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Sodium thiosulfate-coated ceramic denuders for ozone removal in ultrafine particle sampling

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Figure S1 Photograph of the ceramic honeycomb body (Ø 25,4 x 50mm) used as substrate for Na_2SO_3 coating in this study.

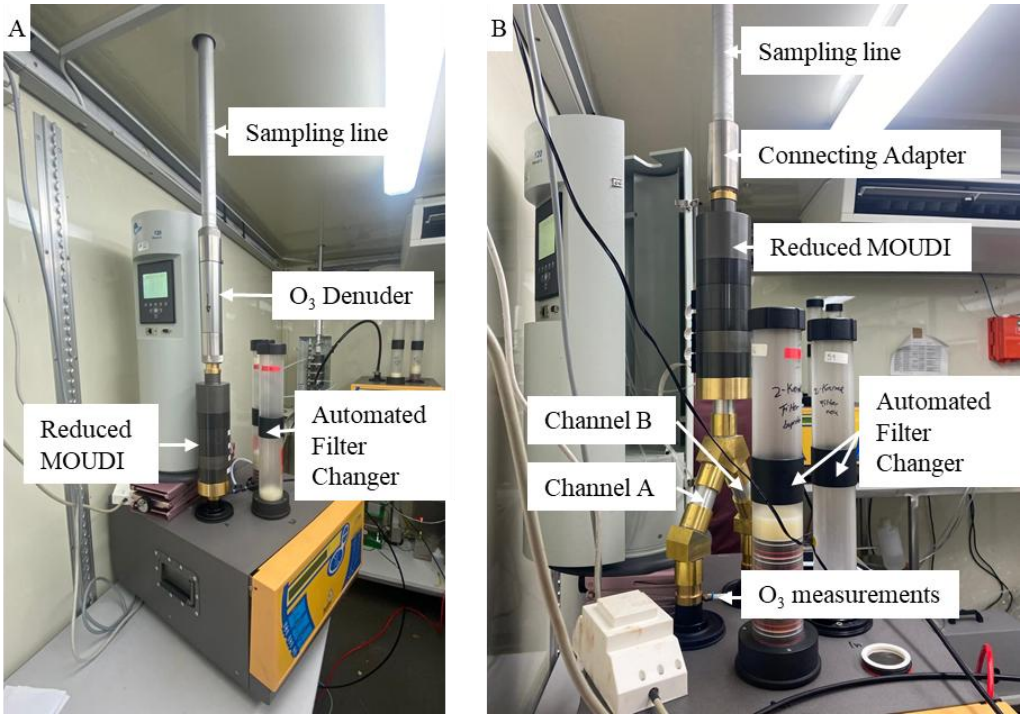

Figure S2 A Picture of one sampling setup, where the TSOD are in a stainless steel housing which is connected above the reduced MOUDI impactor. Such a housing is also used to connect the TSOD from the BATCH to the measurement devices as described in sections 2.2 and 2.3. B Picture of the sampling setup described in section 2.4. The uncoated or coated denuders (depending on the experiment) are behind the MOUDI impactor in channels A und B, directly placed above the UFP filter which was used for analysis.

Table S1: Specifications regarding the different marker compounds that were analyzed and chosen for this study.

Parameter	**HPLC-MS neg**	**HPLC-MS pos**	**HPLC-FLD**
Analytical column	Gemini 5u C18 110A (150 mm x 4.6 mm, 5 µm)	Gemini 5u C18 110A (150 mm x 4.6 mm, 5 µm)	EC 125/4 Nucleosil 100-5 C18 HD (125 mm x 4 mm, 5 µm)
Column temperature	40 °C	30 °C	30 °C
Injection volume	20 µL	20 µL	25 µL
Autosampler temperature	–	–	-5 °C
Flow rate	0.5 mL/min	0.3 - 0.5 mL/min	1 mL/min
Gradient	**A) 80% ACN, B) 4 mM HCOOH**	**A) 80%MeOH, B) 4 mM HCOOH**	**A) ACN, B) H_2O (Milli-pore)**
	0 min 5% A	0 min 50% A	0 min 60% A
	1 min 5% A	3 min 80% A	5 min 70% A
	18 min 50% A	12 min 100% A	8 min 70% A
	21 min 100% A	18 min 90% A	12 min 80% A
	29 min 100% A	20 min 50% A	15 min 80% A
	31 min 5% A	25 min 75% A	19 min 90% A
			22 min 60% A
Detector	MSD	MSD	FLD
	Time ESI(-)-m/z-ions	**Time ESI(+)-m/z-ions**	**Time λ_{ex} / λ_{em} [nm]**
	0 min 207	0 min 212, 227, 269	0 min 259 / 386
	8 min 111, 157, 171, 185	12 min 257, 261, 299	3.3 min 242 / 388
	18 min 121, 135, 183		5.8 min 250 / 370
	25 min 193, 217		7.5 min 270 / 390
			13 min 290 / 430

Table S2: Specifications regarding the different marker compounds that were analyzed and chosen for this study.

