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Supplement of

Multi-generation chemical aging of α -pinene ozonolysis products by reactions with OH

Ningxin Wang et al.

Correspondence to: Spyros N. Pandis (spyros@chemeng.upatras.gr)

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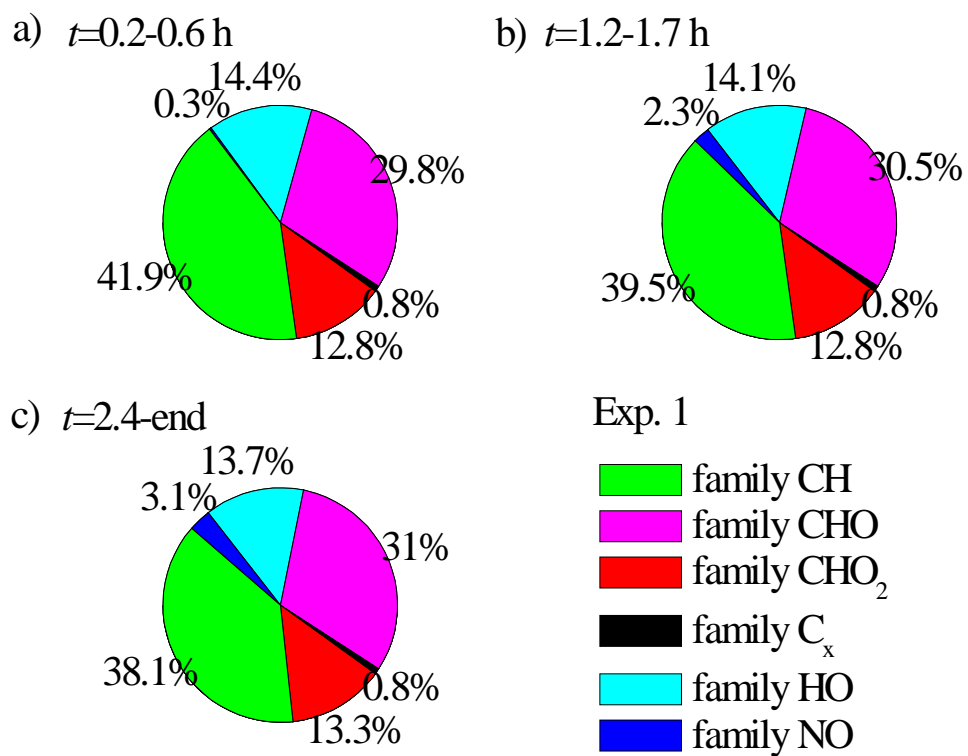


Figure S1: The SOA composition at the end of the corresponding stages of Exp. 1: **a)** α -pinene ozonolysis; **b)** first OH aging period; **c)** second OH aging period based on the high-resolution family analysis of AMS measurements. The periods of data used are also listed.

