

# **Secondary organic aerosol formation from photooxidation of furan: effects of NO<sub>x</sub> and humidity**

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**Supplementary material**

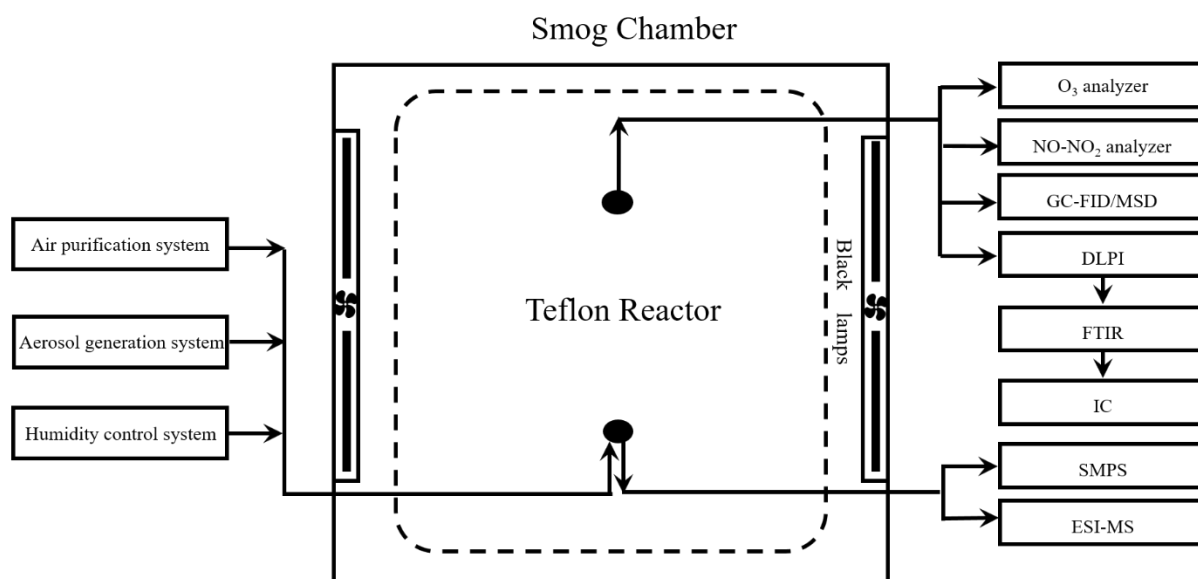


Figure S1: Schematic of the experimental set-up employed in this study.

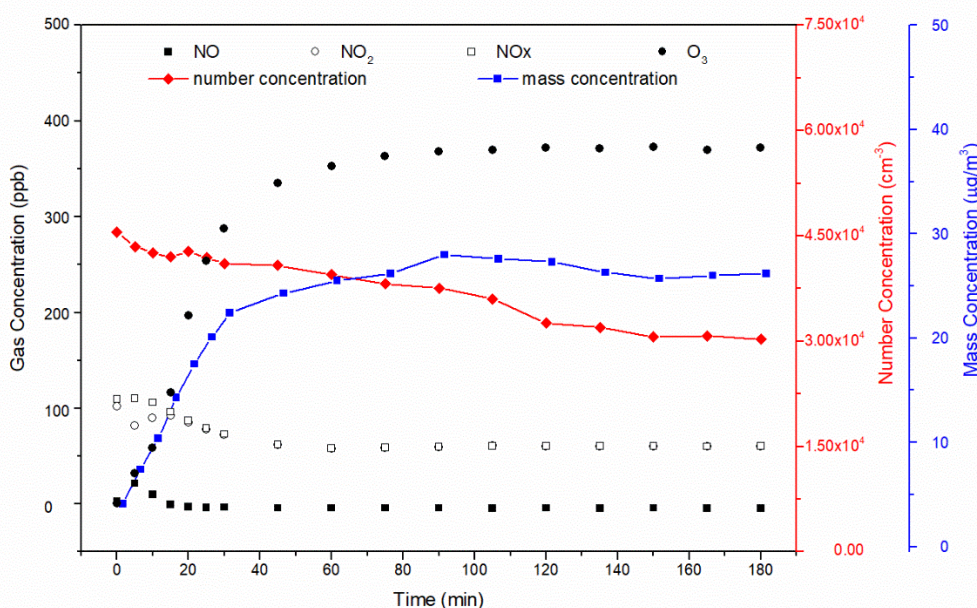


Figure S2: Profile of the gas-phase concentrations of reactants (NO, NO<sub>2</sub>, NO<sub>x</sub> and O<sub>3</sub>) and particle number/mass concentrations (corrected with wall loss) over time. The C<sub>4</sub>H<sub>4</sub>O/NO<sub>x</sub> ratio is 7.9 and RH = 23%. Since the particle wall loss has a weak RH dependence in our chamber, a mean value of  $4.7 \times 10^{-5} \text{ s}^{-1}$  was used for wall loss correction. A density of  $1.4 \text{ g cm}^{-3}$  was used in the SMPS. (Jia and Xu, 2018; Kostenidou et al., 2007)

