

Atmos. Chem. Phys. Discuss., referee comment RC1  
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## Comment on acp-2021-29

Anonymous Referee #1

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Referee comment on "Formation kinetics and mechanisms of ozone and secondary organic aerosols from photochemical oxidation of different aromatic hydrocarbons: dependence on NO<sub>x</sub> and organic substituents" by Hao Luo et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-29-RC1>, 2021

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This work investigated the dependence of the formation kinetics and mechanism of ozone and secondary organic aerosols from photochemical oxidation of different aromatic hydrocarbons on the NO<sub>x</sub> and organic substituent. This paper is well organized. And the outcomes are very helpful to understand the photochemical transformation of AHs to secondary pollutants in the atmosphere. I suggested accepting and publishing this work after minor revision as follows.

Detailed comments:

1. The title may be changed to '... dependence on Nx and organic substituent'.
2. Line 70: NO can photolyze under UV irradiation with a wavelength of less than 420 nm. Please indicate the centre of the UV lamp wavelength applied in this work in the experimental section.
3. Line 80, 88-90: The detection limit of instruments should be provided. Line 123: Did the authors detect any oligomer products during the photochemical reaction in this work?
4. Line 160-165: As the authors suggested that reaction conditions, such as the VOC/NO<sub>x</sub> ratio, could influence the formation rate and mechanism of O<sub>3</sub>. What are the conditions of the experiments in previous studies?
5. Line 497: Please clarify the reaction time in Figure 5 (a).
6. Some spelling mistakes should be avoided in the revised version, such as "NO2" in Line 18.