Why does covellite have a huge reported range of refractive index?

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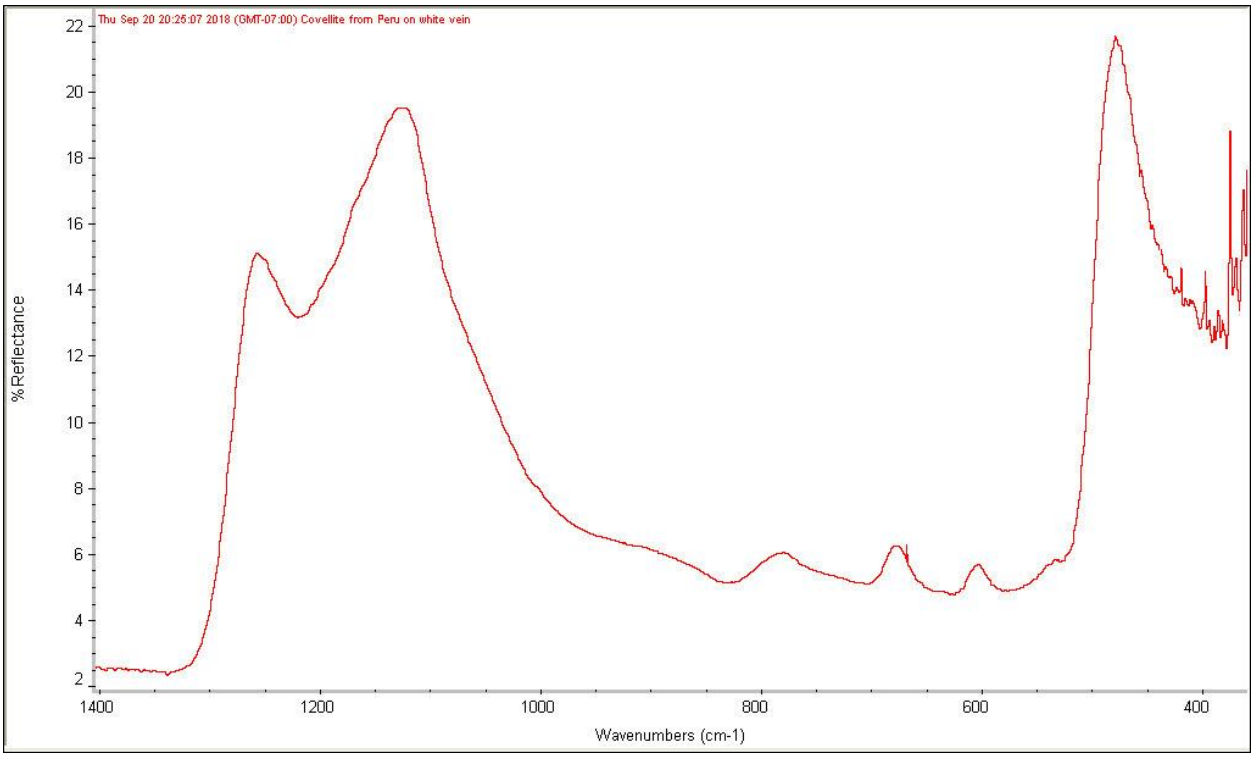
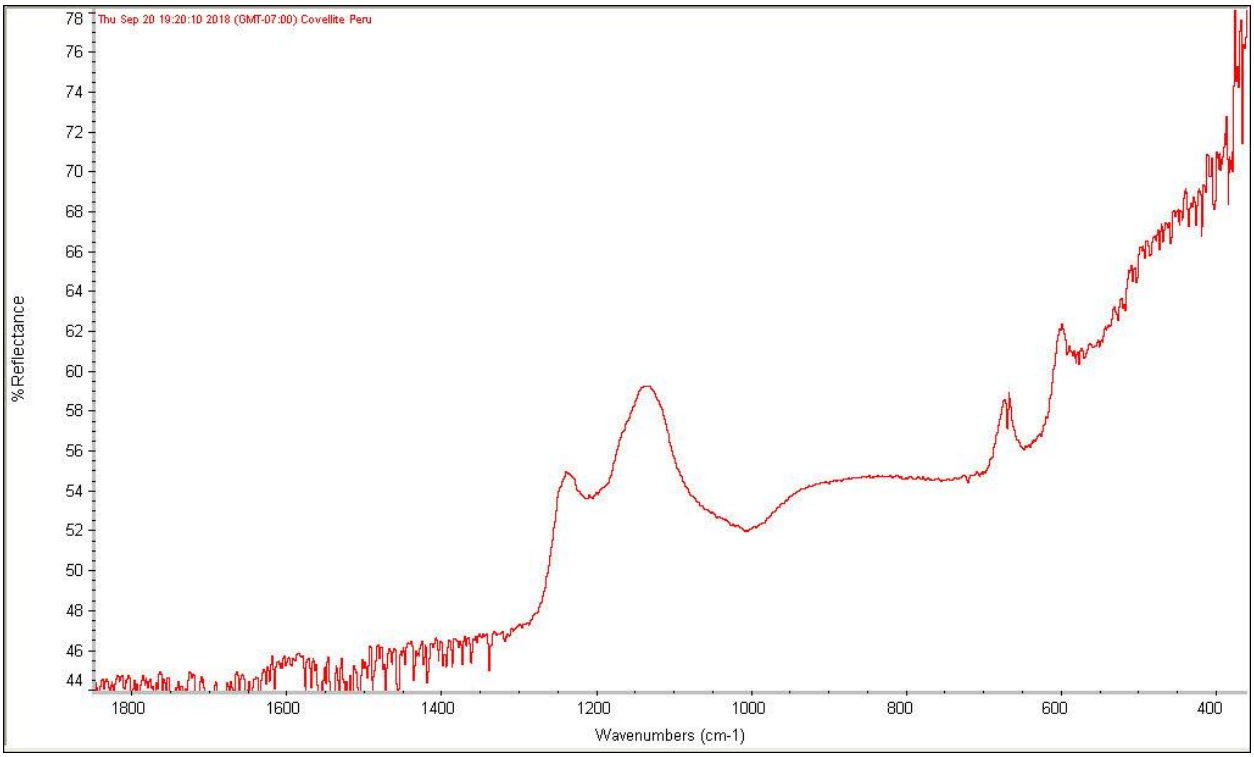
12-27-2019

Mindat and Webmineral sites refractive index (RI) range for covellite is 1.450 to 2.620. This is the same reported in mineralienatlas.de. Does a birefringence of 1.170 make sense? Certainly not. Let us look at some of the Peruvian material, which is all that the author can currently find to purchase. It has white veining. This is interesting, let us use specular reflectance infrared and take a look:



This is opal-A with a secondary mineral present. Opal (no species identified) in Mindat is RI=1.400 to 1.460. Okay, so our covellite from Peru is formed intermixed with opal-A. That explains the erroneous low RI value. Let us get the best covellite scan away from apparent opal-A:



Well, we get more opal-A and a huge metallic mineral upswing indicating a strong RI reflector. The first peak/trough is on the right, the trough at 701 cm-1. Since the dominant trough on the left of the peak series is the Christiansen Trough, which correlates to refractive index, we can take our archives of this linear correlation using our metal sulfide data. Different mineral groups have slightly different trend correlations. We get a refractive index value of the covellite component of this rock at 2.47.

The formation of covellite at very low temperature with opal-A appears to be the cause of the bogus huge refractive index range. Since the type locality is Italy and they claim to have crystals of this mineral, this must be a common mixed occurrence, and perhaps the two cannot actually be separated. Regardless, the published refractive index range for covellite is bogus.