Secondary organic aerosol formation from photooxidation of furan: effects of NOx level and humidity

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Supplementary material

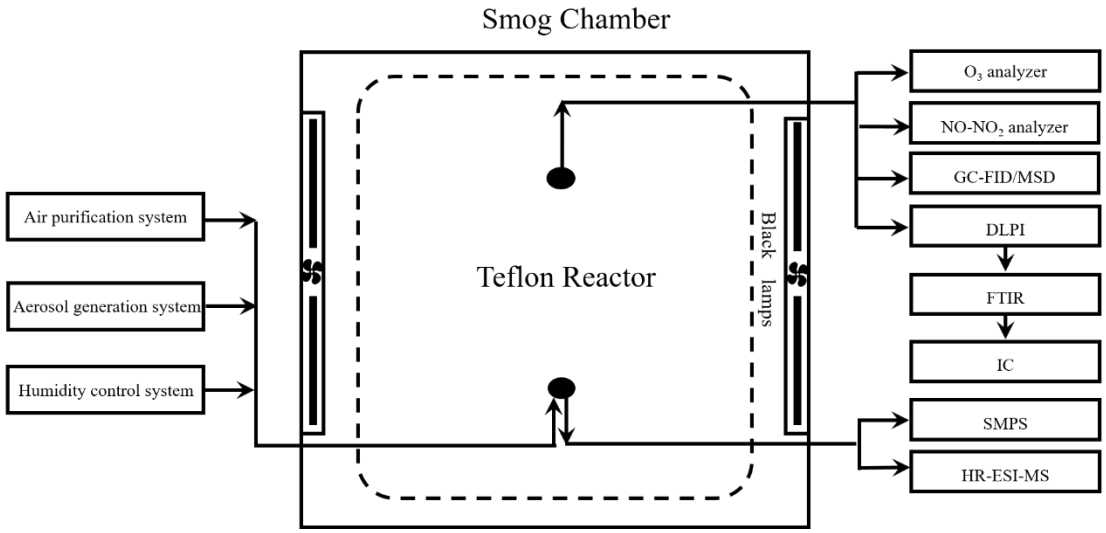
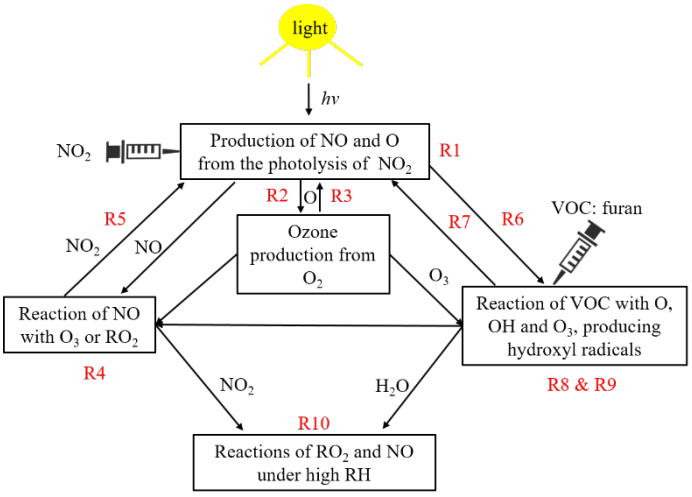


Figure S1: Schematic of the experimental set-up employed in this study.



$NO_2 + h\nu \rightarrow NO + O$ (R1)

$O + O_2 \rightarrow O_3$ (R2)

$O_3 + h\nu \rightarrow O(^1D) + O_2$ (R3)

$NO + O_3 \rightarrow NO_2 + O_2$ (R4)

$NO_2 + h\nu \rightarrow NO + O$ (R5)

$O(1D) + HO_2 \rightarrow 2OH$ (R6)

$NO + RO_2 \rightarrow NO_2 + RO$ (R7)

$RO + O_2 \rightarrow HO_2 + R'O$ (R8)

$HO_2 + NO \rightarrow NO_2 + OH$ (R9)

$RO_2 + NO \rightarrow RONO_2 + RNO_2$ (R10)

Figure S2: Major gas phase inorganic chemical reactions during the experiments.

