

MINERAL SPECIMEN CHARACTERIZATION REPORT

Sample: LMF1401112

Requested by Luis Burillo Minerales

Description:

Sample from Lily mine (Ica, Perú). Complex intergrowth of dark green-blackish crystals on drusy quartz. Difficult to define pseudorhombic or monoclinic symmetry.

Results:

Crystals were analysed using APXS and Raman spectrometry at 532 nm. APXS showed copper as only major metal present. Raman spectrum shows characteristic three peaks at high frequency (OH stretching) zone: 3443, 3362 and 3310 cm^{-1} , a characteristic feature that discards atacamite and suggests clinoatacamite. Other indicative features are a quadruplet at 800-1000 cm^{-1} zone (hydroxyl deformation) and mayor peaks at 518 and 369 cm^{-1} (O-Cu-O vibrations and Cl-Cu-Cl) vibrations.

Conclusion:

Clinoatacamite ($\text{Cu}_2(\text{OH})_3\text{Cl}$)

Guadalajara (Spain), at Wednesday, January 23, 2014



César Menor Salván, PhD

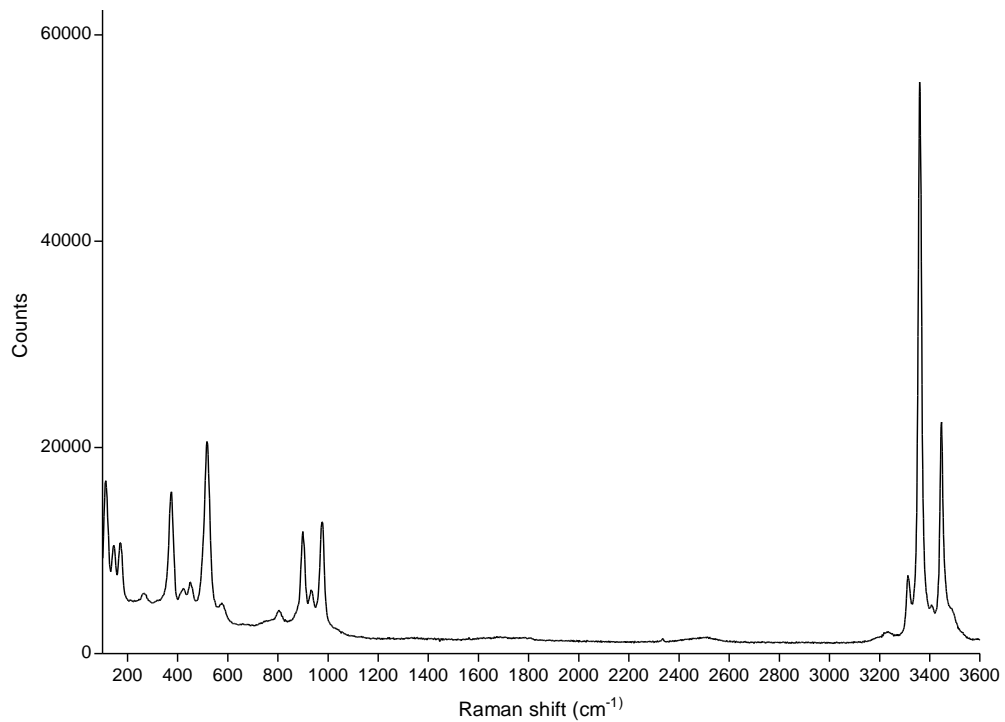
Analytical Chemist and Mineralogist

APPENDIX

Figure 1: Photomicrograph of the analysed crystals



Figure 2: Raman spectrum of the crystals depicted in figure 1



References:

Chu S. et al. *App. Phys. Letters* (2011) 98: 092508.

Bertolotti G. et al. *Anal. Bioanal. Chem.* (2012) 402: 1451.

Martens WN. et al. *Neues Jahrbuch für Mineralogie* (2003) 178:197.