Marker	Method	Recovery	LOD_{Air} [pg/m³] 21.6 m³	External standard calculation	
				Response factor [AU/µg/L]	R^2
POA	HPLC-MS neg	101±6%	268.06	1833	0.98
PA	HPLC-MS neg	84±6%	373.14	4415	0.99
TA	HPLC-MS neg	85±6%,	268.06	3352	0.99
TPA	HPLC-MS neg	96±6%,	343.52	2781	0.99
6PPD	HPLC-MS pos	75±7%	20.09	26766	0.98
6PPDq	HPLC-MS pos	81±7%	24.54	21767	0.99
BaP	HPLC-FLD/UV	78±5%	3.245	10.12	1.00
BbF	HPLC-FLD/UV	74±4%	4.025	12.15	1.00
IcdP	HPLC-FLD/UV	70±4%	3.052	3.29	1.00
Sum Chry BaA	HPLC-FLD/UV	97±5%	2.855	9.68	1.00
BkF	HPLC-FLD/UV	89±6%	2.679	11.80	1.00

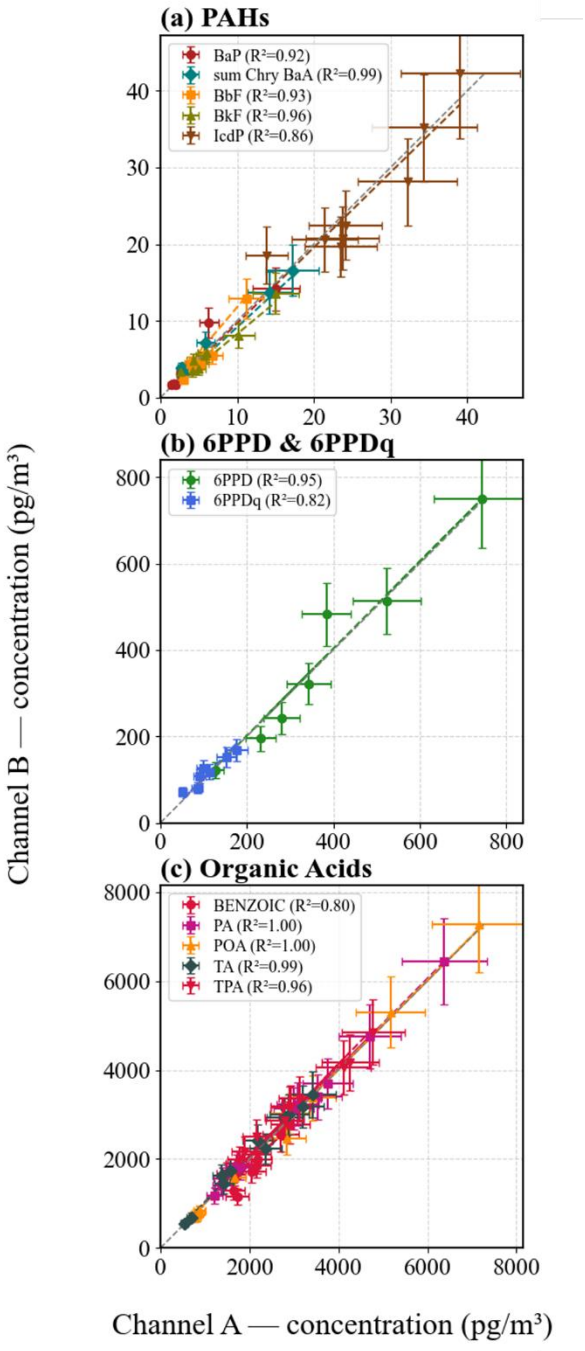

Figure S3 Comparison of PAH concentrations between Channel A and Channel B without the deployment of the TSOD. Regression slopes (s) and coefficients of determination (R^2) indicate high inter-channel agreement in the absence of O_3 removal.