Supporting Information for:

Steady vs. Dynamic Contributions of Different Doped Conducting Polymers in the Principal Components of an Electronic Nose's Response

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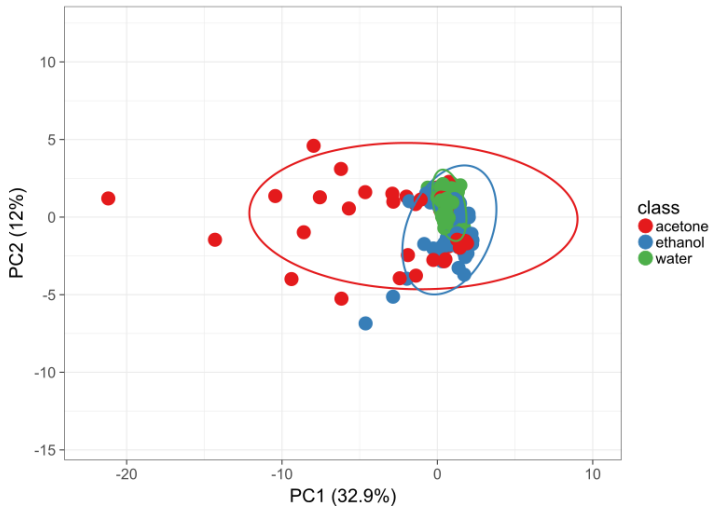
PCA scores (a), variance for the different PC (b) and their loadings (c) are organized in the different supporting figures by acquisition time for both information descriptors α_1 and α_2 such as:

		Descriptors	
		α_1	α_2
Acquisition Time Interval (in seconds)	[0;9]	Figure S1	Figure S19
	[10;19]	Figure S2	Figure S20
	[20;29]	Figure S3	Figure S21
	[30;39]	Figure S4	Figure S22
	[40;49]	Figure S5	Figure S23
	[50;59]	Figure S6	Figure S24
	[60;69]	Figure S7	Figure S25
	[70;79]	Figure S8	Figure S26
	[80;89]	Figure S9	Figure S27
	[90;99]	Figure S10	Figure S28
	[100;109]	Figure S11	Figure S29
	[110;119]	Figure S12	Figure S30
	[120;129]	Figure S13	Figure S31
	[130;139]	Figure S14	Figure S32
	[140;149]	Figure S15	Figure S33
	[150;159]	Figure S16	Figure S34
	[160;169]	Figure S17	Figure S35
	[170;179]	Figure S18	Figure S36

a)



b)

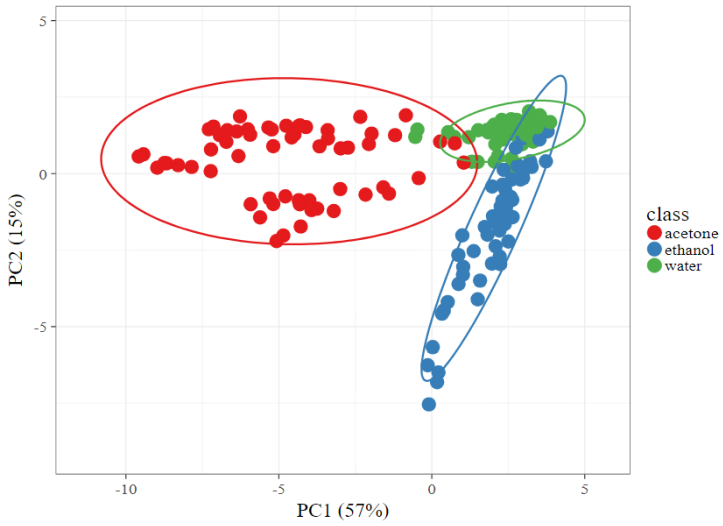
	Variance
PC1	32.9%
PC2	12.0%
PC3	7.6%
PC4	6.1%
PC5	5.2%
PC6	4.7%
PC7	4.3%
PC8	3.9%
PC9	3.6%
PC10	3.3%
PC11	2.8%
PC12	2.4%
PC13	1.9%
PC14	1.8%
PC15	1.5%
PC16	1.3%
PC17	1.1%
PC18	0.9%
PC19	0.7%
PC20	0.6%
PC21	0.5%
PC22	0.4%
PC23	0.3%
PC24	0.2%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.32	0.08
	#2	-0.32	0.04
	#3	-0.23	0.15
$Cu(OTf)_2$	#1	-0.05	-0.28
	#2	-0.12	-0.12
	#3	-0.22	-0.05
$Bi(OTf)_3$	#1	-0.11	0.27
	#2	-0.27	-0.13
	#3	-0.28	0.24
$Al(OTf)_3$	#1	-0.26	0.01
	#2	-0.30	0.06
	#3	-0.31	0.05
$In(OTf)_3$	#1	-0.03	-0.02
	#2	-0.11	-0.03
	#3	-0.19	-0.08
$Dy(OTf)_3$	#1	-0.20	-0.19
	#2	-0.30	-0.05
	#3	-0.14	0.28
$Ce(OTf)_3$	#1	-0.12	-0.27
	#2	-0.10	-0.43
	#3	-0.10	-0.50
no triflate	#1	0.08	-0.21
	#2	0.15	0.02
	#3	-0.03	0.20

Figure S1. PCA on α_1, for R is measured at different time interval [0s;9s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

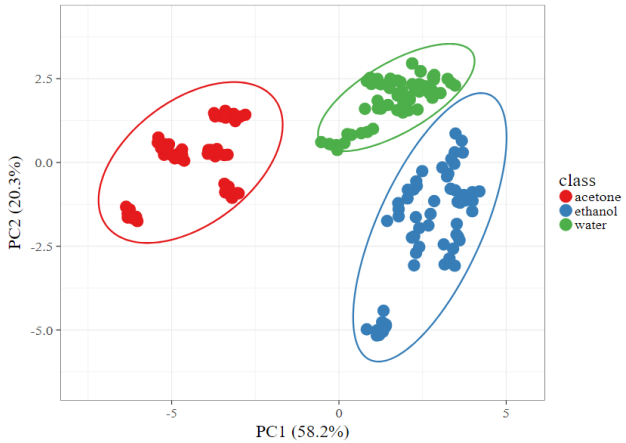
	Variance
PC1	57.0%
PC2	15.0%
PC3	6.1%
PC4	4.4%
PC5	2.9%
PC6	2.6%
PC7	2.0%
PC8	1.8%
PC9	1.6%
PC10	1.1%
PC11	0.9%
PC12	0.8%
PC13	0.7%
PC14	0.6%
PC15	0.5%
PC16	0.4%
PC17	0.4%
PC18	0.3%
PC19	0.2%
PC20	0.2%
PC21	0.2%
PC22	0.1%
PC23	0.1%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.20	-0.16
	#2	-0.24	-0.16
	#3	-0.23	-0.14
$Cu(OTf)_2$	#1	-0.19	0.19
	#2	-0.24	-0.05
	#3	-0.21	-0.11
$Bi(OTf)_3$	#1	-0.18	-0.33
	#2	-0.21	0.17
	#3	-0.18	-0.27
$Al(OTf)_3$	#1	-0.23	0.08
	#2	-0.25	0.09
	#3	-0.26	-0.05
$In(OTf)_3$	#1	-0.22	0.11
	#2	-0.25	0.00
	#3	-0.21	-0.02
$Dy(OTf)_3$	#1	-0.20	0.23
	#2	-0.24	0.15
	#3	-0.19	-0.14
$Ce(OTf)_3$	#1	-0.13	0.39
	#2	-0.07	0.35
	#3	-0.17	0.35
no triflate	#1	0.13	0.31
	#2	0.23	0.16
	#3	-0.06	0.16

Figure S2. PCA on α_1, for R is measured at different time interval [10s;19s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

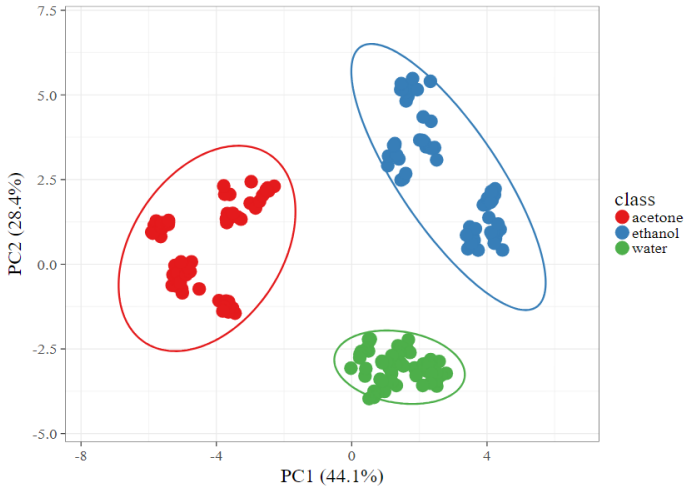
	Variance
PC1	50.3%
PC2	21.7%
PC3	8.0%
PC4	3.4%
PC5	3.2%
PC6	2.7%
PC7	2.6%
PC8	1.8%
PC9	1.5%
PC10	1.1%
PC11	1.0%
PC12	0.7%
PC13	0.4%
PC14	0.3%
PC15	0.3%
PC16	0.2%
PC17	0.2%
PC18	0.2%
PC19	0.1%
PC20	0.1%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.16	0.21
	#2	-0.22	0.24
	#3	-0.22	0.24
$Cu(OTf)_2$	#1	-0.17	-0.22
	#2	-0.26	-0.07
	#3	-0.17	-0.19
$Bi(OTf)_3$	#1	-0.14	0.32
	#2	-0.24	-0.05
	#3	-0.08	0.33
$Al(OTf)_3$	#1	-0.25	-0.09
	#2	-0.27	-0.10
	#3	-0.28	0.05
$In(OTf)_3$	#1	-0.23	-0.02
	#2	-0.27	0.02
	#3	-0.24	0.00
$Dy(OTf)_3$	#1	-0.22	-0.23
	#2	-0.25	-0.14
	#3	-0.21	0.18
$Ce(OTf)_3$	#1	-0.19	-0.30
	#2	-0.07	-0.29
	#3	-0.16	-0.29
no triflate	#1	0.11	-0.28
	#2	0.21	-0.26
	#3	0.04	-0.14

Figure S3. PCA on α_1, for R is measured at different time interval [20s;29s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

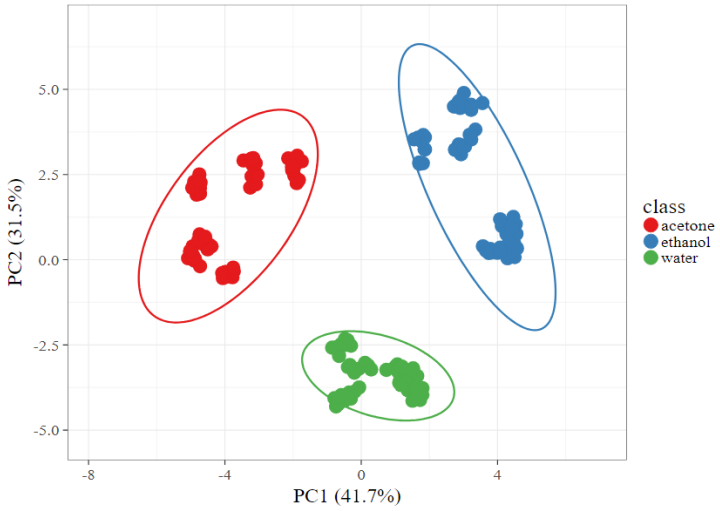
	Variance
PC1	44.1%
PC2	28.4%
PC3	7.5%
PC4	4.3%
PC5	3.3%
PC6	2.6%
PC7	2.2%
PC8	1.9%
PC9	1.7%
PC10	0.9%
PC11	0.8%
PC12	0.5%
PC13	0.5%
PC14	0.4%
PC15	0.3%
PC16	0.2%
PC17	0.1%
PC18	0.1%
PC19	0.1%
PC20	0.1%
PC21	0.1%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.12	0.25
	#2	-0.20	0.25
	#3	-0.15	0.29
$Cu(OTf)_2$	#1	-0.16	-0.21
	#2	-0.26	-0.10
	#3	-0.13	-0.21
$Bi(OTf)_3$	#1	-0.06	0.30
	#2	-0.26	-0.01
	#3	0.01	0.29
$Al(OTf)_3$	#1	-0.27	-0.08
	#2	-0.28	-0.11
	#3	-0.29	0.04
$In(OTf)_3$	#1	-0.21	-0.02
	#2	-0.28	0.06
	#3	-0.24	-0.02
$Dy(OTf)_3$	#1	-0.24	-0.21
	#2	-0.26	-0.14
	#3	-0.21	0.19
$Ce(OTf)_3$	#1	-0.22	-0.25
	#2	-0.03	-0.27
	#3	-0.11	-0.27
no triflate	#1	0.14	-0.28
	#2	0.20	-0.26
	#3	0.17	-0.21

