

# Eleonorite and Beraunite

Tom Mortimer

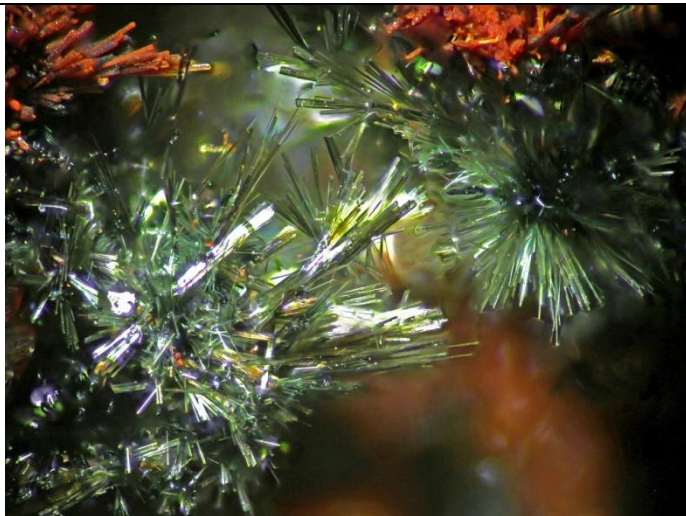
For a year or more now, my friend and MMNE member Ray Meyers has been pestering me to add eleonorite to my New Hampshire mineral species list, <https://www.mindatnh.org/NH%20species%20list.htm>. I knew he was right. This spring, I finally “got off the pot” and made the addition.

Eleonorite,  $\text{Fe}^{3+}_6(\text{PO}_4)_4\text{O}(\text{OH})_4 \cdot 6\text{H}_2\text{O}$ , is basically oxidized beraunite,  $\text{Fe}^{2+}\text{Fe}^{3+}_5(\text{PO}_4)_4(\text{OH})_5 \cdot 6\text{H}_2\text{O}$ . The formulae indicate the difference between these two species is the  $\text{Fe}^{2+}$  in beraunite has been changed to  $\text{Fe}^{3+}$  and a hydroxyl ion, (OH), has been added to maintain charge balance. Visually, the habit presentation of these two species is identical, typically radiating sprays of acicular crystals. The visual difference is that beraunite is a forest green while eleonorite is orange-brown to red-brown. From an EDS chemistry viewpoint, the two species are identical and indistinguishable.

In my years of micro mineral collecting I have discarded many of these brown sprays as “crappy beraunite.” Nice green beraunite is visually appealing. My best examples of eleonorite are from the Chickering Mine, Walpole, NH. Reviewing my catalog, I found that I had not saved a Palermo oxidized beraunite (and I save way too much stuff!).

Some photos of eleonorite and beraunite are included below.

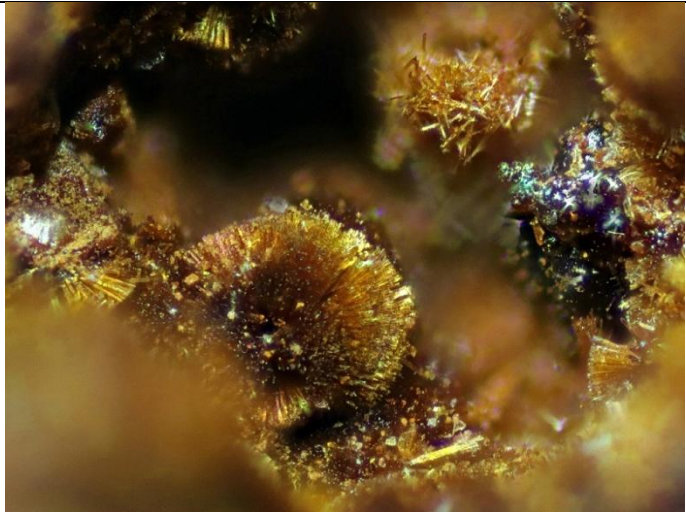
My thanks to Jim Nizamoff for his helpful comments and critique of this article.



**Beraunite** Palermo #1 Mine, N. Groton, NH  
5 mm field of view



**Beraunite** Palermo #1 Mine, N. Groton, NH  
6 mm field of view.



**Eleonorite** Chickering Mine, Walpole, NH  
0.4 mm eleonorite ball.



**Eleonorite** Parker Mtn. Mine, Strafford, NH  
1.7 mm field of view. A Gene Bearss collection specimen.  
Gene had this labeled as beraunite.



**Eleonorite** Chickering Mine, Walpole, NH  
0.7 mm eleonorite fan.



**Eleonorite** Chickering Mine, Walpole, NH  
1.1 mm field of view