

Master Thesis:

The saturation state of seawater for calcium carbonate determined by Raman spectroscopy using skeletons of cold water corals; an analytical study

Motivation

The saturation state of seawater with respect to the two calcium carbonate polymorph aragonite and calcite is regarded as an important parameter for the fate of calcifying organisms like e.g. corals and mollusks in an ocean that changes its physico-chemical properties as a consequence of a changing climate.

Background and aim of the study

It has been suggested that one parameter of Raman spectra (the “full width at half maximum” (FWHM) of the main vibrational mode) obtained on coral skeletons is related to the saturation state that was present during its formation.

The aim of the study is to investigate the underlying processes behind the relationship between FWHM and saturation state in more detail.

Details and requirements

The study will be performed at the Alfred Wegener Institute in Bremerhaven within the section “BioGeosciences” and requires a solid background in physics and chemistry related to mineralogy / geochemistry. A suitable candidate should show a strong interest in analytical methods, if possible having experience in Raman spectroscopy (not mandatory).

The adaptation of existing scripts written in R used to analyze the Raman spectra (curve fitting routines) require experience in using the programming language R. Being able to work with R is therefore mandatory for this master thesis.

If interested

If the above description got you interested and you would like to know more about it, please contact: Dr. Gernot Nehrke at gernot.nehrke@awi.de

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