



Arizona Rocks 8

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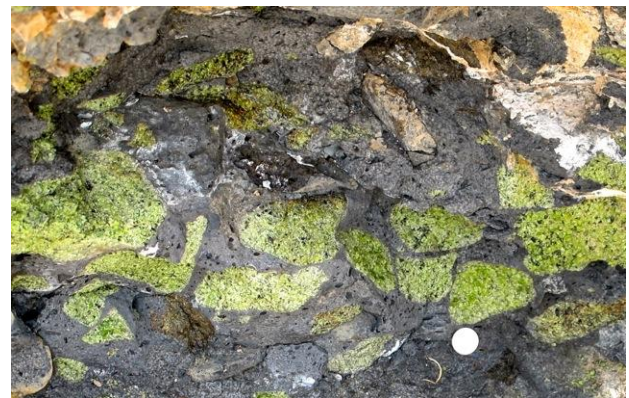
Ultramafic (high in iron and magnesium) igneous rocks are relatively rare. The common name that we will use is peridotite, but again there are many specific names based on the minerals present or the chemistry of the rock. Ultramafic rocks originate in the Earth's mantle and are pushed up to the surface in mountain building events or they are carried to the Earth's surface as nodules (xenoliths or inclusions) with basalt magma. Peridotite contains mainly olivine and pyroxene with small amounts of other minerals such as garnet and spinel.

The Arizona occurrences of peridotite are found as nodules in basalt. The most famous Arizona peridotite locality is Peridot Mesa on the San Carlos Reservation. At Peridot Mesa, there is an amazing amount of peridotite where it is mined for the Peridot, the gem name for olivine. The volcanic eruptions of basalt that contain the olivine happened between one and four million years ago. It is estimated that these nodules came from the mantle at a depth of 50 to 100 miles beneath the earth's surface.

Peridotite nodules are also found in the Uinkaret volcanic field on the north side of the Grand Canyon, the San Bernardino volcanic field in the southwest corner of the state and at the Sullivan Buttes in the Chino Valley. At the Sullivan Buttes, the nodules are composed of garnet, pyroxene, and amphibole. There is no olivine present.



Outcrop of basalt with peridotite nodules at Peridot Mesa



Peridotite nodules mainly olivine at Peridot Mesa (Quarter for scale)



Faceted peridot (olivine) from Peridot Mesa