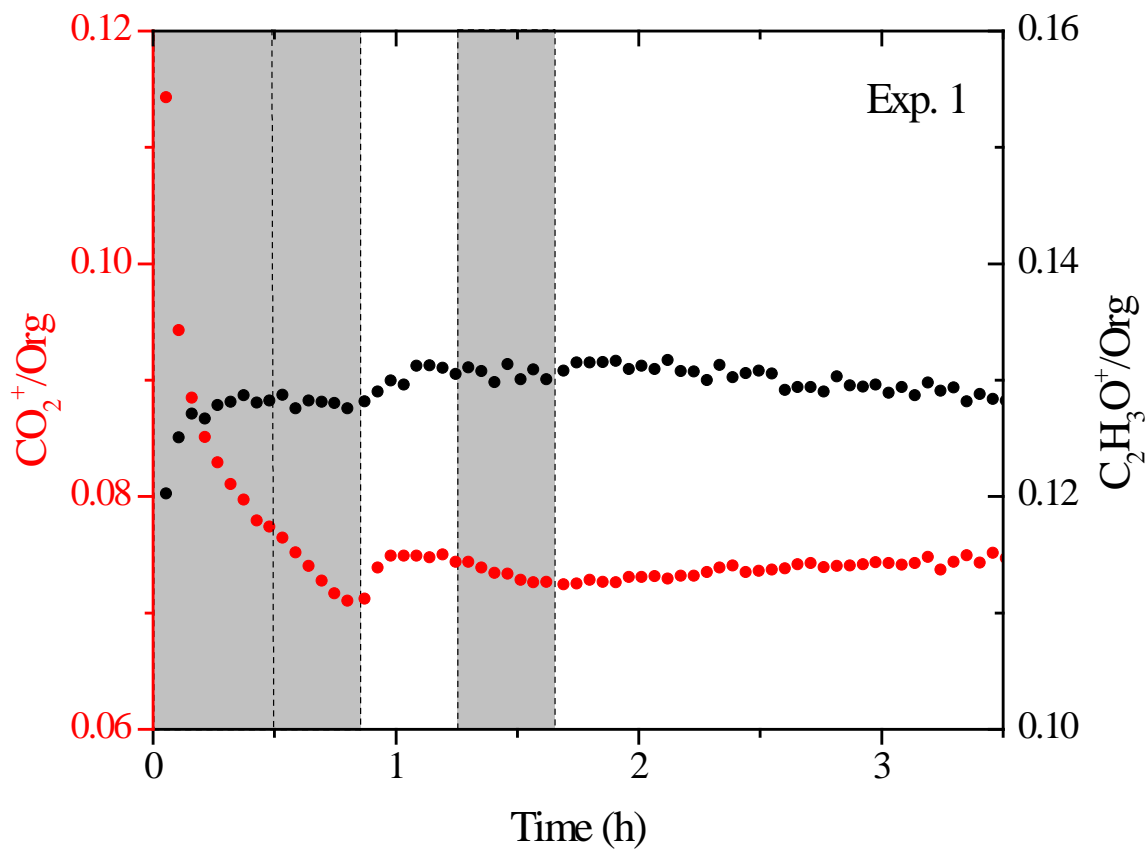


Figure S2: The **a**) CO_2^+/Org (f_{44}) (red symbols, left axis) and the **b**) $\text{C}_2\text{H}_3\text{O}^+/\text{Org}$ (f_{43}) (black symbols, right axis) during Exp. 1 based on the high resolution analysis of AMS measurements. The shaded areas indicate that the chamber was dark. The dashed lines mark the beginning and the end of the two HONO injections.

