

Supplementary Material

ICP analysis metod.

Each sampling filter was placed in PTFE vessels. 4 mL of 67–69% HNO₃ (Ultrapure-for trace analysis, Carlo Erba Reagent), 2 mL of 47 – 51% HF (Ultrapure-for trace analysis, Carlo Erba Reagent) and 2 mL of 30–32% H₂O₂ (Ultrapure-for trace analysis, Carlo Erba Reagent) were added to each vessel; the vessels then were placed in a microwave (MW) oven (Milestone Ethos Touch Control with HPR 1000/10 rotor) and digested in a four-step temperature-time program. The temperature linearly increases for the first step with a power of 600 W up to 180 °C in 15 min; for second step the temperature linearly increases with a power of 600W up to 240°C in 5 minutes and then at 240°C for 15 minutes. The solutions were then analyzed by ICP-MS (Agilent Technologies 7500 ce). Standard solutions (Multistandard 26 elements, Ultra scientific, North Kingstown, United States), for daily calibration, were matrix-matched by preparation in HNO 32% (w/w).

To control nebulizer efficiency, an internal standard (cesium, 50 ng/ml) was used. The analysis plasma and reaction cell parameter are reported in table S1.

Table S1. Set up of analysis plasma and reaction cell parameter

Plasma parameters	
RF Pauer	1500 W
Carrier Gas	0.88 L/min
Makeup Gas	0.20 L/min
Nebulizer Pump	0.10 rps
S/C Temp	2 degC
Reaction Cell parameter	
H ₂ Gas	4.0 mL/min

The glove box has a volume of 0.5 m³ and it is equipped with ball valves. An HEPA filter is used for external insulation; a solenoid valve allows to preserve internal isobaric conditions, while a fan, with speed controller, can rotate over 360°. The fully equipped glove box is shown in supplementary material

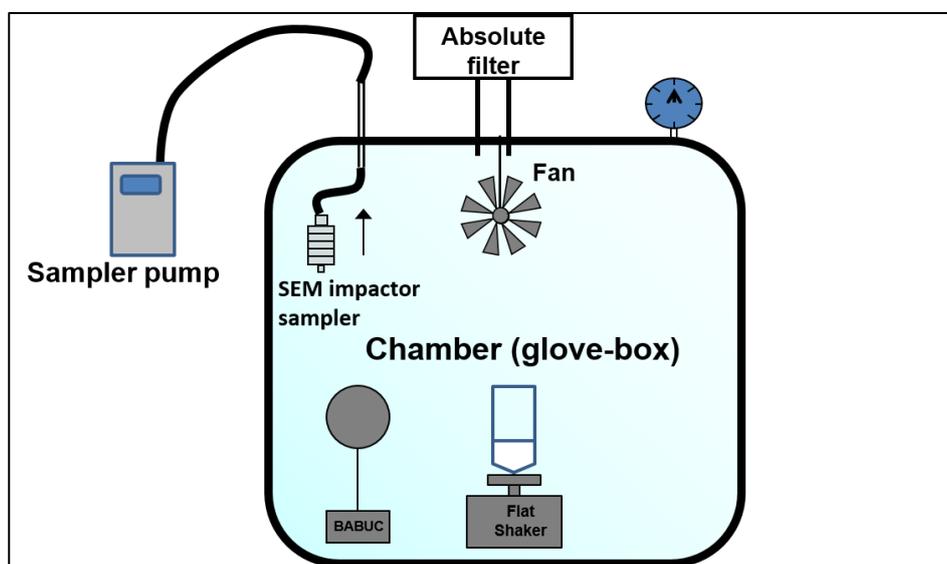


Figure S1. Glove-box experimental set up.

Table S2. Davg frequency values of particle size distribution in day 3 for room B and room A

Size nm	Davg room A Frequency	Davg room B Frequency
6.04	0	0
6.98	0	0
8.06	0	0
9.31	15	29
10.8	8840	4960
12.4	14958	20246
14.3	4969	3129
16.5	18	435
19.1	0	1
22.1	0	0
25.5	0	0
29.4	0	0
34	0	0
39.2	0	182
45.3	0	15182
52.3	0	13363
60.4	960	61
69.8	5071	5
80.6	22721	1
93.1	46	4
107.5	2	1
124.1	0	1
143.3	0	0
165.5	0	0
191.1	0	0
220.7	0	0
Count	57600	57600

