

***Interactive comment on “ $\alpha$ -pinene photooxidation under controlled chemical conditions – Part 2: SOA yield and composition in low- and high-NO<sub>x</sub> environments” by N. C. Eddingsaas et al.***

**Anonymous Referee #2**

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This paper described a series of laboratory experiments exploring the photooxidation of alpha-pinene in the presence and absence of NO and acidic seed aerosol. The authors focus on particle phase composition which has enabled them to build a more complete understanding of the reaction mechanisms under the conditions investigated.

Interestingly the authors have chosen to explore the greater atmospheric relevance of alpha-pinene photooxidation, relative to the more oft studied, but far less atmospherically relevant alpha-pinene ozonolysis. Are there plans to include the more often studied systems in the future to enable a bridge between these new findings and prior work? Likewise are similar explorations of the even more important isoprene system to

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be explored? Both of these are logical extensions of this work and should be considered.

I applaud the investigation of the role of aerosol acidity on the reaction mechanisms, but am left wondering why the authors were not quantitative in their approach. Previously a sub-set of these authors published investigations into the role of aerosol acidity on the formation of SOA from isoprene, but herein have not included the measurements described by Surratt et al. 2007 (ES&T). This is most likely an oversight, and could easily be rectified through the inclusion of the H<sup>+</sup> in air measurements.

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