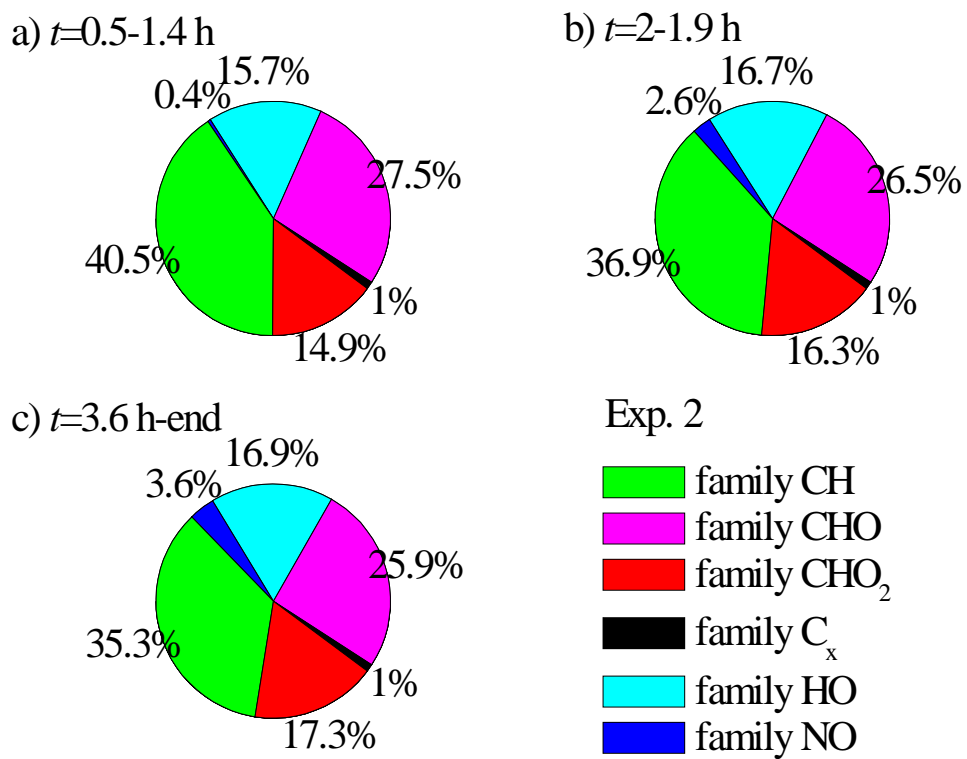


Figure S3: The SOA composition at the end of the corresponding stages of Exp. 2: **a)** α -pinene ozonolysis; **b)** first OH aging period; **c)** second OH aging period based on the high-resolution family analysis of AMS measurements. The periods of data used are also listed.

