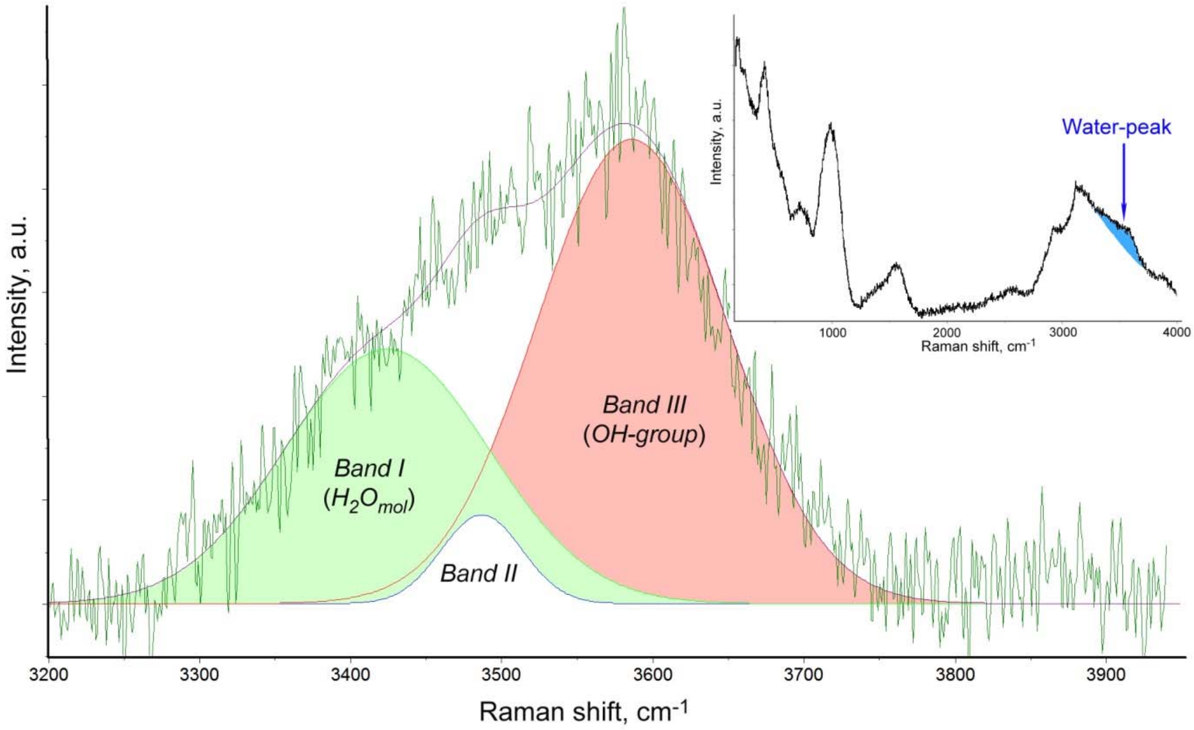

Fig. 1. *Confocal-Raman spectra of submarine basaltic glass of low water content (corrected for frequency dependent intensity and baseline subtracted). The water-peak is deconvoluted by three Gaussian bands, with no requirement for a Lorentzian shape factor. Low wavenumber contributions are related to stretching vibrations involving molecular water units (H_2O_{mol}) and high wavenumber contributions to vibrations of OH-groups. Inlay: uncorrected spectra covering the frequency range of the silica-network at <1500 cm^{-1} and the water-peak at 3200–3800 cm^{-1}.*

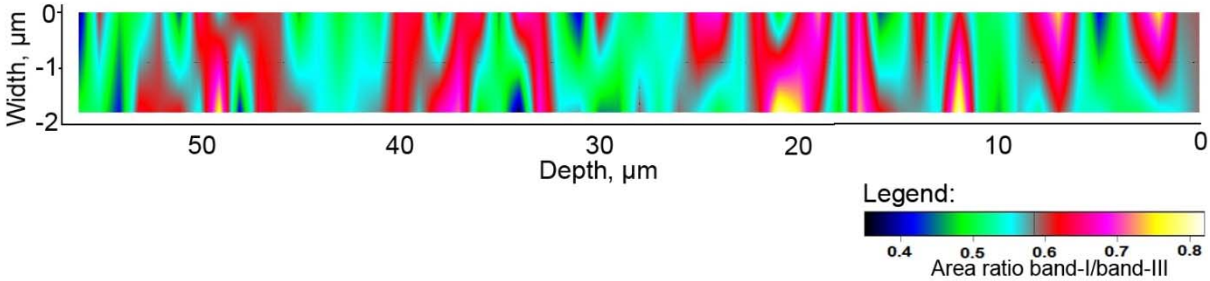

Fig. 2. *Raman spectroscopy array map showing the area ratio band-I/band-III in a submarine glass fragment. The map is orientated perpendicular to the rim, running 57 µm into the fragment. The band ratio is used to approximate the ratio of the two water species present in hydrous silicate glasses, H_2O_{mol}/OH. Over the mapped length, this ratio varies in a non-systematic fashion and is generally higher than to be expected for the low total water content of the glass.*

