Supplement of Atmos. Chem. Phys., 18, 18101–18121, 2018
https://doi.org/10.5194/acp-18-18101-2018-supplement

Atmospheric Chemistry and Physics
Open Access
EGU

Supplement of

Chemical composition of isoprene SOA under acidic and non-acidic conditions: effect of relative humidity

Klara Nestorowicz et al.

Correspondence to: Rafal Szmigielski (ralf@ichf.edu.pl) and Mohammed Jaoui (jaoui.mohammed@epa.gov)

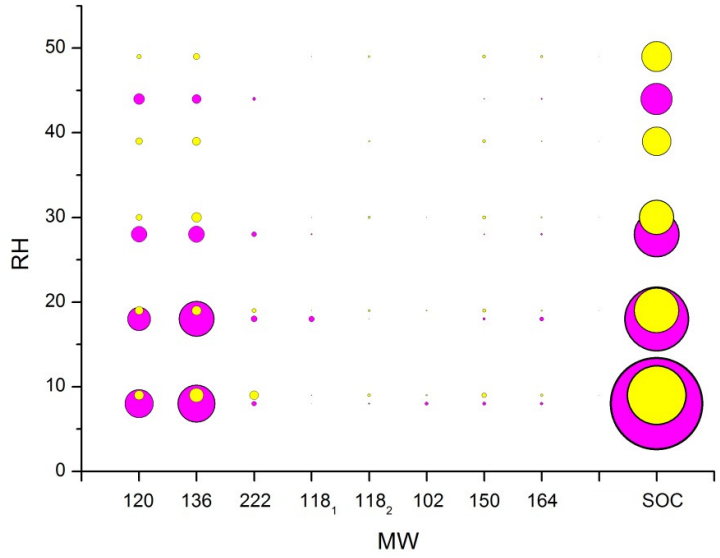


Figure S1. Relative amounts of aerosol components detected with GC-MS acidic seed (pink) and non-acidic seed (yellow) experiments (the areas of the circles are proportional to the estimated mass concentrations of compounds).

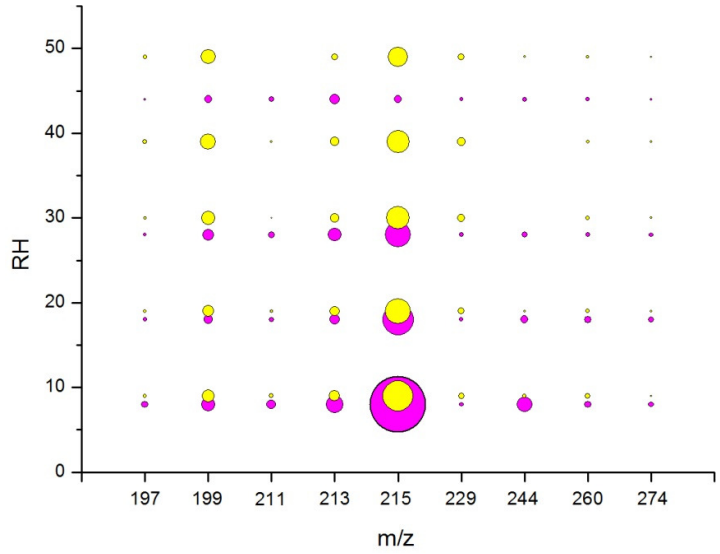
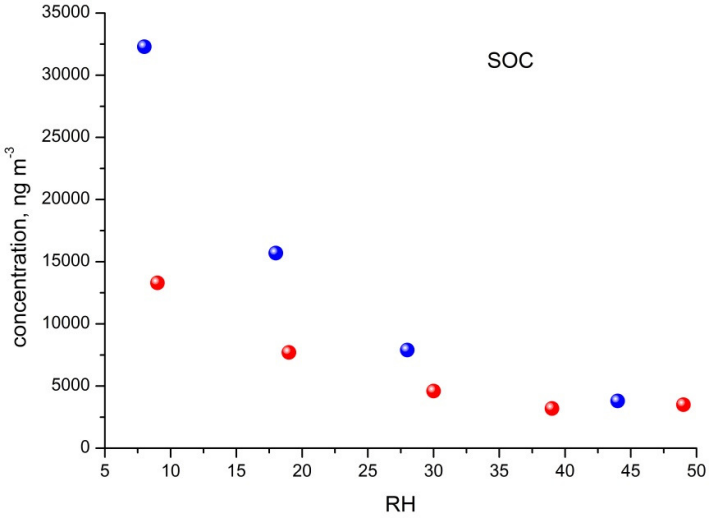


