

Interactive comment on “The metastable HCl .

6H₂O phase –

– IR spectroscopy, phase transitions and kinetic/thermodyna

– 205 K” by S. Chiesa and M.J. Rossi

Anonymous Referee #1

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The manuscript gives a detailed description of experimental results and an extensive discussion of relevant studies in the field. This proves the careful analysis of the data and an open-minded discussion that is not often seen in manuscripts and that adds important and new ideas and results. Further, the topic and findings are highly relevant for atmospheric sciences in general and I therefore suggest publication in ACP. However, I feel that the manuscript needs a major revision; the narrative style makes it difficult to follow the argumentation and understand how the conclusions are derived.

Main issue: Quasi-liquid interface vs. amorphous phase Comparison of the amorphous phase, studied in this study, with the QLL at the interface is done in some detail

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in the manuscript. The QLL is not introduced in the introduction. Neither, it is clear why one can compare properties of an interface with a phase. Maybe, you can introduce the phase diagram, indicating the conditions of McNeill 2006, 2007 (and of other studies in the HCl-ice system) in the introduction and stating the open questions or your hypothesis.

Detailed suggestions Abstract: I find the abstract confusing because it contains too many experimental and technical details. It is also difficult to identify the scientific goal and motivation of the study and why the chosen method is adequate to achieve the goal. Please focus and re-write.

Introduction: I find it confusing that the introduction already states results of this study. I suggest to rewrite and rather focus on the status quo and on open questions that you answer in this study. Is the paragraph on NEXAFs really necessary, as you do not discuss the dissociation of HCl in ice later in the results parts. Showing the phase diagram would help to identify the focus of this study.

Results: The study gives important and unique results. Maybe those can be easier understood if you rearrange the results part and discuss first the nucleation, then the properties, then the decomposition and the phase transition. For each part you could briefly introduce the current knowledge.

I hope that these suggestions help. I'd be happy to review the revised version.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 17793, 2013.