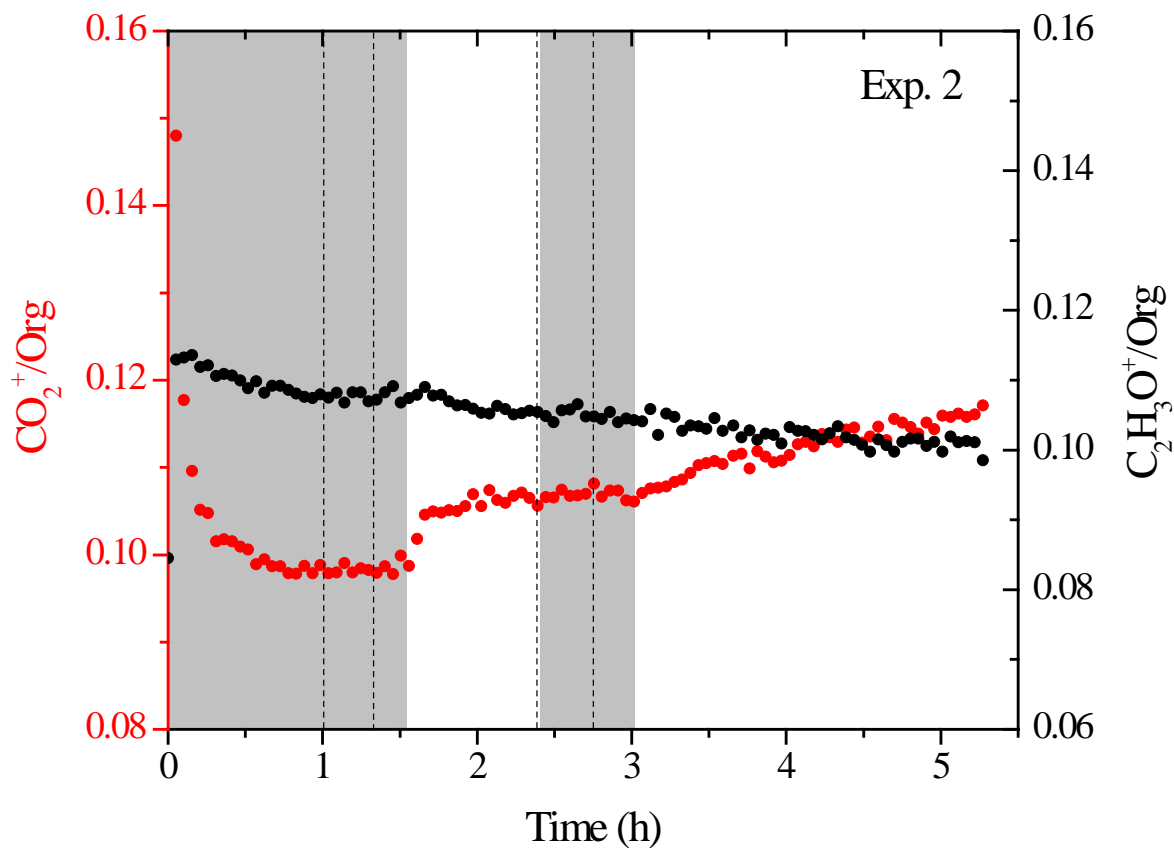


Figure S4: The **a)** CO₂⁺/Org (f_{44}) (red symbols, left axis) and the **b)** C₂H₃O⁺/Org (f_{43}) (black symbols, right axis) during Exp. 2 based on the high resolution analysis of AMS measurements. The shaded areas indicate that the chamber was dark. The dashed lines mark the beginning and the end of the two HONO injections.

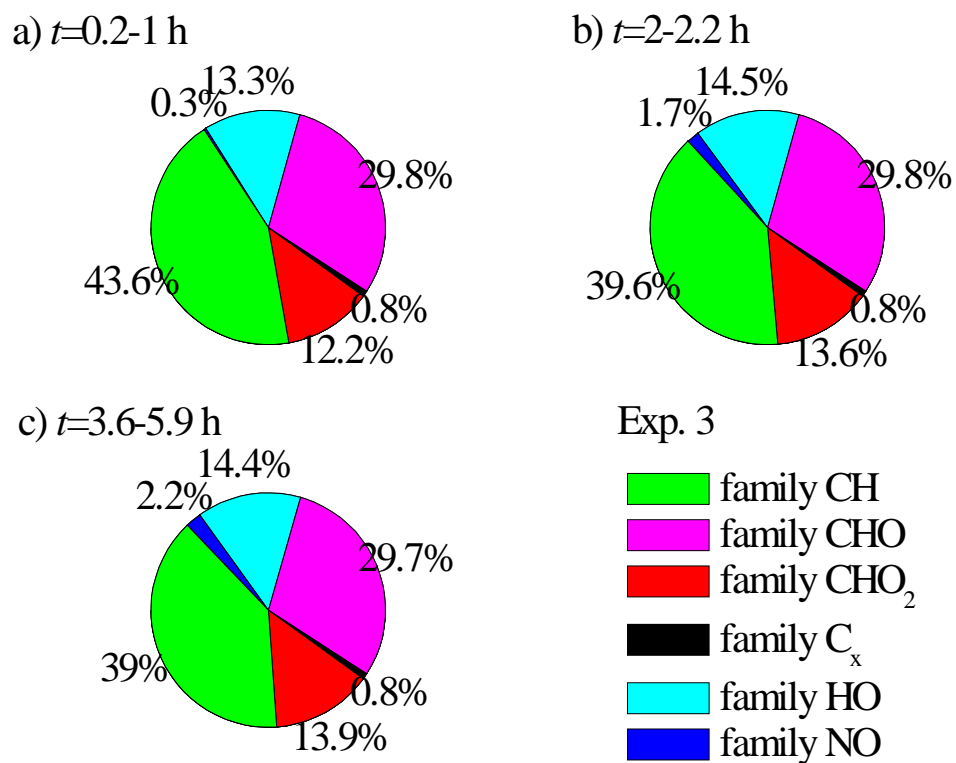


Figure S5: The SOA composition at the end of the corresponding stages of Exp. 3: **a)** α -pinene ozonolysis; **b)** first OH aging period; **c)** second OH aging period based on the high-resolution family analysis of AMS measurements. The periods of data used are also listed.

