

## ***Interactive comment on “Chemical composition, structures, and light absorption of N-containing aromatic compounds emitted from burning wood and charcoal in household cookstoves” by Mingjie Xie et al.***

**Anonymous Referee #2**

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This manuscript presents the analysis of N-containing aromatic compounds (NAC) in PM<sub>2.5</sub> samples collected from biomass-burning emissions of wood and charcoal in special household stoves. Prior to the HPLC analysis, the collected filters were spiked with one deuterated internal standard and extracted in methanol. The goal of this research was to estimate the contribution of BrC NAC species to the total absorption of PM<sub>2.5</sub> samples. The authors also discussed the differences (in OC, total NAC, individual NACs, etc.) between the hot-start and cold-start phases, and also between front and back filters. The authors acknowledged the limitations of this study (e.g., no

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gas-phase NACs were measured). This study is scientifically important, since NACs are not only light-absorbing compounds, but also are toxic organic species and they are still not well characterized. The manuscript is well organized and well written. I have a few major comments:

Major comments:

1. The filter samples were spiked with only one deuterated I.S. compound (4-nitrophenol-d<sub>4</sub>, C6), while the analyzed NACs (Fig 1) have different volatility levels (C7-C11). The author should check if there were potential losses of I.S., which is more volatile than the rest of the analyzed species, and if these losses led to a large overestimates of the concentrations of the analyzed compounds.
2. The manuscript contains a lot of abbreviations, which made it very hard to read (HS, CS, Qf, Qb, WBT, OMMs, SIM, etc.)
3. Table 1. The concentrations of the total NACs are strikingly high for the backup filters. I am wondering if some sort of unexpected breakthrough happened during the sampling (especially in the case of charcoal burning). Would it be possible that the BB emissions were quite hot during the sampling, which caused the evaporation from the front filter?

Some minor comments Line 130. U.S. EPA – please make sure abbreviations are explained in the text Line 131: “USA” should be added after “NC” Line 126, what is “Jiko Poa”? Should company name be added? Lines 152, 156 etc. Company name (+city, state, country) of material and instruments is missing.

In summary, I recommend this manuscript for publication after major revisions

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