

***Interactive comment on* “Characterization of non-photochemically formed oligomers from methylglyoxal: a pathway to produce secondary organic aerosol through cloud processing during night-time” by F. Yasmeen et al.**

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We thank anonymous referee #3 for constructive comments, which were highly appreciated and helped to improve the manuscript. The comments have been/will be addressed as outlined below:

General comments: This manuscript reports results from laboratory investigation of non-photochemical methylglyoxal oligomer formation through simulated cloud process-

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Interactive Discussion

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ing. The authors elucidated the structures of formed oligomers based on their fragmentation behaviors in electrospray-linear ion trap mass spectrometry (ESI-LIT-MS). This reviewer found the manuscript well written and will be of interest to the community. Most of the issues that this reviewer found are also raised by other reviewers and they are not repeated here. Nevertheless, there are a few additional technical comments that the authors may want to address in the revised manuscript.

Specific comments: p. 23001 line 2: It may be nitpicking but the pH value stated here (4.5-5) is not exactly the same as the previous page and page 23003 (pH 4-5) for higher pH solutions. Are there any reasons for this discrepancy?

Response: This was a typing mistake; the correction will be made.

p. 23002 line 15-25: This reviewer agrees with both the reviewers that these compounds more likely originate from nitrogen containing species rather than radical cations. Have the authors access to a high resolution mass spectrometer to confirm the molecular formulas for these compounds?

Response: As already indicated in our responses to the comments of referees 1 and 2, we have ruled out that the molecular ion species with even m/z values correspond to nitrogen-containing molecules. High-resolution mass spectrometry was not used but control experiments were performed in the absence of $\text{NH}_4(\text{SO}_4)_2$. A similar oligomerization pattern was observed using an identical ionic strength of other inorganic salts; hence, we are quite confident that nitrogen is not present in the oligomer molecules.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 22993, 2009.

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