

# ***Interactive comment on “Industrial SO<sub>2</sub> emissions monitoring using a portable multi-channel gas analyzer with an optimized retrieval algorithm” by Y. W. Sun et al.***

**Anonymous Referee #1**

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The manuscript describes a method of portable multi-channel gas analyzer with an optimized retrieval algorithm to monitor accurately the industrial SO<sub>2</sub> emissions with large measurement range and correction for interferences of other infrared absorbers. The good performance was shown in a large dynamic measure range and further in field measurements of different factories' emissions. Overall, it is a new improved and applicable measurement technique with future prospects in practice. And the manuscript meets the scope of the journal and I would recommend publication. Some comments and suggestions are following.

Instrument: why the sample cell was controlled at 343 K? Any impacts of the sample

cell temperature on the measurement? It's better if the authors could show some sensitivity test about this considering the industrial emission was varied in a wide range of temperature.

In abstract, which kind of the effects "have been the major limitations of industrial SO<sub>2</sub> emissions monitoring"? Please rephrase this sentence more clearly.

Could the author give more details of about the comparison with DOAS analyzer in field campaign? e.g. the DOAS analyzer setup? any difference of sampling between this two method? Some explanations of the absolute difference between two instruments?

P13333, line 23, what is the study of Sun et al., 2013 referred to? It is absent in the reference. Please re-check all the references referred in the body part and corresponded one in the References.

The resolution of Fig. 4 is poor to read.

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Interactive comment on *Atmos. Meas. Tech. Discuss.*, 8, 13331, 2015.

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8, C4864–C4865, 2016

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