

## Achrematite discredited

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Achrematite was described by Mallet (1875) from the Guanaceré mine, Chihuahua, Mexico. A cotype specimen of achrematite, obtained from Mallet by Colonel W. A. Roebling and now in the U.S. National Mineral Collection (R6417) was examined in this study. The specimen fits Mallet's description of achrematite very well.

The mineral is brown in color, fine-grained in texture, and is associated with limonite. Small rounded brownish crystals are present on one specimen, and conform to Mallet's description. In thin section, achrematite is seen as a very intimate admixture of mimetite, wulfenite, and several other accessory minerals. X-ray diffraction examination of a number of different samples from the specimen yields powder patterns of mimetite, or mixed patterns of mimetite and wulfenite. Carminite,  $\text{PbFe}_2^+(\text{AsO}_4)_2(\text{OH})_2$  is also present as minute scarlet-red crystals, although not reported by Mallet. Individual wulfenite and mimetite grains were semiquantitatively analyzed with an electron microprobe. The mimetite is molybdenum-free, and the wulfenite is essentially pure (~99% of the  $\text{PbMoO}_4$  component).

Hence, achrematite is a mixture of mimetite and wulfenite as surmised by Hey (1955) and Palache *et al.* (1951). The reference in Strunz (1970) to achrematite as a tungsten-bearing mineral is in error. Mallet himself initially suspected a mixture, but based on the knowledge and technology available to him (*circa* 1875), and after performing all tests possible at that time, he was convinced of its uniqueness as a naturally-occurring chemical compound. It is with regret that the work of so careful a scientist is discredited.

### References

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