

Pseudomorphs of New Mexico What is a Pseudomorph? What pseudomorphs are found in New Mexico?

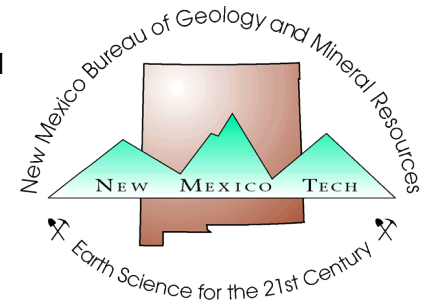
Phillip Simmons and Erin Delventhal

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The annual [New Mexico Mineral Symposium](#) provides a forum for both professionals and amateurs interested in mineralogy. The meeting allows all to share their cumulative knowledge of mineral occurrences and provides stimulus for mineralogical studies and new mineral discoveries. In addition, the informal atmosphere encourages intimate discussions among all interested in mineralogy and associated fields.

The symposium is organized each year by the [Mineral Museum](#) at the [New Mexico Bureau of Geology & Mineral Resources](#).



Abstracts from all prior symposiums are also available: <https://geoinfo.nmt.edu/museum/minsymp/abstracts>

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Pseudomorphs of New Mexico

What is a pseudomorph?

What pseudomorphs are found in New Mexico?

—Philip Simmons and Erin Delventhal

The first question has been the subject of much debate over the course of the past two hundred years. Even today, the definition of what is and isn't a pseudomorph is not agreed upon by the mineral community. The term comes from the combination of pseudo (false) and morph (form), and is generally applied to crystalline or aggregate mineral materials showing the recognizable form of a different pre-existing crystalline mineral (Delventhal, 2019). The first mention of this term was used for fossil replacements by René Just Haüy in 1801 (Delventhal, 2019), but has developed over time to include mineral replacements.



Figure 1. Copper ps. Azurite (alteration), Copper Rose Mine, San Lorenzo, Georgetown District, Grant County, New Mexico, USA. 3.3cm x 2.2cm. Collection of Lou Conti, photograph by Erin Delventhal.

Through extensive research and many talks with other collectors, the following definitions will be used. Alteration pseudomorphs consist of a chemical interaction between the two stages of mineral replacement such as copper ps. azurite and iron oxides/hydroxides ps. pyrite. Minerals can also be partially altered, and the dividing line between pseudomorphs and surficial alteration is a grey area. Encrustation pseudomorphs include minerals that have coated a previous crystalline material while still preserving the original form (epimorphs, perimorphs), such as quartz after calcite. Cast pseudomorphs involve minerals that have filled hollow voids left by a previous mineral, a well-known example being sylvite ps. langbeinite. Fossil pseudomorphs are also prevalent in certain areas, and can be just as interesting as mineral replacements. The Kelly

mine has produced a wide variety of these including smithsonite ps. crinoid and horn coral. Pseudomorphs where the elemental chemistry remains constant, but the crystalline structure changes as a result of P-T conditions (paramorphs) are a special case. The

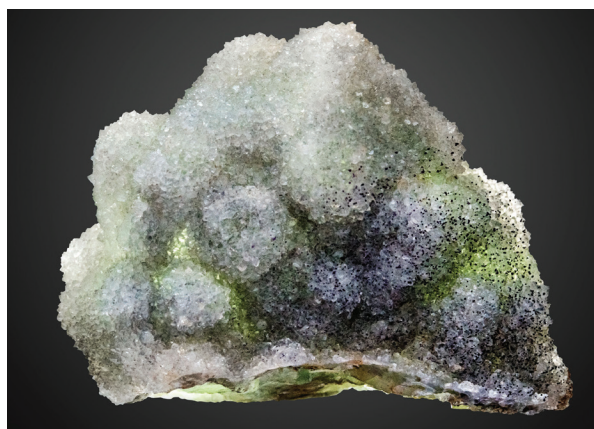


Figure 2. Quartz ps. fluorite (perimorph), Cookes Peak District, Luna County, New Mexico. 4.6cm x 3.4cm. Collection of and photograph by Erin Delventhal.

most common examples of paramorphs are calcite ps. aragonite and acanthite ps. argentine.

New Mexico has a vast variety of pseudomorphs, related to the wide geologic diversity within the state and the amount of oxidation that has altered deposit mineralization over the course of time. These deposits not only include the typical base and precious metal ore deposits found in the central, south-central and southwestern parts of the state, but also more uncommon deposits such as pegmatites, evaporites and mafic systems. Many of the most recognized New Mexico pseudomorphs will be discussed along with newer discoveries and oddball occurrences.

References

Delventhal, Erin (2019). Pseudomorphs: the Mimics of the Mineral World. <https://www.facebook.com/notes/enchanted-minerals-llc/pseudomorphs-the-mimics-of-the-mineral-world/469266880271104>.