Electronic Supplementary Information (ESI)

Joint impacts of atmospheric SO_2 and NH_3 on the formation of nanoparticles from photooxidation of a typical biomass burning compound

*Xiaotong Jiang, Chen Lv, Bo You, Zhiyi Liu, Xinfeng Wang, Lin Du**

Environment Research Institute, Shandong University, Qingdao, 266237, China

*Correspondence author: Lin Du (lindu@sdu.edu.cn)

Contents of this file

Number of pages: 8

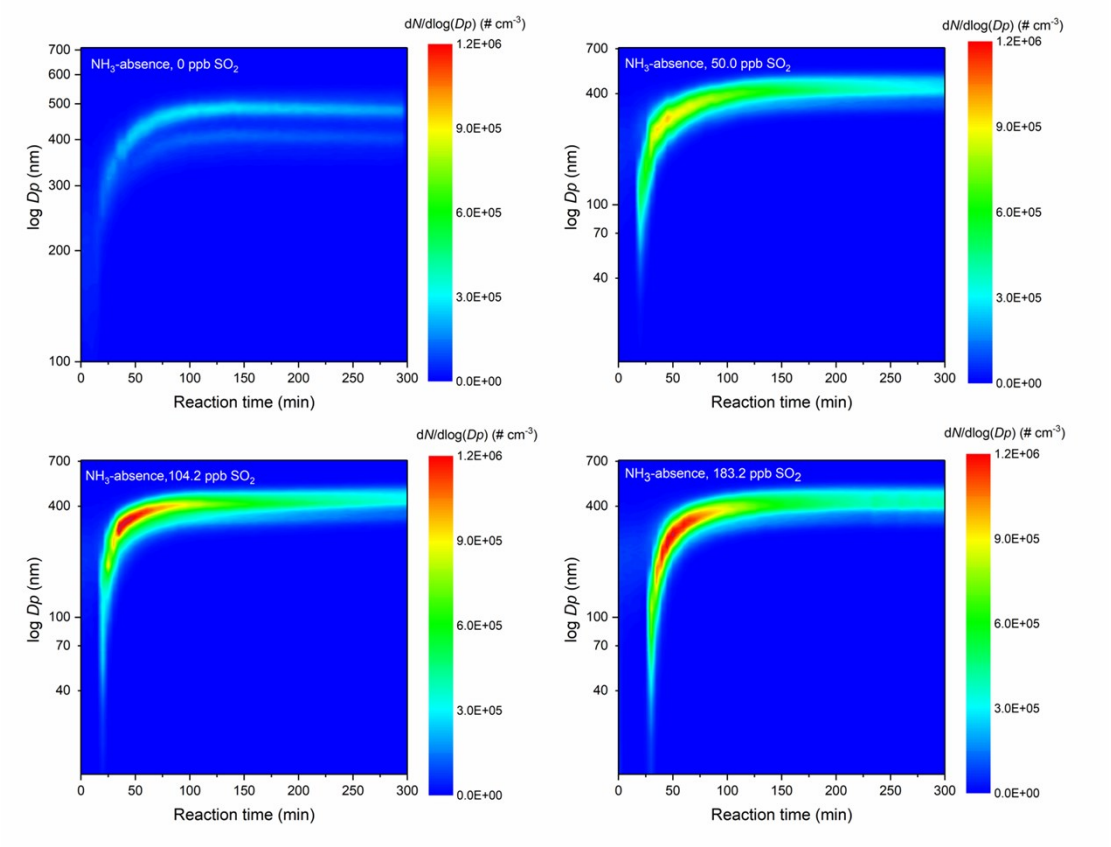


Figure S1. Time evolution of the suspended particle number size distribution during the 3-MF photooxidation under various SO_2 conditions in the presence of seed particles under NH_3-presence conditions.