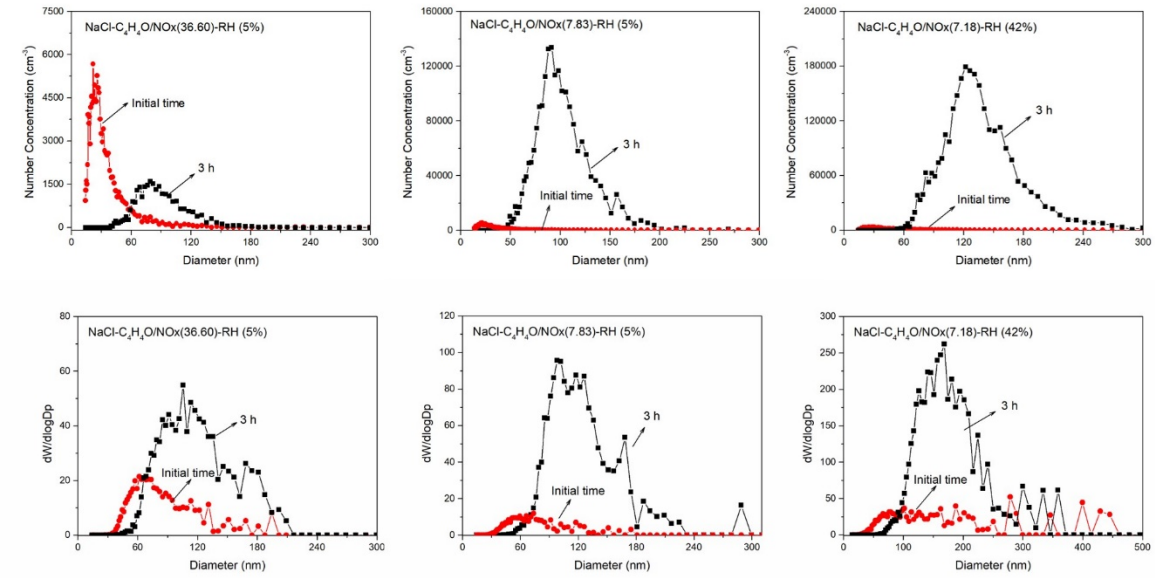


Figure S3: Variations of particle size distribution of number and mass concentrations in the beginning of the experiment and at the 3-h time point under different experimental conditions. Since the particle wall loss has a weak RH dependence in our chamber, a mean value 4.7×10^{-5} s^{-1} wall loss correction was used. A density of 1.4 g m^{-3} was used in SMPS.

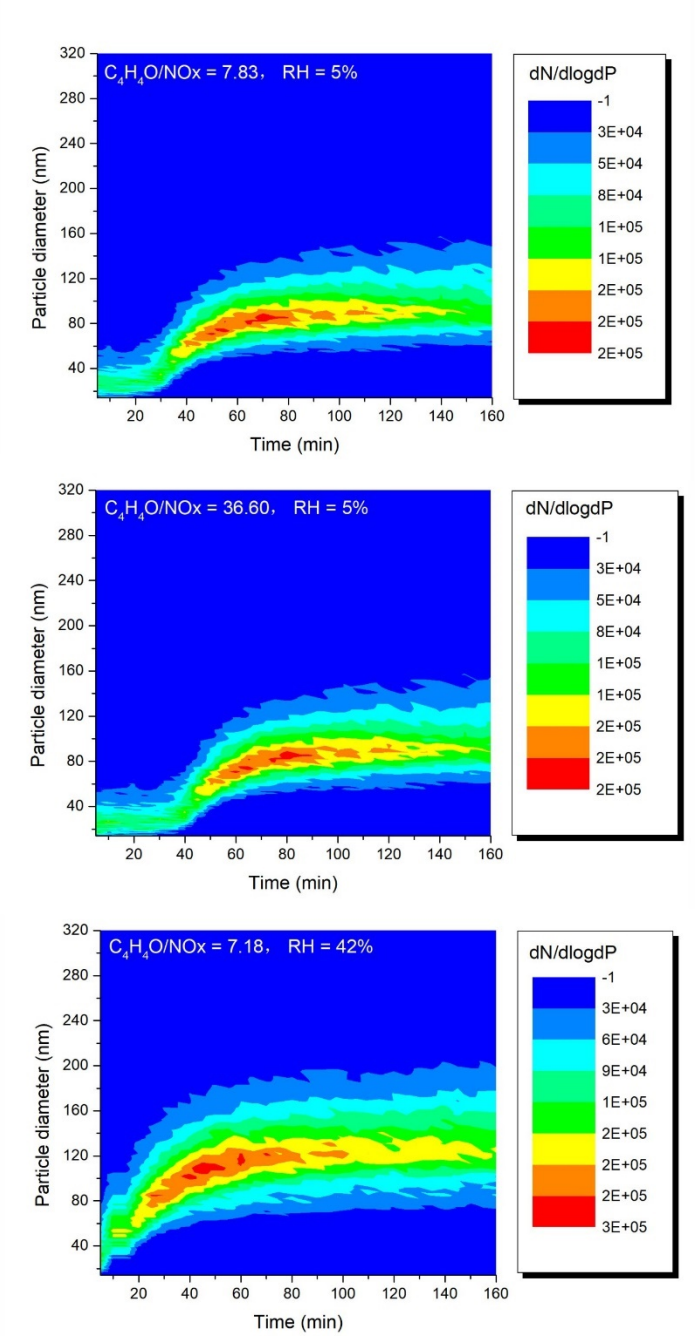


Figure S4: Contour plots of SOA bursts formed under different experimental conditions.

