

## Supporting Information for

### Interfacial Redox Chemistry-Driven Formation and Inhibition of Nanoparticles in Ultrasonic-Humidifier Microdroplets

Juyoung Sheen,<sup>a</sup> Jieun Shin <sup>a</sup> and Jae Kyoo Lee <sup>\*a,b</sup>

- a. Department of Applied Bioengineering, Graduate School of Convergence Science and Technology, Seoul National University, Seoul 08826, Republic of Korea
- b. Research Institute for Convergence Science, Seoul National University, Seoul 08826, Republic of Korea

\*Email: [jaeklee@snu.ac.kr](mailto:jaeklee@snu.ac.kr)

**Fig. SI-1.** Particulate matter concentration measured at different distances (10cm, 33cm, 67cm)

**Fig. SI-2.** X-ray photoelectron spectroscopy (XPS) survey spectrum of particulate matter generated by ultrasonic humidification.

**Fig. SI-3.** Standard calibration curve for calcium quantification using the Colorimetric Calcium Assay Kit.

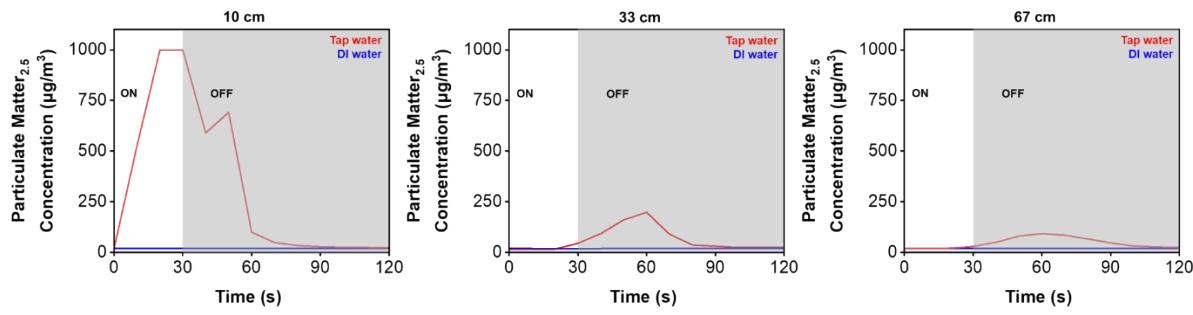
**Fig. SI-4.** Effect of superoxide dismutase (SOD) on particulate matter concentration in tap water.

**Fig. SI-5.** Effect of salicylic acid on particulate matter concentration in tap water.

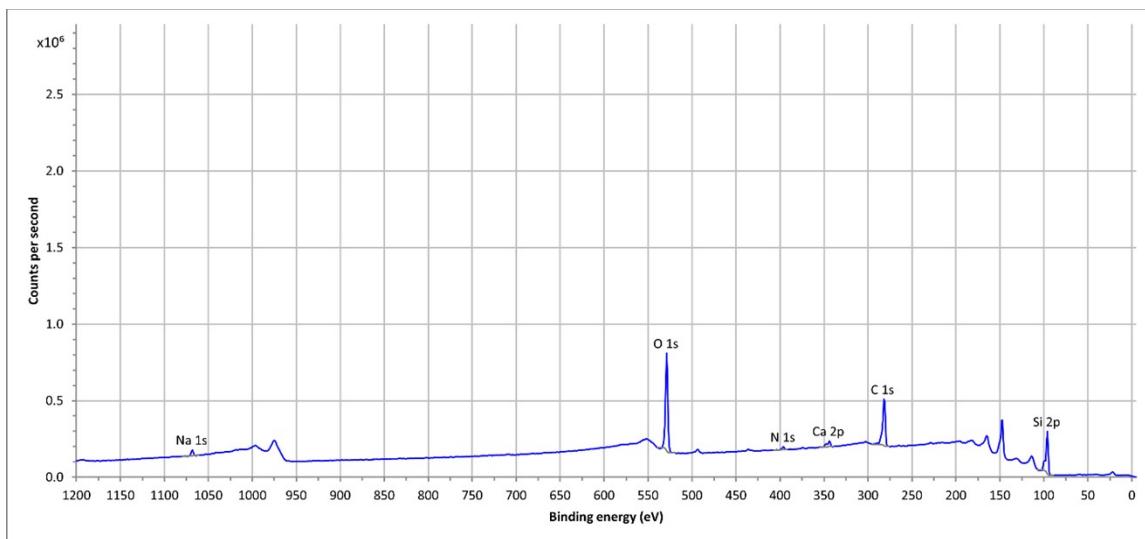
**Fig. SI-6.** Effect of sodium nitrate on particulate matter concentration in tap water.

