Review of Chen et al.

Chen et al. report the online measurement of cycloalkanes using the PTRMS instrument equipped with the NO chemical ionization scheme. The authors utilized a selection of authentic cyclohexane standards to showcase the high sensitivity, long term stability, low humidity dependence, and low detection limit of this method for the real time characterization of cyclohexane. With this method, C10-C20 cycloalkanes were measured in the ambient air at an urban site of China as well as from vehicular emissions in a chassis dynamometer experiment. The obtained concentrations of cycloalkanes can be as much as over half of the levels of the corresponding linear/branched alkanes, suggesting an appreciable amount of this group of compounds in the urban air. Overall, the authors have demonstrated very carefully the utilization of NO+PTRMS for the rigorous quantification of cycloalkanes in the field and laboratory. Here are a few thoughts and suggestions I would like the author to consider prior to publication on AMT.

Page 2, line 25: change 'undergoes' to 'undergo'.

Line 28 (and throughout the main text): 'as the result' should be 'as a result'. Line 35: change 'demonstrates' to 'demonstrate'. Line 38: add 'the' before 'importance'.

Page 9, line 221-225: Was there any measurement of cycloalkanes by PTRMS with the use of the NO+ ionization scheme? If so, could the authors compare their detection limits and sensitivities with those reports? If not, I am just curious why there was no attempt of using NO+PTRMS to detect cycloalkanes. After all, this ionization scheme has been out there for a while.

Page 9, line 226: Are the authors expecting a significant impact of water vapor on the instrument sensitivity? Unlike the proton transfer reaction, water cluster ion formation is not supposed to be a big issue on the ionization efficiency, right?

Page 10, line 254: For bicyclic alkanes, compounds such as unsaturated carbonyls share the identical molecular formula at the unit mass resolution. Could the TOF-MS provide a decent separation of these bicyclic alkanes from other potential interferences?

Page 10, line 255: What is the typical fraction of cycloalkanes in the overall carbon mass of organic compounds detected by NO+PTRMS? Is there any reason for smaller cycloalkanes (e.g., C6-C10) being excluded from the measurements and discussions?

Page 11, line 276-281: Again, I would like to see more discussions on the selectivity of NO+PTRMS towards cycloalkanes. Are there any other compounds that have been routinely measured by this NO+ ionization scheme? If so, how high are the signals of cycloalkanes compared with those compounds?

Page 12, line 316: please specify the technique used in these earlier studies.

Page 25: It seems like the PTR sensitivities to all these cycloalkanes are pretty close. I was wondering if the obtained average sensitivity can be used to other compounds that are detected by this NO+ scheme. Do the authors have any idea what instrument parameters or compound properties may affect the sensitivity?

Page 34: Are the authors expecting a large loss of these big alkane molecules to the sampling line?