

1 **“Physicochemical studies of novel sugar fatty acid esters based on**
2 **(*R*)-3-hydroxylated acids derived from bacterial**
3 **polyhydroxyalkanoates and their potential environmental impact”**

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13 **Keywords: polyhydroxyalkanoates, sugar esters, cosmetic industry, Nematoda,**
14 **environmental impact**

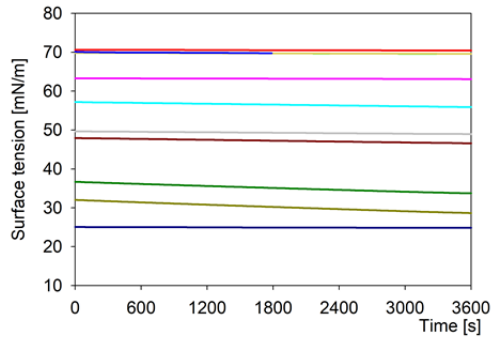
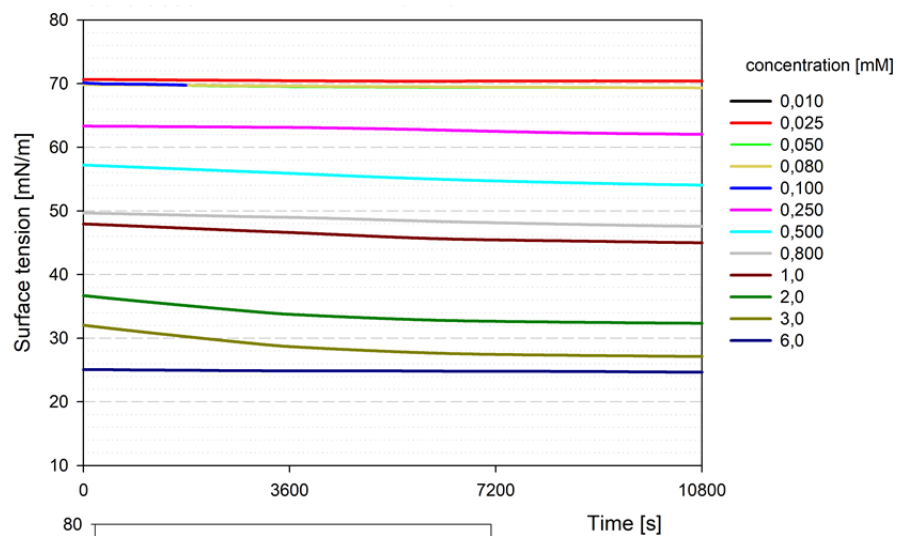
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17 **SUPPLEMENTARY**

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19 **Table S1. Purity, efficiency and yields of the obtained SFAE.**

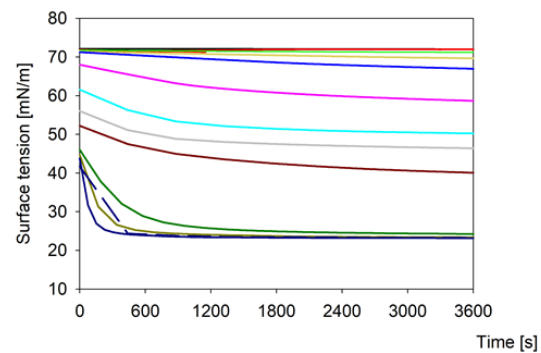
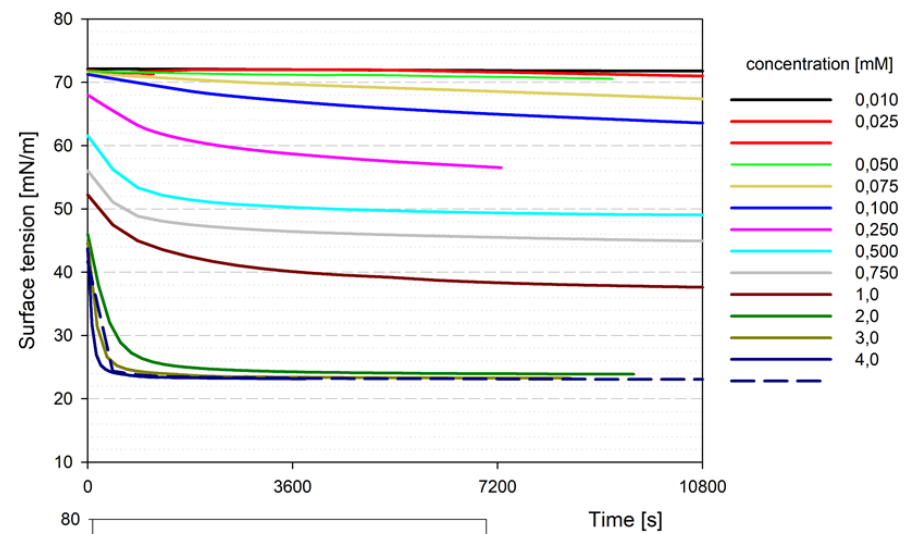
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Compound name:	Mas of the obtained ester [g]	Purity [%]	Mass expected if 100% was monoester [g]	Yield 1 [%]	Mass expected if 100% was diester	Yield 2 [%]
C9-glu	0.328	84.78	2.779	10.01	3.995	6.96
C9-gal	0.278	84.45	2.779	8.44	3.995	5.87
C9-lac	0.135	94.59	2.092	6.10	2.700	4.73
mPHN-glu	0.593	87.73	1.25	41.53	3.124	16.65
mPHN-gal	0.6	89.05	1.25	42.67	3.124	17.10
mPHN-lac	0.118	93.86	1.87	5.93	2.436	4.55

