

The manuscript by Frei et al. deals with application of Cr isotope ratio in deciphering paleo redox variation and modeling of Cr incorporation into the calcite lattice through an intermediate organic pathway. Authors have made reasonable effort to support their hypotheses. Both the reviewers have made reasonable suggestions for improvement of the manuscript.

I have following comments and suggestion:

- A. It is not clear how much Calcium carbonate powder is required for individual Cr analyses (conc and isotope ratio measurement). Carbonate shell sampling part needs clarity. It can be written in two paragraphs. Bulk sampling and transect sampling. Is there is any information on the organic content of the shells? It would help to establish the relation between Cr concentration and TOC content since organic phases seems to be critical in Cr concentration and isotopic fractionation.
- B. The manuscript sites Frakas et al (a submitted paper) frequently in various contexts. I think it should be limited to introduction only.
- C. Authors have discussed Frakas et al. by citing the relation obtained between Ce anomaly and Cr isotopic fractionation. It is not required since this data is not visible to the reader and difficult to comprehend. Moreover Ce anomaly and REE content in has strong correlation with Fe-oxyhydroxide content in calcium carbonate. Many earlier papers have shown sharp change in Ce anomaly at the sed-water interface seasonally coupled with Fe mobilization. The interface redox variation may be attributed to variation in organic loading. I suggest to re- write this part without depending on Ce anomaly which is not a part of the present study.
- D. The samplings of shell are carried out within 1-20 m water depth in open ocean condition. Does the seasonal water column data show any water column redox variation? No Eh or oxygen content data is available from any of the sampling site which can show possible seasonal redox variation. In other words it is not convincing that the observed  $^{53}\text{Cr}$  data along the shell transect is an indicator of water column redox variability.
- E. The vital effect on any isotopic fractionation is very complex and less well understood compared to inorganic incorporation.
- F. Finally, I would suggest reducing the length of the manuscript. It is bit laborious to search for the heart of the manuscript. Also, try to focus more on your data and model than stressing on application in paleo redox variation since it is not supported by your data.