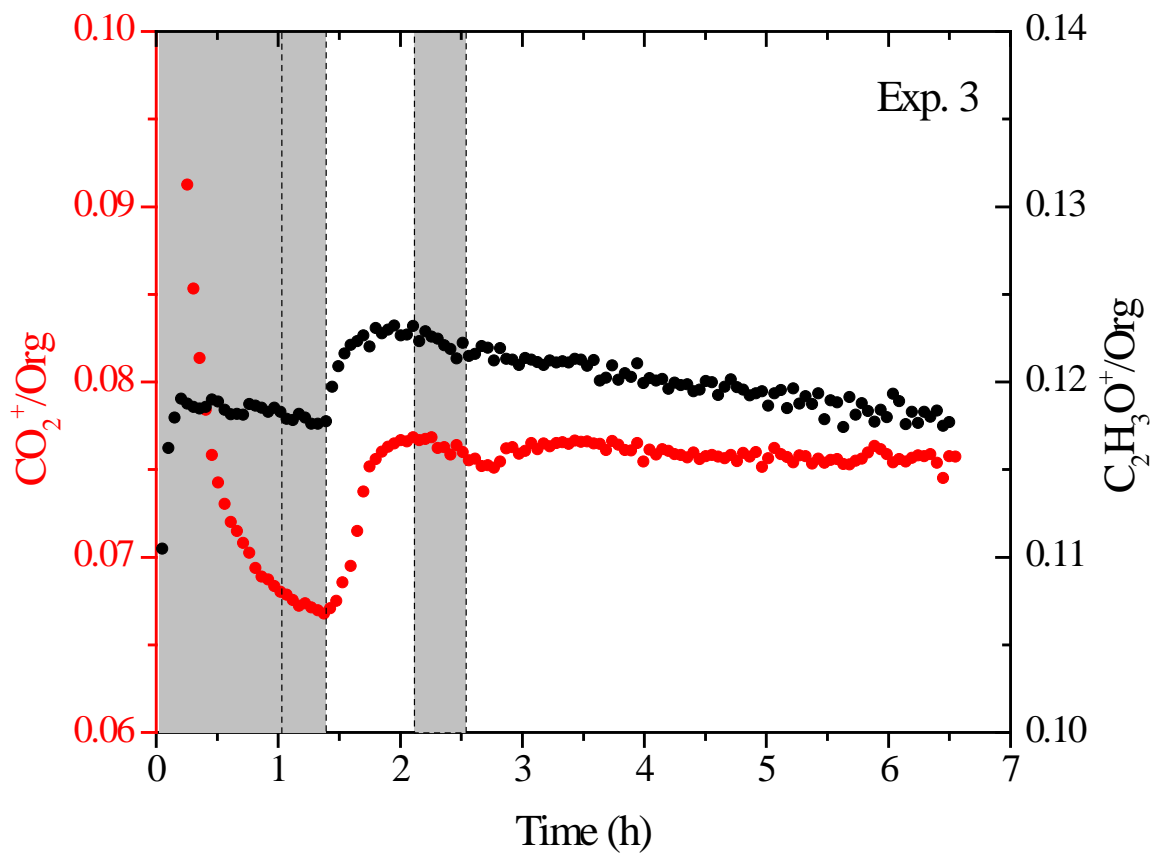


Figure S6: The **a**) CO₂⁺/Org (f_{44}) (red symbols, left axis) and the **b**) C₂H₃O⁺/Org (f_{43}) (black symbols, right axis) during Exp. 3 based on the high resolution analysis of AMS measurements. The shaded areas indicate that the chamber was dark. The dashed lines mark the beginning and the end of the two HONO injections.

