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## ***Interactive comment on “Limpets counteract ocean acidification induced shell corrosion by thickening of aragonitic shell layers” by G. Langer et al.***

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The manuscript deals with the possible influence of sea water pH and the biomineralization process in Mollusc shells. Numerous papers are now published on the consequences of the ocean acidification on calcareous organisms (mainly corals and molluscs). In this study, the selected Mollusks are "limpets", a gastropod species with a very special structural organization and mineralogical composition. This species is not a deep sea one, and is benthic, so that samples are easy to collect. Moreover, the site is a natural acidification zone, so that the observations are not biased as they can be in aquarium or stressed. Raman analyses are efficient for the mineralogical

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determination of the shell layers. The topic of the manuscript is in agreement with the Journal.

Nevertheless, some questions persist. First, only some specialists are able to identify the species of *Patella*. Only small details are important, and because even the shells of living animals are eroded or encrusted, color patterns are not well visible. Several species often co-exist in a single site. Thus, the taxonomy of "*Patella*" is still controversial. The morphology (inner and outer views) of the samples will be useful. 2nd: microstructural observations are missing. The structure of the shell of this genus is unique: the crossed lamellar layer (the most common structure in Mollusks) is calcitic. Some sublayers are aragonitic. But the main part of aragonite is a prismatic layer related to the muscle insertion (myostracum). The absence of thin sections or SEM pictures does not allow the reader to understand what is the structure of what is called "aragonite" in the manuscript. Third: despite the high quality of Raman analyses, other cheaper and faster techniques are available: BSE SEM images with or without staining (Feulgen, spatial resolution about 1 micron), staining of thin sections. Fourth: we have no data about the age of the samples, and the duration of their exposure to the acidic site. Fifth: there is no data about the parameters of the sea water (salinity, temperature, agitation...); these parameters play a role in the life of the animal, as the nutriment does.

Some decades ago, it was shown that the calcitic/aragonitic ratio in *Mytilus* shell depends on the sea water salinity (Dodd in the 60's). This controversial interpretation was not confirmed and it has been shown that other factors play a role. It seems there is a similar situation here. The authors of the manuscript deal with a topic regularly mentioned in all the past and present, national and international projects in which the future climate is concerned. They do not compare their results to what is described for other molluscs. At last, the observations are not sufficient enough to be so affirmative regarding the conclusions. The authors must discuss other hypotheses.

**BGD**

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