

BOW, NH WILLEMITE IDENTIFICATION WITHDRAWN

Tom Mortimer

At the June 2018 MMNE Symposium I gave a short talk on recent mineral finds at a Bow, New Hampshire construction site. This Johnson Road site was discovered by Jim Cahoon. Locality specimens from this quartz-sulfide vein were passed along by Jim to Peter Cristofono, who in turn, shared several boxes of large vein specimens with me. The principal sulfide vein minerals were galena and sphalerite, but several of the large chunks had visible small cerussite crystals. Breaking these rocks apart to micro specimen sized samples revealed an extensive suite of minerals. One of these was of particular interest; 1 to 2 mm clear to milky lustrous hemispheres on quartz crystals. These were strongly fluorescent bright green, figures 2 and 3.



Figure 1: 1.2 mm hemisphere crystal cluster

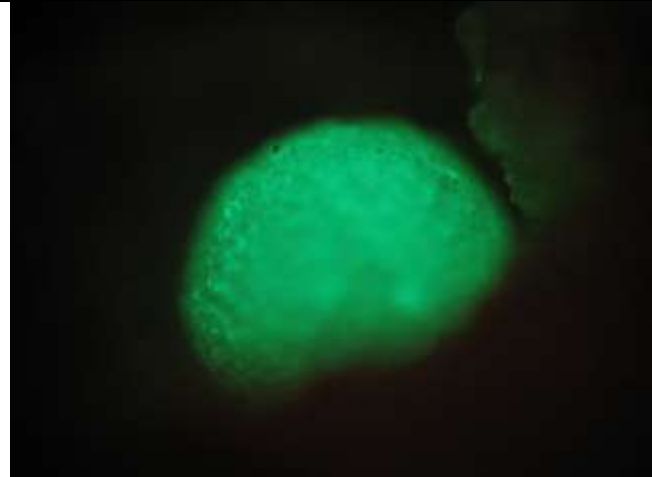


Figure 2: 1.2 mm hemisphere crystal cluster SW UV

Given the locality presence of sphalerite, ZnS , together with secondary zinc minerals smithsonite, $ZnCO_3$ and hemimorphite, $Zn_4Si_2O_7(OH)_2 \cdot H_2O$, plus the strong green fluorescence, it was the opinion of several MMNE members that this mineral was willemite, Zn_2SiO_4 . Researching mindat.org, it is seen that willemite frequently occurs in similar tight radial balls. And, willemite is fluorescent bright green. So willemite was the identification I gave during my MMNE presentation. Note, willemite and hemimorphite are difficult to distinguish with EDS because they both have the same 2:1 Zn:Si ratio.

I shared Bow samples from my limited supply with several MMNE members at the symposium. Fred Davis, with occasional access to a Raman spectroscopy instrument, was able to provide an analysis. The Raman analysis gave a very good match for hemimorphite, Figure 4. In the email that accompanied the plot, Fred stated: "saw the bright fluorescence. Got it in the Raman and [was] shocked - hemimorphite. Probed all over the fragment, 6 or 7 different locations - the results were very consistent. Plot attached. I really wanted it to be willemite. <sigh>".

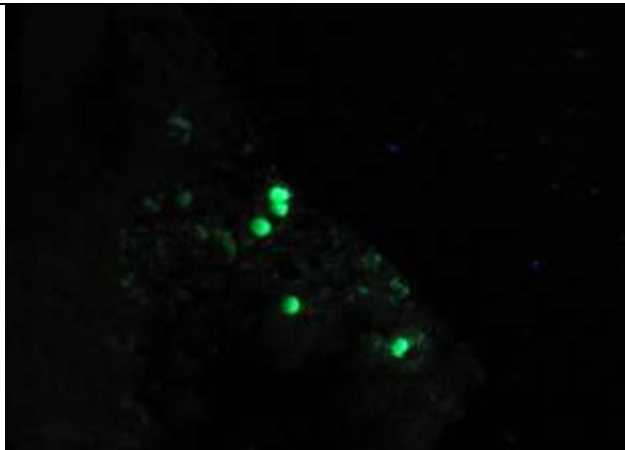


Figure 3: 1.3 mm balls on TN matrix - SW UV

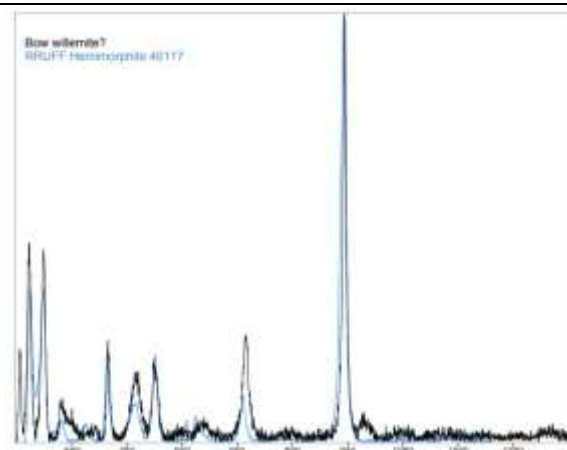


Figure 4: Bow, NH hemimorphite Raman plot

My complete Bow, NH species photo set may be viewed at: https://www.mindatnh.org/Bow_Locality.html