Review of the Manuscript amt-2021-209 titled "*Measurement of Black Carbon Emissions from Multiple Engine and Source Types using Laser-Induced Incandescence: Sensitivity to Laser Fluence*"

The paper investigates the response of the LII 300 instrument to different non-volatile particulate matter (nvPM) emitted by different sources and fuels. In particular, the effect of laser fluence on the nvPM mass concentration was investigated in order to identify a possible nvPM source to be used as calibration standard for the LII 300.
The study was conducted rigorously and the results constitute a valuable contribution in the development of calibration protocols for nvPM mass measurements with the LII 300.

As a general comment, the manuscript is well written and organized. The approach of using the fluence curve to identify on optimal fluence for LII measurements of different type of nvPM is a good practice for LII measurements but it is very often not used and discussed. Therefore, the present paper represents a very valuable study for the identification of a suitable LII calibration source and I recommend the manuscript for publication after few minor revisions.

Point to be improved:

The peak particle temperature presented in Fig. 5 is determined from the two-color pyrometry method and therefore assumptions on the optical properties of the particles have been made.
The fact that the temperature reached form the particles produced at the idle condition is lower to the one obtained by those emitted at the HPO conditions, might be due to the fact that the two type of particles have different optical properties.
The authors pointed out later in the text that differences in particle optical properties might cause a shift in the laser fluence curve, however I believe that a short discussion about the assumption on the optical properties would be valuable in completing the description of figure 5.

Specific comment
L314:for sake of clarity I suggest to add that the effective primary particle diameters are reported in Fig.4

Technical comment
L347: please remove "arbitrary"