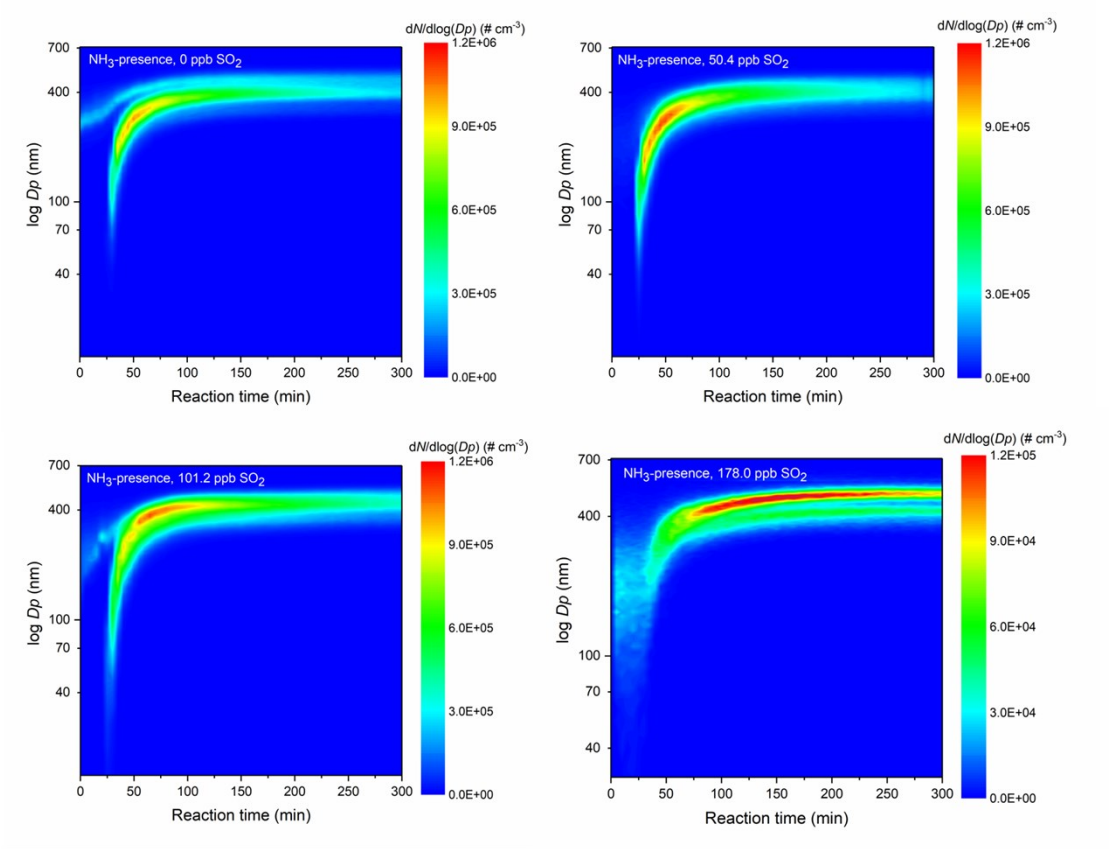


Figure S2. Time evolution of the suspended particle number size distribution during the 3-MF photooxidation under various SO_2 conditions in the presence of NH_3 and $(NH_4)_2SO_4$ seeds.