**Fig. SI-7.** Effect of catalase on particulate matter concentration in tap water.

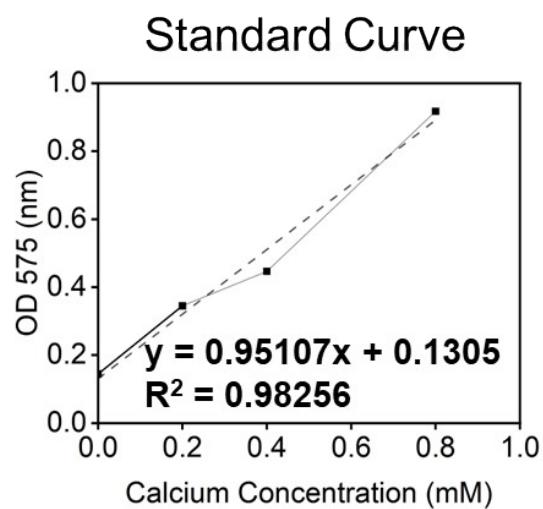
**Fig. SI-8.** Effect of reactive oxygen species (ROS) scavengers (NAC 0.1 mg/L, catalase 2 U/mL, SOD 2.25 U/mL, DMSO 1 %, salicylic acid 10  $\mu$ M,  $\text{NaNO}_3$  100  $\mu$ M) on particulate matter generation in DI water.



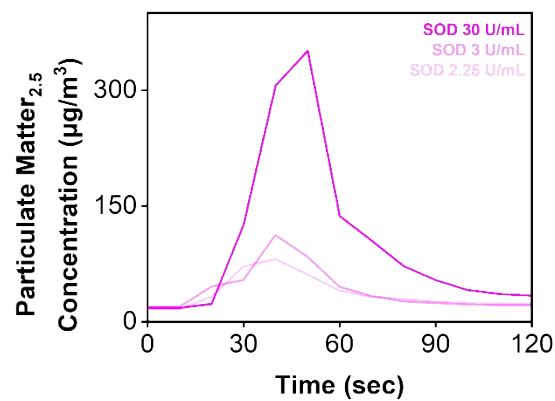
**Fig. SI-1.** Particulate matter concentration (PM<sub>2.5</sub>) measured during ultrasonic humidifier operation (white, humidifier on; gray, humidifier off) using tap water (red) and DI water (blue) at different distances (10 cm, 33 cm, and 67 cm) between the ultrasonic humidifier outlet and the PM detector.



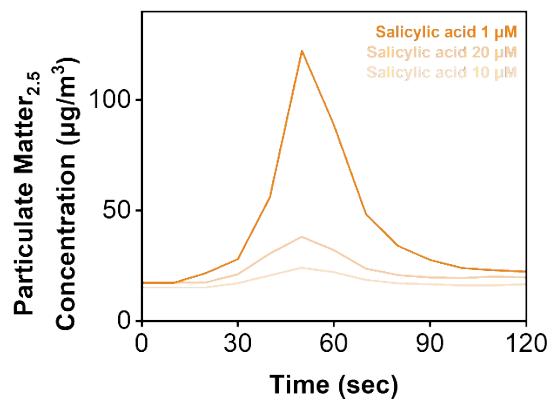
**Fig. SI-2.** X-ray photoelectron spectroscopy (XPS) survey spectrum of particulate matter generated by ultrasonic humidification.



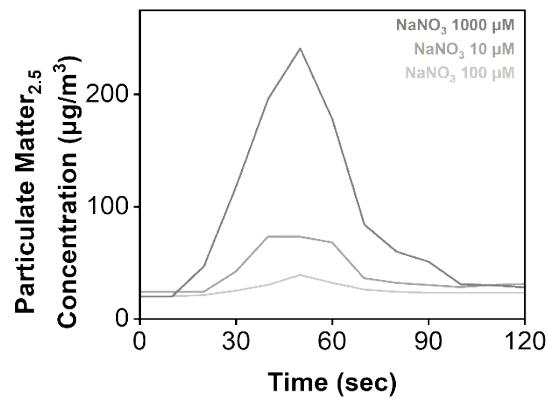
**Fig. SI-3.** Standard calibration curve for calcium quantification using the Colorimetric Calcium Assay Kit.