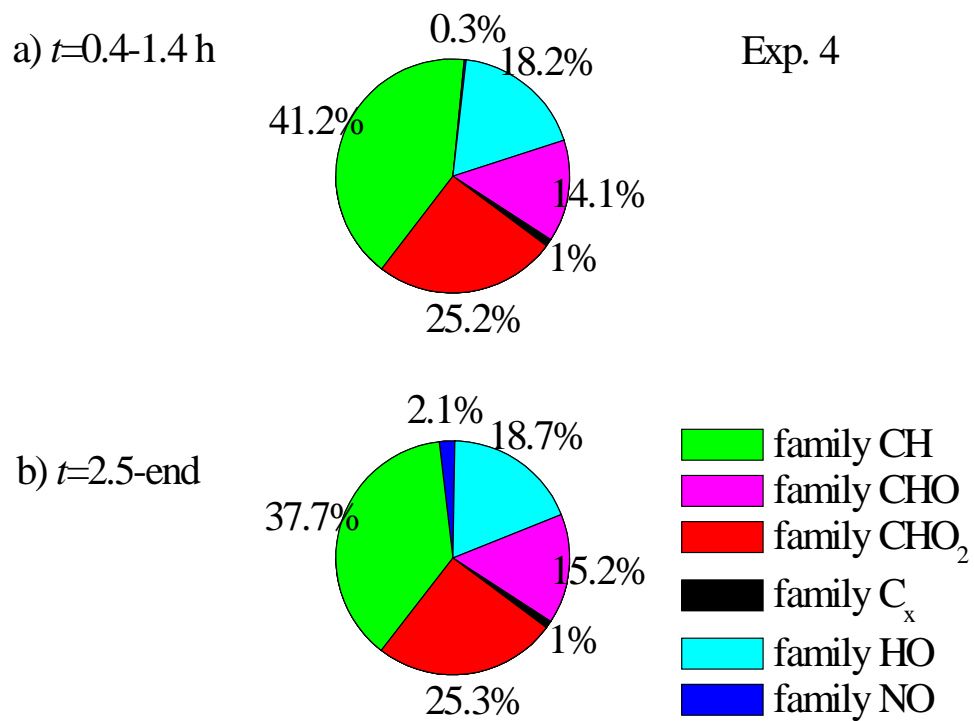


Figure S7: The SOA composition at the end of the corresponding stages of Exp. 4: **a)** α -pinene ozonolysis; **b)** first OH aging period; **c)** second OH aging period based on the high-resolution family analysis of AMS measurements. The periods of data used are also listed.