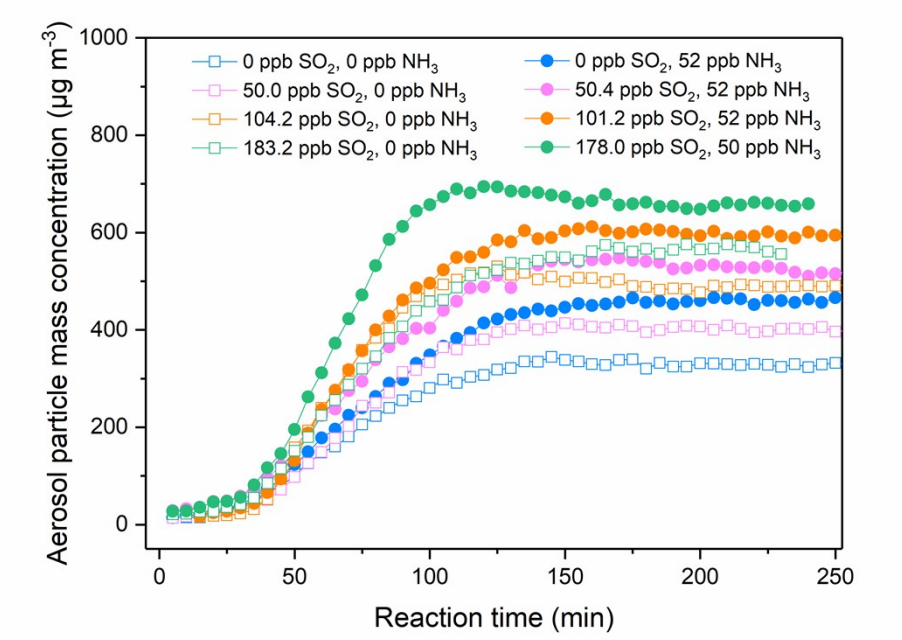


Figure S3. Secondary aerosol formation with different SO_2 concentrations in the 3-MF photooxidation under NH_3-absence (square) and NH_3-presence (solid circle) conditions.

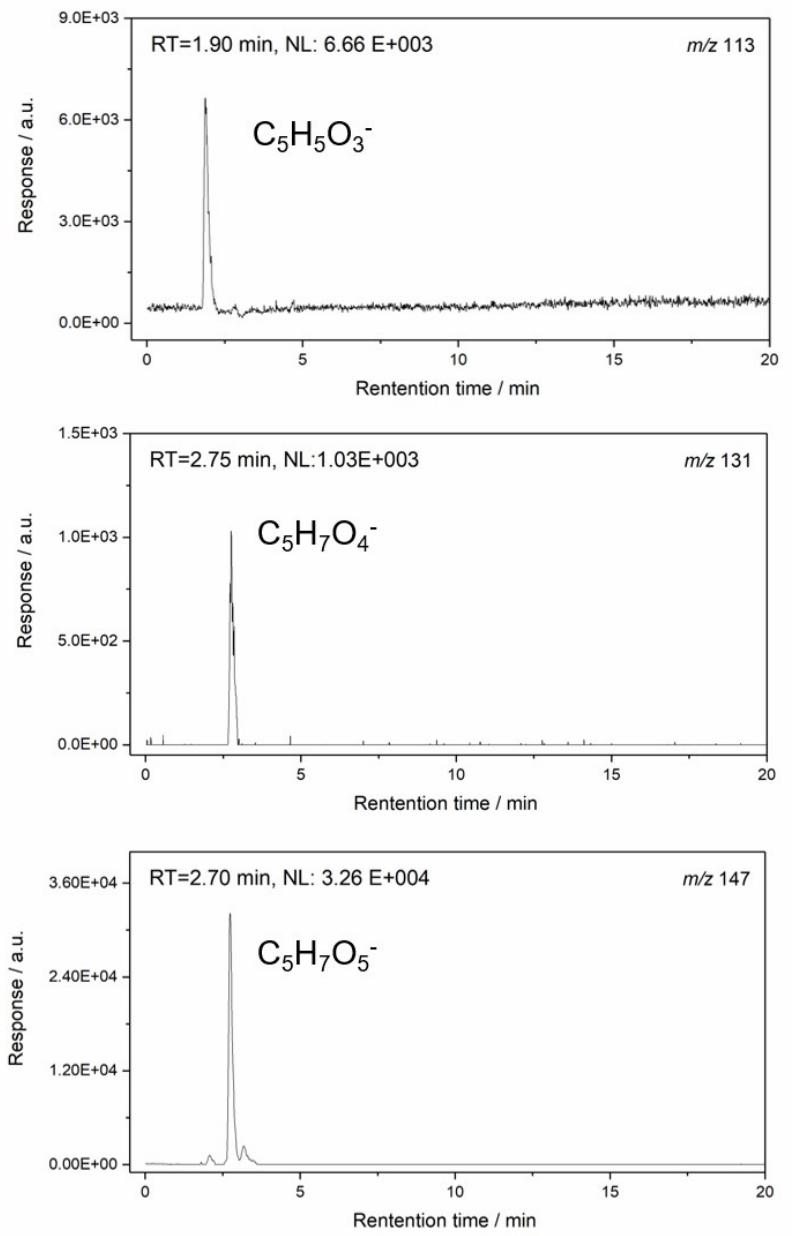


Figure S4. Extracted ion chromatographic profiles for aerosol products identified in experiments MF/SA using HR-MS.

