments (clasts); also known as pyroclastic rocks.

Xenocrysts/-liths: (fragments of) crystals and rocks that are foreign to the **igneous** rock in which they are found.

Zeolites: a group of low-temperature, hydrous, elumino-silicate minerals.

References