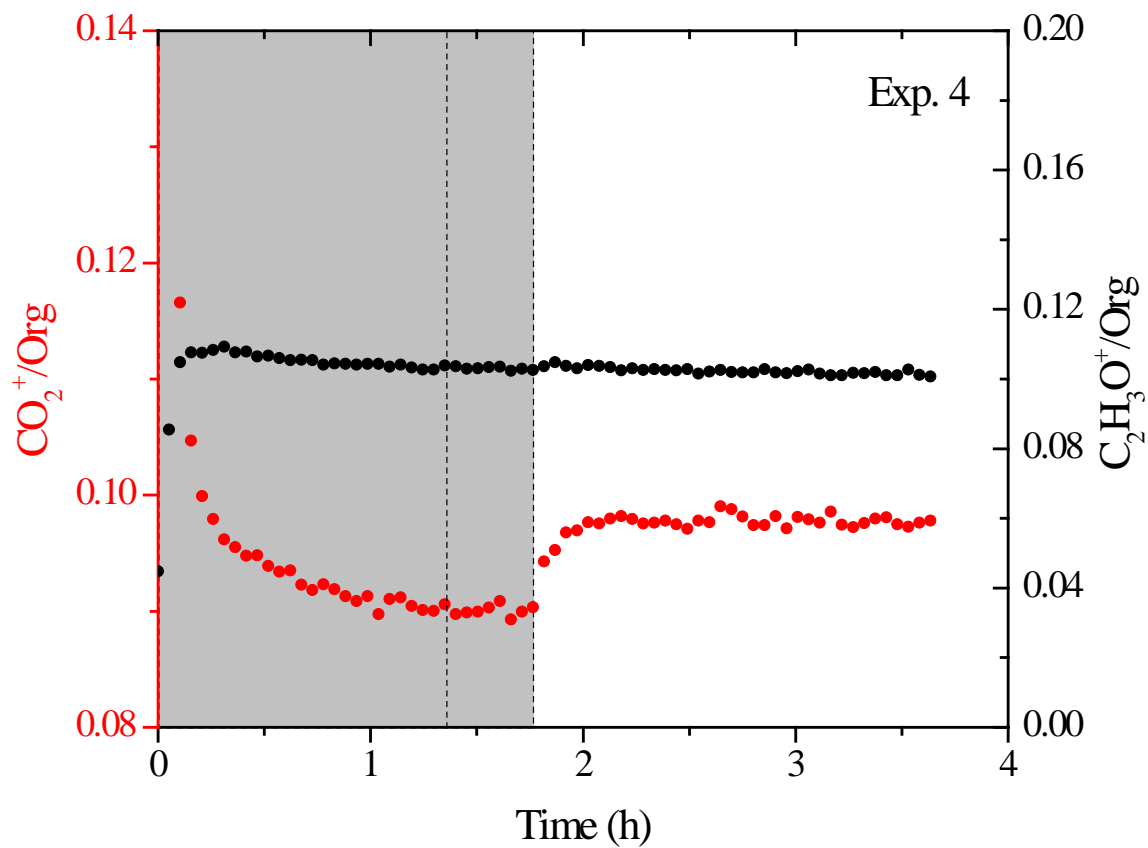


Figure S8: The **a**) CO_2^+/Org (f_{44}) (red symbols, left axis) and the **b**) $\text{C}_2\text{H}_3\text{O}^+/\text{Org}$ (f_{43}) (black symbols, right axis) during Exp. 4 based on the high resolution analysis of AMS measurements. The shaded areas indicate that the chamber was dark. The dashed lines mark the beginning and the end of the HONO injection.

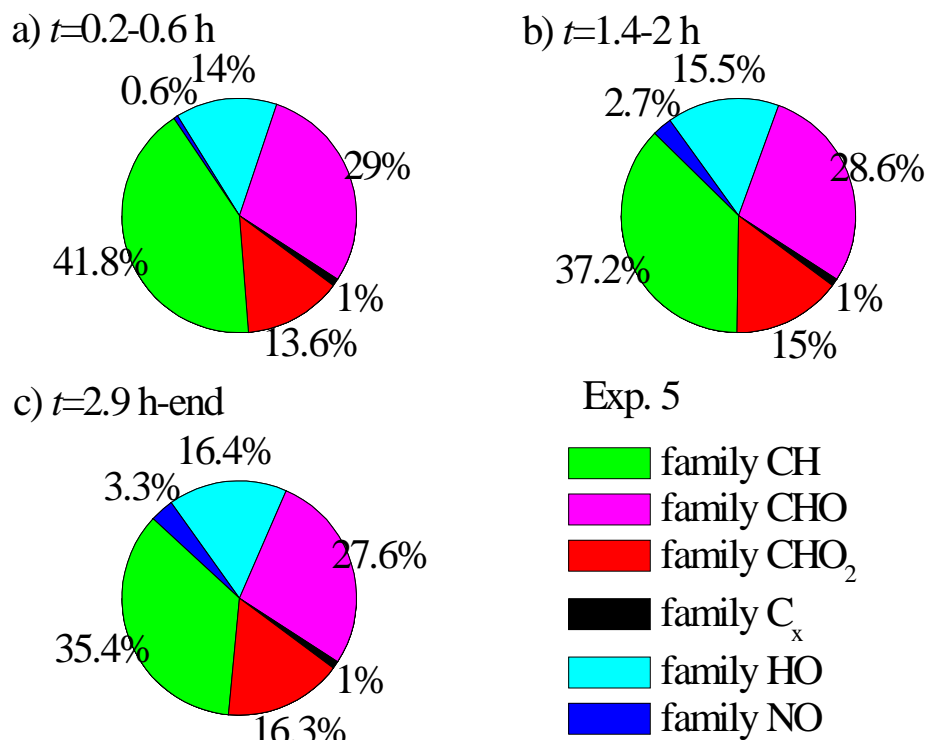


Figure S9: The SOA composition at the end of the corresponding stages of Exp. 5: **a)** α -pinene ozonolysis; **b)** first OH aging period; **c)** second OH aging period based on the high-resolution family analysis of AMS measurements. The periods of data used are also listed.

