

Dear Anonymous Referee #1:

Thanks for your comments, our point-to-point responses to your comments are listed as follows.

Your comments: The paper by Sun et al. presents a method to correct for cross-interference in multichannel non-dispersive infrared measurements which accounts for nonlinear absorption. I consider the paper as scientifically relevant, and its content seems convincing and conclusive to me (I must, however, admit that I am not an expert in this particular field, and I might have missed the one or the other issue). There are, however, several presentation issues:

1. There are several language issues (missing articles, wrong order of words, singular/plural issues etc). Since to my knowledge each paper will undergo routine language editing, I will not list all corrections here.

Response: The Referees and the editor had pointed out several language issues before this paper being published on AMTD, and after that, we had paid the service charge to obtain a copy-editing. Finally, we let a person with an excellent command of English go through the copy-edited manuscript. So those language issues (missing articles, wrong order of words, singular/plural issues etc) which you mentioned in the AMTD would be improved greatly in the revised manuscript.

2. The abstract is full of advertising terms ("optimized", "newly developed" etc). The excessive use of such terms should be avoided.

Response: We have rewritten these terms in the revised manuscript, for examples, some of these terms were replaced by "proposed". Please see the abstract of the revised manuscript for details.

3. Various places: "three order" should be replaced by "third order".

Response: All "three order" were replaced by "third order" in the revised manuscript.

4. It should be stated early in the paper (and possibly also in the abstract) that this is an in situ method, not a remote sensing method.

Response: We have inserted "in situ" before "monitor stack emissions" in the first sentence in the abstract. Please see the abstract of the revised manuscript for details.

5. Many parts of the text refer to particular models of a particular manufacturer. Thus this paper in many places reads like a technical report. I would prefer that references to particular instruments of a particular manufacturer are kept at an absolute minimum, and whenever the method can be described in a more generic style, these references should be avoided. Perhaps the references to the manufacturers' models can be limited to Section 4 ff.

Response: We have accepted your suggestion, and some references have been deleted. For instance, the texts of p2011, line 13 to line 20 and line 25 to line 27 in the AMTD have been deleted. Please see the line 52 and line 57 in the revised manuscript for details.

6. p2011, 128/29: the text in the parentheses is confusing. I suggest "(i.e. the absorption is no longer linear to the concentration)"

Response: This sentence has been rewritten as your suggestion. Please see the line 57 in the revised manuscript for detail.

7. The concept of the relative measurement error is certainly much older than the references given, and it is pretty standard. I think that no references are needed for this definition.

Response: These references have been deleted. Please see the line 128 in the revised manuscript for detail.

8. p2018 bottom: The correlation coefficient usually is  $r$ , not the square of it.

Response: All the correlation coefficients ( $R^2$ ) listed in the AMTD have been replaced by  $r$ .

**Thanks for your comments and the detailed corrections please see the last upload documents.**