

Interactive comment on “A new laser-based and ultra-portable gas sensor for indoor and outdoor formaldehyde (HCHO) monitoring” by Joshua D. Shutter et al.

Anonymous Referee #2

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General comments: This paper reports the characterization of a new commercial formaldehyde sensor for monitor grade purpose. The detection limit of the instrument (3σ) was 690 pptv and 420 pptv for 15 and 60 minutes integration time, respectively. The sensor was compared to research grade Laser Induced Fluorescence instruments, which showed agreement within 10% in accuracy with up to ± 0.5 ppbv absolute difference. The sensor is useful for indoor monitor and outdoor network setup and such a paper would help to address the fundamental and technical concerns of this sensor. The authors should consider adding more discussion on how to perform a data processing method. Also, a discussion on the accuracy determination from a theoretical aspect instead of comparing with other state-of-art instruments would be helpful.

C1

Nevertheless, this paper is well written and structured and meets the scope of AMT. Therefore, I recommend publication after minor revision.

Specific comments: Line 15 Page 1 ‘good agreement with LIF instruments from Harvard and NASA Goddard’ Please be quantitative on the ‘good agreement’.

Line 2 Page 3. Please define HITRAN. The authors should describe all the abbreviation when presented in the paper for the first time.

Line 5 Page 6. It is like a mismatch in the reference.

Figure 7a. The author could consider adding error bars on each data point to show the variability.

A schematic plot of the instrument is helpful to explain the measurement principle.

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C2