SUPPLEMENTARY MATERIAL

Analytical Methods

An eNose-based method performing drift correction for online VOC detection at dry and humid conditions

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Table S1. Target gases and stated optimal detection concentration by manufacturer of incorporated sensors.

Type	Sensor Name	Manufacturer	Target Gases	Optimal Detection Concentration [ppm]	References
Analog	MICS-6814	SGX SENSORTECH Ltd.	Carbon monoxide Nitrogen dioxide Ethanol Hydrogen Ammonia Methane Propane Iso-butane	1 – 1000 0.05 – 10 10 – 500 1 – 1000 1 – 500 >1000 >1000 >1000	[1]
	MICS-4514	SGX SENSORTECH Ltd.	Carbon monoxide Nitrogen dioxide Ethanol Hydrogen Ammonia Methane	1 – 1000 0.05 – 10 10 – 500 1 – 1000 1 – 500 >1000	[2]
	CCS801	ams Sensor Solutions Germany GmbH	Air contaminants Hydrogen	 1 – 30	[3]
	TGS8100	FIGARO Engineering, Inc.	Air quality	-	[4]
Digital	BME680	Bosch Sensortec GmbH	Air quality	-	[5]
	CCS811	ams Sensor Solutions Germany GmbH	Ethanol Hydrogen	0 – 1000 0 - 1000	[6]
	SGP30	Sensirion AG	Air quality Ethanol	 0 – 1000	[7]
	ZMOD4410	Integrated Device Technology, Inc.	Air quality	-	[8]

Table S2. Nominal and actual concentrations of the analyte gases.

Component	Nominal concentration [ppm]	Actual concentration [ppm]	Analytical accuracy
Acetaldehyde	200	190	±5%
Acetone	200	207	±3%
Ethanol	200	203	±5%
Ethyl acetate	200	202	±5%
Isoprene	200	194	±2%
n-pentane	200	197	±2%

Table S3. Specification of used MFCs.

Manufacturer	Type	Maximal flow [mL/min]	Tolerance
Vögtlin	red-y smart series SMART6 GSC	600	±0.3% of maximal flow ±0.5% of measured value
Aalborg*	GFC17	3000	±1% of maximal flow

(*integrated MFC in Owlstone humidity generator OHG-4)

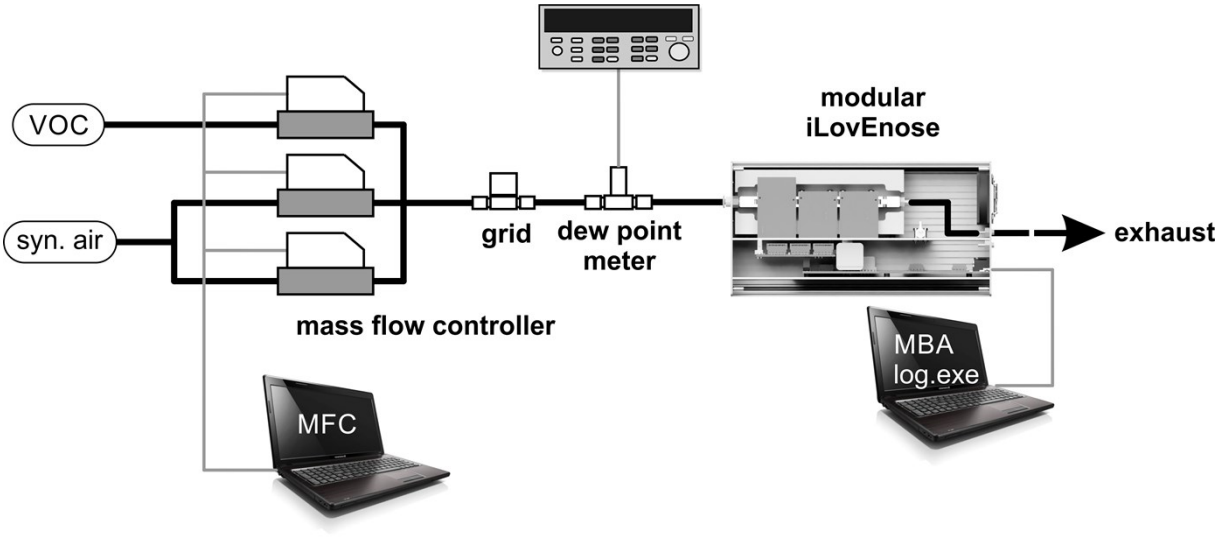

Figure S1. Schematic drawing of the experimental setup for dry measurements.