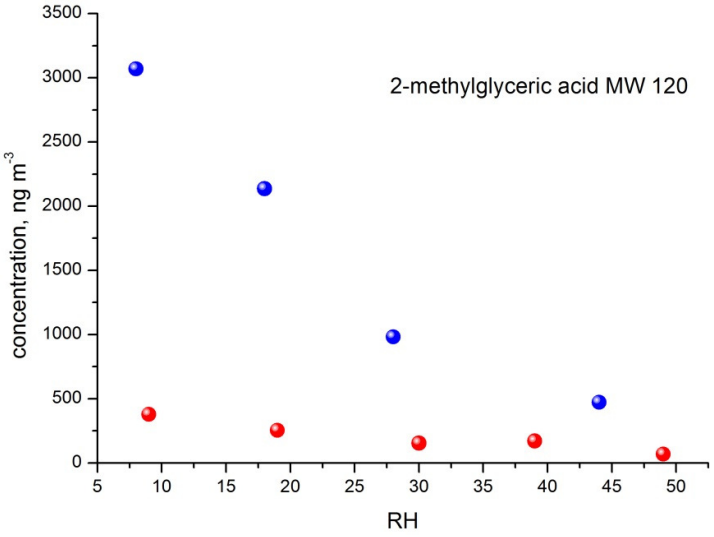
Figure S2. Relative abundances of aerosol components detected with LC-MS in acidic seed (pink) and non-acidic seed (yellow) experiments (the areas of the circles are proportional to relative abundances of compounds detected).

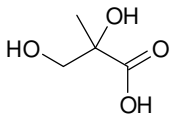
Table S1. Comparison of product yields in acidic seed experiments vs. non-acidic seed experiments at various RH levels (> higher, = equal and lower <)

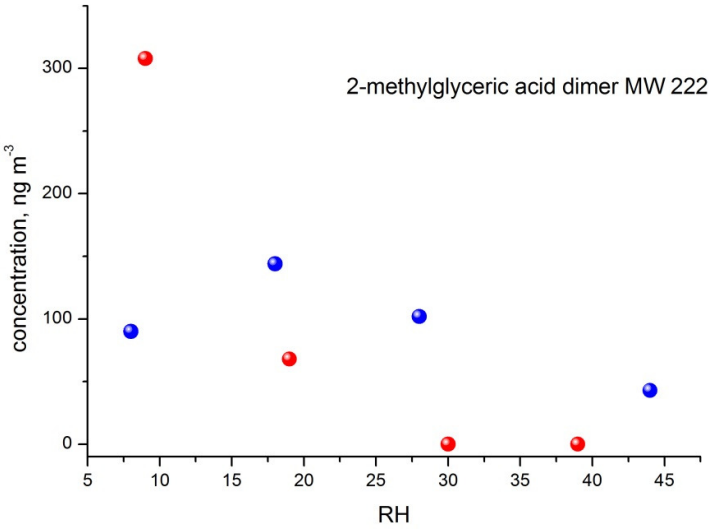
Product	**MW**	***m/z***	**RH = 8 – 9**	**RH = 18 – 20**	**RH = 28 – 30**	**RH = 39 – 49**
2-methylglyceric acid	120		>			
2-methyltetrol OS		244	>			
2-methylthreonic acid NOS		274	>			
furanone OS		211	>			
2-methyltetrols	136		>			=
2-methyltetrol NOS		260	>		=	
furanetriol OS		213	>	=		
2-methyltetrol OS		215	>	=		
IEPOX-1	118		=	>	=	
dimer of 2-methylglyceric acid	222		<	>		
C5-diol	102		>	<	=	
IEPOX OS		197	>	=		<
2-methylglyceric acid OS		199	=	<		
IEPOX-2	118		<			
2-methylthreonic acid OS		229	<			

