Atmospheric Measurement Techniques Discussions

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Comment on amt-2021-245

Anonymous Referee #2

Referee comment on "A simulation chamber for absorption spectroscopy in planetary atmospheres" by Marcel Snels et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2021-245-RC2, 2021

This paper is devoted to the presentation of a simulation chamber developed for spectroscopic measurements in wide range of temperature (from 100 K to 550 K) and pressure (from 10 mbar to 60 bar).The thermal stability of the chamber is sufficiently good for spectroscopic measurements of planetary applications. Tests were made by recording some CO_2 spectra using a White cell mounted inside the chamber and a Fourier Transform Spectrometer. The paper is original; the developed chamber will be certainly useful for wide pressure, temperature conditions spectroscopic studies as well as for the study of planetary atmosphere; it is well written. In my opinion, it can be accepted for publication in AMT.

My minor concern for the paper is the lack of discussions about the recorded spectra. When reading the abstract of the paper, I would expect to see some examples of new measurements for the temperature dependence of continua absorption. However, only two figures (Figs. 9 and 10) showing transmission spectra of CO_2 measured for small temperature and pressure ranges are presented with almost no discussion. I suggest that the authors add other examples of measurements, for larger range of pressure/temperature. It would be interesting to have comparison with spectra measured previously by other setups (eg Stefania et al, 2018; Hartmann et al, 1989) and discuss the improvement/drawback. The base line stability which is very important for continua absorption measurement has to be discussed. Signal to noise ratio should be added for each spectrum in Figs. 9, 10 (no noise is observed in the measurement of Fig. 9, in contrast with those in Fig. 10)