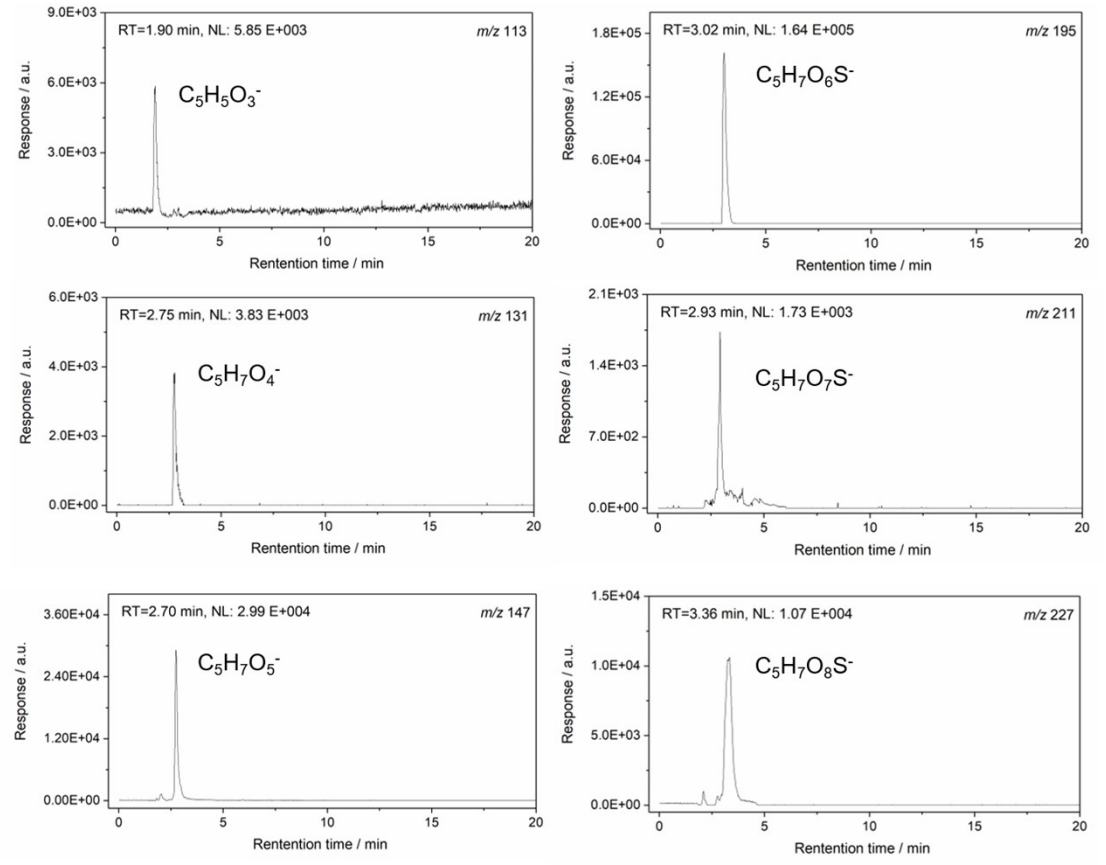


Figure S5. Extracted ion chromatographic profiles for aerosol products identified in experiments MF/SA/S using HR-MS.