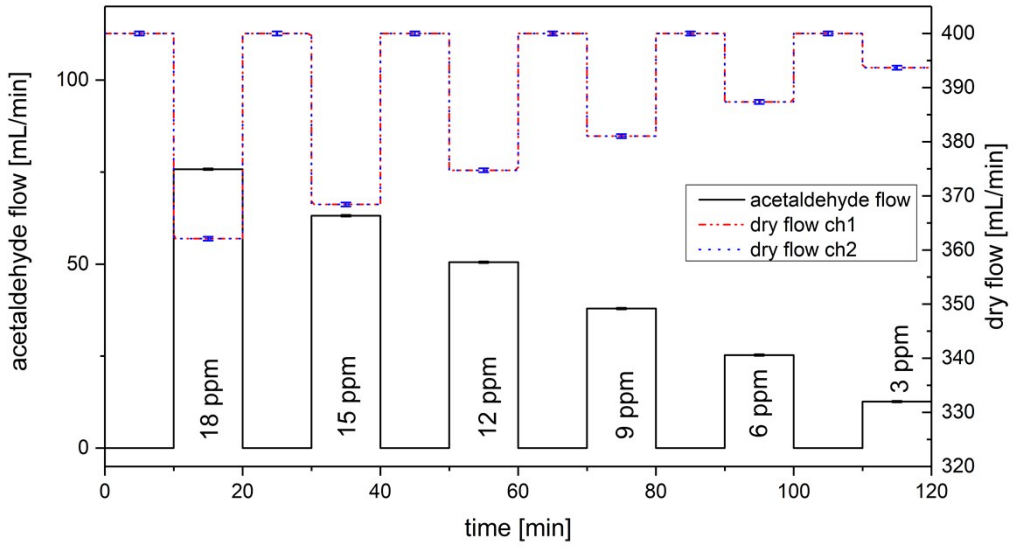

Figure S2. Nominal flow protocol for acetaldehyde under dry conditions including error bars.

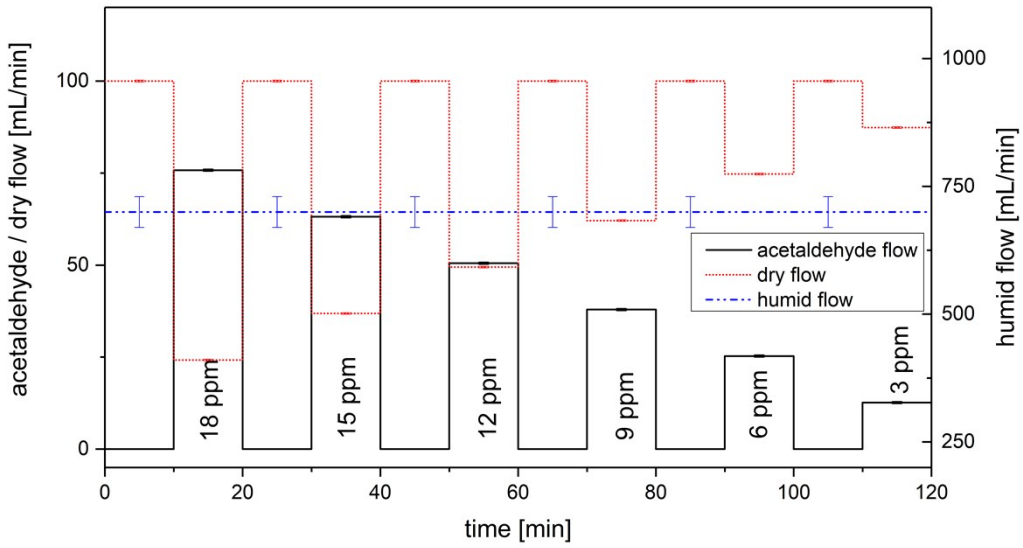

Figure S3. Nominal flow protocol for acetaldehyde under humid conditions including error bars.