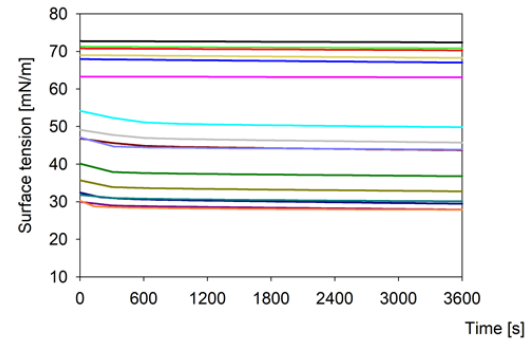
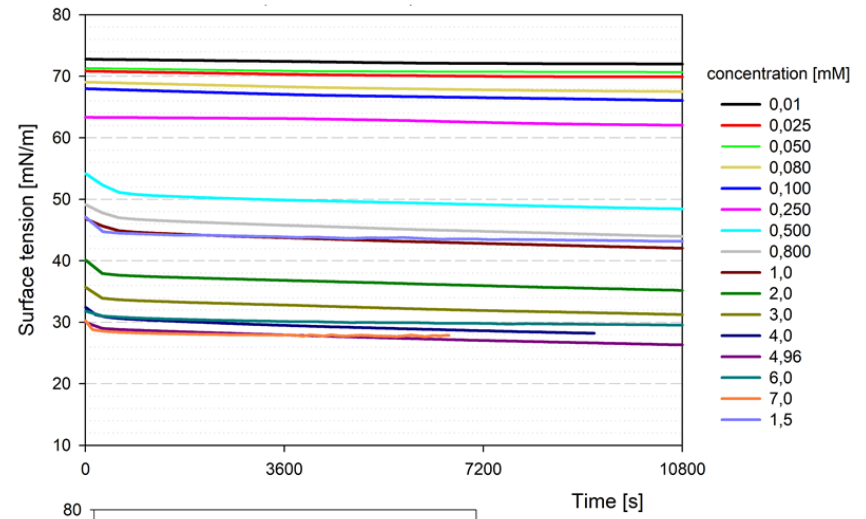
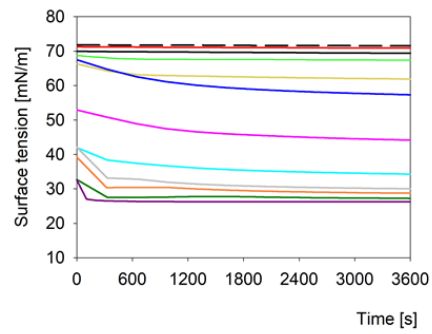
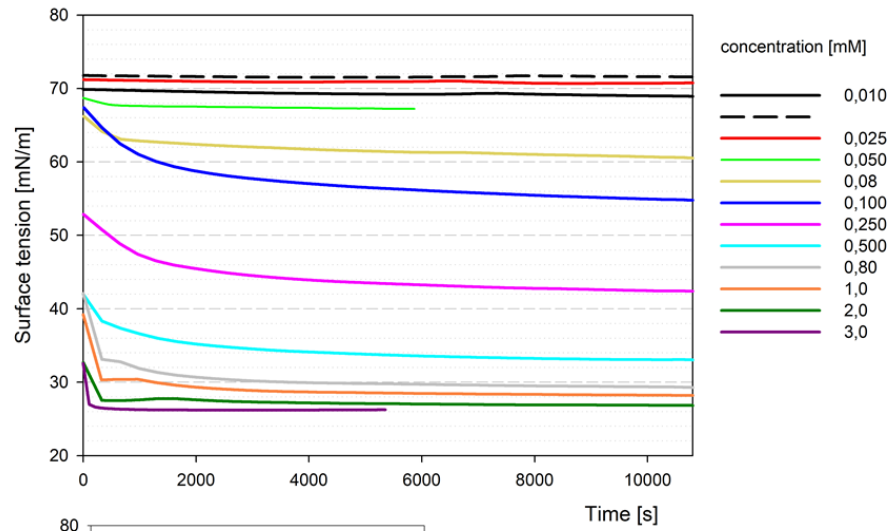
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a) C9-glu



