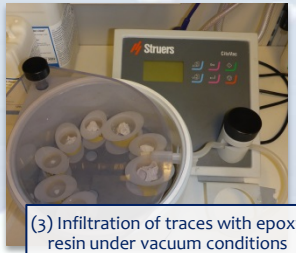
A "cool" and "boring" study
How to use the Cast-Embedding Technique

(1) Sample material: barnacles from Svalbard


(2) Organic material inside the barnacle removed with NaClO



(3) Infiltration of traces with epoxy resin under vacuum conditions


(4) Resin hardens for a couple of days

Bioerosion • A "boring" study

Bioerosion is the breakdown of calcareous material by living organisms, commonly in marine environments. Organisms like fungi or algae bore into hard substrate for nutrients or to find shelter. Through this, they produce characteristic traces, which are left behind in the substrate. An analysis of those traces is a useful tool for the **reconstruction of environmental conditions** from the past, such as temperature or bathymetry.

Some traces are bored by microorganisms and are therefore invisible for the naked eye. To enable an analysis nonetheless, we apply the **Cast-Embedding Technique**. Traces are visualized by infiltration with epoxy resin under vacuum conditions. After being coated with gold, the 'positive casts' are ready for an analysis under a scanning electron microscope (see figures on both sides).

Arctic & Antarctic • A "cool" study

I study bored (micro)traces from **polar environments**. Bioerosion is usually in balance with carbonate accretion, but it has been already found out that bioerosion will accelerate in tropical environments with ongoing climate change and ocean acidification, threatening e.g. coral reefs.

There is a lack of bioerosion studies in high latitudes and it is thus important to produce a **snapshot** of current (micro)borings, which is my main task.

GLOMAR
Bremen International Graduate School for Marine Sciences

Neele Meyer, Glomar PhD student, February 2019

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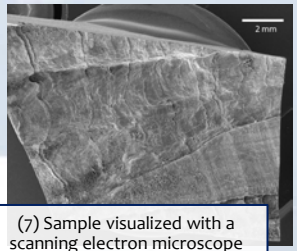
(5) Production of appropriate pieces with a rock saw


(6) After removal of calcite wit HCl – sputter coated with gold



(7) Sample visualized with a scanning electron microscope

(8) Example trace *Saccomorpha guttulata*, produced by a fungus