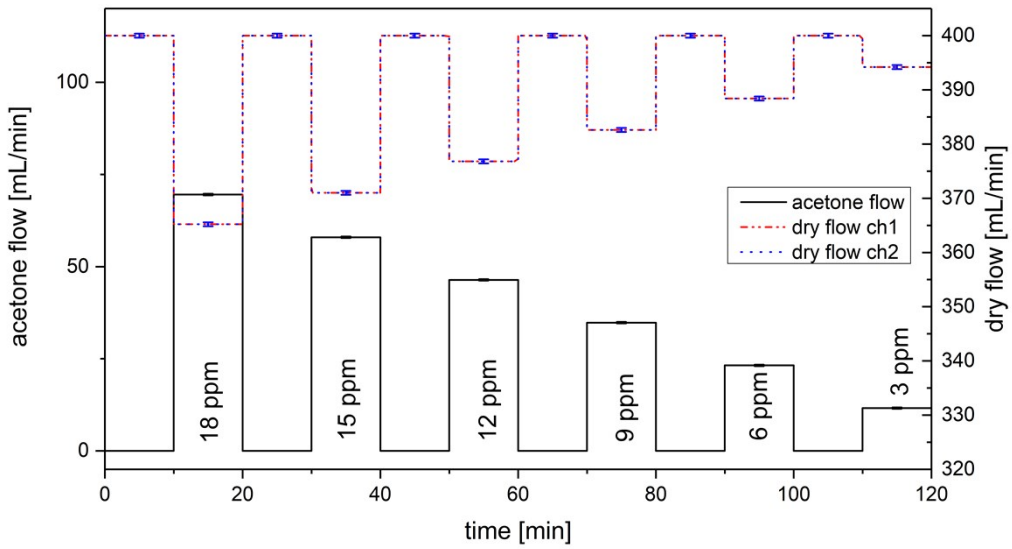

Figure S4. Nominal flow protocol for acetone under dry conditions including error bars.

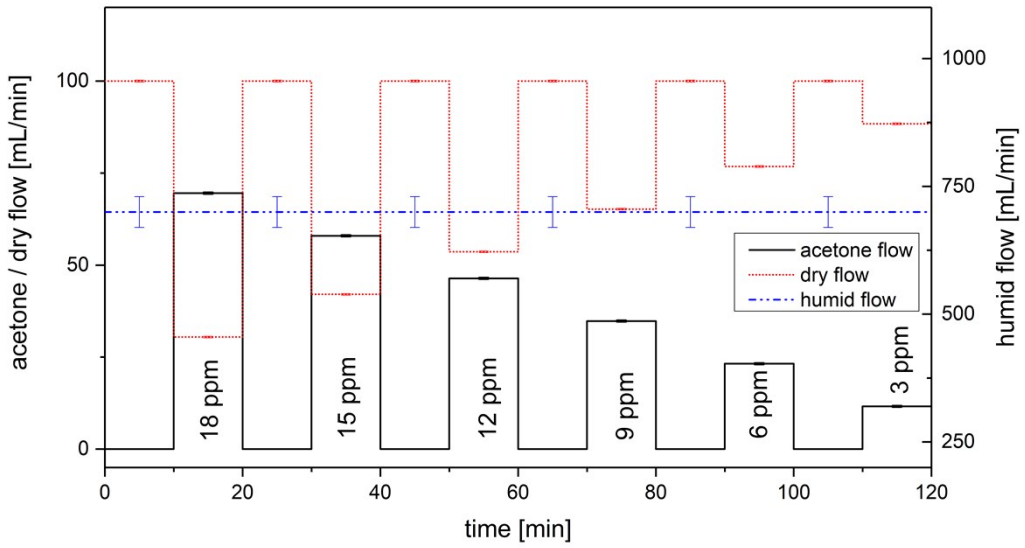

Figure S5. Nominal flow protocol for acetone under humid conditions including error bars.