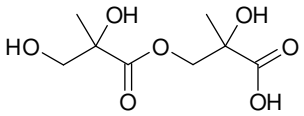
Figure S3. Concentrations or relative abundances of some compounds in acidic seed experiments (blue) and non-acidic seed experiments (red) – influence of Relative Humidity

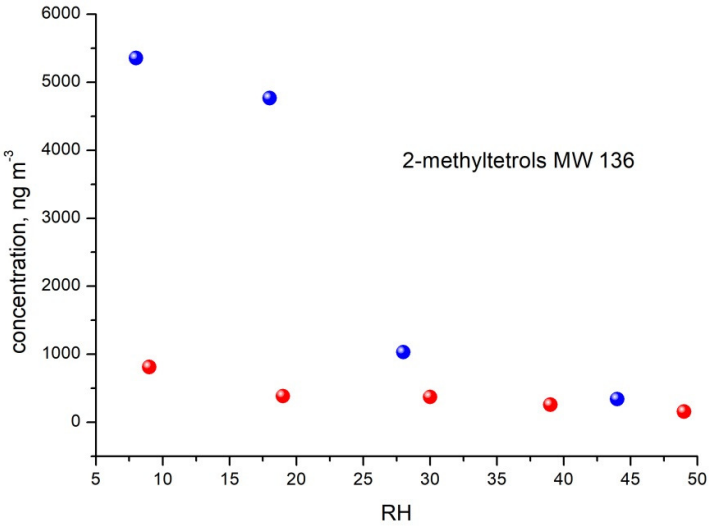


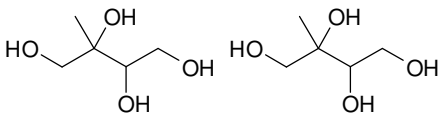




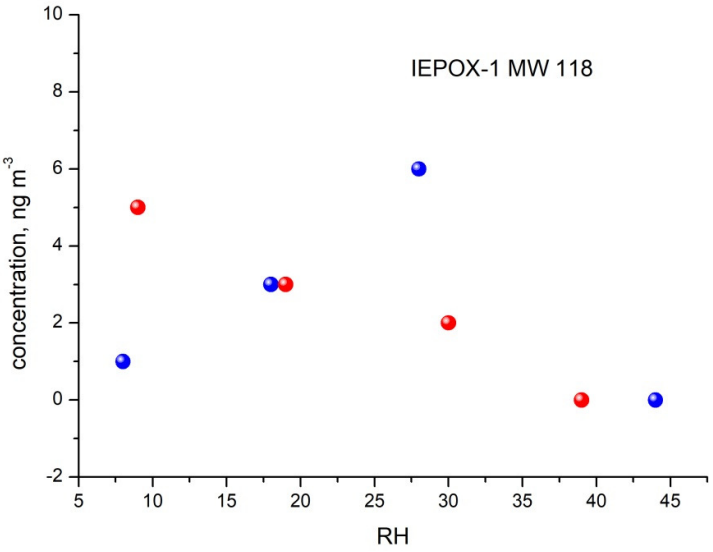


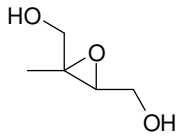


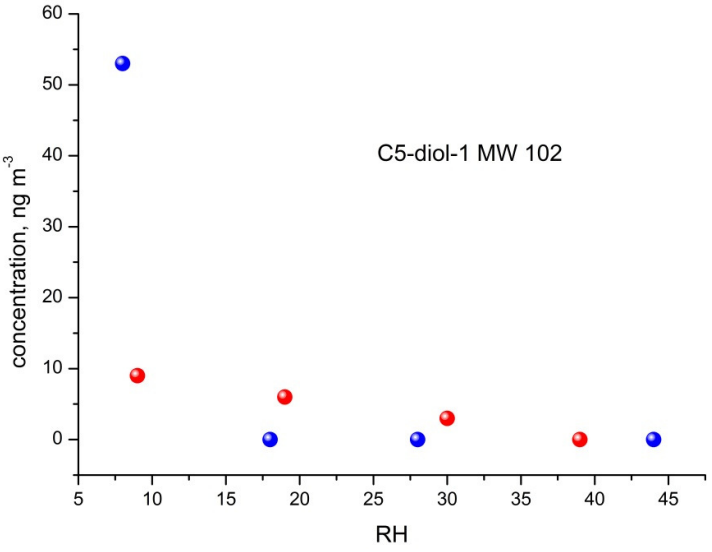