b) C9-gal

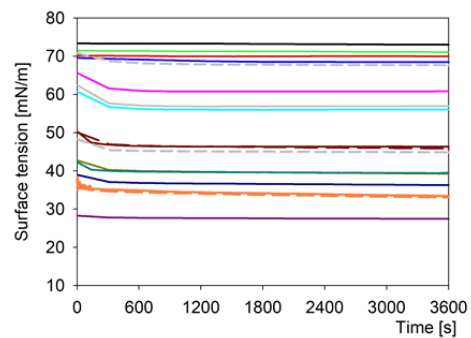
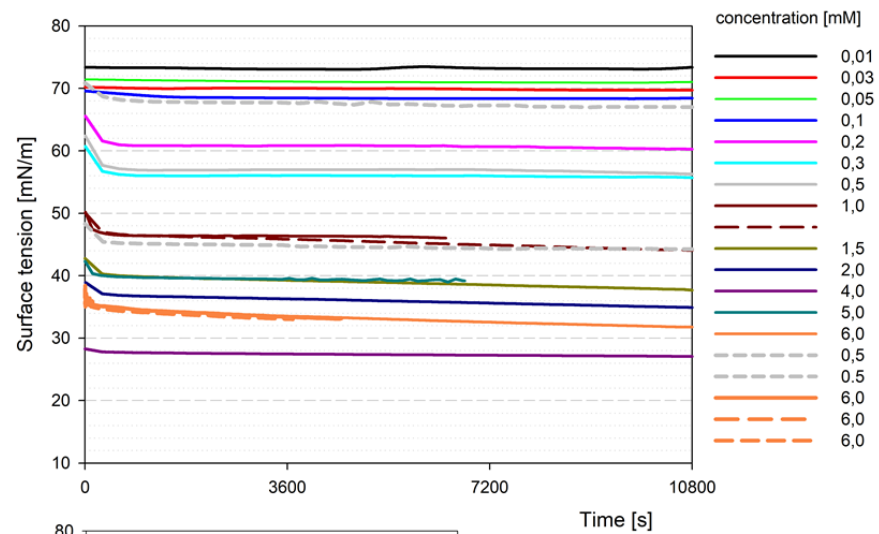


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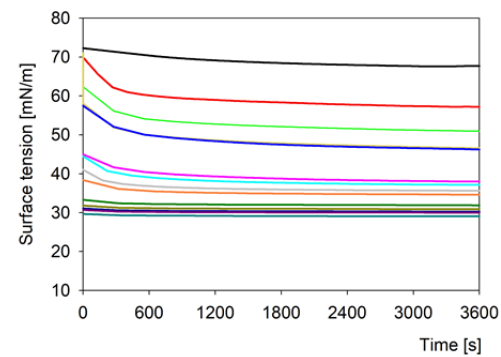
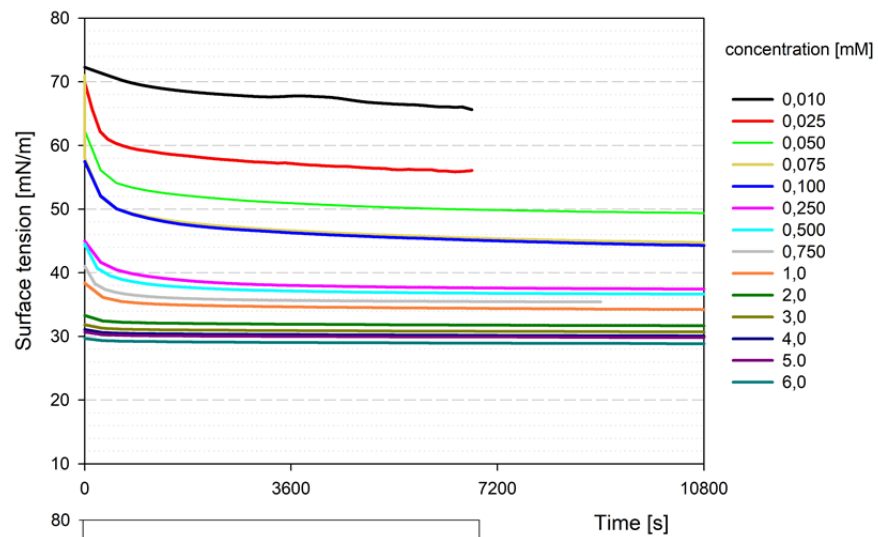
c) C9-lac

