Halotrichite, a New Species for New Hampshire

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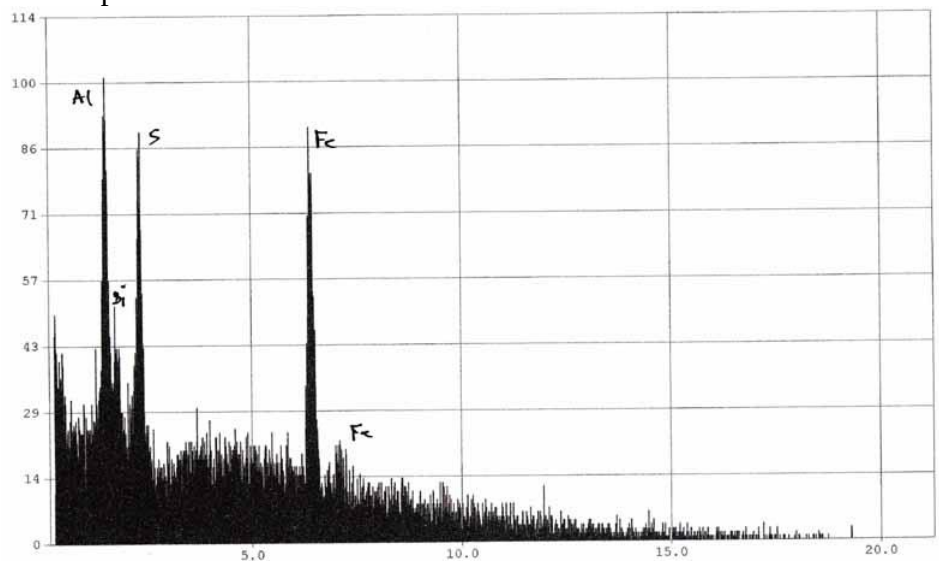
One of the New Hampshire localities I visited in August of 2005 was the "Old Gold Mine" on the Beebe River in Campton, New Hampshire. My motivation for visiting this site was to try and obtain a specimen of Tetrahedrite, the Antimony Sulfide. This is a Phillip Morrill locality. The reported species are magnetite crystals, pyrite and tetrahedrite. Morrill states: the "Old "Gold" Mine, accessible only by wading. Tunnel at falls Beebe River in cliff." I choose August to visit this locality, hoping that the water level would be low. This was a good decision, as I was able to cross the river at the desired point, stepping from boulder to boulder, not needing to remove my boots. As I walked up the riverbank from my roadside parking spot, I noted several quartz-sulfide boulders in the river bed. I broke up a few of these finding galena and pyrite, but found nothing worthy of putting in my pack-pack. I did not see a tunnel at the spot indicated by Morrill, but there was a 60 to 80 foot rock cliff with a decomposing sulfide zone running from the top of the cliff to the river surface. Many large boulders had fallen down this zone. More are likely to follow… adding some risk to mineral collecting at this spot! My guess was that the rock-slides had covered over the tunnel entrance. Figuring that this was the right spot, I set about sampling the decomposing sulfide boulders. There was a modest amount of massive, crumbling pyrite. I did find a few pieces of a white matrix material with soft gray amorphous mineral blebs. I figured this might be the Tetrahedrite, but badly weathered. I also found one piece of a green-gray bladed mineral, which I thought might be Clinozoisite.

As a New Hampshire species collector, my most interesting find was several pieces of a white, frosty, crusty, mineral on the protected underside of a large sulfide boulder. I thought this might be Pickeringite. Although this is not a particularly exciting mineral, as far as aesthetics go, I am not aware of any previous reportings of this species in New Hampshire.

White, frosty, crusty, mineral from Beebe River bank. Photo view field about 1.5 inch by 1 inch.

In the fall of 2006 I had an EDS analysis performed on the three Beebe River locality minerals described above. My "soft gray amorphous mineral blebs", thought to be Tetrahedrite, turned out to be Gypsum, apparently with some trace accessory mineral providing the gray coloration to this normally white species. My green-gray bladed mineral analyzed to be Actinolite, not Clinozoisite. I have seen quite a bit of Actinolite, and was a little surprised with this finding, as this Beebe River material is much paler than the usually dark green color for this species.

The EDS spectrum, below, for the white, crusty, mineral indicated an Iron Aluminum Sulfur species.



Halotrichite, $Fe^{2+}Al_2(SO_4)_4 \cdot 22H_20$, is the obvious match for this mineral in this environment. Halotrichite is water-soluble. The identification clincher was my observation that a lump of this mineral easily dissolves in warm water. (Pickeringite is a close cousin of Halotrichite. It is a Magnesium Aluminum Sulfur mineral).
I suspect that the Halotrichite at this locality dissolves away every spring and is replenished in the dryer summer months! So if you want to collect this New Hampshire species, plan your trip for July-August. Examine the protected underside of sulfide boulders in the slide zone to find this one.