Figure S4. PCA on α_1, for R is measured at different time interval [30s;39s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

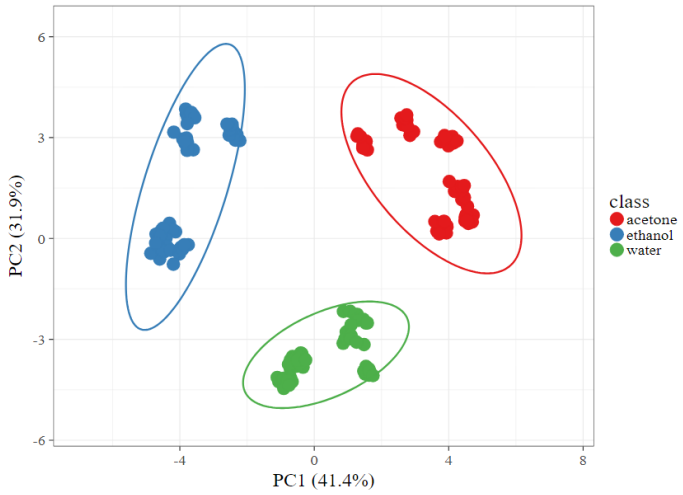
	Variance
PC1	41.7%
PC2	31.5%
PC3	7.2%
PC4	4.2%
PC5	3.6%
PC6	2.6%
PC7	2.2%
PC8	1.9%
PC9	1.4%
PC10	0.8%
PC11	0.8%
PC12	0.5%
PC13	0.4%
PC14	0.3%
PC15	0.2%
PC16	0.2%
PC17	0.1%
PC18	0.1%
PC19	0.1%
PC20	0.1%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.07	0.26
	#2	-0.15	0.28
	#3	-0.05	0.31
$Cu(OTf)_2$	#1	-0.17	-0.21
	#2	-0.28	-0.07
	#3	-0.13	-0.21
$Bi(OTf)_3$	#1	0.03	0.27
	#2	-0.26	0.08
	#3	0.10	0.25
$Al(OTf)_3$	#1	-0.28	-0.04
	#2	-0.29	-0.09
	#3	-0.29	0.07
$In(OTf)_3$	#1	-0.24	0.01
	#2	-0.28	0.11
	#3	-0.25	0.00
$Dy(OTf)_3$	#1	-0.27	-0.16
	#2	-0.28	-0.09
	#3	-0.18	0.21
$Ce(OTf)_3$	#1	-0.25	-0.19
	#2	-0.05	-0.27
	#3	-0.12	-0.25
no triflate	#1	0.12	-0.30
	#2	0.16	-0.29
	#3	0.16	-0.26

Figure S5. PCA on α_1, for R is measured at different time interval [40s;49s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

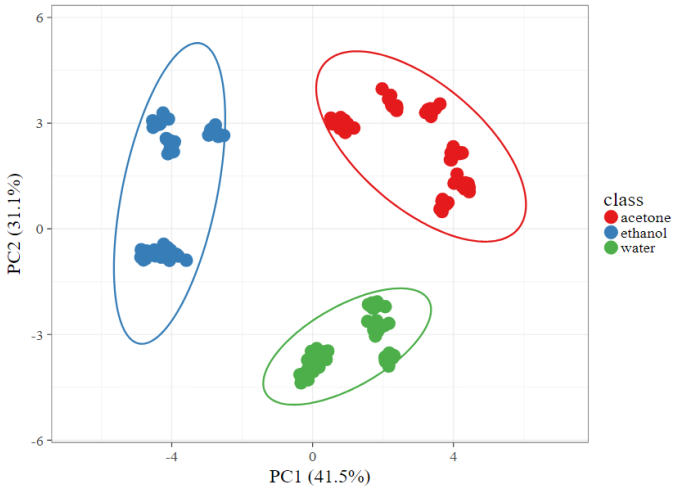
	Variance
PC1	41.4%
PC2	31.9%
PC3	6.4%
PC4	4.5%
PC5	3.3%
PC6	2.5%
PC7	2.4%
PC8	2.1%
PC9	1.4%
PC10	1.0%
PC11	0.9%
PC12	0.6%
PC13	0.4%
PC14	0.4%
PC15	0.2%
PC16	0.2%
PC17	0.1%
PC18	0.1%
PC19	0.1%
PC20	0.0%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.03	0.26
	#2	-0.09	0.30
	#3	0.02	0.30
$Cu(OTf)_2$	#1	-0.19	-0.18
	#2	-0.30	-0.01
	#3	-0.16	-0.22
$Bi(OTf)_3$	#1	0.10	0.24
	#2	-0.25	0.14
	#3	0.17	0.20
$Al(OTf)_3$	#1	-0.28	0.01
	#2	-0.29	-0.07
	#3	-0.28	0.10
$In(OTf)_3$	#1	-0.20	0.05
	#2	-0.26	0.14
	#3	-0.25	0.03
$Dy(OTf)_3$	#1	-0.29	-0.11
	#2	-0.29	-0.04
	#3	-0.15	0.24
$Ce(OTf)_3$	#1	-0.27	-0.15
	#2	-0.08	-0.28
	#3	-0.14	-0.24
no triflate	#1	0.08	-0.32
	#2	0.11	-0.32
	#3	0.14	-0.29

Figure S6. PCA on α_1, for R is measured at different time interval [50s;59s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

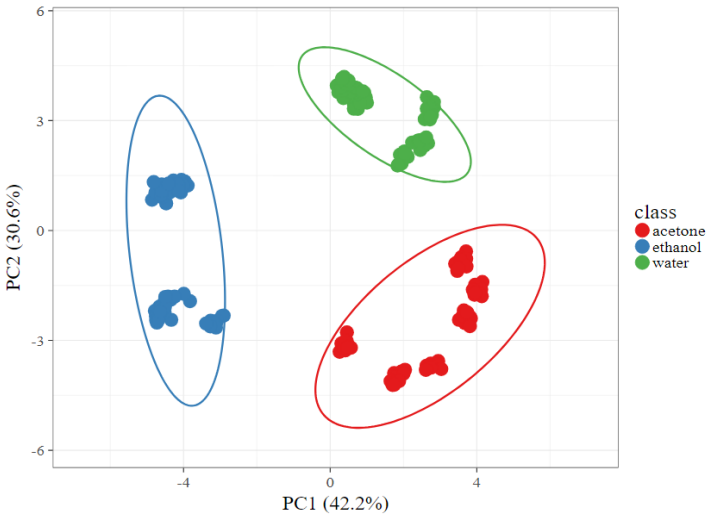
	Variance
PC1	41.5%
PC2	31.1%
PC3	6.4%
PC4	5.0%
PC5	3.2%
PC6	2.8%
PC7	2.4%
PC8	2.3%
PC9	1.3%
PC10	1.1%
PC11	0.8%
PC12	0.5%
PC13	0.4%
PC14	0.3%
PC15	0.3%
PC16	0.2%
PC17	0.1%
PC18	0.1%
PC19	0.1%
PC20	0.1%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.01	-0.26
	#2	0.07	-0.30
	#3	-0.05	-0.29
$Cu(OTf)_2$	#1	0.20	0.15
	#2	0.29	-0.05
	#3	0.17	0.21
$Bi(OTf)_3$	#1	-0.16	-0.19
	#2	0.22	-0.20
	#3	-0.21	-0.15
$Al(OTf)_3$	#1	0.28	-0.04
	#2	0.29	0.07
	#3	0.28	-0.11
$In(OTf)_3$	#1	0.18	-0.08
	#2	0.25	-0.17
	#3	0.25	-0.05
$Dy(OTf)_3$	#1	0.30	0.06
	#2	0.29	0.01
	#3	0.13	-0.25
$Ce(OTf)_3$	#1	0.28	0.13
	#2	0.10	0.27
	#3	0.16	0.24
no triflate	#1	-0.04	0.34
	#2	-0.08	0.33
	#3	-0.10	0.32

Figure S7. PCA on α_1, for R is measured at different time interval [60s;69s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

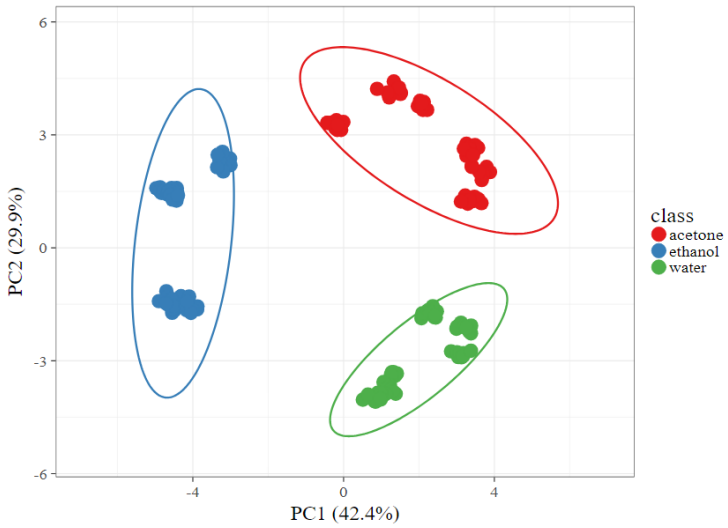
	Variance
PC1	42.2%
PC2	30.6%
PC3	6.2%
PC4	5.2%
PC5	3.1%
PC6	2.9%
PC7	2.5%
PC8	2.1%
PC9	1.3%
PC10	0.9%
PC11	0.9%
PC12	0.6%
PC13	0.3%
PC14	0.2%
PC15	0.2%
PC16	0.2%
PC17	0.1%
PC18	0.1%
PC19	0.1%
PC20	0.0%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.04	-0.25
	#2	0.06	-0.30
	#3	-0.06	-0.27
$Cu(OTf)_2$	#1	0.22	0.12
	#2	0.29	-0.06
	#3	0.19	0.20
$Bi(OTf)_3$	#1	-0.20	-0.12
	#2	0.19	-0.23
	#3	-0.23	-0.11
$Al(OTf)_3$	#1	0.28	-0.05
	#2	0.28	0.06
	#3	0.27	-0.10
$In(OTf)_3$	#1	0.18	-0.06
	#2	0.23	-0.19
	#3	0.24	-0.07
$Dy(OTf)_3$	#1	0.30	0.03
	#2	0.29	-0.02
	#3	0.11	-0.27
$Ce(OTf)_3$	#1	0.28	0.11
	#2	0.12	0.27
	#3	0.18	0.25
no triflate	#1	-0.01	0.34
	#2	-0.04	0.34
	#3	-0.07	0.33

Figure S8. PCA on α_1, for R is measured at different time interval [70s;79s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

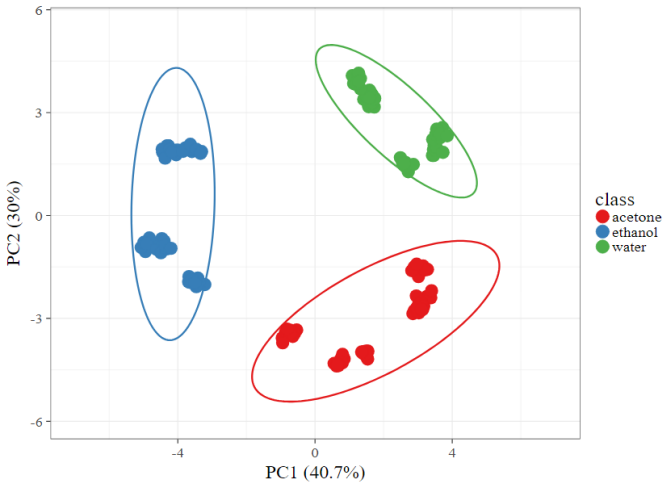
	Variance
PC1	42.4%
PC2	29.9%
PC3	6.6%
PC4	5.4%
PC5	3.3%
PC6	2.7%
PC7	2.5%
PC8	2.4%
PC9	1.3%
PC10	0.9%
PC11	0.8%
PC12	0.6%
PC13	0.4%
PC14	0.2%
PC15	0.2%
PC16	0.2%
PC17	0.1%
PC18	0.1%
PC19	0.1%
PC20	0.0%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.07	0.24
	#2	0.04	0.31
	#3	-0.07	0.26
$Cu(OTf)_2$	#1	0.23	-0.14
	#2	0.29	0.07
	#3	0.22	-0.14
$Bi(OTf)_3$	#1	-0.22	0.04
	#2	0.16	0.27
	#3	-0.25	0.06
$Al(OTf)_3$	#1	0.27	0.09
	#2	0.28	-0.03
	#3	0.27	0.09
$In(OTf)_3$	#1	0.17	0.07
	#2	0.21	0.21
	#3	0.23	0.09
$Dy(OTf)_3$	#1	0.30	0.01
	#2	0.29	0.05
	#3	0.06	0.28
$Ce(OTf)_3$	#1	0.28	-0.10
	#2	0.14	-0.26
	#3	0.19	-0.25
no triflate	#1	0.03	-0.35
	#2	-0.01	-0.35
	#3	-0.04	-0.35