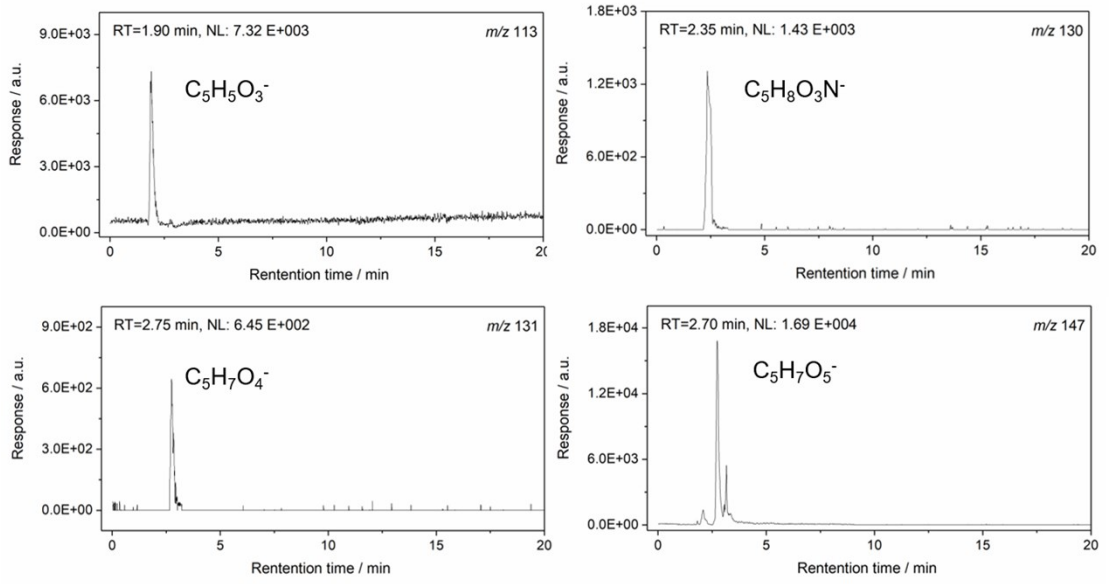


Figure S6. Extracted ion chromatographic profiles for aerosol products identified in experiments MF/SA/A using HR-MS.