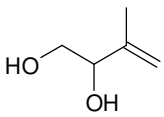


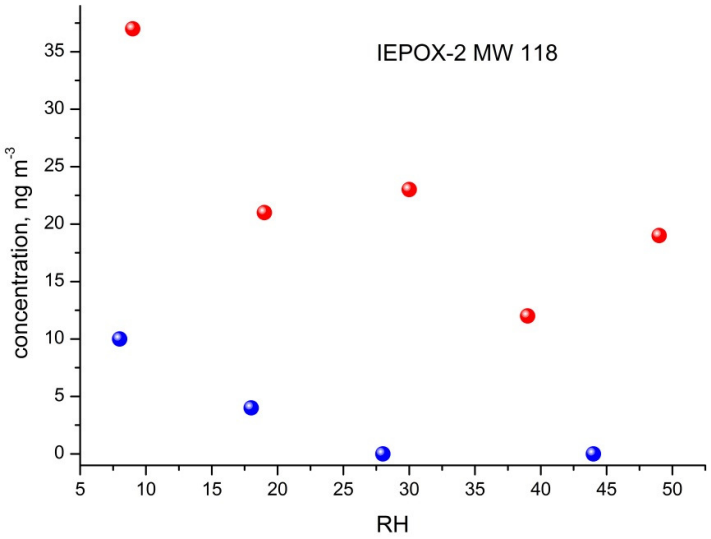
2-methylthreitol (left) and 2-methylerythritol (right)

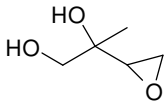

IEPOX-1 MW 118
concentration, ng m-3
RH
10
8
6
4
2
0
-2
5
10
15
20
25
30
35
40
45

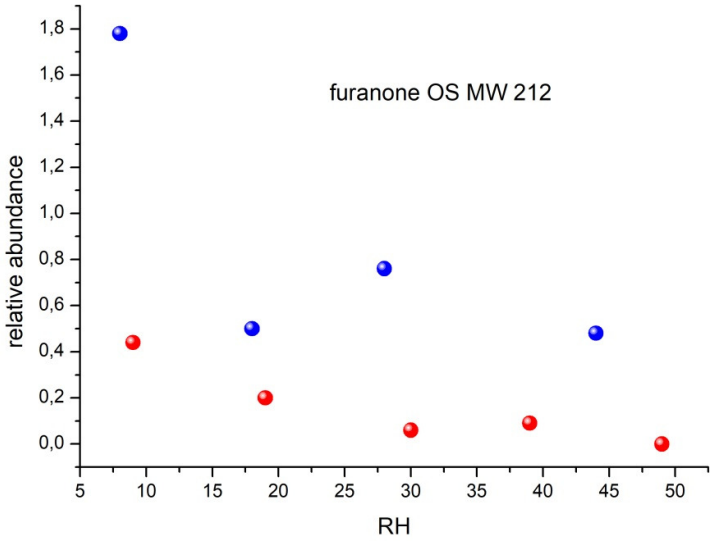

HO
O
OH

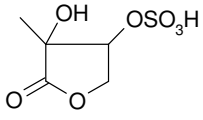

C5-diol-1 MW 102
concentration, ng m-3
RH
60
50
40
30
20
10
0
5
10
15
20
25
30
35
40
45