References:

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Raman spectroscopic investigations of fluoride minerals with the general formula $NaX[AlF_6] \cdot H_2O$

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Thomsenolite and pachnolite, both $NaCa[AlF_6] \cdot H_2O$, as well as ralstonite, $NaMg[Al(F,OH)_6] \cdot H_2O$, are typical minerals derived from the alteration of cryolite. Type locality and till now locality for the best crystals each is the famous cryolite deposit Ivigtut, Greenland.

Crystals of all three minerals as well as cryolite for comparison have been investigated by means of micro Raman spectroscopy. The identity of all samples has been proven by electron probe micro-analysis (EMPA) and X-ray diffraction (XRD).

Raman spectra of all three minerals are contained in the Rruff database, but show very few details especially in the hydrogen stretching region which is determinative for easy distinguishing these three minerals. The Raman spectra of the three minerals in the range 200–1000 cm^{-1} are similar but well distinguishable and compare well with the simpler spectrum of cryolite.

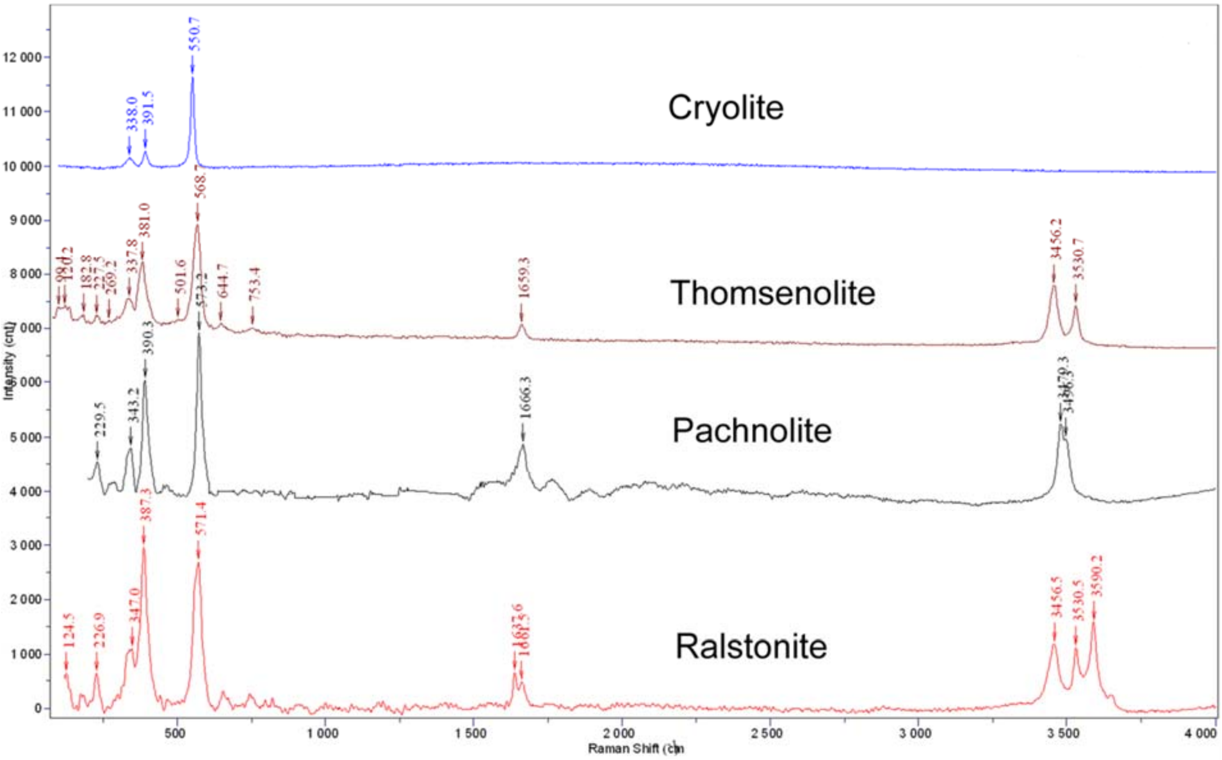

Fig 1. *Raman spectra of (from above) cryolite, thomsenolite, pachnolite and ralstonite.*