Review of Montoya et al. 2017:

Montoya et al. investigate secondary organic aerosol (SOA) formation from OH oxidation of indole. They clearly demonstrate that this typical heterocyclic nitrogen-containing compound is an effective SOA precursor with a yield of ~1. SOA from indole strongly absorb sunlight in the UV region, contributing to brown carbon in the atmosphere. This comprehensive study is important for understanding SOA formation, and the manuscript should be published in Atmospheric Chemistry and Physics (ACP), after considering the individual comments below.

(1) Introduction: Indole can also be emitted from animal husbandry (Feilberg et al., 2010; Yuan et al., 2017). Previous study has showed that animal feeding facilities in Los Angeles areas can be an important emission source for many pollutants (e.g. ammonia) (Nowak et al., 2012). The emission from animal feeding should be included in the discussion and in the chemical transport model as well.
(2) P8 L22: Please correct this citation
(3) P9 L16: Isatoic anhydride should be $C_8H_5O_3N$
(4) P8-P9: I would suggest moving Figure S2.3 and Figure S3 to the main text. These two graphs are really important to understand the oxidation chemistry of indole.
(5) P11: The reaction of NO_3 and indole is not investigated and considered here in this paper. Could you provide some discussion on this. What if you assume NO_3 oxidation of indole has a similar SOA yield as photooxidation in the chemical transport model?
(6) Figure 3: Do you consider the wall loss of semi-volatile organic compounds for the chamber experiments.
(7) Figure 5: Could you indicate the locations of the important secondary products in the mass spectra.
(8) Figure 7: Could you add reference lines for the labelled compound names.
(9) Figure 8: Could you provide a colored version of this graph.
(10) Figure 9: Could you combine (a) and (b) to provide a more combined mechanism for the reactions. Based on Atkinson et al. 1995, 2-formyl-formanilide is the large oxidation product of OH+indole. This information needs to reflect in Figure 9.

References:

Feilberg, A., Liu, D., Adamsen, A. P. S., Hansen, M. J., and Jonassen, K. E. N.: Odorant Emissions from Intensive Pig Production Measured by Online Proton-Transfer-Reaction Mass Spectrometry, Environmental Science & Technology, 44, 5894-5900, 10.1021/es100483s, 2010.

Nowak, J. B., Neuman, J. A., Bahreini, R., Middlebrook, A. M., Holloway, J. S., McKeen, S. A., Parrish, D. D., Ryerson, T. B., and Trainer, M.: Ammonia sources in the California South Coast Air Basin and their impact on ammonium nitrate formation, Geophysical Research Letters, 39, L07804, 10.1029/2012GL051197, 2012.

Yuan, B., Coggon, M. M., Koss, A. R., Warneke, C., Eilerman, S., Peischl, J., Aikiin, K. C., Ryerson, T. B., and de Gouw, J. A.: Emissions of volatile organic compounds (VOCs) from concentrated animal feeding operations (CAFOs): chemical compositions and separation of sources, Atmos. Chem. Phys., 17, 4945-4956, 10.5194/acp-17-4945-2017, 2017.