

## Response to Reviewer #1

### **General comments:**

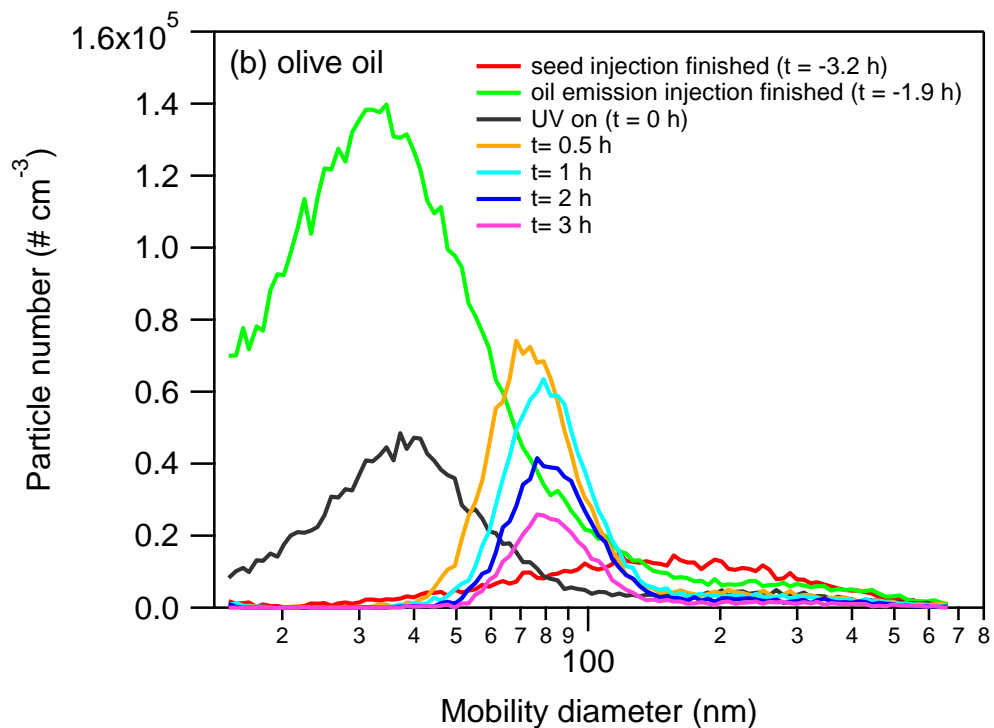
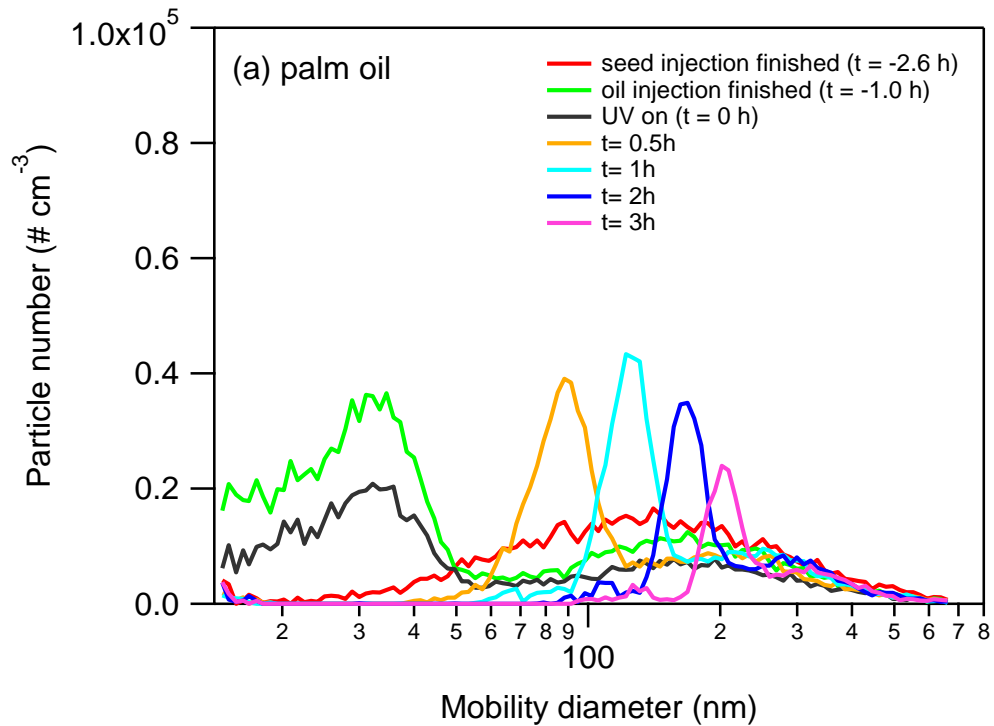
Generally, this manuscript is well-written and contain good scientific content. I would like to recommend for publication if the authors could address some comments as the following:

### **Specific comments:**

**Q1:** Line 142-144. The author mention about the use of SMPS, but I have seen any results from these instrument. It is maybe better if the authors could show the evolution of particle number size distribution during the experiment.

**R1:** The evolution of particle number size distribution for the palm and olive oil experiments is shown in the following figure (now Fig. S4 in the Supplement). It is clear that the particle numbers decreased rapidly due to wall loss before the lights were switched on and a rapid growth of particles was observed after SOA formation. It should be noted that this work focused on the separation and characterization of POA and SOA from heated cooking oils, hence the evolution of particle number size distribution was not discussed in details and only provided in the Supplement now. The following sentence was added to the revised manuscript.

“Similarly, the particle numbers decreased rapidly due to wall loss before the lights were switched on and the mode particle diameters grew rapidly after SOA formation (Fig. S4).” (Line 195-197).



**Q2:** Smog chamber experiments: I think the author should describe in more details about the experiment: How many experiments the authors conducted for each oil cooking? The time resolution of each instruments?

**R2:** One experiment was conducted for each oil. The time resolution of each instrument was added to the revised manuscript.

**Q3:** What about the uncertainty of the number H:C, O:C for SOA that the author

presented in the Fig.8?

R3: According to Canagaratna et al. (2015), the uncertainty in determining O:C and H:C elemental ratios using improved-ambient method was 28% and 13%, respectively.

The following sentence was added to the revised manuscript:

“The uncertainty in determining O:C and H:C ratios was 28% and 13%, respectively (Canagaratna et al., 2015).” (Line 377-378).

#### References:

Canagaratna, M. R., Jimenez, J. L., Kroll, J. H., Chen, Q., Kessler, S. H., Massoli, P., Hildebrandt Ruiz, L., Fortner, E., Williams, L. R., Wilson, K. R., Surratt, J. D., Donahue, N. M., Jayne, J. T., and Worsnop, D. R.: Elemental ratio measurements of organic compounds using aerosol mass spectrometry: characterization, improved calibration, and implications, *Atmos. Chem. Phys.*, 15, 253-272, <https://doi.org/10.5194/acp-15-253-2015>, 2015.