

New Mexico copper, cuprite, and delafossite

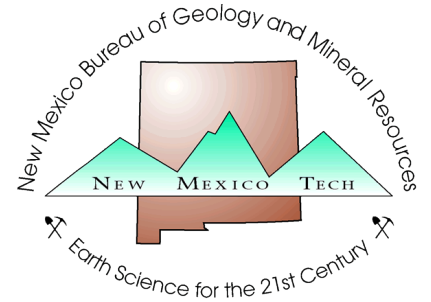
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NEW MEXICO COPPER, CUPRITE, AND DELAFOSSITE

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Native copper has a long history in New Mexico. Copper artifacts from 3,500 to 5,000 years ago have been described (Northrup, S.A. and La Bruzza, F.A., 1996) and reputedly first mentioned by Europeans in 1535. The Santa Rita (Chino mine) copper deposit was shown to the Spanish by an Apache Chief in 1800 and by 1804 the Spanish were transporting the ore by mule train to Chihuahua, Mexico. Copper and cuprite have been mentioned as occurring in seventeen of New Mexico's counties and delafossite (copper iron oxide) has only been reported from two locations (one of which is doubtful).

The Chino mine in Grant County is the premier location for copper and cuprite in New Mexico. It has produced excellent specimens for many decades. The Chino mine is a wholly owned subsidiary of Freeport McMoran Copper and Gold. A comprehensive article on the Chino mine in *Rocks and Minerals Magazine* (Lueth, V.W., Gibbs, R.B. and North, R. M., 2009) provides detailed information on the history, geology and mineralogy of the Chino mine. Of particular note were finds starting in 2001 to 2006 of large, well developed, blocky crystals and exceptional spinel twins by Stan Espenshade and Jay Rosenbauer. New Mexico's finest cuprites have also come from the Chino mine.



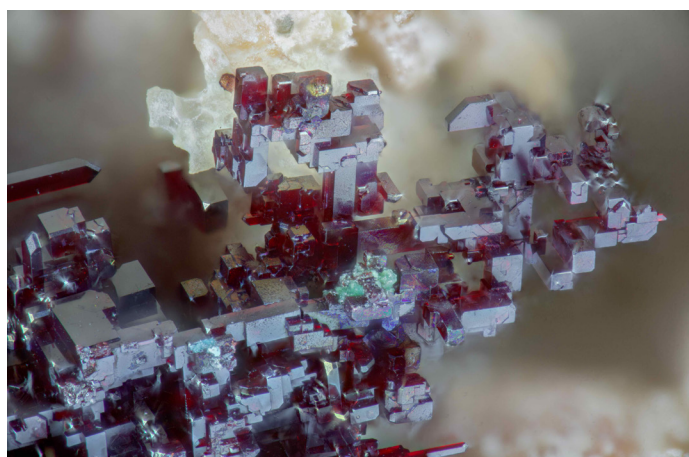
Cuprite crystals with Japanese label

Large (up to 2.5cm) crystals are known and aggregates of small cuprite crystals intergrown with copper, several inches across, surface occasionally with mineral dealers. Delafossite, CuFeO_2 , had not previously been reported from the Chino mine, but specimens collected by Chris DeWitt from the Oswaldo ore body and acquired in 1989 were positively identified by XRD (personal communication, K. McNamara, 2022). Copper and chalcotrichite were found in association. The only other confirmed occurrence of delafossite is a specimen from the Silver monument mine in the Chloride district of Sierra county. This specimen is in the NMBGMR Mineral Museum collection.

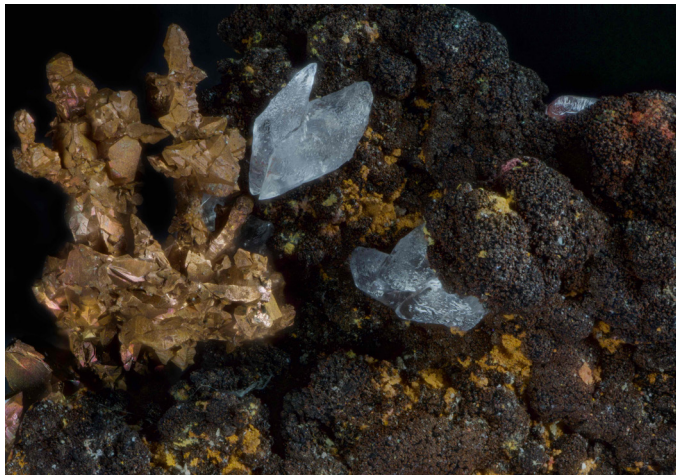
The Hanover mine, north of the Chino mine, has historically produced huge amounts of copper. According to Jones, F. A. (1904), "...the celebrated Hanover mine; exceeded in production and renown only by that of Santa Rita". Excellent specimens from this mine can be viewed in the NMBGMR museum. Specimens collected in more recent times are sparse and not exceptional.