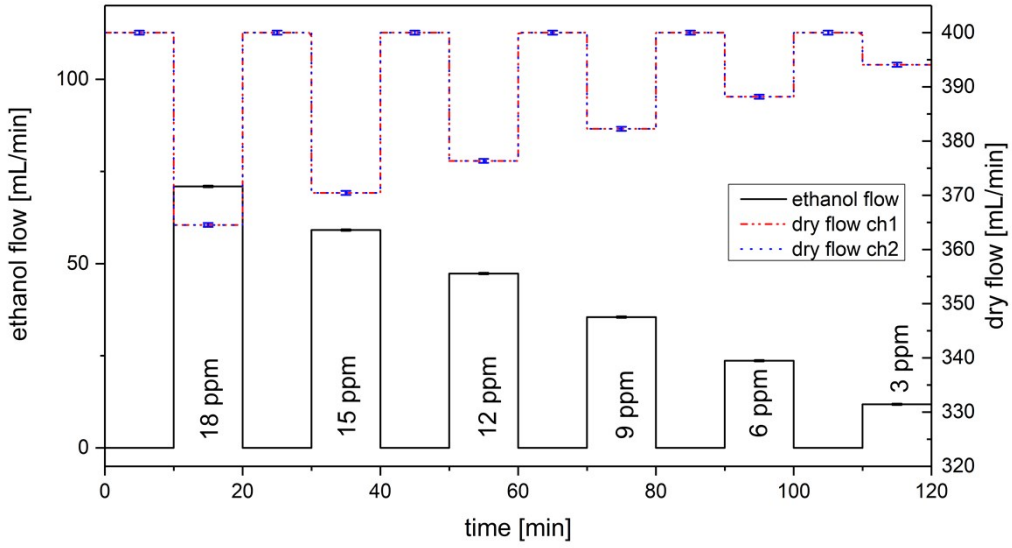

Figure S6. Nominal flow protocol for ethanol under dry conditions including error bars.

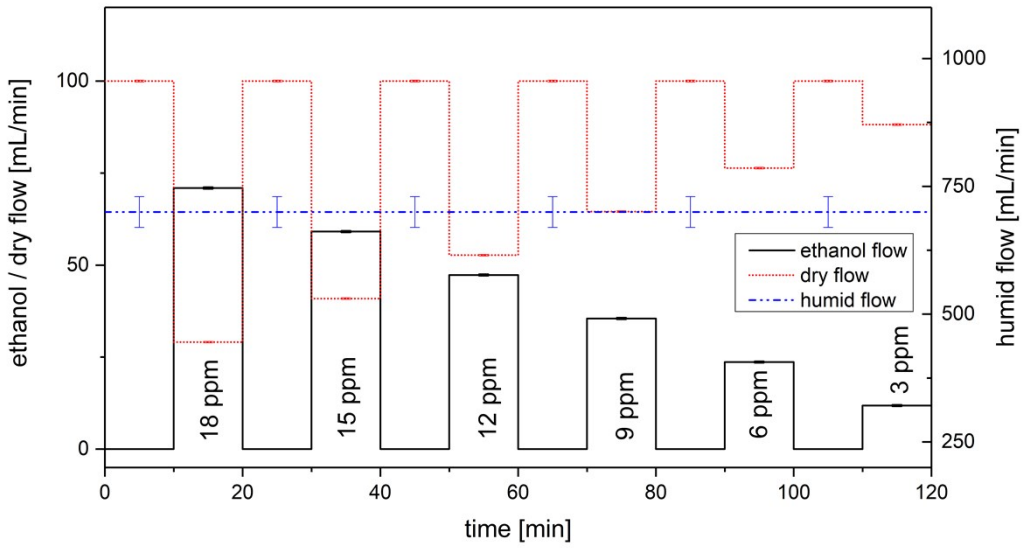

Figure S7. Nominal flow protocol for ethanol under humid conditions including error bars.

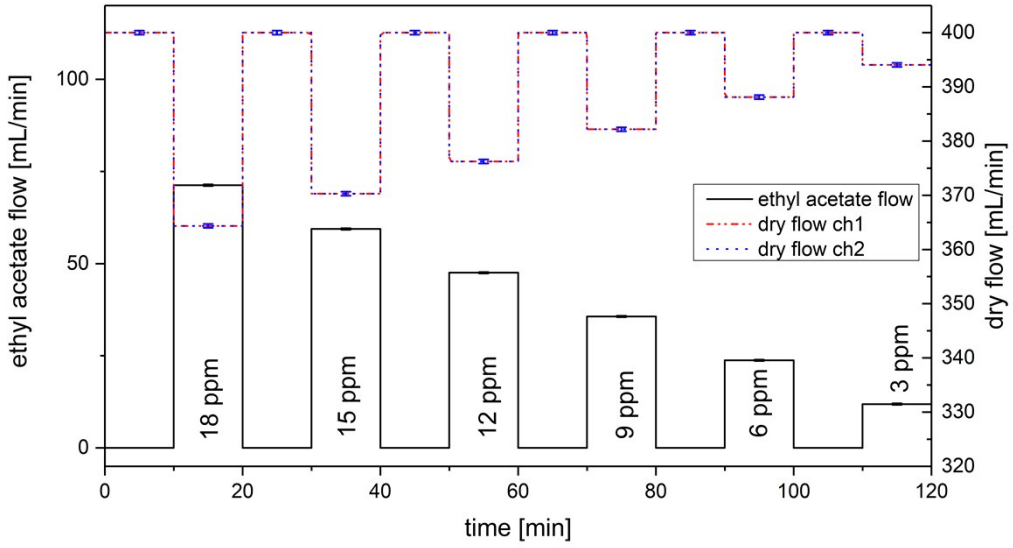

Figure S8. Nominal flow protocol for ethyl acetate under dry conditions including error bars.