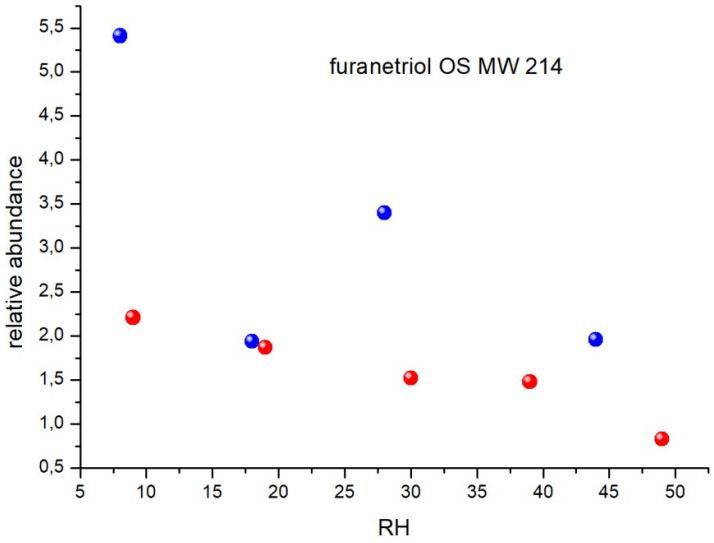

HO
OH

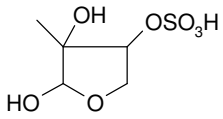

IEPOX-2 MW 118
concentration, ng m-3
RH
0
5
10
15
20
25
30
35
5
10
15
20
25
30
35
40
45
50

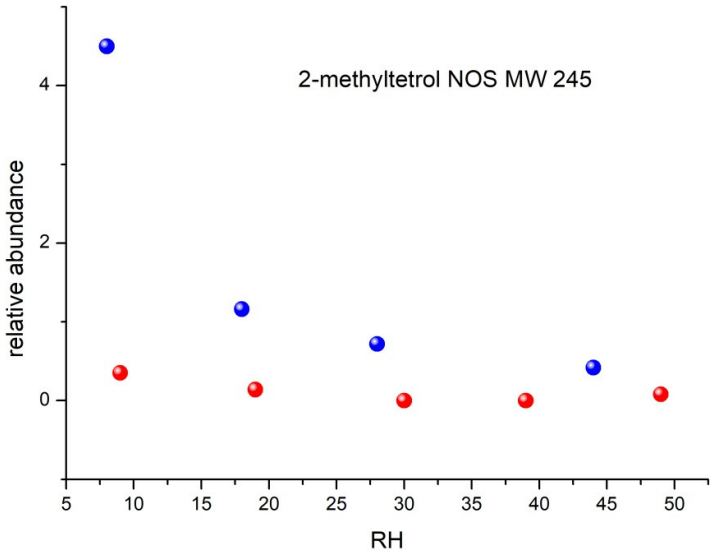

HO
HO
O

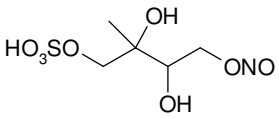

furanone OS MW 212
relative abundance
RH
0,0
0,2
0,4
0,6
0,8
1,0
1,2
1,4
1,6
1,8
5
10
15
20
25
30
35
40
45
50

