



Arizona Rocks 49

Text and photos by Ray Grant

A pseudomorph, false form, is when one mineral replaces another mineral but keeps the form (shape) of the original mineral. Commonly the new mineral forms because the chemistry of the original mineral changes by the addition and/or subtraction of some constituent. For example, pyrite, iron sulfide, will lose sulfur and add oxygen and hydrogen to form goethite, iron oxide hydroxide. Azurite, with a change in the ratio of copper and carbonate, will commonly alter to malachite.

In other cases there may be no chemical relationship between the original mineral and the replacement mineral. Quartz will replace calcite, fluorite, and many other minerals that have a very different chemistry. There are other types of pseudomorphs such as when the atoms in a mineral rearrange themselves because of a change in temperature or pressure with no change in chemistry.

A somewhat different type of pseudomorph is when minerals replace biological material such as quartz replacing wood to form petrified wood.

Next month, where to find a bonanza of pseudomorphs?



Pyrite from Four Metals Mine, Santa Cruz County, Arizona
Goethite pseudomorph after pyrite from Chillito Mine, Gila County, Arizona



Quartz pseudomorph after calcite from Red Cloud Mine, La Paz County, Arizona
Ed Schaffer specimen at the Pinal Geology Museum



Azurite from Bisbee, Cochise County, Arizona
Malachite pseudomorph after azurite from Bisbee, Cochise County, Arizona



Quartz after wood from Petrified Forest, Arizona