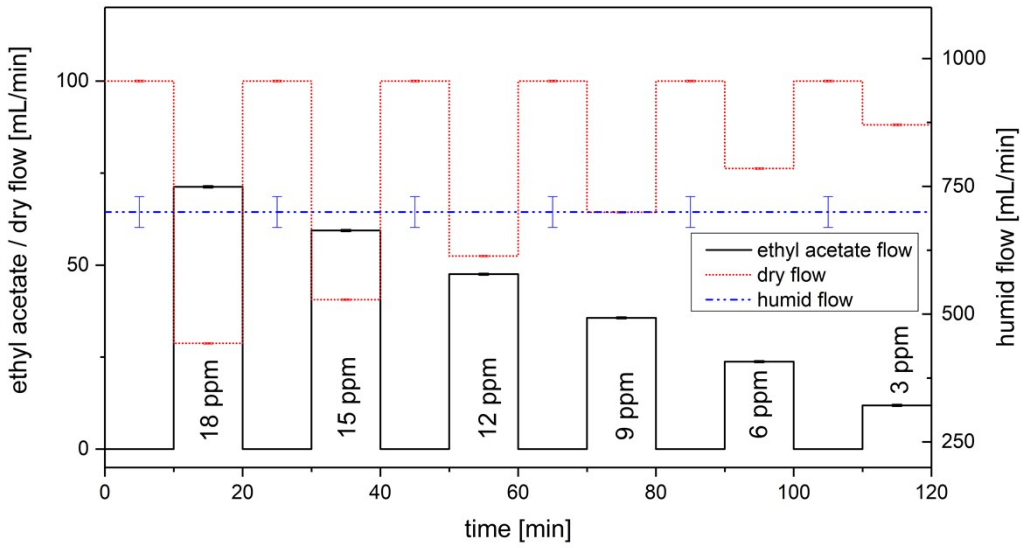

Figure S9. Nominal flow protocol for ethyl acetate under humid conditions including error bars.

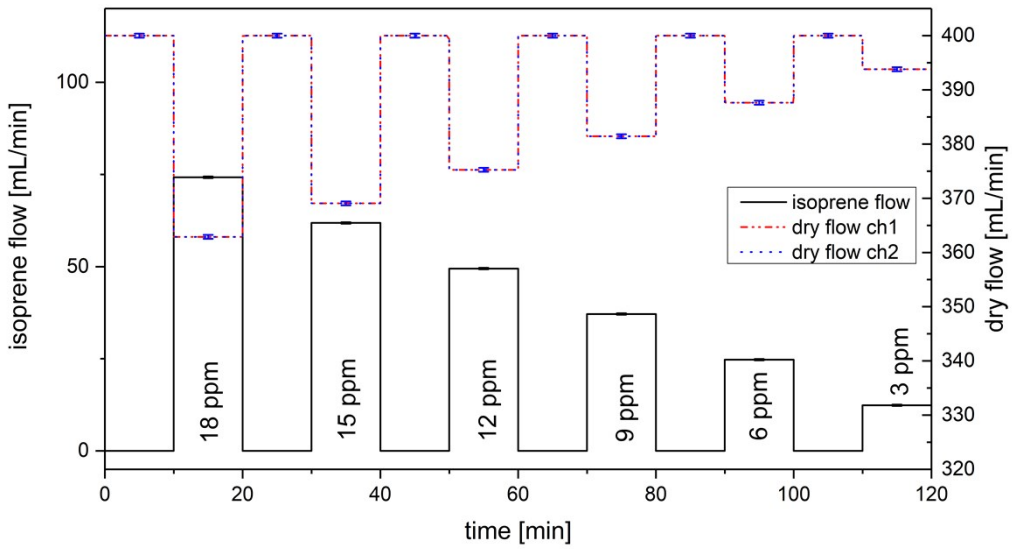

Figure S10. Nominal flow protocol for isoprene under dry conditions including error bars.

