

## ***Interactive comment on “***

# **Design of a new multi-phase experimental simulation chamber for atmospheric photosmog, aerosol and cloud chemistry research” by J. Wang et al.**

### **Anonymous Referee #3**

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Comments for the paper: Design of a new multi-phase experimental simulation chamber for atmospheric photosmog, aerosol and cloud chemistry research J. Wang<sup>1</sup>, J.-F. Doussin<sup>1</sup>, S. Perrier<sup>1</sup>, E. Perraudin<sup>1,\*</sup>, Y. Katrib<sup>1</sup>, E. Pangui<sup>1</sup>, and B. Picquet-Varrault<sup>1</sup>

This paper describes the setup and the features of a new simulation chamber for the investigation of atmospheric processes in the gas phase and aerosol / cloud phase.

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The main feature, which distinguish this chamber from existing ones are the pressure and temperature variability together with an artificial light source.. The paper is well written and it describes first test measurements, which should show the versatile possible usage. I recommend this paper for publication in AMT after taking the following comments / questions into account:

1. As a simulation chamber of atmospheric processes it is important to be able to adjust the concentration of atmospheric trace constituents to their natural level, this is correctly pointed out in the paper) though the test experiments are carried out at very large concentrations given in table 5) which seem for most atmospheric situation unrealistic and some / most? of the analysis equipment seems to have not the necessary detection limit for real atmospheric concentration levels (like NO, NO<sub>2</sub>, FTIR ..). Some explanation and adjustment of the purpose of the new chamber should be given. 2. It seems, but it is not clearly stated in the interpretation of the test experiments, is the mass balance during the NO<sub>x</sub> and the propene experiments obeyed or what are the processes which consume substances (for example NO<sub>x</sub>) and how reproducible those processes are.

Because these are essential features for future investigations I would recommend to explain these features explicitly and in detail.

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