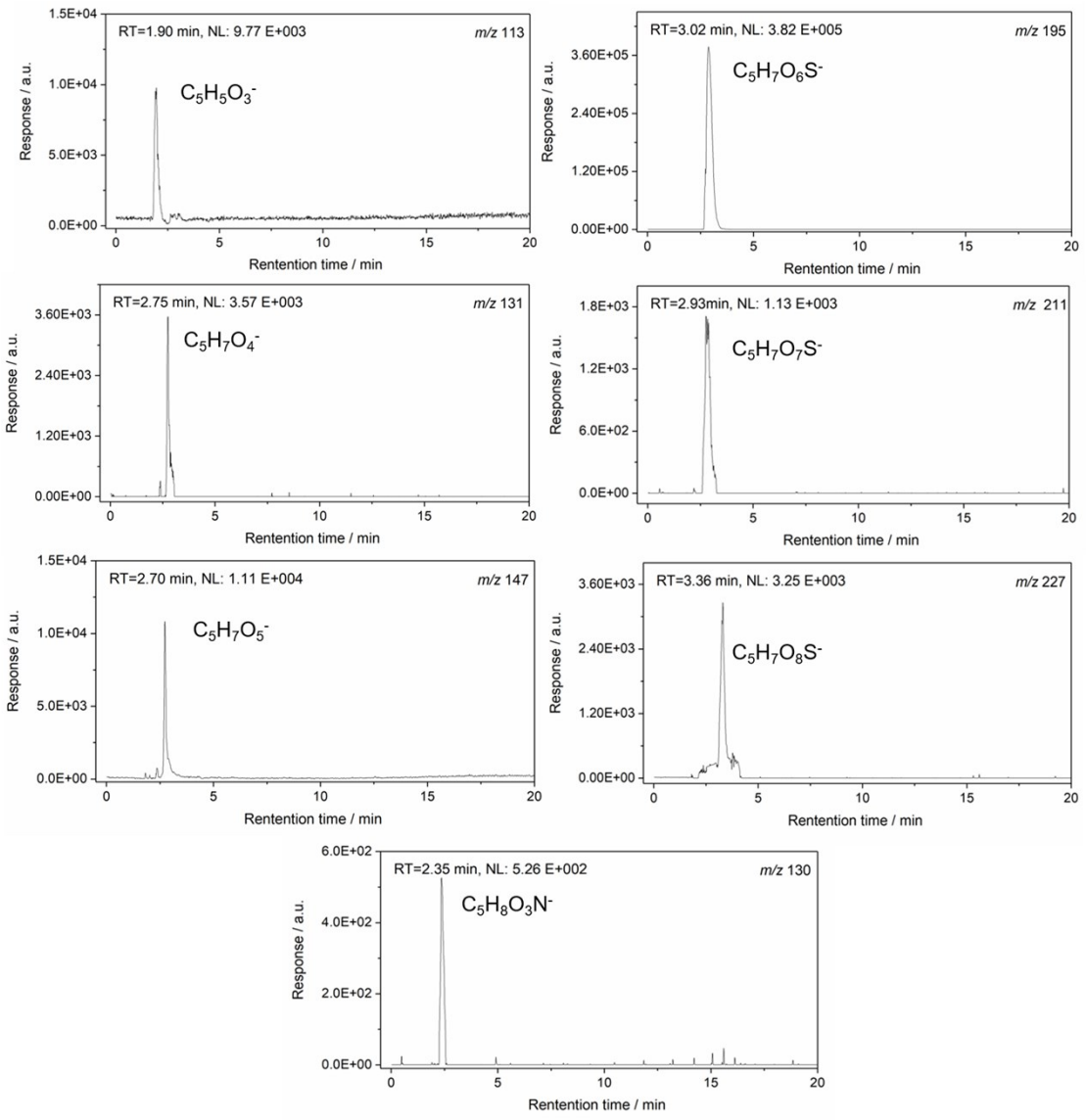
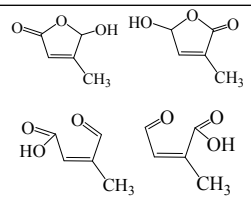
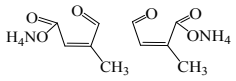
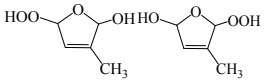
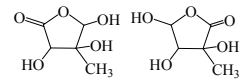
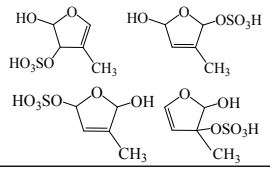
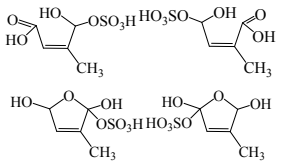


Figure S7. Extracted ion chromatographic profiles for aerosol products identified in experiments MF/SA/S/A using HR-MS.

Table S1 Parameters used for the calculation of SOA yield.

Experiment No.	Δ[3-MF] (μg m^{-3})	TSP (μg m^{-3})	NH_4^+ (μg m^{-3})	SO_4^{2-} (μg m^{-3})
MF/SA	2894	312.63	0	0
MF/SA/S	2967	410.41	0	15.3
MF/SA/A	3357	499.63	8.5	0
MF/SA/S/A	3418	567.93	12.4	28.4
NH_3-absence	2942	473.3	0	0
	3017	536.6	0	18.6
	3562	662.65	0	22.9
	3438	687.54	0	27.2
NH_3-presence	1983	158.72	13.5	0
	2054	193.98	16.7	20.4
	1676	214.03	23.6	29.7
	1835	297.38	25.8	35.1

Table S2. Ion peaks and ion formula as well as the proposed structures observed in UHPLC-ESI-ISQ EC-MS.

Ion mode	No.	Mass (*m/z*)	Ion formula	Proposed structure
Negative ion mode	1	113	$C_5H_5O_3^-$	
	2	130	$C_5H_8O_3N^-$	
	3	131	$C_5H_7O_4^-$	
	4	147	$C_5H_7O_5^-$	
	5	195	$C_5H_7O_6S^-$	
	6	211	$C_5H_7O_7S^-$	
	7	227	$C_5H_7O_8S^-$