Response to the comments of Reviewer #2

The revised manuscript has carefully addressed my earlier comments. The paper quality has clearly improved. I have two additional comments regarding the revised manuscript:

Response: We thank Anonymous Referee #2 for the review and the positive evaluation of our manuscript. We have fully considered the comments and responded to these comments below in blue text. The revisions in the manuscript are highlighted in yellow color. The response and changes are listed below.

1. It is interesting that there was not enhancement in SOA mass under lower temperature. This is somewhat in contract with prior research. Some discussion is needed to explain the observation. It appears that under both conditions, the SOA mass reached maximum before the end of the experiments. So I do not think the reactivity is a major issue here. The authors should consider a few other aspects (i.e., chemistry, wall loss, etc.) in detailed discussion.

Thank you for the valuable comments and suggestions. The particle wall loss rates under both room and low temperature conditions had been measured. The wall loss rate under low temperature condition (0.0025 ~ 0.0028 min^{-1}) was larger than that under room temperature condition (0.0018 ~ 0.0020 min^{-1}). After wall loss correction, the SOA mass under low temperature condition was higher than that under room temperature condition. We have added the related statement in the main text and Table 1 (Page 10, Line 306-309; Page 17, Line 611-615)

2. In these experiments, after SOA mass reached maximum, there are 2-3 hours remaining but why did sample collection only last for 30 min? Longer collection could allow for better accuracy in the optical and compositional measurements.

The optical properties of the formed particles were analyzed after the mass

concentration of the aerosol reached the maximum. During the following one to two hours, the surface mean diameter and the extinction coefficients of the particles tended to be stable and would not change much. Then, we collected the particles on the film to analyze its chemical composition in the same period. The sample collection time was chosen to make sure the signal of the collected filter is much higher than the background of the blank filter in mass spectrometry. Another principle is less sample volume used in this process. If the membrane extraction time is too long, the chamber volume will decrease too much. So, a sampling time of 30 minutes is chosen. Thanks for the suggestion, and we would use longer collection time when the low mass concentration of particles are encountered in our future research work. We have added the related statement in the main text. (Page 4, Line 114-121)