Figure S9. PCA on α_1, for R is measured at different time interval [80s;89s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

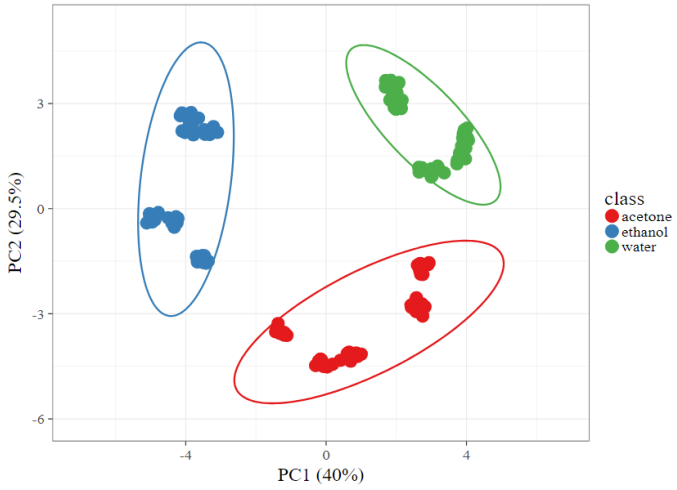
	Variance
PC1	40.7%
PC2	30.0%
PC3	6.9%
PC4	5.9%
PC5	3.7%
PC6	3.0%
PC7	2.8%
PC8	2.3%
PC9	1.1%
PC10	0.9%
PC11	0.7%
PC12	0.5%
PC13	0.4%
PC14	0.3%
PC15	0.2%
PC16	0.2%
PC17	0.1%
PC18	0.1%
PC19	0.1%
PC20	0.0%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	PC2
$Fe(OTf)_3$	#1	-0.11	0.22
	#2	0.02	0.30
	#3	-0.08	0.24
$Cu(OTf)_2$	#1	0.23	-0.11
	#2	0.28	0.10
	#3	0.20	-0.16
$Bi(OTf)_3$	#1	-0.22	-0.04
	#2	0.14	0.29
	#3	-0.26	0.01
$Al(OTf)_3$	#1	0.26	0.11
	#2	0.28	-0.02
	#3	0.27	0.08
$In(OTf)_3$	#1	0.15	0.06
	#2	0.18	0.24
	#3	0.22	0.11
$Dy(OTf)_3$	#1	0.30	0.05
	#2	0.29	0.09
	#3	0.03	0.29
$Ce(OTf)_3$	#1	0.29	-0.08
	#2	0.16	-0.24
	#3	0.22	-0.23
no triflate	#1	0.05	-0.35
	#2	0.04	-0.35
	#3	0.01	-0.35

Figure S10. PCA on α_1, for R is measured at different time interval [90s;99s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

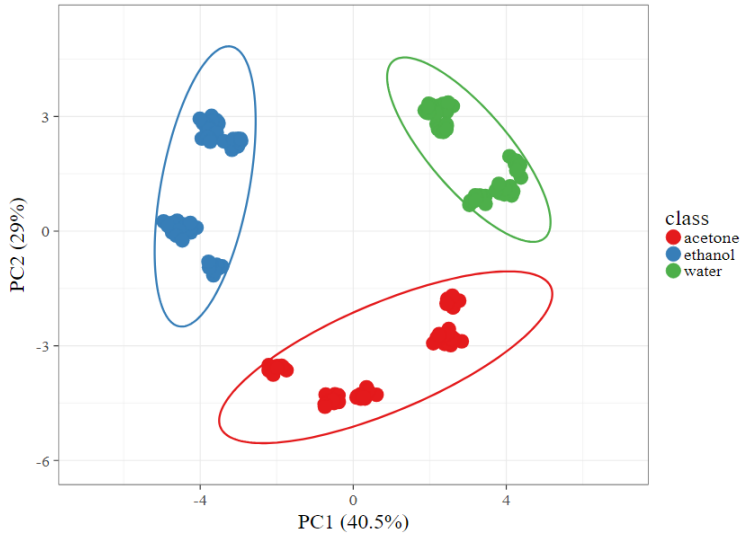
	Variance
PC1	40.0%
PC2	29.5%
PC3	7.8%
PC4	6.0%
PC5	4.1%
PC6	3.1%
PC7	2.7%
PC8	2.3%
PC9	1.1%
PC10	0.9%
PC11	0.7%
PC12	0.5%
PC13	0.4%
PC14	0.3%
PC15	0.2%
PC16	0.1%
PC17	0.1%
PC18	0.1%
PC19	0.1%
PC20	0.0%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.14	0.19
	#2	-0.01	0.29
	#3	-0.11	0.22
$Cu(OTf)_2$	#1	0.24	-0.09
	#2	0.28	0.11
	#3	0.20	-0.14
$Bi(OTf)_3$	#1	-0.21	-0.11
	#2	0.10	0.32
	#3	-0.26	-0.05
$Al(OTf)_3$	#1	0.25	0.14
	#2	0.27	-0.02
	#3	0.27	0.09
$In(OTf)_3$	#1	0.14	0.04
	#2	0.16	0.26
	#3	0.21	0.13
$Dy(OTf)_3$	#1	0.30	0.09
	#2	0.27	0.14
	#3	-0.01	0.29
$Ce(OTf)_3$	#1	0.30	-0.05
	#2	0.19	-0.22
	#3	0.24	-0.21
no triflate	#1	0.09	-0.34
	#2	0.09	-0.34
	#3	0.06	-0.35

Figure S11. PCA on α_1, for R is measured at different time interval [100s;109s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

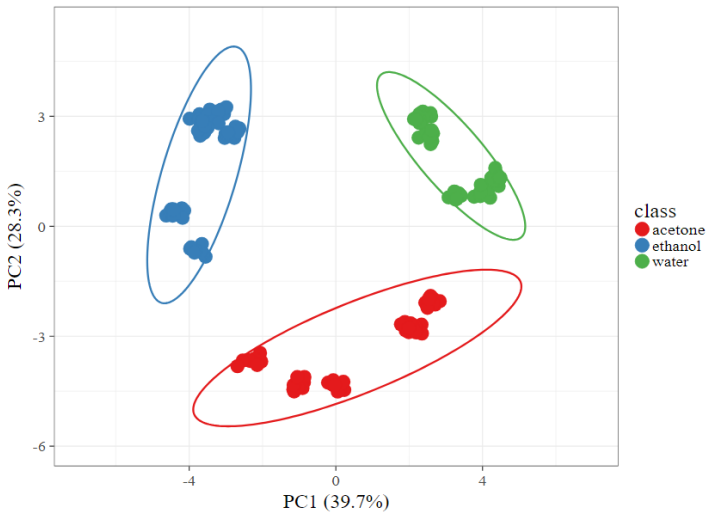
	Variance
PC1	40.5%
PC2	29.0%
PC3	8.2%
PC4	6.0%
PC5	3.8%
PC6	3.0%
PC7	2.6%
PC8	2.1%
PC9	1.2%
PC10	1.0%
PC11	0.7%
PC12	0.5%
PC13	0.4%
PC14	0.3%
PC15	0.2%
PC16	0.1%
PC17	0.1%
PC18	0.1%
PC19	0.1%
PC20	0.0%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	PC2
$Fe(OTf)_3$	#1	-0.15	0.16
	#2	-0.02	0.28
	#3	-0.12	0.19
$Cu(OTf)_2$	#1	0.24	-0.07
	#2	0.27	0.12
	#3	0.23	-0.13
$Bi(OTf)_3$	#1	-0.19	-0.16
	#2	0.07	0.33
	#3	-0.25	-0.10
$Al(OTf)_3$	#1	0.24	0.15
	#2	0.27	-0.01
	#3	0.27	0.09
$In(OTf)_3$	#1	0.16	-0.01
	#2	0.16	0.25
	#3	0.20	0.15
$Dy(OTf)_3$	#1	0.29	0.12
	#2	0.26	0.17
	#3	-0.03	0.30
$Ce(OTf)_3$	#1	0.30	-0.04
	#2	0.20	-0.21
	#3	0.25	-0.19
no triflate	#1	0.11	-0.33
	#2	0.11	-0.33
	#3	0.08	-0.35

Figure S12. PCA on α_1, for R is measured at different time interval [110s;119s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

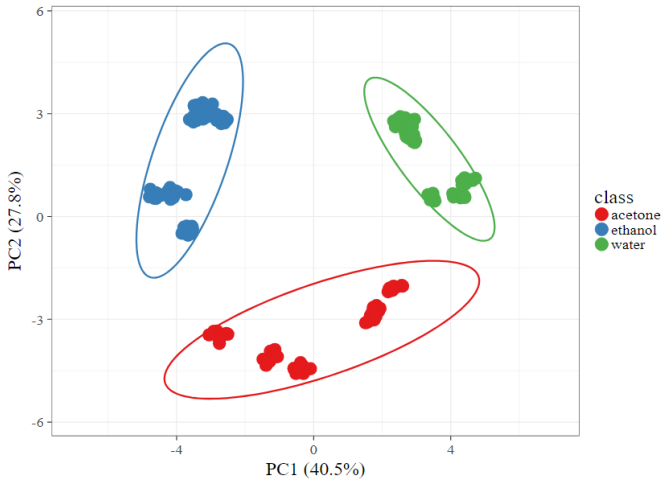
	Variance
PC1	39.7%
PC2	28.3%
PC3	8.6%
PC4	6.2%
PC5	4.3%
PC6	3.0%
PC7	2.8%
PC8	1.9%
PC9	1.4%
PC10	1.3%
PC11	0.7%
PC12	0.5%
PC13	0.4%
PC14	0.2%
PC15	0.2%
PC16	0.1%
PC17	0.1%
PC18	0.1%
PC19	0.1%
PC20	0.0%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.14	0.14
	#2	-0.03	0.27
	#3	-0.13	0.16
$Cu(OTf)_2$	#1	0.25	-0.06
	#2	0.25	0.14
	#3	0.24	-0.08
$Bi(OTf)_3$	#1	-0.17	-0.20
	#2	0.05	0.34
	#3	-0.24	-0.14
$Al(OTf)_3$	#1	0.24	0.16
	#2	0.26	-0.03
	#3	0.27	0.08
$In(OTf)_3$	#1	0.15	-0.05
	#2	0.15	0.26
	#3	0.20	0.15
$Dy(OTf)_3$	#1	0.29	0.14
	#2	0.25	0.20
	#3	-0.04	0.30
$Ce(OTf)_3$	#1	0.31	-0.04
	#2	0.22	-0.20
	#3	0.26	-0.18
no triflate	#1	0.13	-0.33
	#2	0.13	-0.33
	#3	0.10	-0.35

Figure S13. PCA on α_1, for R is measured at different time interval [120s;129s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

