

Dear professor Thorsten Bartels-Rausch,

Thank you for your decision to allow us to revise our manuscript for publication in *Atmospheric Chemistry and Physics*. Below is a point by point response to the comments.

Dear Chong Han

Thank you for your patience, understanding, and response to the referee's comments. I would like to come back to the "tone down." Thank you for doing the in the sentences mentioned by the referee. I understood and supported the referee in that those were just examples. In the current version, for example, line 7 still states "prominently": "We provide evidence that light prominently enhances the conversion of SO<sub>2</sub>". Could you revise the manuscript accordingly throughout? What is the meaning of prominently that you refer to? Can you give statistical measures to support this statement? I failed to find a discussion in the manuscript that supports the "prominent" chemistry. Do you refer to the atmospheric implications or the signal difference in Fig 1A?

**Re:** Thank you for your comments. "prominently" in the manuscript refers to the signal difference in Fig 1A, and we statistically described the SO<sub>2</sub> uptake in the dark and under irradiation, as shown by the sentences "The  $\gamma_{0, \text{BET}}$  and  $\gamma_{s, \text{BET}}$  under the irradiation of  $7.93 \times 10^{16}$  photons cm<sup>-2</sup> s<sup>-1</sup> were 1.75 and 2.25 times of those in the dark, respectively." in Lines 208–210 in the revised manuscript. According to your suggestion, the descriptions of the results and the significance of the work have been toned down throughout the manuscript. For example, the words "prominently", "significantly", "firstly", "greatly", "strong", "obviously" and "markedly" have been deleted in the revised manuscript.

The language aspects that the referee referred to can be dealt with during copy editing ([https://publications.copernicus.org/services/copy\\_editing\\_for\\_english.html](https://publications.copernicus.org/services/copy_editing_for_english.html))

I hope this helps and looking forward to your revised version.

best, Thorsten Bartels-Rausch

**Re:** Thank you. We will carefully revise the language with the help of the copy-editing team in the proofreading stage.

Thank you very much for your help.

Sincerely yours,

Chong Han

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