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## ***Interactive comment on “Impact of aftertreatment devices on primary emissions and secondary organic aerosol formation potential from in-use diesel vehicles: results from smog chamber experiments” by R. Chirico et al.***

**Anonymous Referee #2**

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In this manuscript detailed results from a study of particle emissions from passenger car diesel engines are presented, with the focus on the primary and secondary organic aerosols. The results clearly show that to compare emission- and ambient air measurements, SOA formation has to be considered. This makes the study relevant and important. The experiments seem to be done carefully, however, there is a mismatch in data presented and conclusion drawn, it is hard to see what is really important. Here are some remarks, which could be considered in a revised version: A wall loss correction, using EC as metric for wall losses is used (equation 2). This may be a bit

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problematic, when applying it to SOA, because the correction assumes that the losses occur from the beginning whereas SOA is formed during the irradiation in the smog chamber. This will not influence the main message of the manuscript, but may lead to an error which should be mentioned. The remarks concerning the DOC-activity (lines 374-385) are a bit vague. Could perhaps the NO/NO<sub>x</sub> ratio be used to quantify the DOC efficiency? An impressive amount of data from the AMS measurements is given. A more profound data analysis and interpretation of these data would be wishful. For example: why is the DOC very efficient in removing SOA, but not POA. Table 1: units for BC, POA and SOA are missing Not much information is contained in Fig.11; this Fig. could be removed and replaced by one or two sentences in the text. The information in fig. 14 is mainly contained in Fig.13.

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