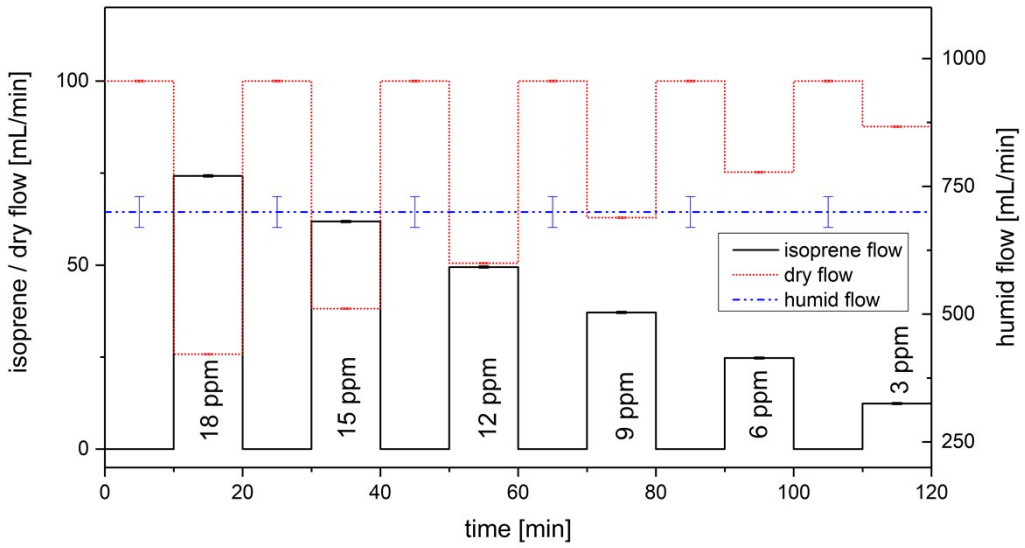

Figure S11. Nominal flow protocol for isoprene under humid conditions including error bars.

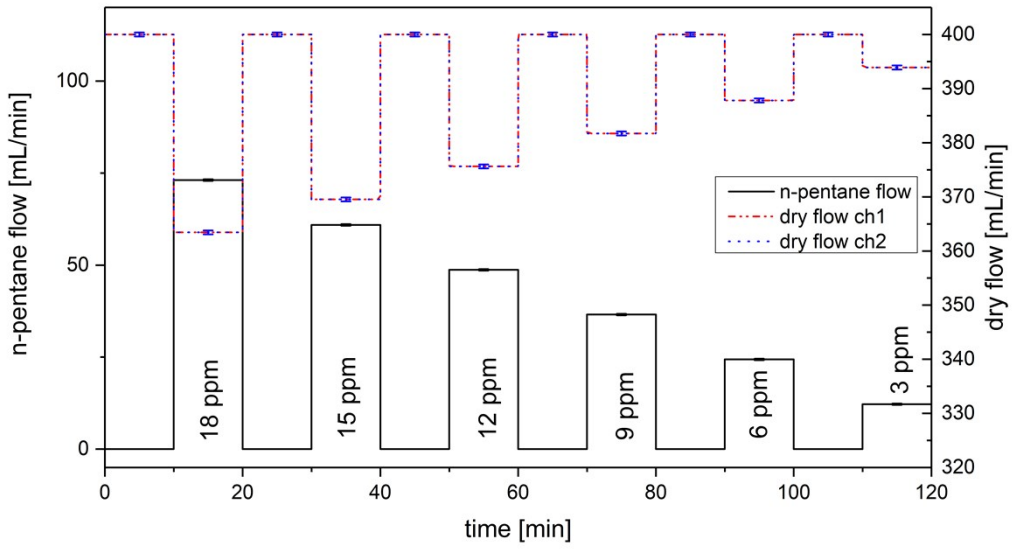

Figure S12. Nominal flow protocol for *n*-pentane under dry conditions including error bars.