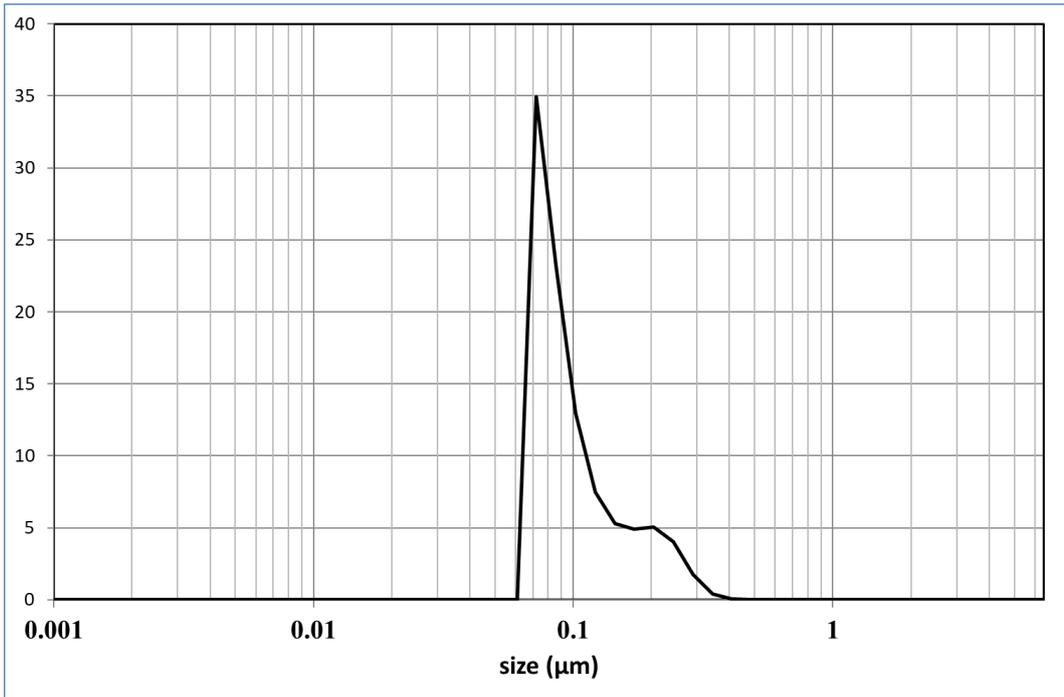


Figure S2. LTA NZs Dynamic Light Scattering analysis provided by the manufacturer.

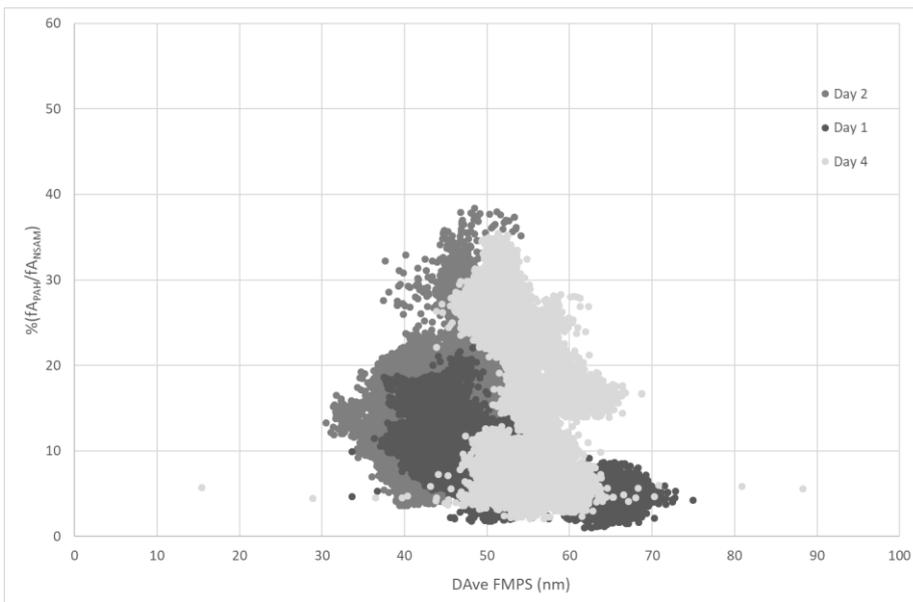


Figure S3. PAS/DC versus D_{avg} (FMPS) plots for sampling during days 1, 2 and 4

