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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Composition and light absorption of nitroaromatic compounds in organic aerosols from laboratory biomass burning" *by* Mingjie Xie et al.

Anonymous Referee #2

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This manuscript present a decent study on the light absorption of biomass burning organic aerosols (BBOA) from controlled laboratory burning experiment, with particular focus on the nitroaromatic compounds (NACs), which has been identified as an important light absorbers of OA recently.

Overall this manuscript is well written with clear logic and good English. The only problem on the organization of the content is that the authors keep so many valuable information in the SI, making it impossible to understand their major conclusions without reading the SI. I suggest to move some of them (e.g., Table S2, Figure S2-S4 with some modifications) into the main articles.

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Discussion paper

Another major issue is the identification of NACs in section 3.2: the authors attempt to get some structural information of NACs through measuring their MS/MS spectra. However, those results should be interpreted more carefully. I don't see any references cited when they discuss the relationship of fragmentation pattern with possible molecular structures. E.g., at line 250-252, "the loss of CNO suggest the skeleton of benzisoxazole. . . . . ." similar issues can also be found at line 259-261, line 264, line 269-274. The authors may need to find some references investigating the MS/MS spectra of even-electron ions of known standard compounds with similar MS conditions (e.g., https://onlinelibrary.wiley.com/doi/pdf/10.1002/jms.1234) to make educated guess of the structures.

Other problems:

Abstract, line 48-50: this sentence is confusing. I understand that the authors want to say that the burn conditions affect significantly on NACs formation, but slightly on the bulk absorptive properties of BB BrC. However, it reads like the author compare burn condition and bulk adsorptive properties' influence on the formation of NACs.

Section 2.3, HPLC/DAD-MS analysis: the authors use the same analytical method developed in their previous study and described briefly in the current manuscript. It is better to describe the HPLC elution protocols as well so that we don't need to go to another paper if someone want to try the same method or make any comparisons or evaluations about the chromatograph separation.

Line 243-244: the retention time of compound showed in Figure S2b and Figure S3b don't match, with difference $\sim$0.3min, which is too large for a $\sim$20-min length LC chromatogram. If they are the same compound, not only their MS/MS spectra, but also their RTs should also match with each other. Any explanation?

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-1071, 2018.