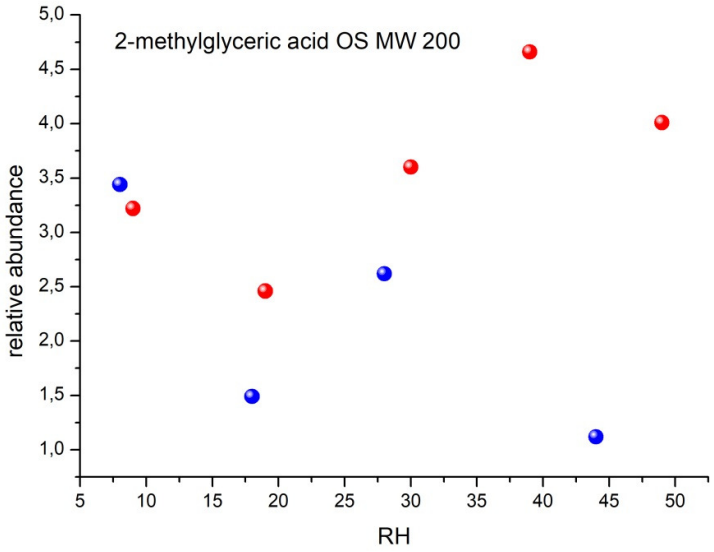

OH
OSO3H
O
O


furanetriol OS MW 214
relative abundance
RH
5,5
5,0
4,5
4,0
3,5
3,0
2,5
2,0
1,5
1,0
0,5
5
10
15
20
25
30
35
40
45
50


OH
OSO3H
HO
O


2-methyltetrol NOS MW 245
relative abundance
RH
4
2
0
5
10
15
20
25
30
35
40
45
50


OH
HO3SO
ONO
OH


2-methylglyceric acid OS MW 200
relative abundance
RH
5,0
4,5
4,0
3,5
3,0
2,5
2,0
1,5
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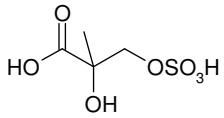
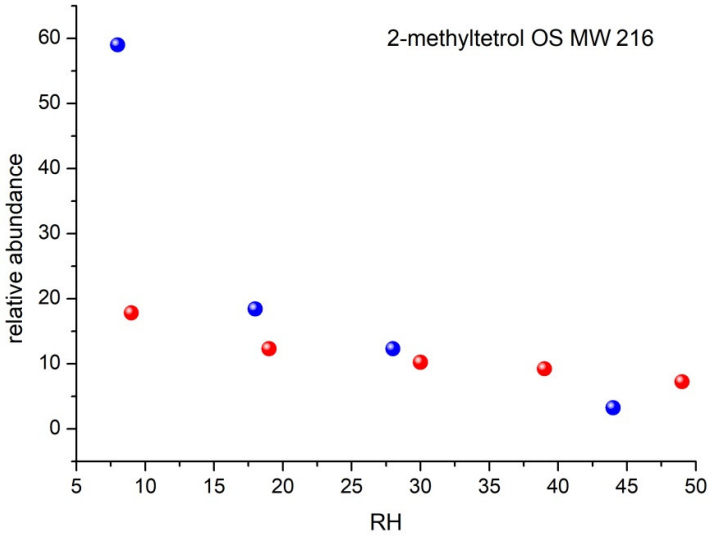
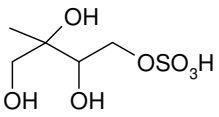
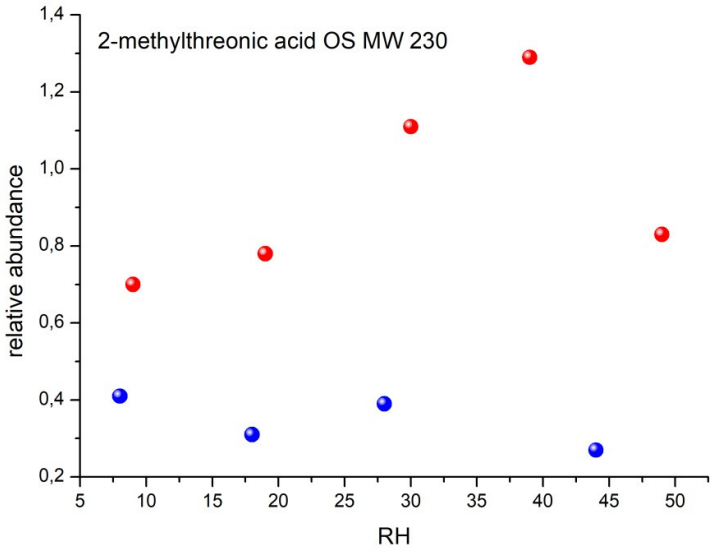
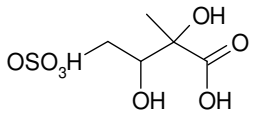
5
10
15
20
25
30
35
40
45
50

