



## Arizona Rocks 11

Text and photos by Ray Grant

This is a summary for igneous rocks. Remember, geologists have hundreds of names for different igneous rocks, but the names given in the last 10 Arizona Rocks will work. To determine the name of an igneous rock two things are needed the texture and the chemistry (minerals present). If you say granite to a geologist, they know you mean a coarse-grained, light colored igneous rock with quartz. Quartz monzonite, granodiorite, and even quartz diorite are similar rocks and can't be named without specific information on the kind and amount of feldspar present. Most geologists would initially just call these rocks granite without more information.

The texture of an igneous rock is generally related to its cooling history. The magma for fine-grained rocks cooled fast, for coarse-grained ones the magma cooled more slowly, and for most porphyries with two sizes of crystals, the magma cooled fast then slow. For rocks with a glassy texture the magma cooled so fast that crystals did not have time to form.

The chemistry of an igneous rock is a little harder to determine. For the coarse-grained rocks we use the minerals present. For the fine-grained rocks, where the minerals can't be seen, the color is the best guide. Light colored is felsite or rhyolite, dark colored is basalt, and gray color would be andesite. For more specific names an actual chemical analysis would be needed.

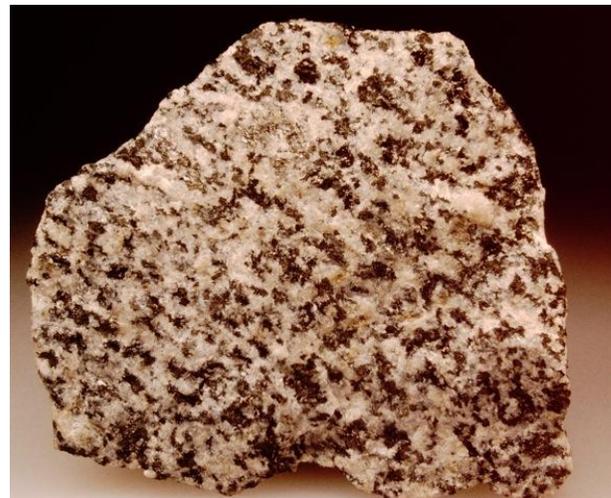
Stan Celestian has a great geology lab program on-line that he developed for ASU and I recommend if you want to learn more about igneous rocks this is the site to visit:

[http://www.asu.edu/courses/glg103/PDF%20lab s/](http://www.asu.edu/courses/glg103/PDF%20lab%20s/) and click on the igneous rock lab.

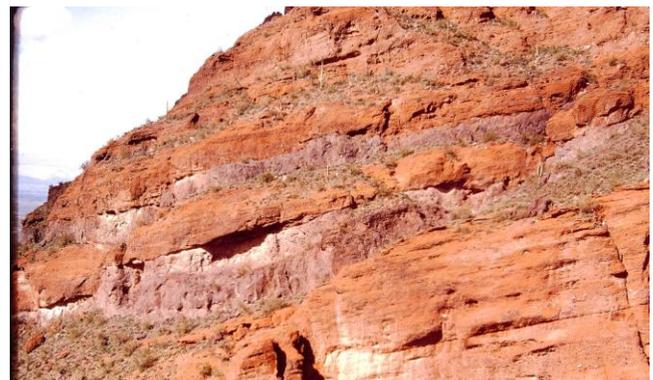
The chart on the following page shows the classification of igneous rocks using the names in the ten Arizona Rocks. The next Arizona Rocks will start sedimentary rocks.



Granite from the Walker Butte Granite Quarry near Florence, gray is quartz, pink is microcline, white is plagioclase, and black is biotite. (Ray Grant photo)



Diorite (white plagioclase, black hornblende), New Mexico (Jeff Scovil photo)



Andesite flows in red sedimentary rocks at Red Mountain (Ray Grant photo)