Comment on amt-2021-188

Anonymous Referee #3

Referee comment on "A semi-automated instrument for cellular oxidative potential evaluation (SCOPE) of water-soluble extracts of ambient particulate matter" by Sudheer Salana et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2021-188-RC2, 2021

The authors present a new semi-automated instrument to assess cellular oxidative potential (OP) when exposed to particulate matter, based on the DCFH-DA assay, which is capable of analysing six samples in only 5 hours. Furthermore, they investigate the intrinsic OP of a range of standards which are of interest with respect to ambient PM OP. The authors discuss the functionality of the method, as well as the operational procedure, calibration, limit of detection and reproducibility. This is a novel and interesting method for quantifying cellular OP representing a significant technical advancement , and certainly fits the scope of AMT. I recommend publication after considering the following minor comments:

Line 122 – It is unclear what the negative control actually is, please elaborate.

Line 161 – Why specifically was tertbutyl hydroperoxide chosen as the positive control as opposed to e.g. H_2O_2?

Line 166 – Is a DCFH-DA control performed alongside each 2 hour cell measurement, or before the batch 6 batches of cells are analysed? Is there any change in the DCFH-DA stock reactivity over the 5 hour period that could complicate quantification due to degradation etc?

Line 227 – should this be Figure 3?

Line 234 – mg/ml and μM units are used interchangeable through the manuscript,

consistent units would be beneficial for comparison.

Line 237 – what values were used for PM normalization, the extracted PM mass in mg/ml?

Figure 1 – This Figure could benefit from a more descriptive Figure caption to make it easier to follow the schematic.

Figure 6 – The three panels in the Figure should be labelled A-C.

Figure 6 – The error bars associated with Figures 6 A-C are in some cases quite large, could the authors comment on the source of this variability?