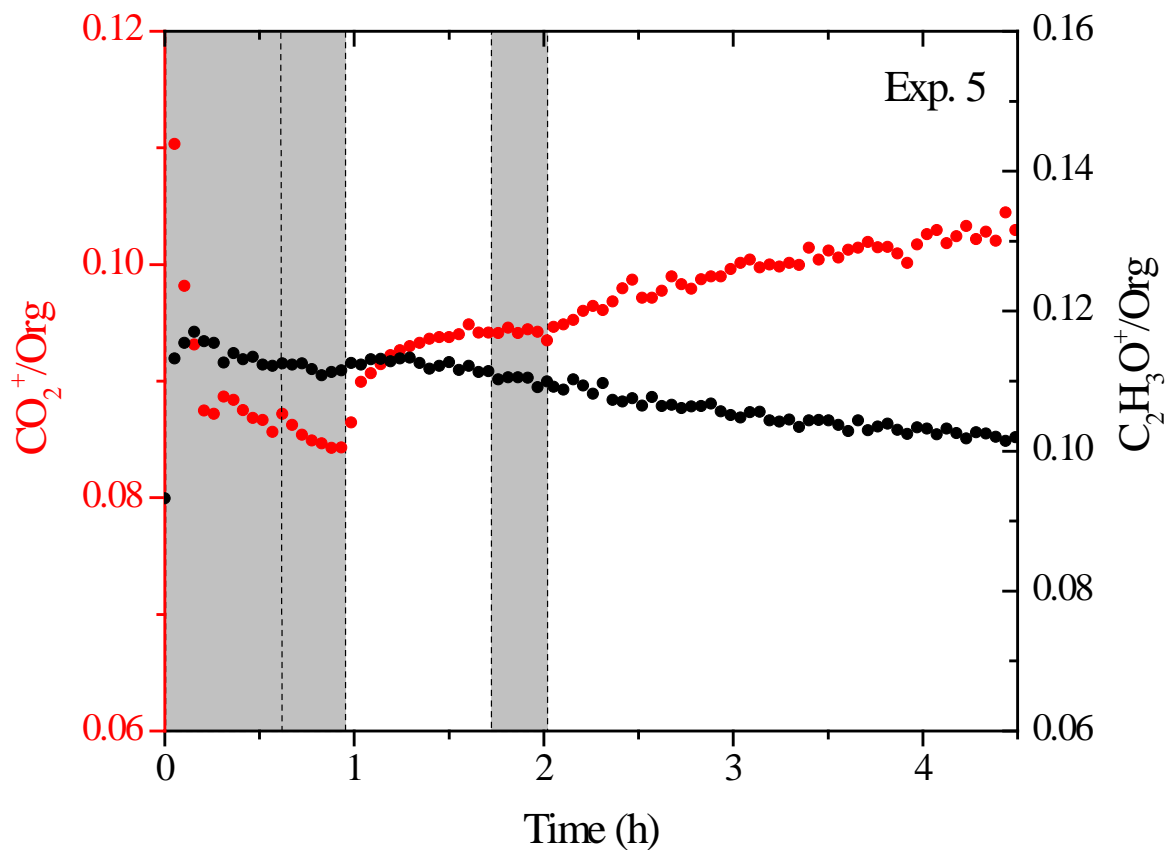


Figure S10: The **a**) CO₂⁺/Org (f_{44}) (red symbols, left axis) and the **b**) C₂H₃O⁺/Org (f_{43}) (black symbols, right axis) during Exp. 5 based on the high resolution analysis of AMS measurements. The shaded areas indicate that the chamber was dark. The dashed lines mark the beginning and the end of the two HONO injections.