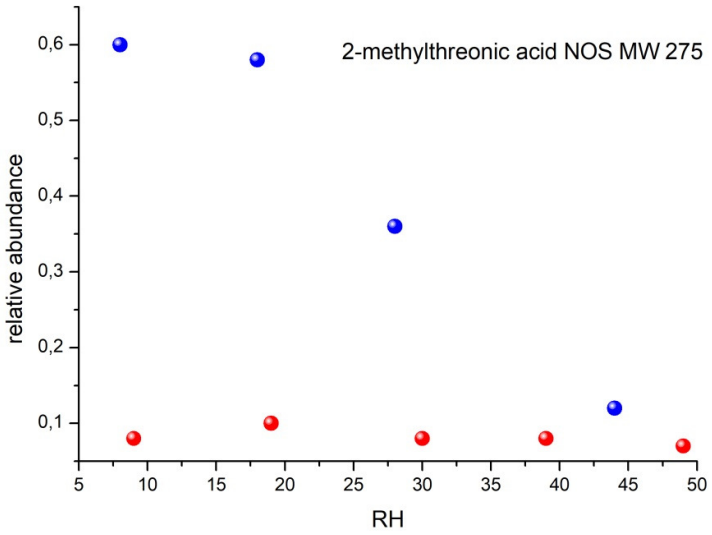

O
HO
OSO3H
OH

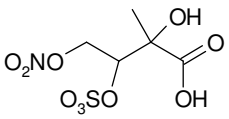

2-methyltetrol OS MW 216
relative abundance
RH
60
50
40
30
20
10
0
5
10
15
20
25
30
35
40
45
50

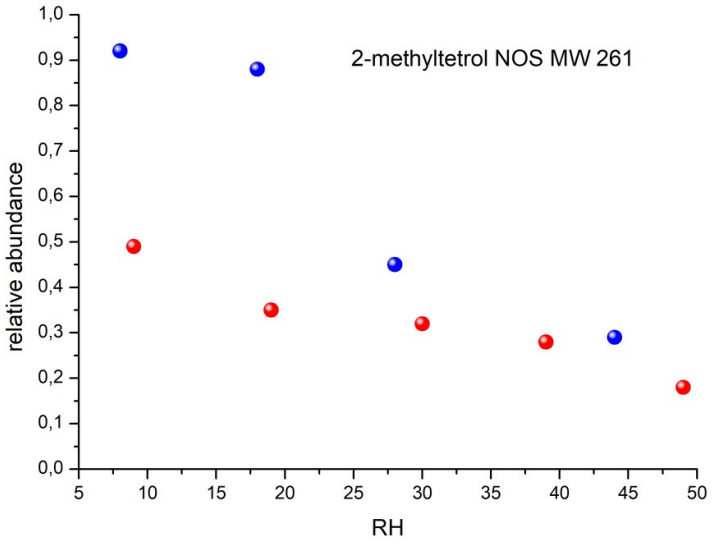

OH
OSO3H
OH
OH

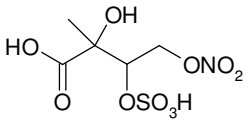

2-methylthreonic acid OS MW 230
relative abundance
RH
1,4
1,2
1,0
0,8
0,6
0,4
0,2
5
10
15
20
25
30
35
40
45
50