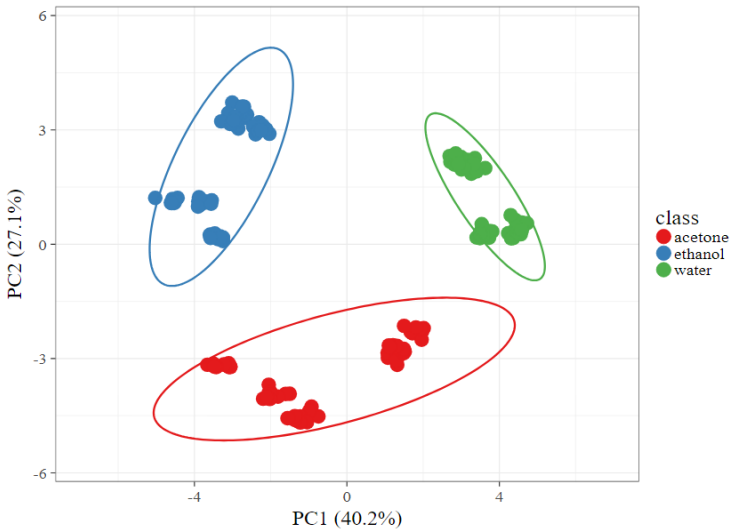
	Variance
PC1	40.5%
PC2	27.8%
PC3	8.9%
PC4	6.5%
PC5	3.9%
PC6	3.0%
PC7	2.6%
PC8	1.7%
PC9	1.5%
PC10	1.1%
PC11	0.7%
PC12	0.5%
PC13	0.3%
PC14	0.2%
PC15	0.2%
PC16	0.1%
PC17	0.1%
PC18	0.1%
PC19	0.1%
PC20	0.0%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.14	0.14
	#2	-0.05	0.25
	#3	-0.14	0.15
$Cu(OTf)_2$	#1	0.25	-0.03
	#2	0.25	0.13
	#3	0.25	-0.06
$Bi(OTf)_3$	#1	-0.14	-0.23
	#2	0.03	0.35
	#3	-0.23	-0.17
$Al(OTf)_3$	#1	0.24	0.18
	#2	0.26	-0.03
	#3	0.28	0.07
$In(OTf)_3$	#1	0.16	-0.03
	#2	0.14	0.25
	#3	0.19	0.17
$Dy(OTf)_3$	#1	0.28	0.16
	#2	0.24	0.22
	#3	-0.07	0.30
$Ce(OTf)_3$	#1	0.30	-0.03
	#2	0.22	-0.18
	#3	0.27	-0.16
no triflate	#1	0.16	-0.31
	#2	0.16	-0.32
	#3	0.13	-0.34

Figure S14. PCA on α_1, for R is measured at different time interval [130s;139s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

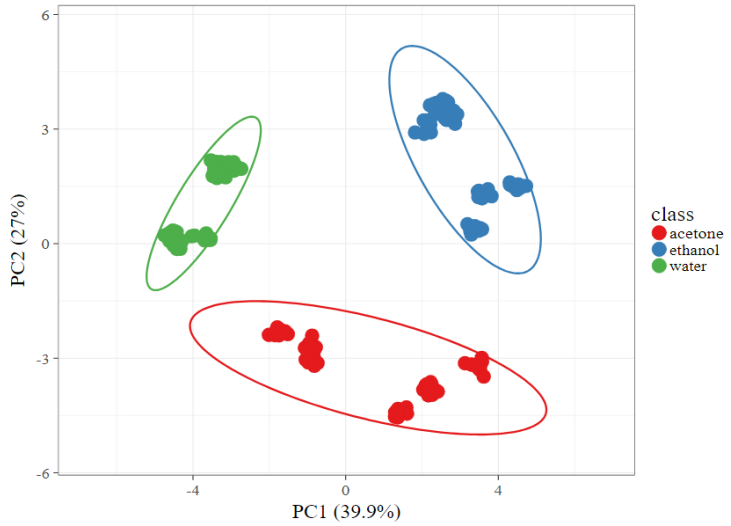
	Variance
PC1	40.2%
PC2	27.1%
PC3	8.9%
PC4	6.6%
PC5	4.1%
PC6	3.3%
PC7	2.6%
PC8	2.1%
PC9	1.7%
PC10	1.1%
PC11	0.7%
PC12	0.4%
PC13	0.4%
PC14	0.3%
PC15	0.2%
PC16	0.1%
PC17	0.1%
PC18	0.1%
PC19	0.1%
PC20	0.0%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.15	0.11
	#2	-0.07	0.22
	#3	-0.16	0.11
$Cu(OTf)_2$	#1	0.25	-0.01
	#2	0.23	0.16
	#3	0.25	-0.04
$Bi(OTf)_3$	#1	-0.11	-0.26
	#2	-0.01	0.36
	#3	-0.20	-0.22
$Al(OTf)_3$	#1	0.23	0.19
	#2	0.25	-0.01
	#3	0.27	0.08
$In(OTf)_3$	#1	0.18	-0.07
	#2	0.12	0.26
	#3	0.18	0.18
$Dy(OTf)_3$	#1	0.26	0.21
	#2	0.22	0.26
	#3	-0.11	0.28
$Ce(OTf)_3$	#1	0.30	0.00
	#2	0.23	-0.15
	#3	0.28	-0.12
no triflate	#1	0.19	-0.29
	#2	0.19	-0.30
	#3	0.17	-0.32

Figure S15. PCA on α_1, for R is measured at different time interval [140s;149s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

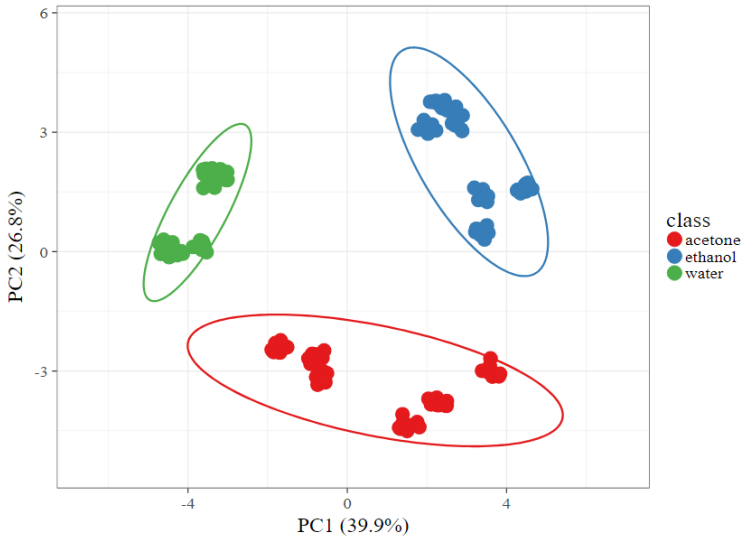
	Variance
PC1	39.9%
PC2	27.0%
PC3	8.8%
PC4	6.4%
PC5	4.4%
PC6	3.4%
PC7	2.9%
PC8	2.1%
PC9	1.8%
PC10	1.2%
PC11	0.7%
PC12	0.4%
PC13	0.4%
PC14	0.3%
PC15	0.2%
PC16	0.1%
PC17	0.1%
PC18	0.1%
PC19	0.0%
PC20	0.0%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.14	0.10
	#2	-0.09	0.19
	#3	-0.16	0.09
$Cu(OTf)_2$	#1	0.25	-0.01
	#2	0.24	0.15
	#3	0.24	-0.08
$Bi(OTf)_3$	#1	-0.09	-0.28
	#2	-0.03	0.35
	#3	-0.18	-0.25
$Al(OTf)_3$	#1	0.22	0.19
	#2	0.25	-0.02
	#3	0.28	0.08
$In(OTf)_3$	#1	0.18	-0.04
	#2	0.11	0.28
	#3	0.18	0.20
$Dy(OTf)_3$	#1	0.25	0.22
	#2	0.20	0.28
	#3	-0.10	0.27
$Ce(OTf)_3$	#1	0.31	0.00
	#2	0.24	-0.14
	#3	0.29	-0.11
no triflate	#1	0.21	-0.28
	#2	0.20	-0.28
	#3	0.19	-0.31

Figure S16. PCA on α_1, for R is measured at different time interval [150s;159s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

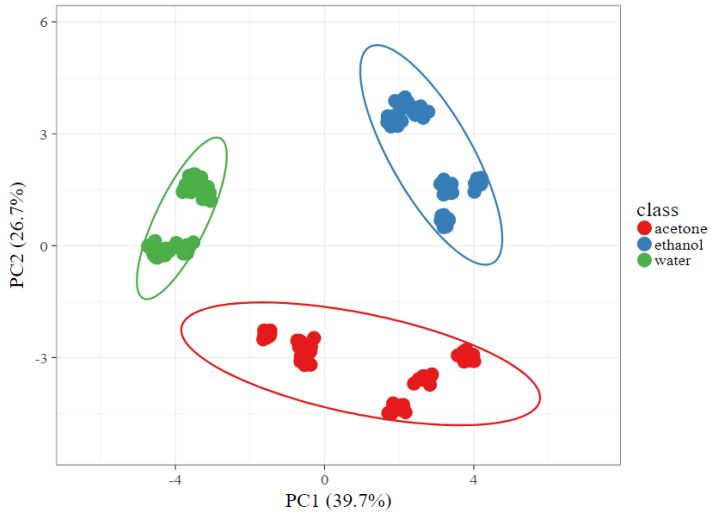
	Variance
PC1	39.9%
PC2	26.8%
PC3	8.9%
PC4	6.3%
PC5	4.3%
PC6	3.4%
PC7	2.9%
PC8	2.0%
PC9	1.7%
PC10	1.4%
PC11	0.7%
PC12	0.5%
PC13	0.4%
PC14	0.3%
PC15	0.2%
PC16	0.1%
PC17	0.1%
PC18	0.1%
PC19	0.0%
PC20	0.0%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.14	0.07
	#2	-0.09	0.18
	#3	-0.17	0.07
$Cu(OTf)_2$	#1	0.25	-0.01
	#2	0.23	0.17
	#3	0.24	-0.09
$Bi(OTf)_3$	#1	-0.07	-0.29
	#2	-0.03	0.36
	#3	-0.17	-0.27
$Al(OTf)_3$	#1	0.22	0.18
	#2	0.24	-0.02
	#3	0.28	0.10
$In(OTf)_3$	#1	0.17	-0.03
	#2	0.12	0.27
	#3	0.18	0.20
$Dy(OTf)_3$	#1	0.25	0.23
	#2	0.20	0.28
	#3	-0.12	0.26
$Ce(OTf)_3$	#1	0.31	-0.01
	#2	0.24	-0.13
	#3	0.29	-0.11
no triflate	#1	0.21	-0.28
	#2	0.21	-0.28
	#3	0.19	-0.31

Figure S17. PCA on α_1, for R is measured at different time interval [160s;169s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

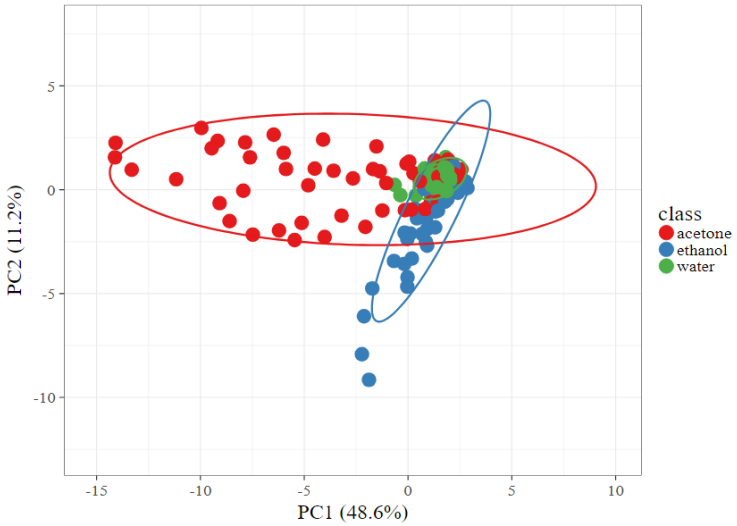
	Variance
PC1	39.7%
PC2	26.7%
PC3	9.2%
PC4	6.5%
PC5	4.5%
PC6	3.2%
PC7	2.9%
PC8	1.9%
PC9	1.7%
PC10	1.3%
PC11	0.7%
PC12	0.4%
PC13	0.3%
PC14	0.2%
PC15	0.1%
PC16	0.1%
PC17	0.1%
PC18	0.1%
PC19	0.0%
PC20	0.0%
PC21	0.0%
PC22	0.0%
PC23	0.0%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.13	0.04
	#2	-0.09	0.16
	#3	-0.16	0.05
$Cu(OTf)_2$	#1	0.25	0.00
	#2	0.22	0.21
	#3	0.24	-0.10
$Bi(OTf)_3$	#1	-0.05	-0.30
	#2	-0.05	0.35
	#3	-0.15	-0.28
$Al(OTf)_3$	#1	0.21	0.20
	#2	0.24	-0.03
	#3	0.28	0.10
$In(OTf)_3$	#1	0.18	-0.06
	#2	0.11	0.26
	#3	0.18	0.21
$Dy(OTf)_3$	#1	0.24	0.25
	#2	0.19	0.30
	#3	-0.11	0.26
$Ce(OTf)_3$	#1	0.31	0.00
	#2	0.25	-0.12
	#3	0.29	-0.10
no triflate	#1	0.23	-0.25
	#2	0.23	-0.26
	#3	0.21	-0.29