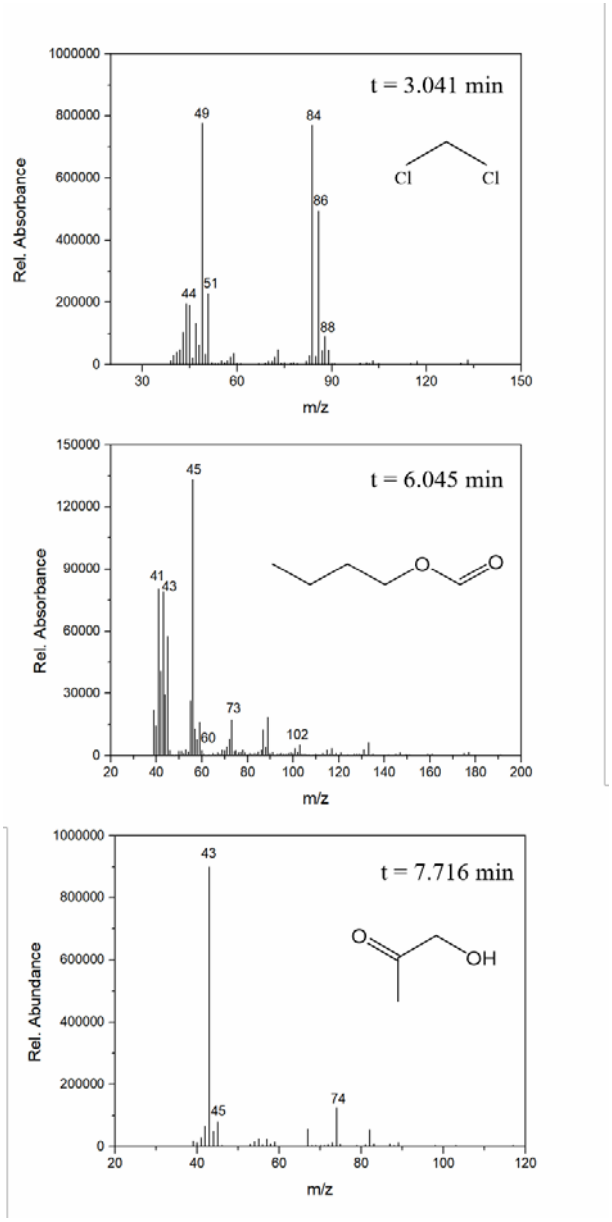


Figure S5: GC-MS spectra of gas phase products formed from the photooxidation of furan.

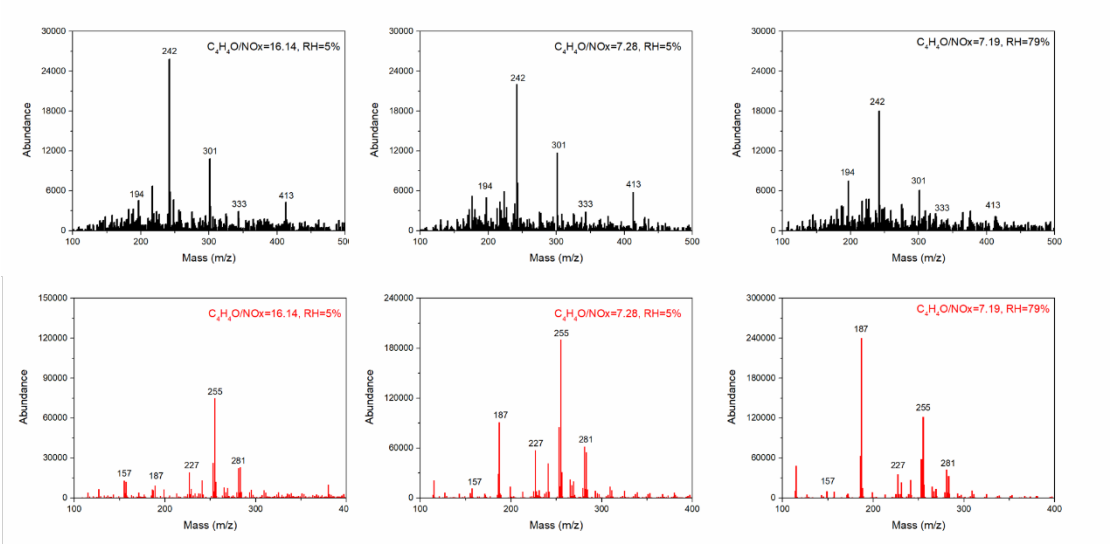


Figure S6: Background-subtracting mass spectra of SOA in both positive ion mode (black) and negative ion mode (red) from the photooxidation of furan under different experimental conditions.