Supplement of

Development, characterization and first deployment of an improved on-line reactive oxygen species analyzer

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Figure S1. The reaction scheme of the DCFH assay (Miljevic et al., 2014).

Figure S2. Overview of the offline ROS analyzer.
**Figure S3.** Average of calibrations of the ROS analyzer with different H$_2$O$_2$ concentrations which were repeated three times.

**Figure S4.** Comparison of measured $\text{ROS}_{\text{norm}}(t)$ and modelled $\text{ROS}_{\text{norm}}(t)$. $\text{ROS}_{\text{norm}}(t)$ is the ROS measured at time $t$ normalized to the ROS measured the first time ($t_1$).
Figure S5. Long-lived ROS fraction as a function of OA loading (a) and modified combustion efficiency (MCE) (b). Markers indicate the modelled long-lived-ROS fraction (see section 3.4.2) and the solid lines a linear least-square fit.

Figure S6. Normalized frequency of ROS decay percentages. “Bern_ambient” and “wood combustion_SC” represent the results from Bern ambient air (filter storage time: 1 year) and wood combustion smog chamber aging (filter storage time: 2 years), respectively; “Wood combustion_PAM” represents the estimated results from wood combustion potential aerosol mass chamber aging using the biexponential decay model described in section 3.4.2 (filter storage time: 1 year).