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d) mPHN-glu



e) mPHN-gal



f) mPHN-lac

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Fig S1. Interfacial tension changes in time depending on sugar ester concentration


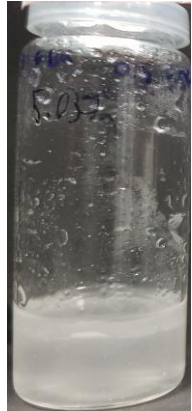

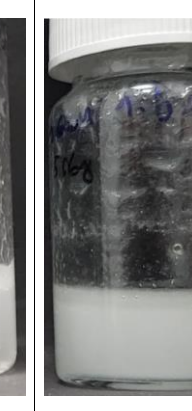






0	1	2	3	4
				
C9-glu squalane- before start making emulsion	C9-glu squalene, 30 min, $0.5 \times$ CAC	C9-glu squalene, 5 min, $0.5 \times$ CAC	C9-glu olive 1 min, $1.5 \times$ CAC	C9-glu olive 0 min, just after mixing, $1.5 \times$ CAC
				
mPHN-lac squalane- after 24h	mPHN-lac squalane 30 min, $1.0 \times$ CAC	mPHN-lac squalane 5 min $1.5 \times$ CAC	mPHN-lac squalane 0 min	mPHN-lac olive 0 min

Figure S2. Exemplary photos of the formed emulsions stabilized by SFAE

a)

time [min]	Squalane	Olive
0	3	3
1	1	3
5	0	2
30	0	1
60	0	0
180	0	0
1440	0	0

b)

N x CMC	Control	C9-glu			C9-gal			C9-lac			mPHN-glu			mPHN-gal			mPHN-lac		
		0.5 x CAC	1.0 x CAC	1.5 x CAC	0.5 x CAC	1.0 x CAC	1.5 x CAC	0.5 x CAC	1.0 x CAC	1.5 x CAC	0.5 x CAC	1.0 x CAC	1.5 x CAC	0.5 x CAC	1.0 x CAC	1.5 x CAC	0.5 x CAC	1.0 x CAC	1.5 x CAC
time [min]																			
0	3	3	3	3	3	3	3	1	1	1	3	3	3	3	3	3	3	3	3
1	1	3	3	3	3	3	3	1	1	1	2	3	3	3	3	3	3	3	3
5	0	1	2	2	2	3	2	1	1	1	2	3	3	2	3	3	2	3	3
30	0	1	2	2	2	2	2	0	0	0	1	2	2	1	2	2	1	2	2
60	0	0	1	2	2	2	2	0	0	0	0	1	1	0	1	1	0	1	1
180	0	0	1	1	1	1	1	0	0	0	0	1	1	0	1	1	0	1	1
1440	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

c)

N x CMC	Control	C9-glu			C9-gal			C9-lac			mPHN-glu			mPHN-gal			mPHN-lac		
		0.5 x CAC	1.0 x CAC	1.5 x CAC	0.5 x CAC	1.0 x CAC	1.5 x CAC	0.5 x CAC	1.0 x CAC	1.5 x CAC	0.5 x CAC	1.0 x CAC	1.5 x CAC	0.5 x CAC	1.0 x CAC	1.5 x CAC	0.5 x CAC	1.0 x CAC	1.5 x CAC
time [min]																			
0	3	4	4	4	4	4	4	3	4	3	3	3	3	4	4	3	4	4	
1	3	3	3	3	4	4	3	3	3	3	2	3	2	3	3	4	3	3	4
5	2	3	3	3	4	4	3	3	3	3	2	3	2	3	3	3	3	3	3
30	1	3	3	3	3	3	3	2	3	2	2	3	1	3	3	3	3	3	3
60	0	3	3	3	3	3	3	2	3	2	2	2	1	3	3	3	3	3	3
180	0	2	2	2	1	2	2	2	2	1	2	2	1	1	1	2	1	1	2
1440	0	1	2	2	1	2	2	2	2	1	0	0	0	0	1	1	0	1	1