Nuummite Composition, or Put Another Way, More Disinformation Bites the Dust

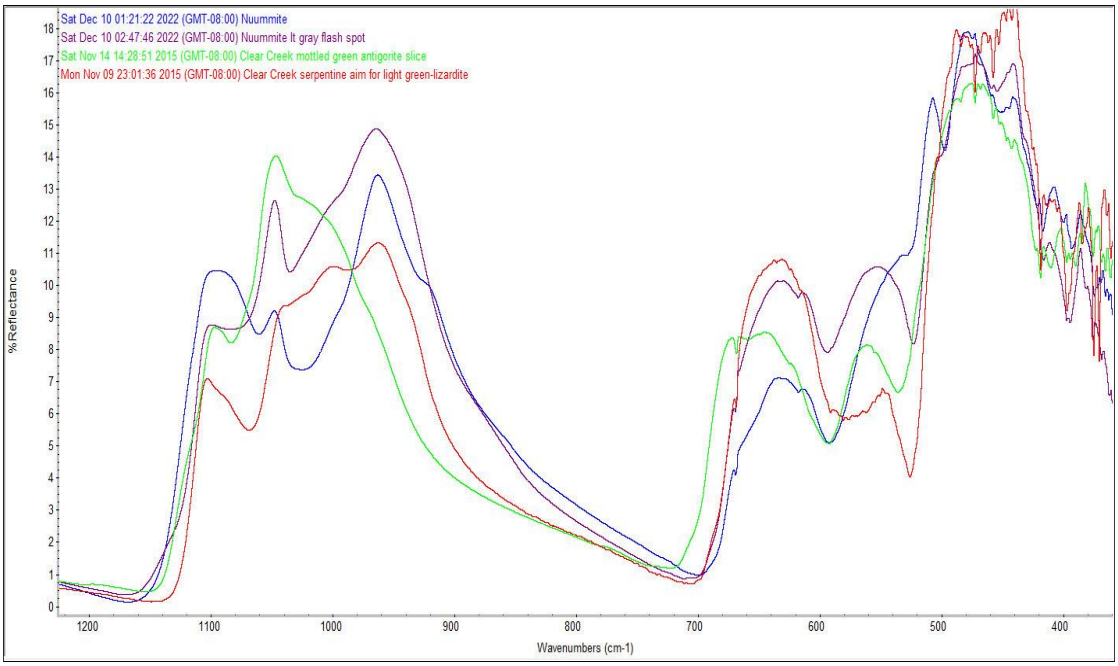
Donald Kasper, 12-11-2022

A paper in The Journal of Gemmology, titled Violet-to-Blue 'Nuummite' from Simiuttat, Greenland: Origin of Colour Appearance and Conditions of Formation, Leander Franz, et. al., 35(4), (2016), used Raman spectroscopy, and a variety of atomic compositional machines on samples of Nuummite, a sometime iridescent rock from southwest Greenland, and concluded it is orthoamphibole. There are very few ortho-class amphiboles, which leaves us with anthophyllite and gedrite. This is the same compositional description at mindat.org.