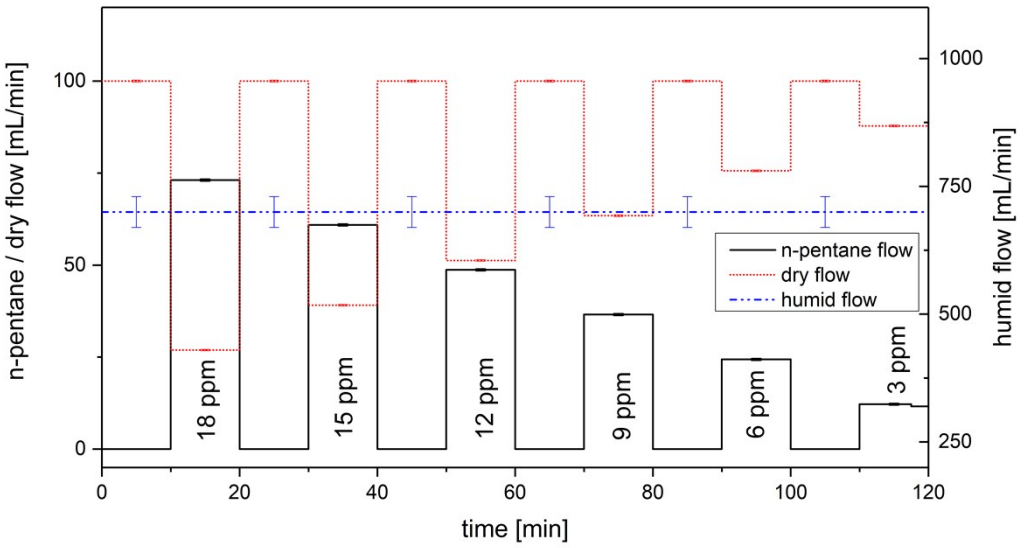

Figure S13. Nominal flow protocol for *n*-pentane under humid conditions including error bars.

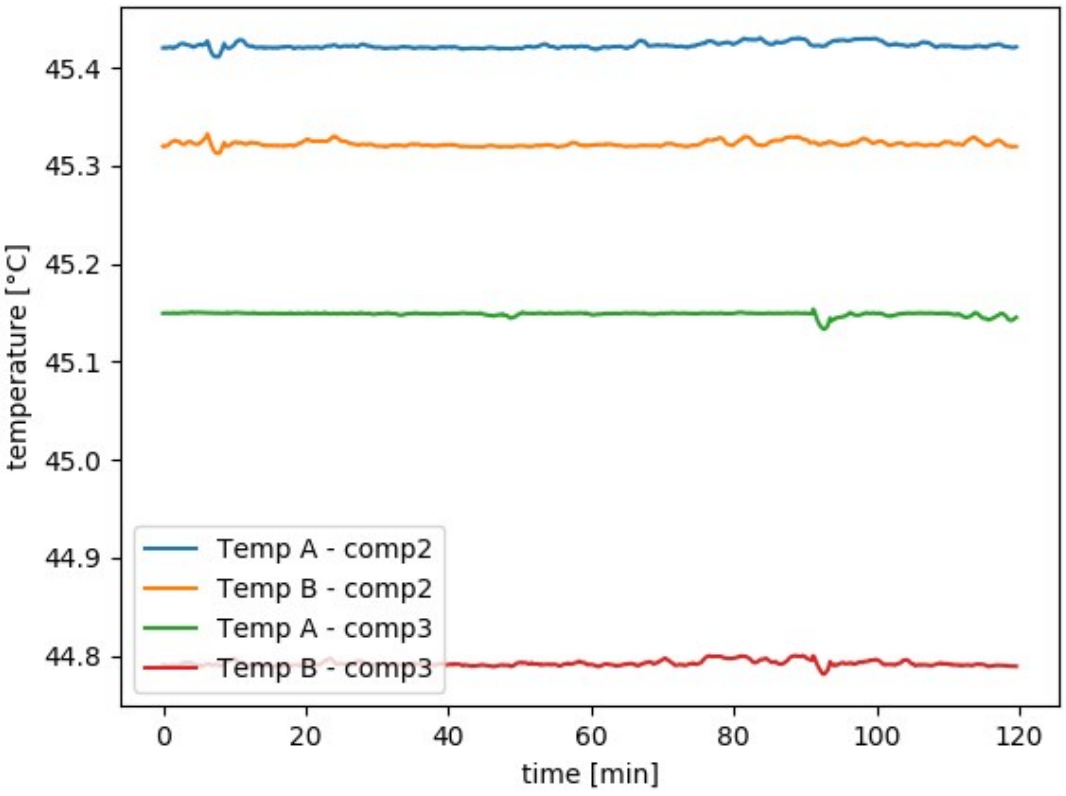

Figure S14. Exemplary auxiliary data of all integrated BME680 sensors within both digital compartments, during an isoprene exposure under humid conditions (sixth repetition). Here it is shown the temperature.

