

## Moganite - A Common Mineral with a Disapproved Name

Mineralogists assume that they have described the common minerals of the crust. They also pride themselves on having a rigorous international system for approving new mineral names to assure the names that get into print really do represent uniquely different minerals. Recently both of these assumptions have been thrown into disarray by a mineral called "moganite". Moganite turns out to be so common that virtually every rockhound has unknowingly found, polished or bought it.

Moganite refers to a mineral closely related to quartz. Quartz is  $\text{SiO}_2$  and crystallizes in the hexagonal system. Moganite is also  $\text{SiO}_2$ , but it crystallizes in the monoclinic system. It was discovered in 1976 by a group of geologists led by the Russian O.W. Florke. This team was studying the rocks near Mogan in the Canary Islands and found it as fine-grained gray fibers intergrown with chalcedony and opal in cracks in the lava flows. Moganite's physical and X-ray properties are almost identical to quartz.

Florke submitted a description of moganite to the International Commission on Mineral Names and Naming (I.C.M.N.N.), who disapproved of it. They felt that not enough evidence was presented to show that moganite was not simply a mixture of quartz and other minerals. Florke and his coworkers then committed a cardinal mineralogical sin by publishing their data, using the name moganite as though it had been approved. They published more articles on moganite over the next decade, proving it was a unique mineral. They never resubmitted their data to the I.C.M.N.N. The I.C.M.N.N. just as stubbornly refused to approve the name without such an official resubmission. So goes mineralogy politics!

A recent article by Peter Heaney and Jeffrey Post in *Science* added insult to injury. They reported finding moganite in nearly all of the 150 samples of fine-grained quartz they tested from the Smithsonian's mineral collection. Some samples contained over 75% moganite mixed with the quartz. Chert had the most moganite. Flint contained 13 -17% moganite. Agate had 5 to 20% moganite. Silicified corals from the Tampa Bay area in Florida averaged 20% moganite. The only samples found with no moganite were jaspers from iron formations, the weathered outer rinds of agates and Arkansas novaculite. Clearly moganite is a very overlooked mineral.

Why moganite forms is not known. In the Canary islands it forms under extremely dry surface conditions. Since moganite is more soluble than quartz, it leaches out of chalcedony, which could account for chalcedony's lower density and higher permeability.

Here is a mineral we all have that doesn't have an approved name. What is a conscientious mineral collector to do? We'd best just label things "quartz", "agate" or "chalcedony" until the semantic dust settles.

-Dr. Bill Cordua, University of Wisconsin-River Falls

### References:

Florke, O.W., U. Florke and U. Geise, 1984, "Moganite: a new microcrystalline silica mineral", *Nues Jahrb. Mineralogy*, vol. 149, p. 325-336.

Heaney, Peter and Post, J.E., 1992, "The widespread distribution of a novel silica polymorph in microcrystalline quartz", *Science*, vol. 255, p.441-444.