

Interactive comment on “Photooxidants from Brown Carbon and Other Chromophores in Illuminated Particle Extracts” by Richie Kaur et al.

Anonymous Referee #2

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General comments This manuscript presents results of measurements of traditional and novel oxidants in PM extracts of ambient samples and importantly illustrates the potential for brown carbon to increase oxidant concentrations through the formation of triplet states. While many uncertainties exist, this study lays the groundwork for future studies into the role of brown carbon in generating photooxidants. The study presents a novel technique for measuring oxidants that appears to hold even under diluted conditions of aerosol extracts, and the results and conclusions drawn are supported by the available data. The abstract is concise enough, though it may benefit from further shortening and the title reflects the work as presented. The large volume of supplementary information will allow future work to build on this publication.

This work may help address the measurement/model discrepancies between the O/C

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ratio of ambient SOA and that predicted by chemical models. The manuscript is well-presented with clear writing and legible figures. The work is also highly timely, and represents a step forward in our ability to understand the competing reactions taking place in aerosol and aerosol water (oxidant generation and loss). I have only two minor comments to improve the paper and one technical correction.

Specific comments

The abstract was a bit hard to get through, and could benefit from further shortening if the authors feel this is possible. For example, lines 34-38 may be omitted without loss of meaning.

Lines 448-451: It was difficult to follow the relationship between $k^{\text{SYR},3\text{C}^*}$ / $k^{\text{MeJA},3\text{C}^*}$, and $k^{\text{Probe},3\text{C}^*}$ ratio. Are these the same thing, but the latter is a general term? Please clarify.

Technical corrections

Line 545: missing “is” between “it also”

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-1258>, 2018.

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