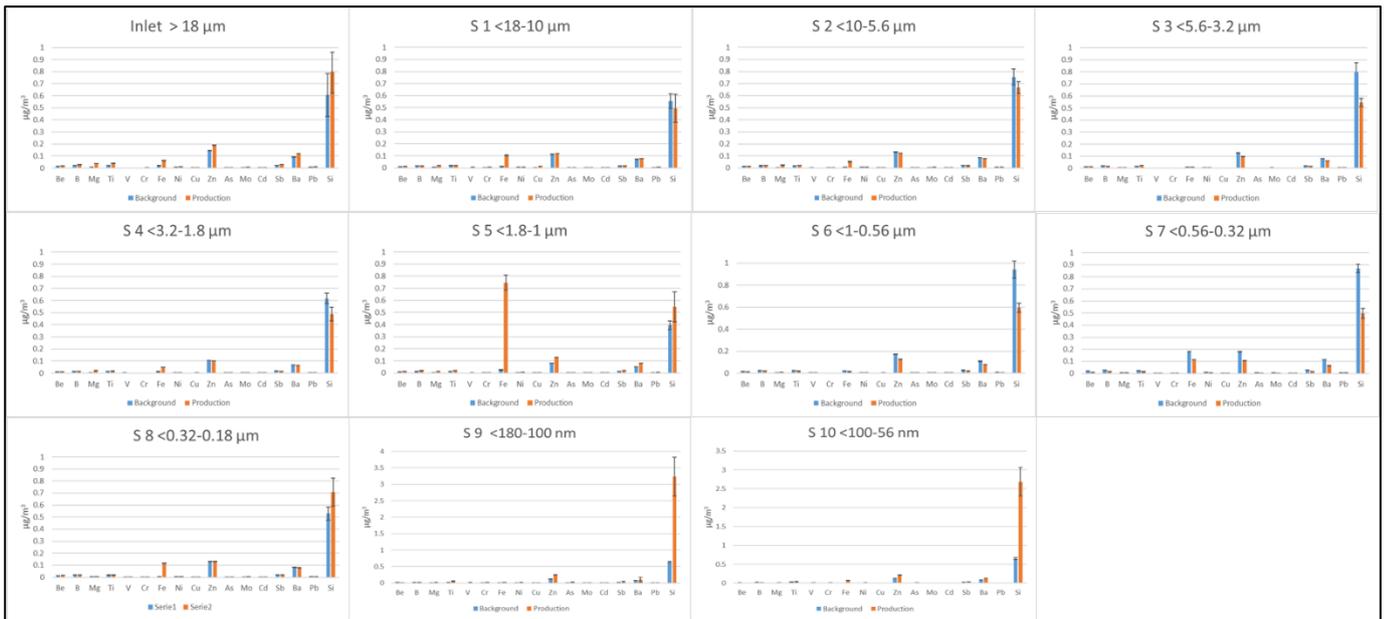


Figure S4. ICP-MS analysis on nanoMOUDI stages for 17 metals

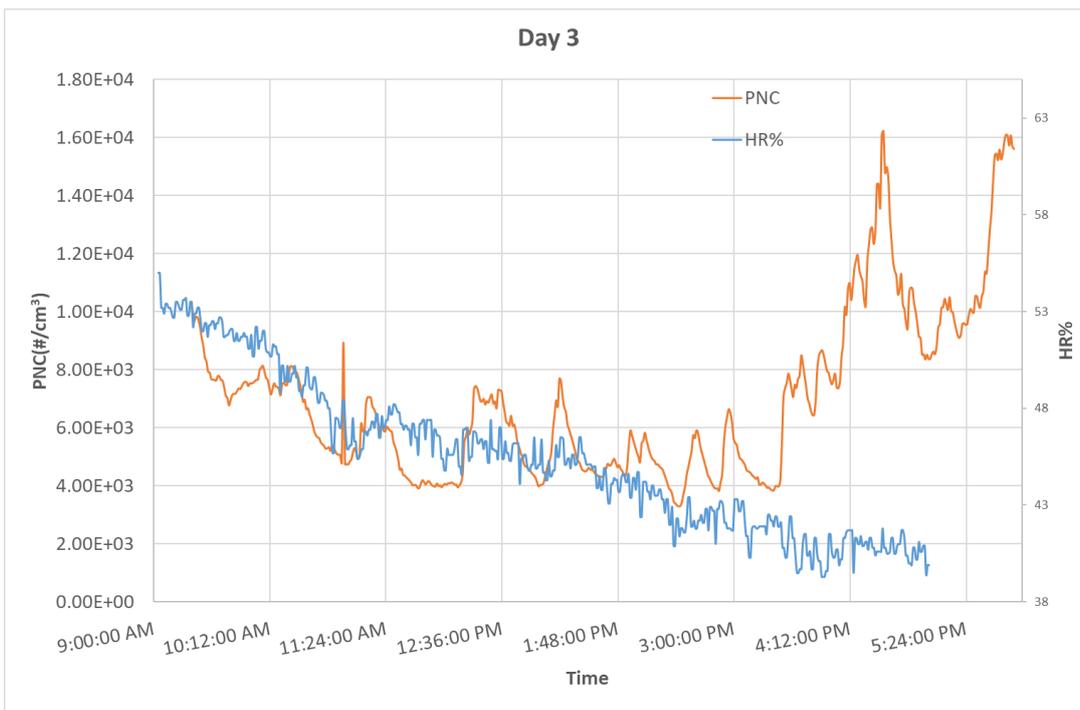


Figure S5. PNC and Relative humidity time course during the Day 3 during surface modification phase