Copper spinel twin from the Chino mine



Cuprite crystals (2mm FOV) from the Chino mine



Delafossite with copper and calcite (8mm FOV) from the Chino Mine

Copper pseudomorphs (roses) after azurite are unique to New Mexico. They are found at the Rose mine near San Lorenzo, east of Silver City. The crystals were first advertised by George English in the *American Geologist*, 6(2) 1890. The crystals and location were comprehensively studied by Hanson, T.A. (1994). They are not homogenous and much of the copper has been retrograde pseudomorphed by cuprite and malachite. Most crystal groups are from 2.5 – 4.5cm.

The Nogal district, southeast of Carrizozo in Lincoln County, is best known for gold (Helen Rae and American mines). Wayne Holland however was very successful in recovering rough crystals and masses of copper in alluvium, west of the town of Nogal, using a metal detector. In 1986, Wayne and one of the authors (RD) collected numerous alluvial specimens along with matrix specimens of anhedral copper and cuprite from a nearby andesite outcrop. Some pieces were associated with thomsonite.

Although rarely seen today, copper at the Kelly mine was apparently quite common in earlier years. Copper specimens with smithsonite have been recovered. Bill Dobson (deceased) sold specimens from the nearby Graphic mine from his rock shop in Magdalena. The Juanita mine, adjacent to the Kelly mine has produced beautiful micro octahedrons of cuprite, mostly altered to allophane and malachite.

Jones, F.A. (1904) reported copper and cuprite from the Jerome mine in the San Lorenzo district south of Socorro. Nothing had been reported from this district for many years, but in 2015, Pat Haynes recovered several thin, platy and micro-crystal-line copper specimens.

Northrop, S.A. and La Bruzza, F.A. (1996) cited “fine specimens of native copper reported in 1882 locally abundant at the Torpedo mine.” The Torpedo mine is just south of San Agustin pass in Doña Ana County. Large, platy, arborescent masses were collected from the dumps of this mine in the early 1990’s by the

Massis family. More recently, one of the authors (MM) acquired some very nice micro-crystals from this location.

Chalcotrichite was reported to be abundant at the Sternberg mine in the Hillsboro district of Sierra County (Northrop, S.A. and La Bruzza, F.A. 1996). In researching this location, it was determined that this mine was “eaten up” by the open pit of the Copper Flats copper mine and is no longer in existence. Chalcotrichite, however, has been found in a dike at the west end of the pit by Ron Gibbs.

Minor occurrences of copper and cuprite are found elsewhere in New Mexico. Of note are micro cuprite octahedrons altered to rosasite that have been collected from the Carnahan mine near the San Pedro mine in Santa Fe County, and a single occurrence of micro anhedral copper and cuprite that was found in the Sunshine #4 adit at the Blanchard mine. Cuprite also occurs at this location as very fine inclusions in hemimorphite.

In 1973, one of the authors (RD) acquired a 7.5 – 10cm anhedral solid mass of copper and cuprite from Lois Heister, a part-time mineral dealer and one of the earliest members of the Albuquerque Gem and Mineral Club. The specimen was reputed to be from Señora de los Milagros mine in the Manzano mountains. Northrop S.A. and La Bruzza, F.A. (1996) noted that “According to new reports, a carload of copper ore shipped in 1948 by the Manzano Mountains Gold mines from the west side of the Manzano mountains, 16 airline miles southeast of Albuquerque, was predominantly cuprite.” A visit by one of the authors (RD) to the mine in 1983 did turn up some minor cuprite specimens on the dump.

Copper mining continues at Chino and Hanover. New discoveries may arise!

Mines and locations mentioned in this abstract are either privately owned or are on private mining claims. Permission to enter these properties must be obtained by the owners.

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