Figure S18. PCA on α_1, for R is measured at different time interval [170s;179s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

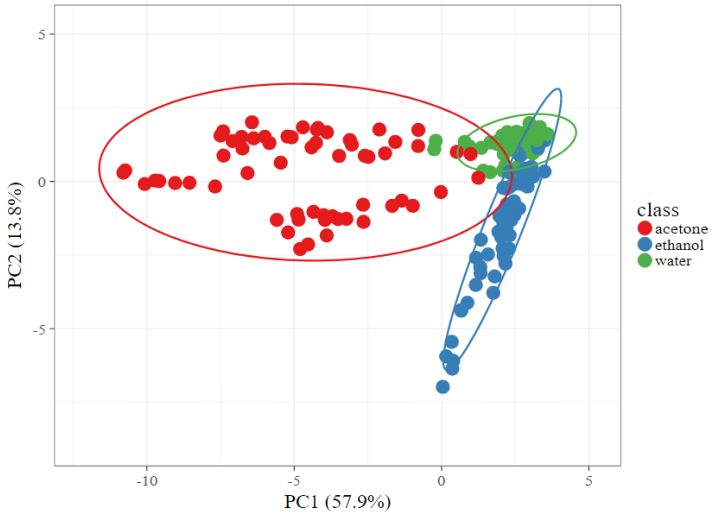
	Variance
PC1	48.6%
PC2	11.2%
PC3	6.8%
PC4	6.3%
PC5	4.3%
PC6	4.1%
PC7	3.6%
PC8	2.9%
PC9	2.4%
PC10	1.8%
PC11	1.5%
PC12	1.3%
PC13	0.9%
PC14	0.9%
PC15	0.7%
PC16	0.7%
PC17	0.6%
PC18	0.3%
PC19	0.3%
PC20	0.2%
PC21	0.2%
PC22	0.1%
PC23	0.1%
PC24	0.1%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	0.24	0.10
	#2	0.27	0.07
	#3	0.25	0.03
$Cu(OTf)_2$	#1	0.19	-0.13
	#2	0.24	0.08
	#3	0.23	0.21
$Bi(OTf)_3$	#1	0.18	0.36
	#2	0.25	-0.19
	#3	0.23	0.22
$Al(OTf)_3$	#1	0.25	-0.08
	#2	0.18	-0.03
	#3	0.26	0.06
$In(OTf)_3$	#1	0.21	-0.09
	#2	0.21	0.09
	#3	0.21	0.01
$Dy(OTf)_3$	#1	0.18	-0.19
	#2	0.23	-0.13
	#3	0.18	0.14
$Ce(OTf)_3$	#1	0.09	-0.44
	#2	0.07	-0.43
	#3	0.20	-0.35
no triflate	#1	-0.12	-0.27
	#2	-0.20	-0.01
	#3	0.07	-0.15

Figure S19. PCA on α_2, for R is measured at different time interval [1s;9s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

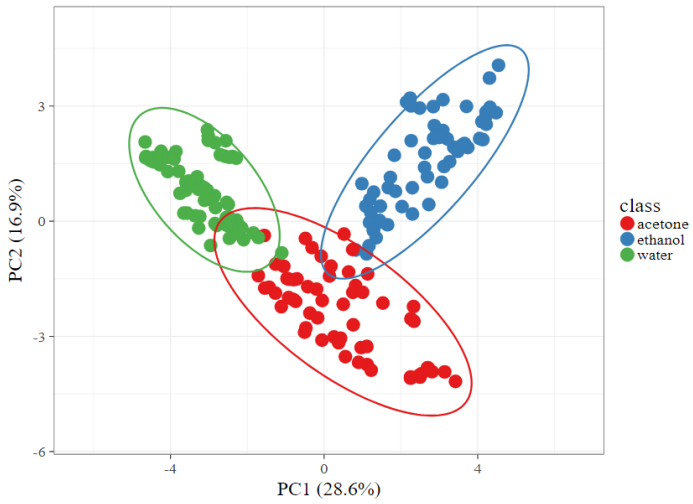
	Variance
PC1	57.9%
PC2	13.8%
PC3	6.7%
PC4	4.9%
PC5	2.9%
PC6	2.6%
PC7	2.1%
PC8	1.9%
PC9	1.5%
PC10	1.1%
PC11	1.0%
PC12	0.7%
PC13	0.6%
PC14	0.5%
PC15	0.4%
PC16	0.4%
PC17	0.3%
PC18	0.3%
PC19	0.2%
PC20	0.1%
PC21	0.1%
PC22	0.1%
PC23	0.1%
PC24	0.0%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	0.20	0.15
	#2	0.24	0.14
	#3	0.23	0.14
$Cu(OTf)_2$	#1	0.20	-0.18
	#2	0.24	0.02
	#3	0.21	0.12
$Bi(OTf)_3$	#1	0.18	0.35
	#2	0.21	-0.15
	#3	0.18	0.30
$Al(OTf)_3$	#1	0.25	-0.06
	#2	0.24	-0.06
	#3	0.26	0.04
$In(OTf)_3$	#1	0.21	-0.11
	#2	0.25	0.00
	#3	0.21	0.02
$Dy(OTf)_3$	#1	0.20	-0.20
	#2	0.24	-0.12
	#3	0.17	0.15
$Ce(OTf)_3$	#1	0.15	-0.38
	#2	0.09	-0.37
	#3	0.19	-0.33
no triflate	#1	-0.12	-0.33
	#2	-0.23	-0.18
	#3	0.06	-0.17

Figure S20. PCA on α_2, for R is measured at different time interval [10s;19s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

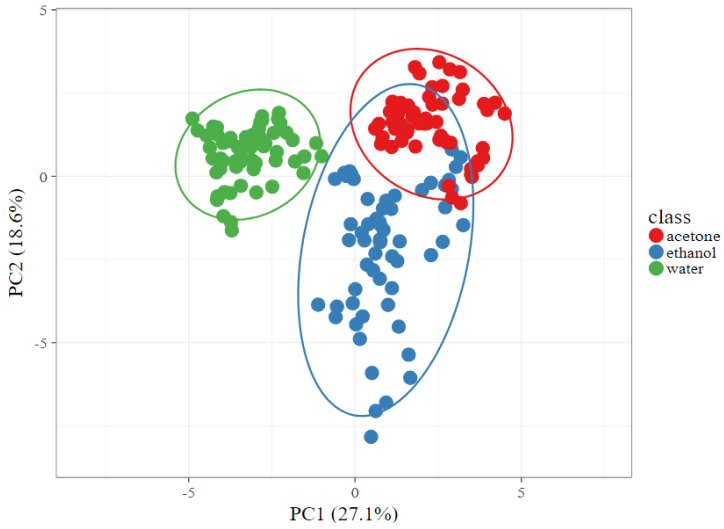
	Variance
PC1	28.6%
PC2	16.9%
PC3	7.3%
PC4	5.9%
PC5	5.3%
PC6	5.1%
PC7	4.7%
PC8	4.1%
PC9	3.0%
PC10	2.7%
PC11	2.6%
PC12	2.3%
PC13	2.1%
PC14	1.8%
PC15	1.6%
PC16	1.5%
PC17	1.3%
PC18	1.0%
PC19	0.8%
PC20	0.5%
PC21	0.3%
PC22	0.3%
PC23	0.2%
PC24	0.1%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.11	0.33
	#2	-0.17	0.29
	#3	-0.21	0.25
$Cu(OTf)_2$	#1	0.26	-0.01
	#2	0.24	0.09
	#3	0.14	0.06
$Bi(OTf)_3$	#1	0.04	0.39
	#2	0.05	-0.06
	#3	-0.13	0.40
$Al(OTf)_3$	#1	0.24	0.09
	#2	0.19	0.13
	#3	0.26	0.20
$In(OTf)_3$	#1	0.07	0.18
	#2	0.07	0.34
	#3	0.13	-0.12
$Dy(OTf)_3$	#1	0.35	0.05
	#2	0.33	-0.01
	#3	0.18	0.06
$Ce(OTf)_3$	#1	0.24	-0.27
	#2	0.28	-0.05
	#3	0.24	-0.01
no triflate	#1	0.16	0.13
	#2	0.24	0.16
	#3	0.12	0.24

Figure S21. PCA on α_2, for R is measured at different time interval [20s;29s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

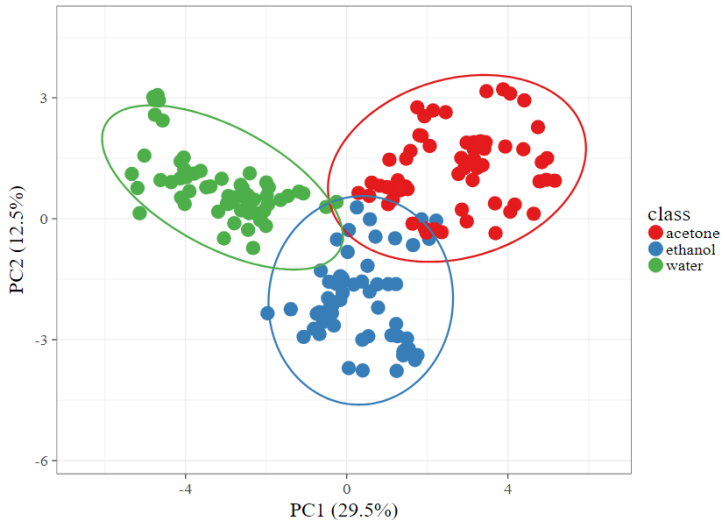
	Variance
PC1	27.1%
PC2	18.6%
PC3	6.9%
PC4	6.0%
PC5	5.7%
PC6	4.8%
PC7	4.0%
PC8	3.6%
PC9	3.4%
PC10	2.9%
PC11	2.8%
PC12	2.5%
PC13	2.1%
PC14	1.9%
PC15	1.6%
PC16	1.4%
PC17	1.1%
PC18	0.8%
PC19	0.7%
PC20	0.6%
PC21	0.5%
PC22	0.4%
PC23	0.3%
PC24	0.2%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.10	0.34
	#2	-0.05	0.36
	#3	-0.08	0.39
$Cu(OTf)_2$	#1	-0.23	-0.09
	#2	-0.17	0.03
	#3	-0.16	0.13
$Bi(OTf)_3$	#1	-0.19	0.24
	#2	0.07	0.17
	#3	-0.09	0.39
$Al(OTf)_3$	#1	-0.24	0.04
	#2	-0.28	0.13
	#3	-0.24	-0.08
$In(OTf)_3$	#1	-0.06	0.16
	#2	-0.11	0.21
	#3	-0.23	-0.02
$Dy(OTf)_3$	#1	-0.30	-0.18
	#2	-0.21	-0.23
	#3	-0.12	0.03
$Ce(OTf)_3$	#1	-0.20	-0.31
	#2	-0.30	-0.20
	#3	-0.28	-0.08
no triflate	#1	-0.24	0.03
	#2	-0.25	-0.02
	#3	-0.28	0.11

Figure S22. PCA on α_2, for R is measured at different time interval [30s;39s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