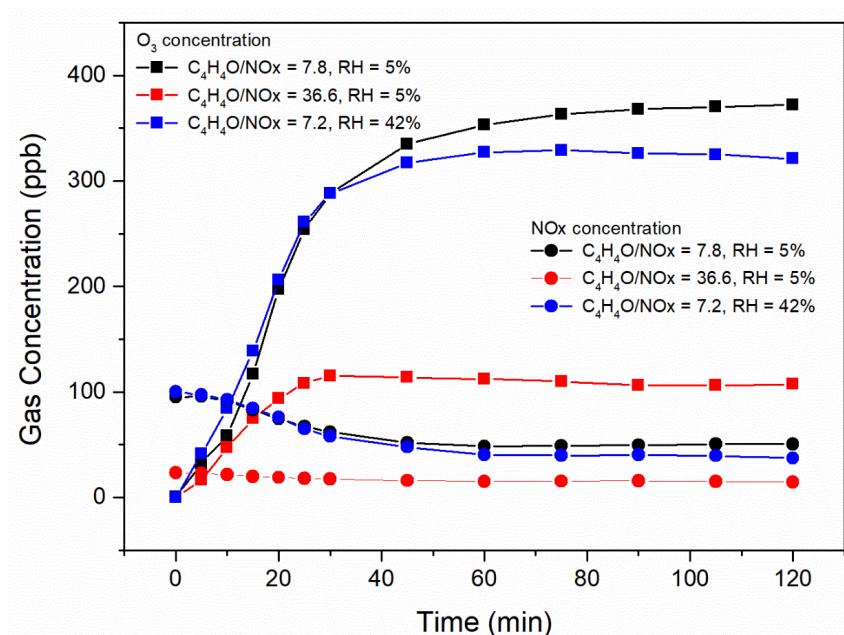


Figure S3: Comparisons of the observed concentrations of O<sub>3</sub> (square) and NO<sub>x</sub> (circle) from furan irradiations at different experimental conditions.

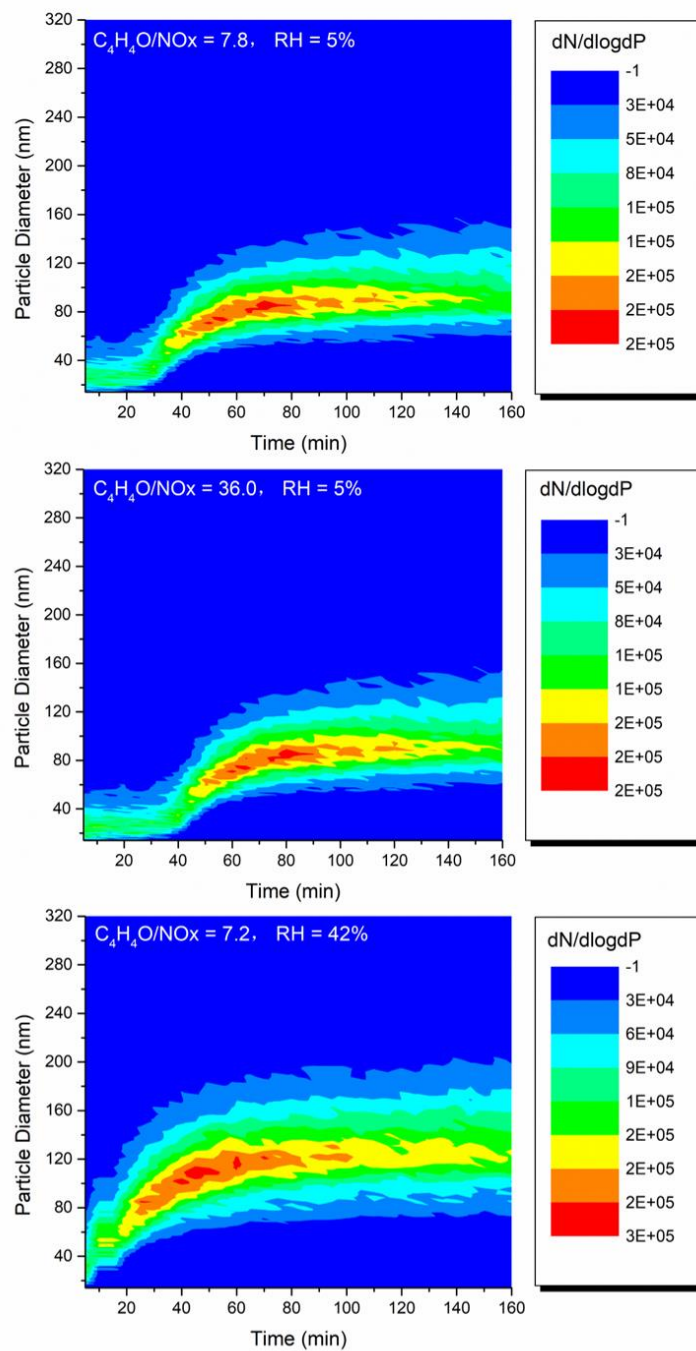


Figure S4: Contour plots of SOA bursts formed under different experimental conditions.

