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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Secondary Organic Aerosol from Atmospheric Photooxidation of Indole" *by* Julia Montoya et al.

Julia Montoya et al.

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See attached.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2017-270, 2017.

Response to Anonymous Referee #1

This manuscript describes a laboratory study on the photo-oxidation of indole unde
Secondary organic aerosols (SOA) were chemically characterized to determine the
chemistry in the formation of brown carbon (BrC) constituents. State of art analyt
resolution mass spectrometers) used is this study, provide novel and import
understanding of the formation of BrC in the atmosphere. In addition, the author
importance of their findings using a regional model and have highlighted that oxi
have an important role in SOA formation as well as BrC compounds. Since these r
accurate atmospheric chemistry models for the oxidation of BVOC, they are an im
the literature. While the results are interesting and are appropriate for Atmosp
Physics, few clarifications (c.f. comments below) should be provided and would
revisions.

1.1 Page 2. Lines 7-15: The authors should consider adding some information on the e
the atmosphere and compare them with the emissions of other BVOCs. In a
contribution of the human activities (e.g. agriculture, pharmaceutical application) in
of indole?

The literature review on the emission sources of indole that was included in the
manuscript was fairly comprehensive. However, we have added additional refe
emissions of indole from animal husbandry (see response 4.1 to reviewer #4).

1.2 Page 4. Line 5: Could the authors provide more information on the settings of the
time and mass resolutions?

We added information on the CTR-ToF-MS settings to the first paragraph in section

Secondary Organic Aerosol from Atmospheric Photooxidation of Indole

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Abstract. Indole is a heterocyclic compound emitted by various plant species under stressed conditions or during flowering events. The formation, optical properties, and chemical composition of secondary organic aerosol (SOA) formed by low-NO_x photooxidation of indole were investigated. The SOA yield (1.1 3 ± 0.3) was estimated from measuring the particle mass concentration with a scanning mobility particle sizer (SMPS) and correcting it for the wall loss effects. The high value of the SOA mass yield suggests that the majority ofmost oxidized indole products eventually end up in the particle phase. The SOA particles were collected on filters and analysed offline with UV-Vis spectrophotometry to measure the mass absorption coefficient (MAC) of the bulk sample. The samples were visibly brown and had MAC values of ~2 m^2/g at λ = 300 nm and ~0.5 m^2/g at λ = 400 nm, comparable to strongly absorbing brown carbon emitted from biomass burning. The