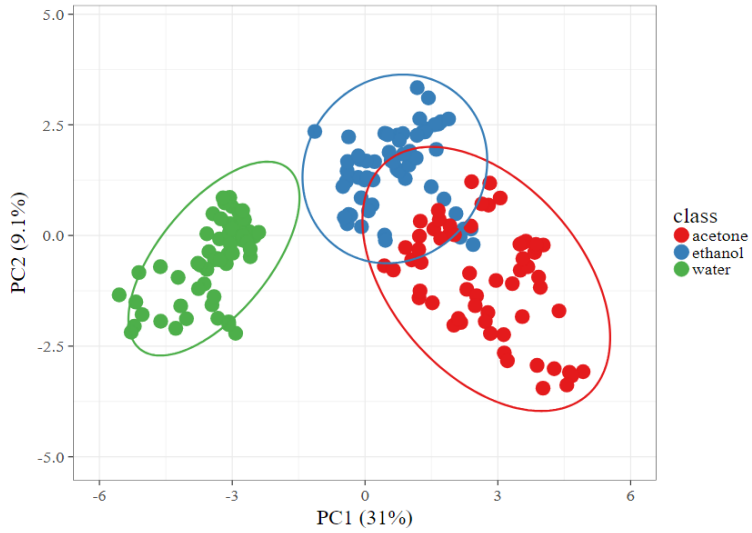
	Variance
PC1	29.5%
PC2	12.5%
PC3	8.7%
PC4	6.0%
PC5	5.9%
PC6	5.2%
PC7	4.9%
PC8	3.6%
PC9	3.2%
PC10	3.1%
PC11	2.5%
PC12	2.1%
PC13	1.8%
PC14	1.7%
PC15	1.6%
PC16	1.4%
PC17	1.3%
PC18	1.0%
PC19	0.9%
PC20	0.8%
PC21	0.7%
PC22	0.6%
PC23	0.4%
PC24	0.3%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.18	0.14
	#2	-0.24	-0.17
	#3	-0.20	-0.40
$Cu(OTf)_2$	#1	-0.14	0.16
	#2	-0.09	0.34
	#3	-0.12	0.13
$Bi(OTf)_3$	#1	-0.23	-0.31
	#2	0.17	-0.08
	#3	-0.13	-0.44
$Al(OTf)_3$	#1	-0.16	-0.14
	#2	-0.26	0.01
	#3	-0.22	0.03
$In(OTf)_3$	#1	-0.01	0.13
	#2	-0.18	-0.10
	#3	-0.12	-0.09
$Dy(OTf)_3$	#1	-0.25	0.20
	#2	-0.14	0.30
	#3	-0.01	-0.05
$Ce(OTf)_3$	#1	-0.24	0.25
	#2	-0.31	0.20
	#3	-0.28	0.17
no triflate	#1	-0.25	-0.05
	#2	-0.29	-0.12
	#3	-0.27	-0.10

Figure S23. PCA on α_2, for R is measured at different time interval [40s;49s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

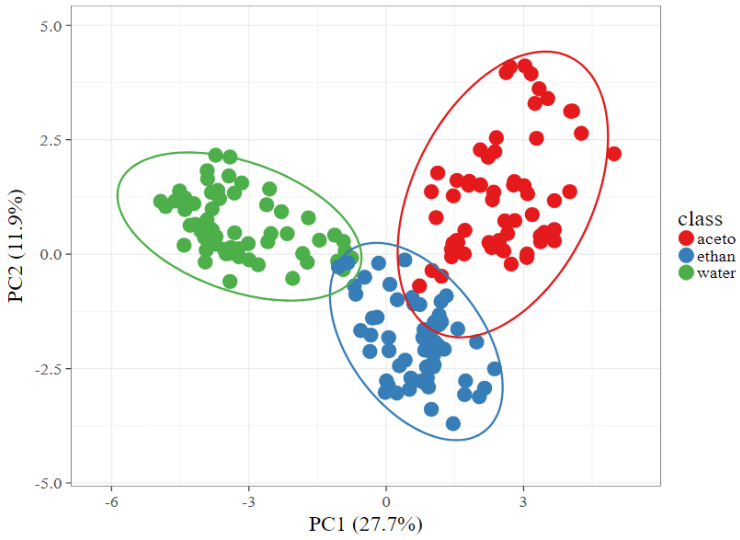
	Variance
PC1	31.0%
PC2	9.1%
PC3	6.8%
PC4	6.3%
PC5	5.7%
PC6	5.2%
PC7	4.8%
PC8	4.1%
PC9	3.9%
PC10	3.1%
PC11	2.8%
PC12	2.6%
PC13	2.3%
PC14	2.2%
PC15	2.1%
PC16	1.7%
PC17	1.4%
PC18	1.2%
PC19	0.9%
PC20	0.8%
PC21	0.8%
PC22	0.5%
PC23	0.4%
PC24	0.3%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.18	0.09
	#2	-0.32	-0.05
	#3	-0.19	-0.26
$Cu(OTf)_2$	#1	-0.07	0.08
	#2	0.01	-0.04
	#3	-0.09	-0.03
$Bi(OTf)_3$	#1	-0.21	0.44
	#2	0.21	0.11
	#3	-0.15	0.48
$Al(OTf)_3$	#1	-0.21	-0.06
	#2	-0.19	0.19
	#3	-0.23	0.25
$In(OTf)_3$	#1	-0.13	0.14
	#2	-0.17	-0.29
	#3	-0.17	-0.05
$Dy(OTf)_3$	#1	-0.22	-0.24
	#2	-0.14	-0.04
	#3	-0.11	0.08
$Ce(OTf)_3$	#1	-0.24	-0.22
	#2	-0.31	-0.21
	#3	-0.27	-0.24
no triflate	#1	-0.23	0.06
	#2	-0.27	0.15
	#3	-0.26	0.18

Figure S24. PCA on α_2, for R is measured at different time interval [50s;59s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

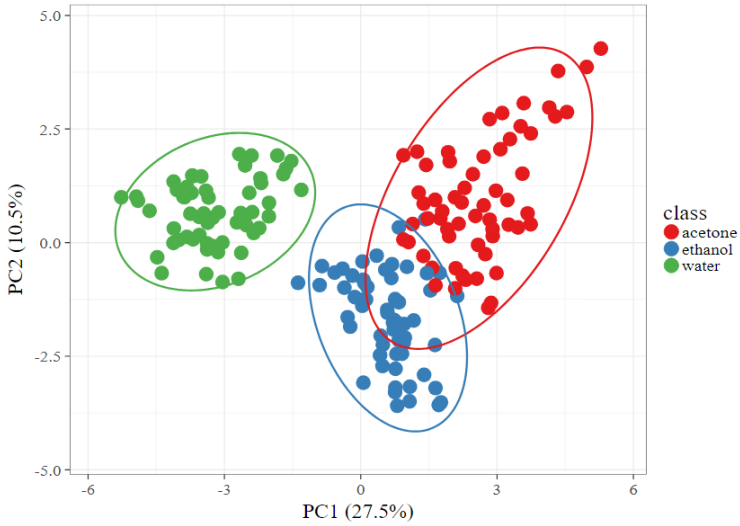
	Variance
PC1	27.7%
PC2	11.9%
PC3	7.0%
PC4	6.1%
PC5	5.8%
PC6	5.0%
PC7	4.3%
PC8	4.1%
PC9	3.7%
PC10	3.4%
PC11	3.2%
PC12	2.9%
PC13	2.7%
PC14	2.4%
PC15	1.9%
PC16	1.8%
PC17	1.3%
PC18	1.3%
PC19	1.0%
PC20	0.9%
PC21	0.6%
PC22	0.5%
PC23	0.4%
PC24	0.2%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.24	0.01
	#2	-0.32	-0.13
	#3	-0.11	-0.40
$Cu(OTf)_2$	#1	-0.06	-0.10
	#2	-0.12	0.13
	#3	-0.06	0.12
$Bi(OTf)_3$	#1	-0.22	0.42
	#2	0.23	0.00
	#3	-0.14	0.45
$Al(OTf)_3$	#1	-0.13	-0.21
	#2	-0.18	0.05
	#3	-0.21	0.05
$In(OTf)_3$	#1	-0.04	0.07
	#2	-0.06	0.13
	#3	-0.19	0.24
$Dy(OTf)_3$	#1	-0.21	-0.27
	#2	-0.18	-0.17
	#3	-0.05	-0.12
$Ce(OTf)_3$	#1	-0.31	-0.15
	#2	-0.34	-0.16
	#3	-0.29	-0.17
no triflate	#1	-0.26	0.04
	#2	-0.27	0.24
	#3	-0.20	0.13

Figure S25. PCA on α_2, for R is measured at different time interval [60s;69s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

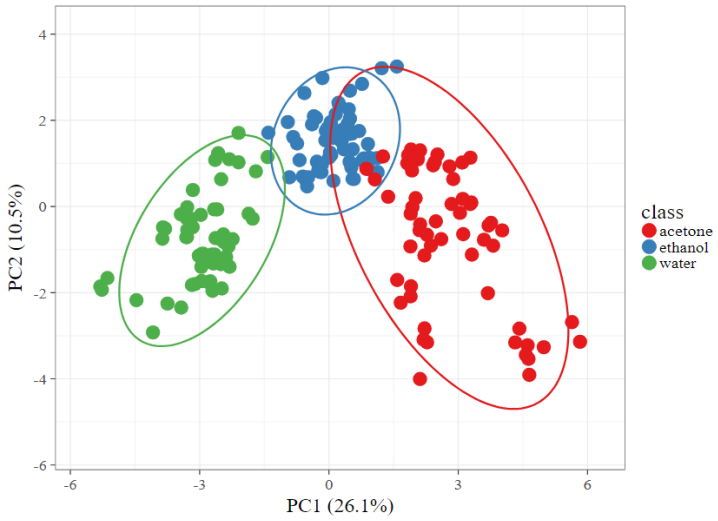
	Variance
PC1	27.5%
PC2	10.5%
PC3	7.6%
PC4	6.3%
PC5	5.2%
PC6	4.9%
PC7	4.4%
PC8	4.1%
PC9	3.7%
PC10	3.4%
PC11	3.2%
PC12	2.7%
PC13	2.5%
PC14	2.3%
PC15	1.9%
PC16	1.8%
PC17	1.6%
PC18	1.4%
PC19	1.2%
PC20	1.1%
PC21	1.0%
PC22	0.8%
PC23	0.6%
PC24	0.2%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.28	0.09
	#2	-0.30	0.14
	#3	-0.13	0.38
$Cu(OTf)_2$	#1	-0.08	0.14
	#2	-0.12	0.04
	#3	-0.01	0.25
$Bi(OTf)_3$	#1	-0.24	-0.34
	#2	0.21	-0.16
	#3	-0.10	-0.44
$Al(OTf)_3$	#1	-0.11	-0.10
	#2	-0.15	-0.30
	#3	-0.25	-0.08
$In(OTf)_3$	#1	-0.15	0.07
	#2	-0.09	0.05
	#3	-0.15	-0.18
$Dy(OTf)_3$	#1	-0.19	0.28
	#2	-0.04	-0.09
	#3	0.07	-0.19
$Ce(OTf)_3$	#1	-0.32	0.05
	#2	-0.34	0.11
	#3	-0.30	0.16
no triflate	#1	-0.25	-0.05
	#2	-0.22	-0.26
	#3	-0.26	-0.18

Figure S26. PCA on α_2, for R is measured at different time interval [70s;79s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

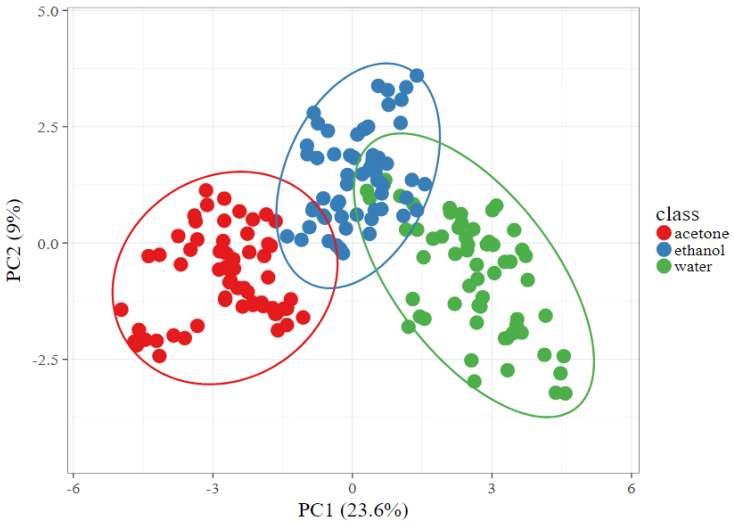
	Variance
PC1	26.1%
PC2	10.5%
PC3	7.0%
PC4	6.4%
PC5	6.0%
PC6	5.6%
PC7	4.7%
PC8	4.6%
PC9	4.4%
PC10	3.7%
PC11	3.0%
PC12	2.6%
PC13	2.5%
PC14	2.2%
PC15	1.8%
PC16	1.7%
PC17	1.5%
PC18	1.4%
PC19	1.2%
PC20	0.9%
PC21	0.7%
PC22	0.7%
PC23	0.6%
PC24	0.2%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.19	0.33
	#2	-0.25	-0.07
	#3	-0.01	-0.31
$Cu(OTf)_2$	#1	-0.17	0.14
	#2	-0.14	0.04
	#3	-0.03	0.00
$Bi(OTf)_3$	#1	-0.29	0.34
	#2	0.12	0.05
	#3	-0.19	0.28
$Al(OTf)_3$	#1	-0.14	-0.21
	#2	-0.18	0.12
	#3	-0.29	0.09
$In(OTf)_3$	#1	-0.02	0.26
	#2	-0.05	-0.07
	#3	-0.21	0.06
$Dy(OTf)_3$	#1	-0.17	-0.36
	#2	-0.05	-0.36
	#3	-0.11	-0.06
$Ce(OTf)_3$	#1	-0.34	-0.15
	#2	-0.33	-0.25
	#3	-0.29	-0.26
no triflate	#1	-0.30	0.06
	#2	-0.17	-0.01
	#3	-0.25	0.12