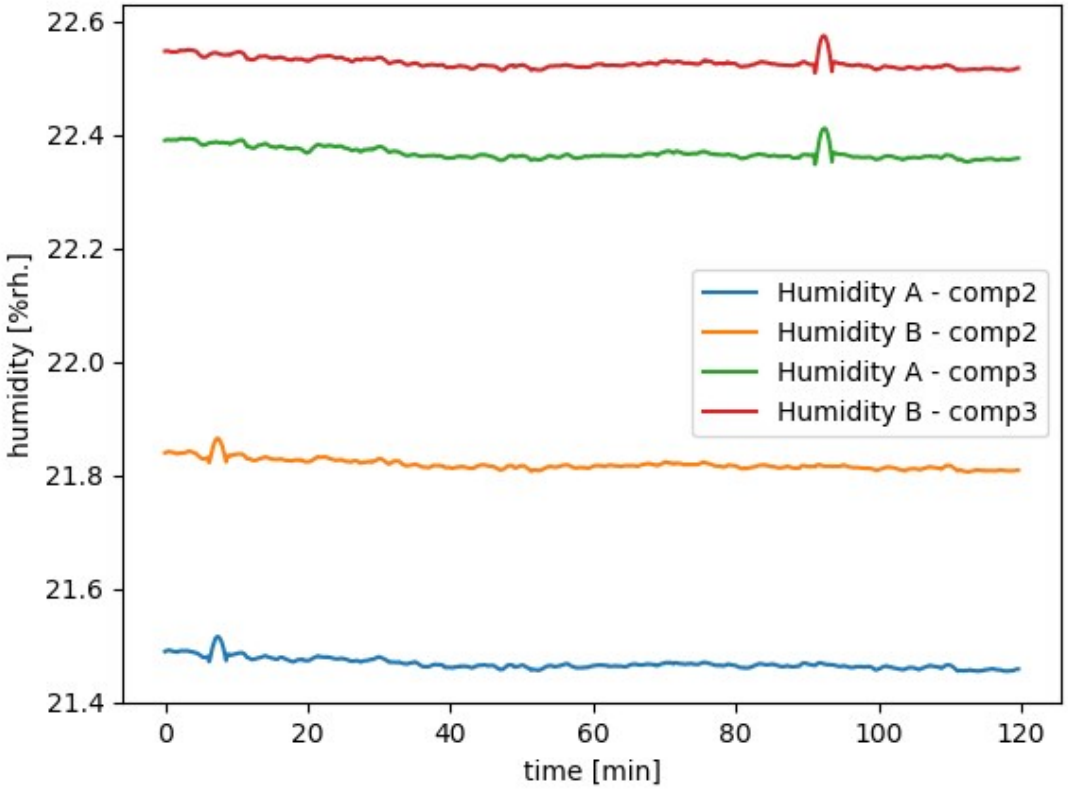

Figure S15. Exemplary auxiliary data of all integrated BME680 sensors within both digital compartments, during an isoprene exposure under humid conditions (sixth repetition). Here it is shown the relative humidity at 45 °C.

Table S4. No. of PCA components retaining 99.5% of variance per analyte and case.

	Analyte	**# PCA for 99.5%**		
		Case A	**Case B**	**Case C**
Dry	Acetaldehyde	6	11	11
	Acetone	5	10	11
	Ethanol	4	10	10
	Ethyl acetate	9	11	11
	Isoprene	5	10	10
	n-pentane	11	11	11
Humid	Acetaldehyde	9	11	11
	Acetone	10	11	11
	Ethanol	4	11	11
	Ethyl acetate	10	11	11
	Isoprene	5	11	11
	n-pentane	11	11	11

References

[1] SGX Datasheet MiCS-6814, https://www.sgxsensortech.com/content/uploads/2015/02/1143_Datasheet-MiCS-6814-rev-8.pdf (accessed June 1, 2020).

[2] SGX Datasheet MiCS-4514, https://www.sgxsensortech.com/content/uploads/2014/08/0278_Datasheet-MiCS-4514.pdf (accessed December 22, 2019).

[3] AMS Datasheet CCS 801, https://ams.com/documents/20143/36005/CCS801_DS000457_3-00.pdf/59f95f8c-2db9-91f8-c696-0056aa4cca55 (accessed June 1, 2020).

[4] Figaro Datasheet TGS8100, https://www.figaro.co.jp/en/product/docs/tgs8100_product infomation(en)_rev06.pdf (accessed June 1, 2020).

[5] Bosch Datasheet BME680, https://ae-bst.resource.bosch.com/media/_tech/media/datasheets/BST-BME680-DS001-00.pdf (accessed June 1, 2020).

[6] AMS Datasheet CCS 811, https://ams.com/documents/20143/36005/CCS811_DS000459_7-00.pdf/3cfdaea5-b602-fe28-1a14-18776b61a35a (accessed December 22, 2019).

[7] Sensirion Datasheet SGP30, https://www.sensirion.com/fileadmin/user_upload/customers/sensirion/Dokumente/0_Datasheets/Gas/Sensirion_Gas_Sensors_SGP30_Datasheet.pdf (accessed June 1, 2020).

[8] IDT Datasheet ZMOD4410, https://www.idt.com/document/dst/zmod4410-datasheet (accessed June 1, 2020).