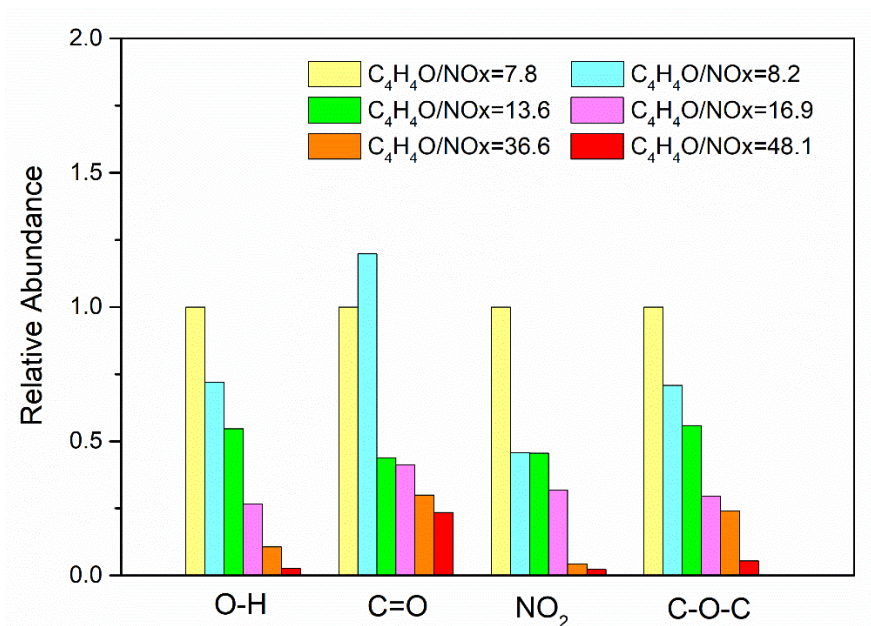


Figure S5: Variations of the relative abundance of different functional groups with C<sub>4</sub>H<sub>4</sub>O/NO<sub>x</sub> ratios from 7.8 to 48.1. Absolute abundances are normalized with respect to the corresponding functional abundance detected at C<sub>4</sub>H<sub>4</sub>O/NO<sub>x</sub>=7.8.

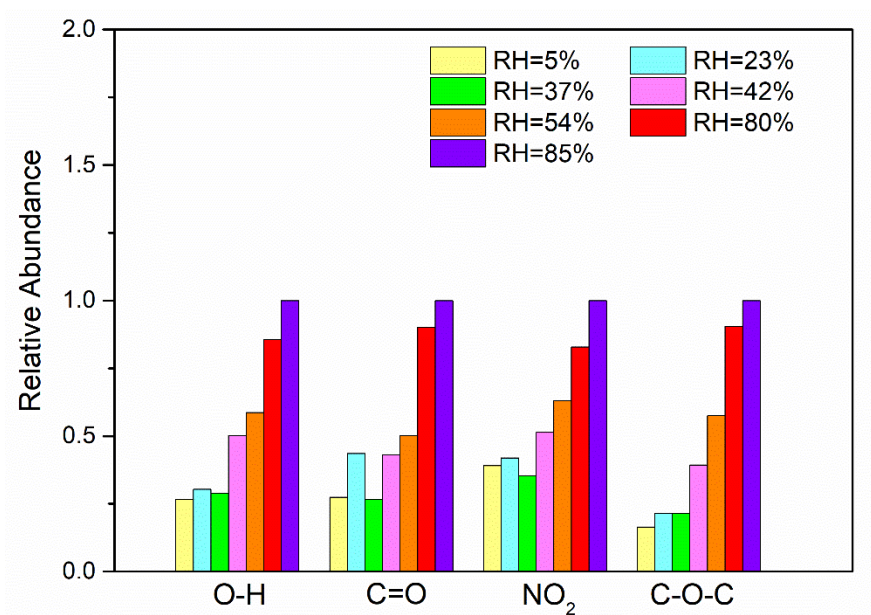


Figure S6: Variations of FTIR absorption abundance of different functional groups at RH from 5% to 85% relative to the absolute abundance detected at RH 85%.