Figure S27. PCA on α_2, for R is measured at different time interval [80s;89s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

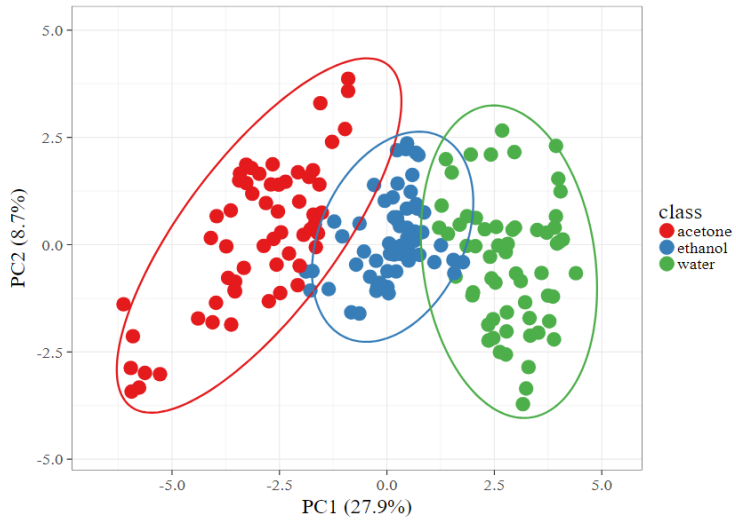
	Variance
PC1	23.6%
PC2	9.0%
PC3	8.2%
PC4	6.7%
PC5	6.0%
PC6	5.6%
PC7	5.1%
PC8	4.9%
PC9	3.9%
PC10	3.7%
PC11	3.4%
PC12	2.9%
PC13	2.8%
PC14	2.4%
PC15	2.0%
PC16	1.8%
PC17	1.5%
PC18	1.5%
PC19	1.3%
PC20	1.0%
PC21	1.0%
PC22	0.6%
PC23	0.6%
PC24	0.2%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.21	-0.30
	#2	-0.25	0.01
	#3	-0.19	0.20
$Cu(OTf)_2$	#1	-0.07	-0.11
	#2	-0.01	-0.06
	#3	-0.14	-0.34
$Bi(OTf)_3$	#1	-0.29	-0.32
	#2	0.12	-0.22
	#3	-0.29	-0.31
$Al(OTf)_3$	#1	-0.19	-0.13
	#2	-0.17	-0.21
	#3	-0.21	0.01
$In(OTf)_3$	#1	-0.03	0.06
	#2	-0.02	-0.26
	#3	-0.14	-0.04
$Dy(OTf)_3$	#1	-0.17	0.07
	#2	-0.09	-0.07
	#3	0.00	-0.20
$Ce(OTf)_3$	#1	-0.36	0.15
	#2	-0.35	0.28
	#3	-0.31	0.27
no triflate	#1	-0.25	0.00
	#2	-0.25	0.11
	#3	-0.08	0.36

Figure S28. PCA on α_2, for R is measured at different time interval [90s;99s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

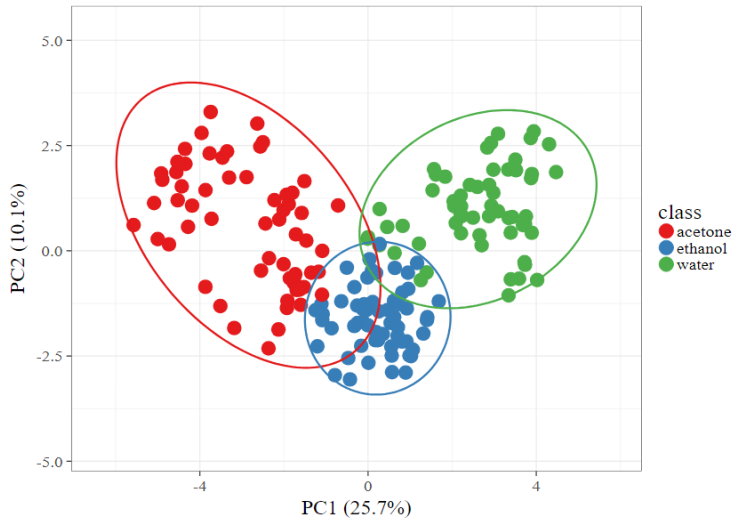
	Variance
PC1	27.9%
PC2	8.7%
PC3	7.6%
PC4	6.2%
PC5	6.0%
PC6	5.3%
PC7	4.8%
PC8	4.3%
PC9	3.5%
PC10	3.4%
PC11	3.2%
PC12	3.1%
PC13	2.7%
PC14	2.4%
PC15	2.0%
PC16	1.6%
PC17	1.6%
PC18	1.5%
PC19	1.2%
PC20	1.1%
PC21	0.7%
PC22	0.6%
PC23	0.4%
PC24	0.1%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.29	0.13
	#2	-0.24	0.03
	#3	-0.20	-0.31
$Cu(OTf)_2$	#1	-0.06	0.26
	#2	-0.18	0.10
	#3	0.10	-0.26
$Bi(OTf)_3$	#1	-0.28	0.17
	#2	0.17	-0.31
	#3	-0.27	-0.03
$Al(OTf)_3$	#1	-0.16	-0.24
	#2	-0.17	0.26
	#3	-0.10	0.19
$In(OTf)_3$	#1	-0.08	0.12
	#2	0.01	-0.44
	#3	-0.19	0.15
$Dy(OTf)_3$	#1	-0.21	0.00
	#2	-0.02	-0.16
	#3	0.04	-0.20
$Ce(OTf)_3$	#1	-0.32	-0.16
	#2	-0.31	-0.21
	#3	-0.28	-0.26
no triflate	#1	-0.28	-0.10
	#2	-0.18	-0.06
	#3	-0.23	0.09

Figure S29. PCA on α_2, for R is measured at different time interval [100s;109s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

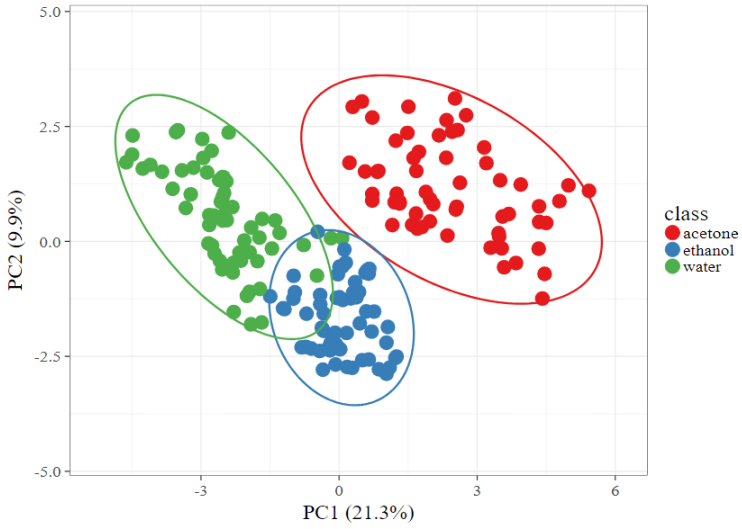
	Variance
PC1	25.7%
PC2	10.1%
PC3	8.3%
PC4	6.3%
PC5	5.7%
PC6	5.0%
PC7	4.8%
PC8	4.4%
PC9	3.6%
PC10	3.6%
PC11	3.2%
PC12	3.0%
PC13	2.9%
PC14	2.5%
PC15	2.0%
PC16	1.9%
PC17	1.5%
PC18	1.4%
PC19	1.2%
PC20	1.1%
PC21	0.8%
PC22	0.5%
PC23	0.4%
PC24	0.1%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.16	0.21
	#2	-0.20	-0.09
	#3	-0.05	0.16
$Cu(OTf)_2$	#1	0.04	-0.03
	#2	-0.01	-0.22
	#3	-0.30	0.03
$Bi(OTf)_3$	#1	0.22	-0.31
	#2	-0.24	0.37
	#3	-0.22	-0.36
$Al(OTf)_3$	#1	-0.23	0.02
	#2	-0.18	-0.07
	#3	-0.13	0.01
$In(OTf)_3$	#1	-0.16	-0.13
	#2	-0.07	-0.03
	#3	-0.01	0.10
$Dy(OTf)_3$	#1	-0.03	0.46
	#2	-0.06	0.07
	#3	-0.37	0.05
$Ce(OTf)_3$	#1	-0.34	0.11
	#2	-0.30	0.26
	#3	-0.27	0.25
no triflate	#1	-0.17	0.22
	#2	-0.20	-0.21
	#3	-0.19	-0.16

Figure S30. PCA on α_2, for R is measured at different time interval [110s;119s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

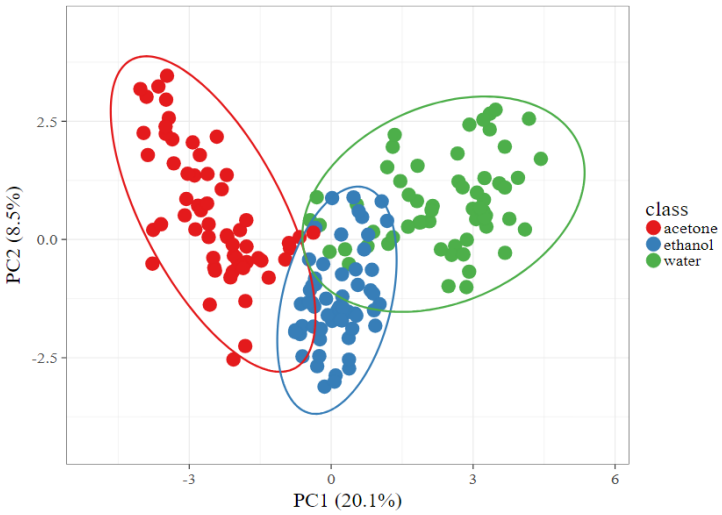
	Variance
PC1	21.3%
PC2	9.9%
PC3	7.8%
PC4	7.0%
PC5	6.6%
PC6	5.6%
PC7	5.1%
PC8	4.6%
PC9	4.2%
PC10	3.8%
PC11	3.3%
PC12	3.1%
PC13	3.0%
PC14	2.6%
PC15	2.2%
PC16	2.1%
PC17	1.8%
PC18	1.8%
PC19	1.4%
PC20	1.0%
PC21	0.8%
PC22	0.4%
PC23	0.4%
PC24	0.1%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.10	0.38
	#2	-0.15	0.01
	#3	-0.27	0.04
$Cu(OTf)_2$	#1	-0.05	0.29
	#2	-0.10	-0.06
	#3	-0.02	0.12
$Bi(OTf)_3$	#1	-0.32	-0.27
	#2	0.22	-0.02
	#3	-0.23	-0.45
$Al(OTf)_3$	#1	-0.07	-0.27
	#2	-0.08	-0.06
	#3	-0.13	-0.25
$In(OTf)_3$	#1	-0.10	0.18
	#2	-0.02	-0.06
	#3	-0.24	0.15
$Dy(OTf)_3$	#1	-0.13	0.44
	#2	-0.08	0.18
	#3	0.03	-0.13
$Ce(OTf)_3$	#1	-0.40	0.05
	#2	-0.38	0.10
	#3	-0.31	0.13
no triflate	#1	-0.20	-0.04
	#2	-0.30	-0.09
	#3	-0.15	-0.05

Figure S31. PCA on α_2, for R is measured at different time interval [120s;129s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

