Response to reviewer 1

This is a very interesting and worthy contribution to Biogeosciences.

We thank the reviewer for their constructive and positive comments, and are happy to address the issues raised.

May I just suggest a few minor comments below: Page 1 Line 9: Are these species only marine?

The two species used here are marine, from temperate waters (isolated from coastal Brittany) but they are found in polar waters too. Generally loricate choanoflagellates are found waters from the tropics to the poles, though more prevalent in polar waters. Historically they were thought to be from marine and brackish water, but they have now additionally been isolated from freshwaters (Paul, 2011; Nitsche, 2014; Richter & Nitsche, 2016).

We have now included this information in the introduction and methods.

Page 1 Line 10: you provide a range in diatom fractionation factors between -0.5 per mille to 2 per mille in your abstract but in the introduction (page 2, line 10) only one estimation is provided (de la Rocha's). Please could you elaborate on this, to reflect your abstract.

This information is explained later in the paragraph: the range in fractionation factors was later discovered as a result of culture experiments involving different species of diatoms.

Page 2, line 24: could the authors please just clarify what they mean by their statement "that the strongest fractionation in sponges (most negative value of ε)". I assume that they mean that the most negative published ε values are derived from sponges? However, it could also be interpreted as referring to polymerisation only occurring in the most negative of the fractionation factors occurring in sponges (e.g. not all sponges).

We have clarified this statement that the strongest component of sponge silicon isotope fractionation occurs during polymerisation (as opposed to influx or efflux).

We have rephrased that sentence accordingly: "In contrast, biological models based on Michaelis-Menten kinetics and empirical data from growth rate experiments suggest that the largest contribution towards isotopic fractionation in sponges occurs during the polymerisation step rather than during influx or efflux of DSi…"

Table 1: can you change the capitalisation of Numbers please (if you wish to keep the existing comma).

The comma has now been replaced with a period.

Could you also be specific that your growth medium refer to the seawater compositions you report.

The word "seawater" has been replaced with "growth medium" in Table 1.