A Note on the Paragenesis of Ottensite

Marcus J. Origlieri
1505 West St. Mary's Road #106
Tucson, AZ 85745
marcusa@mineralzone.com

Thomas A. Laetsch
Department of Geosciences
University of Arizona
Tucson, AZ 85721-0077	
tomtal@email.arizona.edu

Robert T. Downs
Department of Geosciences
University of Arizona
Tucson, AZ 85721-0077
downs@geo.arizona.edu

INTRODUCTION
During the Denver mineral show of 2005, the senior author noticed a specimen of stibnite with red and yellow encrustations, identified as “cetineite” and “cervantite,” respectively. The specimen owner, Guanghua Liu, could not supply a specific locality, nor provide analytical data supporting the identifications. Rather than let this specimen slip away into oblivion, the senior author purchased it (see Fig. 1 of the previous article).

Initial X-ray powder diffraction of the red encrustation yielded a pattern generally consistent with cetineite. Cetineite is a rare antimony mineral originally described from the Cetine mine, Italy (Sabelli and Vezzalini, 1987) and not apparently recognized elsewhere (Anthony et al., 1997). To check the internal consistency of the results, these diffraction data were indexed as cetineite, and the unit cell dimensions were refined. The unit cell dimensions, however, appeared significantly smaller than those reported for cetineite, but closely matched those of the synthetic Na analog of cetineite (Sabelli et al., 1988). Based on the indication that the mineral might represent a natural equivalent of the Na analog of cetineite, further work began. In June 2006, however, a notice on the web site of the International Mineralogical Association listed new mineral IMA 2006-014 (Burke and Ferraris, 2006). The authors realized that the presently labeled “cetineite” material and the new mineral were indeed the same. In this issue, this mineral is described as the new species ottensite (Sejkora and Hyrsl, 2007).

X-RAY STUDY
X-ray diffraction data were collected on a Philips X’Pert MDP diffractometer located in the Department of Chemistry, University of Arizona. The unit cell parameters were calculated using in-house software developed by the authors (TAL, RTD), using non-linear least squares regression. The ottensite unit cell dimensions found here were a = 14.1788(2) Å and c = 5.5736(2) Å. These data more closely approximate those of the sodium analog of cetineite (Sabelli et al., 1988).

The sequence of deposition begins with the deposition of well-formed stibnite crystals, followed by encrustation by fluorite. Many such specimens, without further alteration of the stibnite, have appeared on the mineral market. There are attractive examples of this occurrence from another occurrence in Guizhou Province, specifically the Banpo mine, Dushan County (Ottens, 2005: Fig. 18).

In the case of the ottensite specimens from the Qianlong deposit, the stibnite crystals have been partially leached away, leaving hollow void space between the fluorite encrustation and the underlying stibnite. Ottensite develops subsequently, sometimes completely filling the void, but often forming in open space as spherical aggregates somewhat reminiscent of red caviar (see p. 78, Fig. 2). X-ray diffraction analysis confirms these botryoidal aggregates as ottensite. An unidentified amorphous antimony oxide stains the fluorite coatings yellow on some specimens (Fig. 1, p. 78). These yellow coatings have previously been labeled “cervantite,” an identification which remains unconfirmed.

Mopungite, tetragonal NaSb(OH)₆, was originally described from...
Nevada (Williams, 1985) and subsequently found with cetineite in Italy (Anthony et al., 1997). This new material apparently represents a third world occurrence for mopungite, and the first occurrence of the mineral in China. The mopungite is not distinctly visible under the microscope and is apparently finely intermixed with the ottensite.

ACKNOWLEDGMENTS
We would like to thank Robert Dzwillo for many helpful discussions concerning Chinese mineral localities. We also thank Michael Scott for donating X-ray equipment to the University of Arizona, which enabled the characterization of the minerals involved, and Michael Carducci for collecting the X-ray diffraction pattern. Many thanks to Tom Moore and Wendell Wilson for their help and interest in this work.

REFERENCES