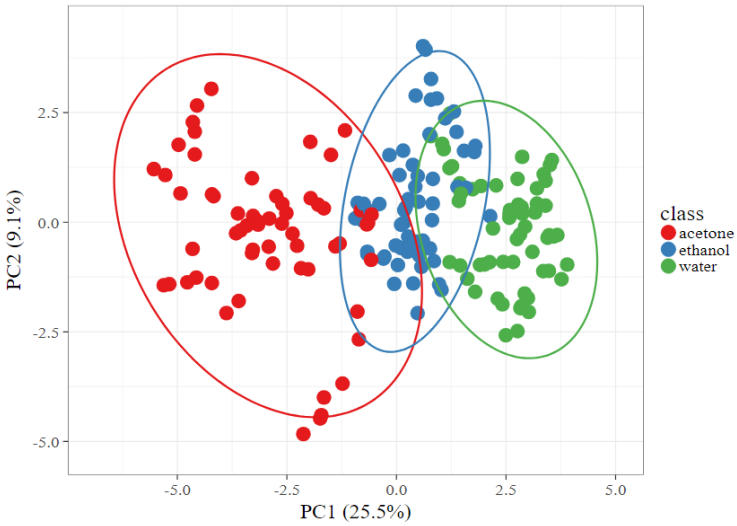
	Variance
PC1	20.1%
PC2	8.5%
PC3	7.9%
PC4	6.6%
PC5	6.4%
PC6	6.1%
PC7	5.4%
PC8	4.9%
PC9	4.3%
PC10	4.1%
PC11	3.8%
PC12	3.4%
PC13	3.1%
PC14	2.6%
PC15	2.5%
PC16	2.1%
PC17	1.7%
PC18	1.6%
PC19	1.4%
PC20	1.2%
PC21	1.0%
PC22	0.7%
PC23	0.4%
PC24	0.1%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.07	0.35
	#2	-0.22	-0.37
	#3	-0.10	-0.16
$Cu(OTf)_2$	#1	-0.01	-0.21
	#2	-0.02	-0.01
	#3	-0.08	0.14
$Bi(OTf)_3$	#1	-0.29	-0.37
	#2	0.02	0.30
	#3	-0.28	-0.30
$Al(OTf)_3$	#1	-0.12	0.03
	#2	-0.16	-0.20
	#3	-0.14	-0.08
$In(OTf)_3$	#1	-0.08	0.29
	#2	-0.12	0.02
	#3	-0.12	0.04
$Dy(OTf)_3$	#1	-0.04	0.26
	#2	-0.11	-0.07
	#3	-0.03	0.04
$Ce(OTf)_3$	#1	-0.42	0.09
	#2	-0.41	0.17
	#3	-0.40	0.12
no triflate	#1	-0.18	0.21
	#2	-0.29	0.14
	#3	-0.19	0.13

Figure S32. PCA on α_2, for R is measured at different time interval [130s;139s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

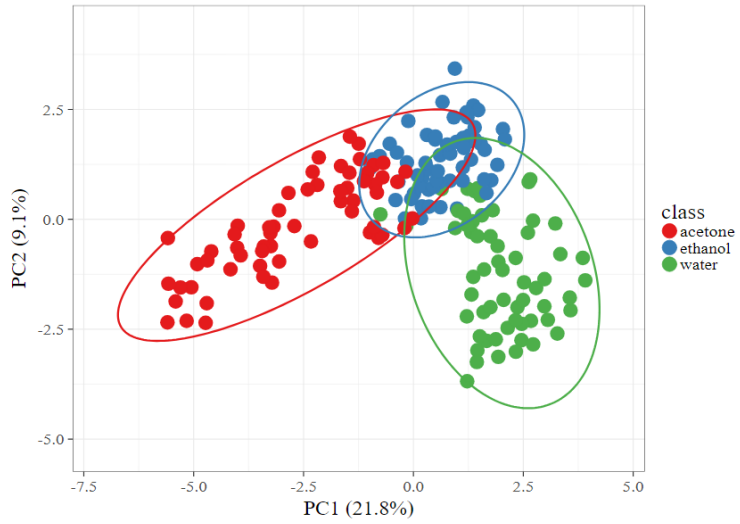
	Variance
PC1	25.5%
PC2	9.1%
PC3	8.0%
PC4	7.3%
PC5	5.8%
PC6	5.4%
PC7	4.6%
PC8	4.1%
PC9	3.8%
PC10	3.5%
PC11	3.2%
PC12	2.8%
PC13	2.7%
PC14	2.5%
PC15	2.4%
PC16	1.9%
PC17	1.6%
PC18	1.5%
PC19	1.4%
PC20	1.2%
PC21	0.7%
PC22	0.4%
PC23	0.4%
PC24	0.1%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.20	0.33
	#2	-0.11	0.01
	#3	-0.10	-0.35
$Cu(OTf)_2$	#1	-0.17	-0.14
	#2	-0.12	-0.10
	#3	-0.09	0.26
$Bi(OTf)_3$	#1	-0.31	-0.02
	#2	-0.03	-0.42
	#3	-0.29	0.00
$Al(OTf)_3$	#1	-0.25	-0.09
	#2	-0.19	0.15
	#3	-0.19	0.22
$In(OTf)_3$	#1	-0.07	-0.01
	#2	0.06	0.28
	#3	-0.13	-0.26
$Dy(OTf)_3$	#1	-0.07	0.41
	#2	0.07	-0.04
	#3	-0.13	-0.27
$Ce(OTf)_3$	#1	-0.35	0.04
	#2	-0.33	0.06
	#3	-0.35	0.07
no triflate	#1	-0.26	-0.11
	#2	-0.23	-0.06
	#3	-0.20	-0.06

Figure S33. PCA on α_2, for R is measured at different time interval [140s;149s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

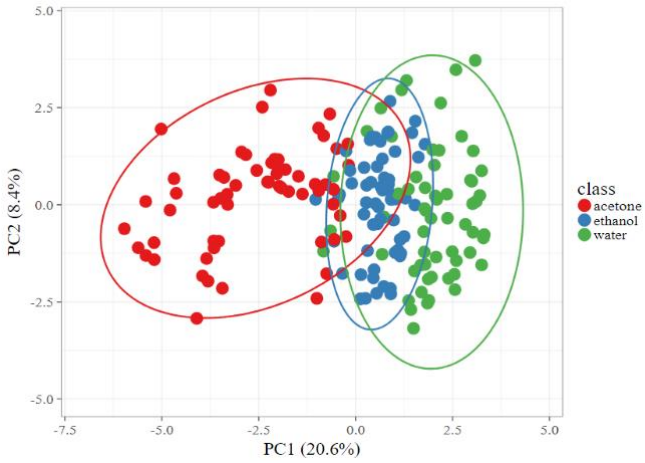
	Variance
PC1	21.8%
PC2	9.1%
PC3	8.3%
PC4	7.2%
PC5	6.0%
PC6	5.5%
PC7	4.9%
PC8	4.7%
PC9	4.2%
PC10	3.9%
PC11	3.7%
PC12	3.5%
PC13	2.8%
PC14	2.4%
PC15	2.1%
PC16	1.8%
PC17	1.7%
PC18	1.6%
PC19	1.5%
PC20	1.3%
PC21	1.0%
PC22	0.5%
PC23	0.4%
PC24	0.2%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.29	0.06
	#2	-0.23	-0.26
	#3	-0.17	-0.36
$Cu(OTf)_2$	#1	-0.16	-0.03
	#2	0.02	0.09
	#3	-0.10	-0.01
$Bi(OTf)_3$	#1	-0.33	-0.28
	#2	-0.04	-0.12
	#3	-0.33	-0.24
$Al(OTf)_3$	#1	-0.10	-0.08
	#2	-0.22	-0.14
	#3	0.05	0.16
$In(OTf)_3$	#1	0.03	0.06
	#2	-0.09	-0.20
	#3	-0.03	-0.06
$Dy(OTf)_3$	#1	-0.11	0.29
	#2	0.04	0.31
	#3	-0.08	-0.18
$Ce(OTf)_3$	#1	-0.36	0.22
	#2	-0.33	0.36
	#3	-0.39	0.18
no triflate	#1	-0.22	0.18
	#2	-0.14	0.31
	#3	-0.19	-0.01

Figure S34. PCA on α_2, for R is measured at different time interval [150s;159s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

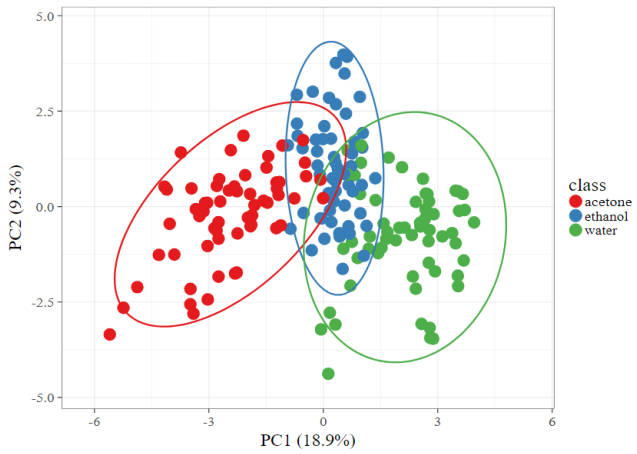
	Variance
PC1	20.6%
PC2	8.4%
PC3	8.2%
PC4	7.0%
PC5	6.0%
PC6	5.4%
PC7	5.2%
PC8	5.0%
PC9	4.3%
PC10	3.8%
PC11	3.5%
PC12	3.1%
PC13	3.0%
PC14	2.6%
PC15	2.3%
PC16	2.2%
PC17	2.1%
PC18	1.8%
PC19	1.6%
PC20	1.4%
PC21	1.2%
PC22	0.6%
PC23	0.4%
PC24	0.3%

c)

		Loadings PC1	PC2
$Fe(OTf)_3$	#1	0.18	-0.21
	#2	0.16	0.14
	#3	0.23	0.30
$Cu(OTf)_2$	#1	0.08	0.34
	#2	-0.09	-0.30
	#3	0.13	-0.07
$Bi(OTf)_3$	#1	0.34	0.01
	#2	0.09	0.12
	#3	0.30	-0.08
$Al(OTf)_3$	#1	0.10	-0.32
	#2	0.17	-0.16
	#3	0.15	0.18
$In(OTf)_3$	#1	0.08	-0.04
	#2	0.08	-0.40
	#3	0.13	-0.07
$Dy(OTf)_3$	#1	0.07	-0.04
	#2	0.06	-0.20
	#3	-0.02	-0.20
$Ce(OTf)_3$	#1	0.39	-0.06
	#2	0.38	-0.14
	#3	0.39	-0.10
no triflate	#1	0.17	0.01
	#2	0.20	0.37
	#3	0.18	0.19

Figure S35. PCA on α_2, for R is measured at different time interval [160s;169s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.

a)



b)

	Variance
PC1	18.9%
PC2	9.3%
PC3	8.0%
PC4	6.8%
PC5	6.6%
PC6	6.0%
PC7	5.2%
PC8	5.1%
PC9	4.3%
PC10	4.1%
PC11	3.9%
PC12	3.3%
PC13	3.1%
PC14	2.6%
PC15	2.2%
PC16	2.0%
PC17	1.8%
PC18	1.7%
PC19	1.4%
PC20	1.2%
PC21	1.0%
PC22	0.6%
PC23	0.5%
PC24	0.3%

c)

		Loadings PC1	Loadings PC2
$Fe(OTf)_3$	#1	-0.20	-0.06
	#2	-0.10	0.40
	#3	-0.17	0.16
$Cu(OTf)_2$	#1	-0.12	0.33
	#2	-0.07	-0.11
	#3	-0.11	0.02
$Bi(OTf)_3$	#1	-0.33	-0.18
	#2	-0.18	-0.32
	#3	-0.35	-0.12
$Al(OTf)_3$	#1	-0.03	-0.13
	#2	-0.06	-0.28
	#3	-0.11	-0.32
$In(OTf)_3$	#1	0.03	0.27
	#2	-0.10	0.00
	#3	0.01	-0.33
$Dy(OTf)_3$	#1	-0.14	0.09
	#2	-0.14	0.02
	#3	0.07	0.02
$Ce(OTf)_3$	#1	-0.42	0.02
	#2	-0.42	0.11
	#3	-0.40	0.00
no triflate	#1	-0.04	-0.15
	#2	-0.06	0.08
	#3	-0.18	0.34

Figure S36. PCA on α_2, for R is measured at different time interval [170s;179s] | **a,** PCA scores with 95% confidence ellipsoids. **b,** Individual variance for the different PC. **c,** PCA loadings of the different sensing elements' response for PC1 and PC2.