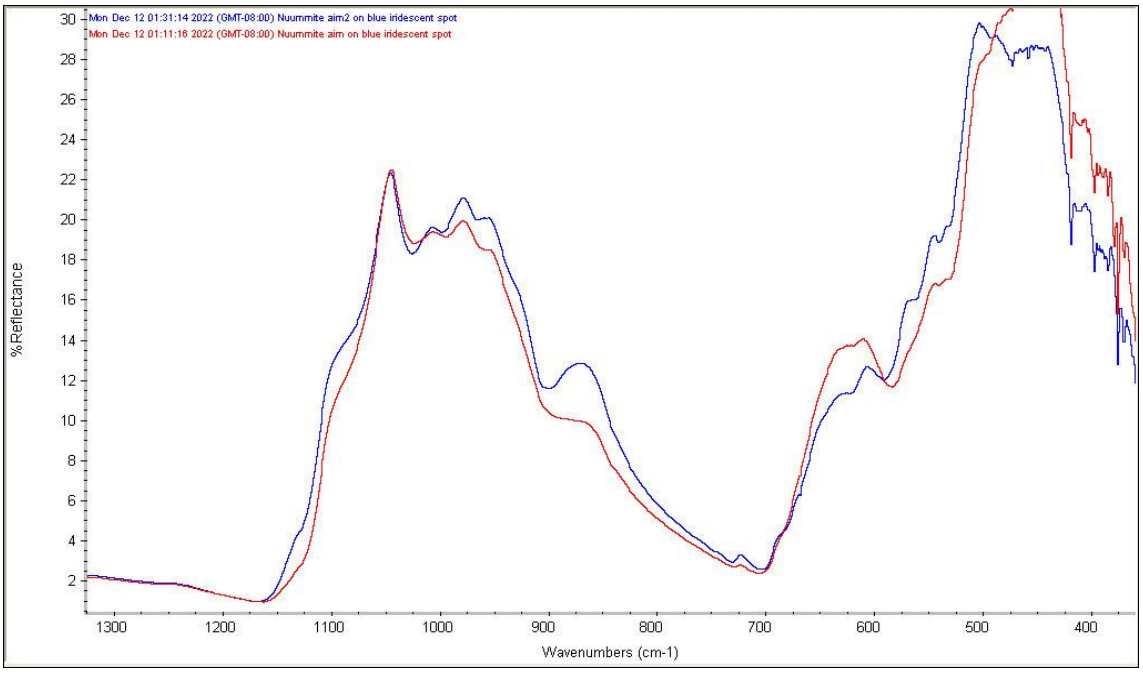
Rogers, et. al. in Iridescent anthophyllite-gedrite from Simiuttat, Nuuk district, southern West Greenland: composition, exsolution, age, Mineralogical Magazine, December 1996, Vol. 60, pp. 937-947, studied samples and concluded the angular inclusions are gedrite.

There is always the possibility that the author's purchased specimen, which has gray inclusions in black matrix, is different from the GIA sample, but we should get a general idea if the two are close, with the author using infrared spectroscopy. Infrared scans the specimen in a several millimeter ellipse, larger than conducted in the GIA study, and scale matters, but the matrix aggregate scan should be about the same, with anomalous peaks from small amounts of inclusions. This specimen does have one inclusion cluster that is blue at a specific angle of incidence and rotation angle. At other angles, it is gray. That spectra are shown below.

Do we get amphibole? Hornblende? Something anomalous? Well, what this spectrum shows is a mix of antigorite and lizardite serpentine dominate. That spectra are shown below. Iridescent patches show another unidentified mineral in antigorite. GIA specifically studied blue inclusions in their nuummite, which is not widespread for typical stone based on retail, so it may very well have gedrite in some pieces, but the matrix generally does not. The typical case for nuummite is serpentine with a lot of carbon, and inclusions that may be gedrite. The author has New Hogan Lake, out of Stockton, CA, and Shasta, CA region samples of black antigorite, so it is not unheard of. Trace inclusion compositions can show up as water bands, where a serpentine water at 3700 cm^{-1} occurs, and a 7200 cm^{-1} band not linked to serpentine somewhat close to anthophyllite, and possibly gedrite. Good reference specimens for gedrite are not apparent so far.



Nuummite on general dark matrix (blue spectrum), gray inclusion group (magenta spectrum), Clear Creek, CA antigorite (green spectrum), Clear Creek, CA lizardite (red spectrum). Nuummite has a mix of serpentine (lizardite and antigorite) for this specimen. Very distinct serpentine water spike trough at 3700 cm^{-1} not shown.



Best two aims on blue iridescent patch shows antigorite and another unidentified mineral. The author's specimens considered anthophyllite don't match at all. It is not a match to cordierite. It may be the literature referral to gedrite.