

***Interactive comment on “Measurement report:
PM_{2.5}-bound nitrated aromatic compounds in
Xi’an, Northwest China: Seasonal variations and
contributions to optical properties of brown
carbon” by Wei Yuan et al.***

Anonymous Referee #2

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The paper reports the contribution of PM_{2.5}-bound nitrated aromatic compounds to the optical properties of brown carbon. Seasonal variations of concerned species were discussed as well. The topic is interesting and suitable for the journal, and the paper is well organized and understandable. However, some problems need further discussion. In conclusion, I suggest it for publication after the authors addressing the following specific points:

1. Line 63-65, considering that this paper mainly focuses on the optical properties of NACs, the introduction should include more previous research findings regarding the

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light absorption ability of NACs rather than just one sentence.

2. Line 66-67, could the author add a few more sentences on why NACs are harmful to human health?

3. Line 153, what are the uncertainties of the input species?

4. Line 154, The constrain of specific species in different sources will influence the Q value of the solution, thus the setting should be extremely cautious. After this kind of setting, is the %dQ value acceptable? Is the PMF solution still robust?

5. Line 160, any reason to choose a 72-h backward trajectory instead of 24-h or 48h?

6. Line 298-300, besides the high emissions of NACs in winter, are any other PM_{2.5} components that may contribute to the enhanced light absorption between 300-500nm during winter?

7. Section 3.4, based on the PMF results, the author may consider using multilinear regression analysis to investigate which source contributes most to the light absorption ability of NACs.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-703>, 2020.

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