

## Jarosite, A New Species for NH by Tom Mortimer

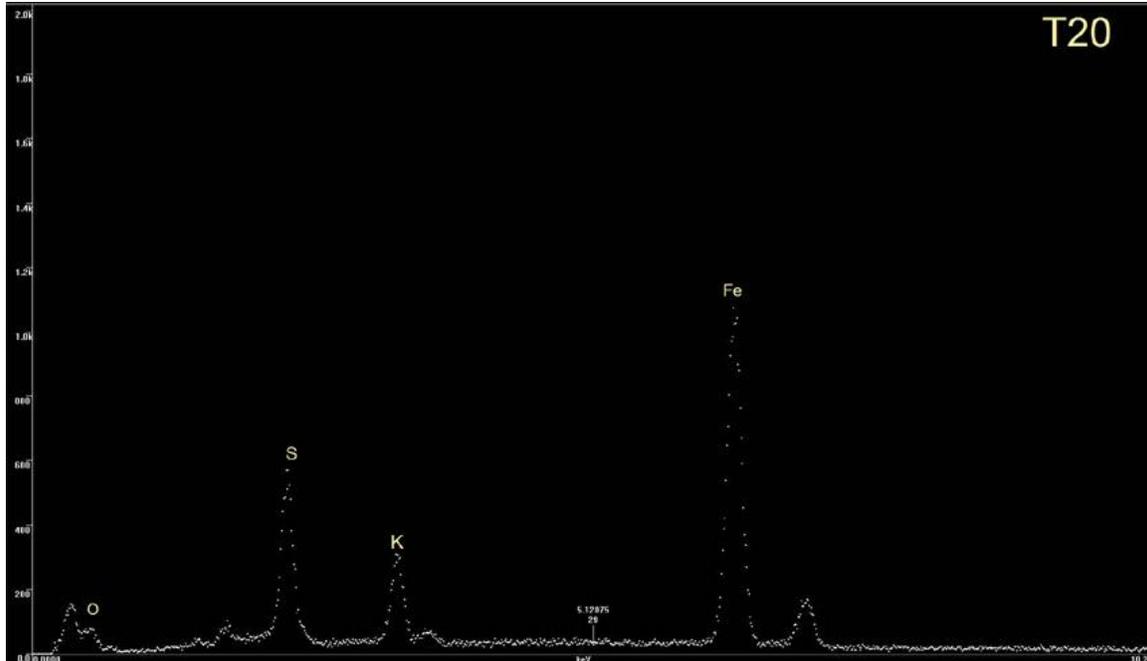
While examining New Hampshire mineral specimens in the Harvard basement collection during the spring of 2008, I came across two pyrite specimens from “Moss Brook”, Easton, NH. These specimens contained well-formed, brassy, pyrite cubes, to three-quarter inch, in a coarse chlorite schist. I had not read of this locality in any previous literature.

My friend Curt LaPlante, who shares my curiosity for “lost” collecting locales, (and a willingness for long hikes with no guarantees), agreed to research this occurrence with me. We could not find a “Moss Brook” in Easton, NH, but we did identify a “Morse Brook.” We concluded that this was the most likely match.

A visit to the area of Morse Brook in the spring of 2008 led to the discovery (or more accurately re-discovery) of pyrite cubes in chlorite schist. Extracting well exposed cubes on the schist matrix proved to be moderately difficult. The schist is quite permeable to water and most crystals contained micro fractures due to weathering, (even though their luster remained brassy). The majority of the crystals fell apart on attempts to reduce specimens to a manageable size. Fortunately the pyrite was moderately abundant so a number of fair specimens were collected. The pyrite crystals were found in float boulders and exposed ledges. One large boulder was found that contained external (and internal after breaking apart) surfaces covered with a fine yellow powder. My first thought was that this powder was native sulfur which being released from the decomposing pyrite. The powder appeared identical to the “Flower of Sulfur” that I purchased as a kid from my local drug store.... to make my own gunpowder (as a typical young lad, I loved things that went “bang”).

This yellow powder was a substance that only a species collector would stick in their backpack. I happily selected several chunks and carefully wrapped the pieces in paper towels to preserve as much of the powder as possible.

Native sulfur is very rare in New Hampshire. It is only confirmed from the Parker Mtn. Mine in Center Strafford, NH. In this occurrence the sulfur forms sub-millimeter, resinous, spheres ([http://mindatnh.org/sulfur\\_sheet.html](http://mindatnh.org/sulfur_sheet.html)) With the prospect of a *macroscopic* NH occurrence of native sulfur, I set out to do some tests. My first test result was encouraging: the yellow powder did not dissolve in water, consistent with sulfur and eliminating melanterite and other water soluble, sulfur containing, species. Next I heated a sample in a small test tube, expecting the formation of a gooey resinous mass and a distinctive sulfur odor. I got neither. My powder turned a dark reddish-brown, with water condensing in the cooler, open end of the tube. No sulfur smell was detected. At this point I posted a request for “Identity Help” on the mindat message board. Several helpful suggestions were proffered. Among these, Jarosite,  $\text{KFe}^{3+}_3[(\text{OH})_3\text{SO}_4]_2$ , seemed likely the best fit. A confirmation of the presence of potassium (K) in my unknown was essential. A sample of this Morse Brook yellow powder was included in my next batch of New Hampshire samples sent off for EDS analysis. The resultant spectrum is shown below.



The EDS analyst confirmed that the spectrum clearly indicated jarosite.



**Jarosite**, 3 cm specimen. Yellow powder on coarse chlorite schist. Morse Brook, Easton, NH.

Although jarosite is not a rare species, I believe this is the first confirmed occurrence of jarosite in New Hampshire. Given jarosite's association with weathering pyrite, it is possible that jarosite may have been observed by previous NH collectors, but that its unattractive appearance has kept it from their sample bags and backpacks.