

## ***Interactive comment on “The quantitative infrared and NIR spectrum of CH<sub>2</sub>I<sub>2</sub> vapor: vibrational assignments and potential for atmospheric monitoring” by T. J. Johnson et al.***

**Anonymous Referee #2**

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This is a spectroscopically sound study of the IR and NIR spectra of CH<sub>2</sub>I<sub>2</sub>. The data obtained are certainly of high quality. The authors suggest that the data may be useful in developing methods to monitor atmospheric CH<sub>2</sub>I<sub>2</sub>, hence the publication in an atmospheric journal. After reading the manuscript, it becomes apparent that optical methods are however unlikely to supersede the established GCMS technique which has superior sensitivity, and the advantage (over open path DOAS) of providing a point measurement.

The focus of the paper is strongly biased to the spectroscopy of CH<sub>2</sub>I<sub>2</sub> and the intro-

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ductory text dealing with the atmospheric chemistry of CH<sub>2</sub>I<sub>2</sub> and iodine in general is weak and in some places inappropriately referenced.

Following points should be considered:

P1276, L2-3 The role of di-iodomethane goes beyond providing precursors of new particle formation. This opening sentence is misleading and certainly out of place in the abstract.

P1277, L5 Reference to older literature (Schmitt, Kasper) is to be encouraged, but not when the conclusions drawn are irrelevant for the atmospheric chemistry of di-iodomethane. As the authors point out later, the formation of I<sub>2</sub> and reformation of CH<sub>2</sub>I<sub>2</sub> are not atmospheric processes in di-iodomethane photolysis. The “atmospheric chemistry” text fails to mention the fundamental fact that the photolysis of CH<sub>2</sub>I<sub>2</sub> results (via reaction 2) in IO formation, and that CH<sub>2</sub>I<sub>2</sub> is a major contributor to coastal IO formation.

P1277, L16 Hoffmann et al did not show that OIO is formed in the reactions of IO. The first detection of OIO may be attributed to Himmelmann et al (Chem. Phys. Lett, 1996). Neither Harwood et al not Gilles et al observed OIO as a product of the IO self reaction or the reaction of IO with BrO. The correct citation is to Bloss et al (J. Phys. Chem 2001) and Rowley et al (J. Phys. Chem. 2001).

The authors are encouraged to re-read the publications of e.g. Vogt et al, McFiggans et al and Cox et al and write a more concise and accurate summary of the role of iodine chemistry in the marine boundary layer.

Will the IR spectra reported here will be available as supplementary information to readers of the Journal ?

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