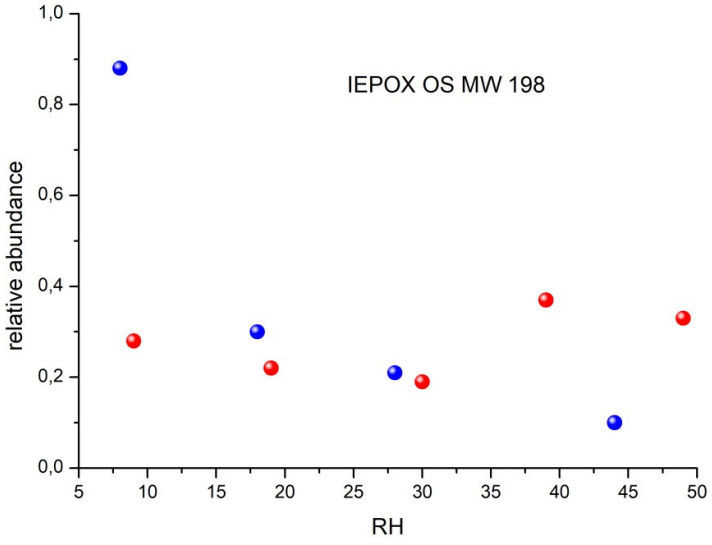

OH
O
OSO3H
OH
OH


2-methylthreonic acid NOS MW 275
relative abundance
RH
0,6
0,5
0,4
0,3
0,2
0,1
5
10
15
20
25
30
35
40
45
50


OH
O
O2NO
O3SO
OH


2-methyltetrol NOS MW 261
relative abundance
RH
1,0
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0,0
5
10
15
20
25
30
35
40
45
50


OH
HO
ONO2
O
OSO3H


IEPOX OS MW 198
relative abundance
RH
1,0
0,8
0,6
0,4
0,2
0,0
5
10
15
20
25
30
35
40
45
50

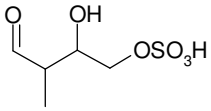
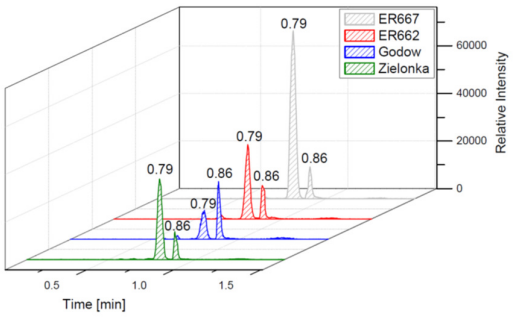
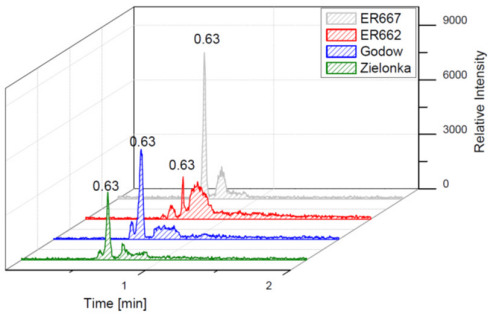

O
OH
OSO3H

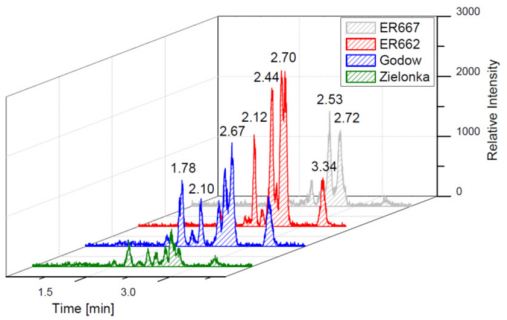
Figure S4. Extracted Ion Chromatograms (EIC) of selected components detected in the respective filter extracts from smog chamber ISO SOA (ER667 – non-acidic seed aerosol; ER662 – acidic seed aerosol) and $PM_{2.5}$ ambient summer aerosol from Godow and Zielonka sites.



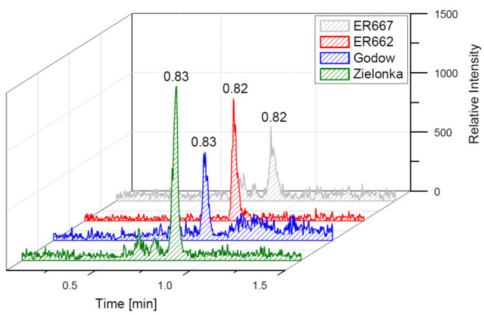
2-methyltetrol organosulfate (MW 216)



2-methylthreonic acid organosulfate (MW 230)



2-methyltetrol nitroxy-organosulfate (MW 261)



2-methylthreonic acid nitroxy-organosulfate (MW 275)