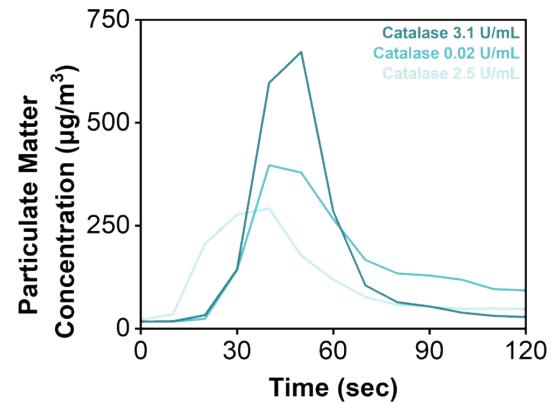
**Fig. SI-4.** Effect of superoxide dismutase (SOD) on particulate matter concentration in tap water.



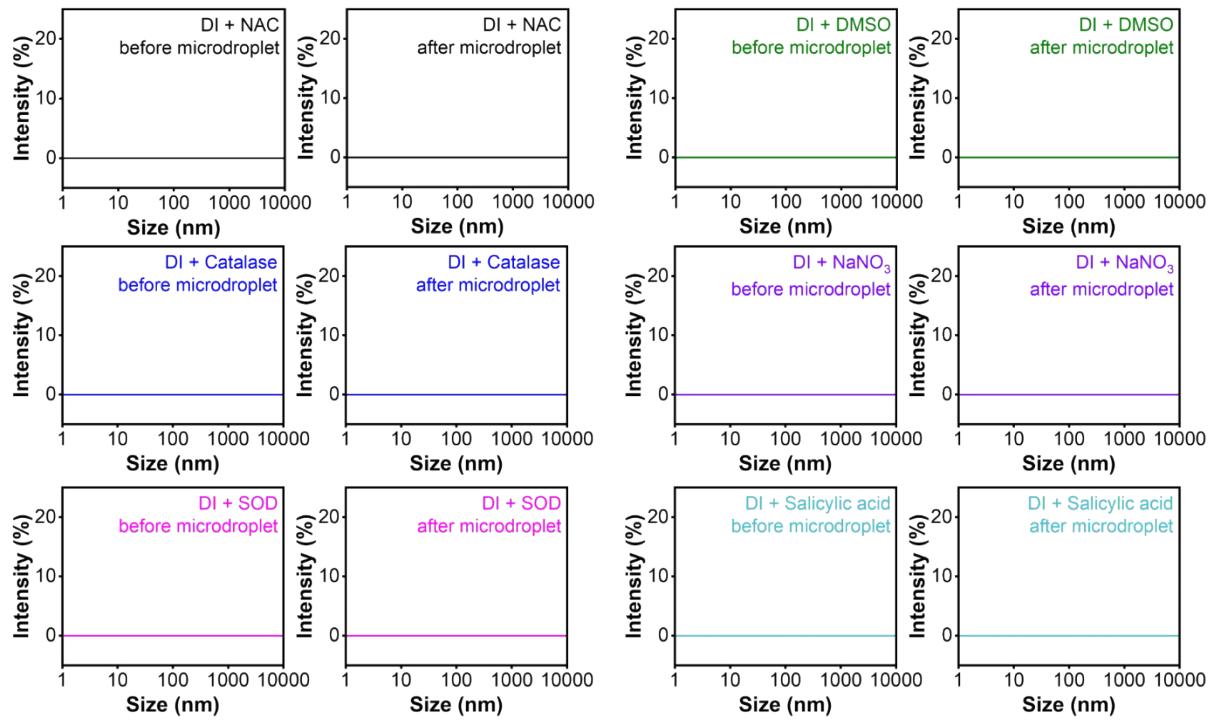
**Fig. SI-5.** Effect of salicylic acid on particulate matter concentration in tap water.



**Fig. SI-6.** Effect of sodium nitrate on particulate matter concentration in tap water.



**Fig. SI-7.** Effect of catalase on particulate matter concentration in tap water.



**Fig. SI-8.** Effect of reactive oxygen species (ROS) scavengers (NAC, 0.1 mg/L; catalase, 2 U/mL; SOD, 2.25 U/mL; DMSO, 1%; salicylic acid, 10  $\mu$ M;  $\text{NaNO}_3$ , 100  $\mu$ M) on particulate-matter generation in DI water. Particulate-matter concentrations were measured by dynamic light scattering (DLS). The concentrations of the scavengers were the same as those listed in Table 2.