Sedimentary Rocks Essay, Research Paper

Sedimentary Rock

On Quartz and sedimentary rocks

Silicon and oxygen, the two most common chemical elements in the Earth’s crust, combine as silicon dioxide to form the mineral quartz. SEDIMENTARY ROCKS, are Rocks that are formed by the compaction of sediments or by the crystallization of the dissolved minerals. Quartz is the most abundant mineral in the Earth’s crust. Quartz has been found in meteorites and in some rocks collected on the moon. Quartz has the chemical formula SiO2. There are many varieties of quartz, which occurs in nearly all types of igneous, metamorphic and sedimentary rocks. It is an essential mineral in granites, granodiorites and rhyolites. Metamorphism of quartz-bearing igneous and sedimentary rocks typically increases the amount of quartz and its grain size. Quartz is very resistant to weathering and, therefore, concentrates as sandstones and other detrital rocks. Most sands are weathered fragments of quartz. Sandstone and quartzite are the same materials that are re-lithified (compressed into rock). Quartz has many commercial applications. In science and industry, quartz sand is used for manufacturing sandpaper and other abrasives, polishing powders and soaps. It is used to make building materials, heat-resistant materials known as refractories and for the bearings of precision instruments. Quartz sand is also used in the manufacture of porcelain, glass and metal casting molds. Precision-cut plates of quartz are used for frequency control in radios, TVs, clocks and watches. Compositionally, quartz is usually quite pure, with only traces of other elements like aluminum, sodium, potassium and lithium. Quartz is found as large crystals that are often beautifully colored by impurities. The many varieties of quartz are due to formation of different geometric arrangements of its tetrahedral crystals. This accounts for different crystal structures, and, therefore, different physical properties.

To form Quartz sandstone, rock particles & remains of living things are deposited in the sea by rivers and waves. These sediments accumulate layer by layer, over thousands or millions of years, forming thick deposits on land or on the sea floor. The weight of the overlying sediments compact those below. Over time, they form sedimentary rocks. Sedimentary rocks usually occur in shallow parts of the sea or in lakes in desert areas where evaporation is higher than precipitation. As evaporation takes place, water is lost and the dissolved minerals form crystals. As evaporation continues, more crystals form and accumulate on the sea or lake floor, becoming sedimentary rocks, i.e. coal. They have a layered appearance because the materials that form them are deposited in layers. Plant and animal fossils can be found in many sedimentary rocks.

Color: Very variable; frequently red, brown, greenish, yellow, gray, white.

Texture: Medium-grained. Usually well sorted, that is grains all about the same size; grains sub angular to rounded (sandstone).

Structure: Bedding usually apparent; current bedding and ripple marks common; graded bedding may occur. Concretions and fossils may be found.

Mineralogy: Quartz is the main component but is often accompanied by feldspar, mica or other minerals. The grains may be cemented by silica, calcite or iron oxides.

Field relations: Sandstones are associated with most other sedimentary rocks. Most sands accumulated either in water, usually the sea, or as wind-blown deposits in arid continental areas. Desert sandstones tend to be red, and the individual sand grains are often almost spherical and polished.”

Bibliography

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