

Supplementary Materials

Preparation of pH-Responsive PET TeMs by Controlled Graft Block Copolymerisation of Styrene and Methacrylic Acid for the Separation of Water-Oil Emulsions

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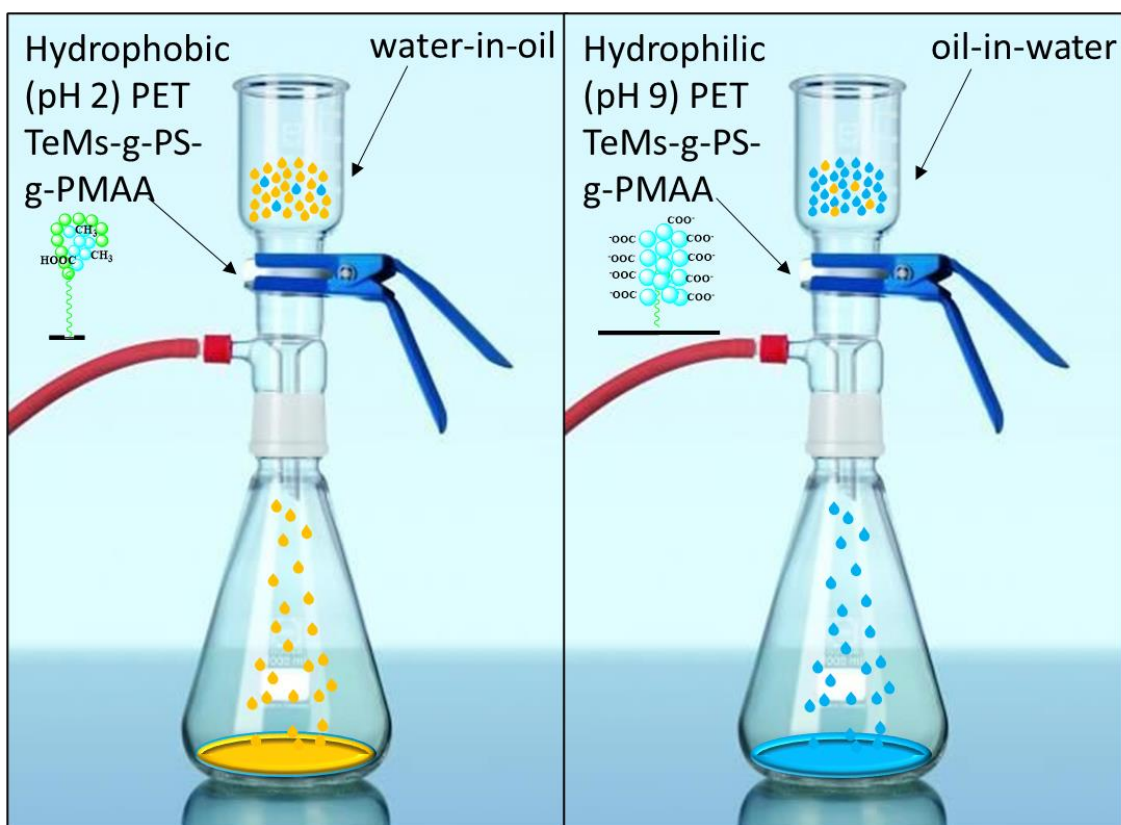


Figure S1. Dead-end vacuum filtration system used for membrane testing

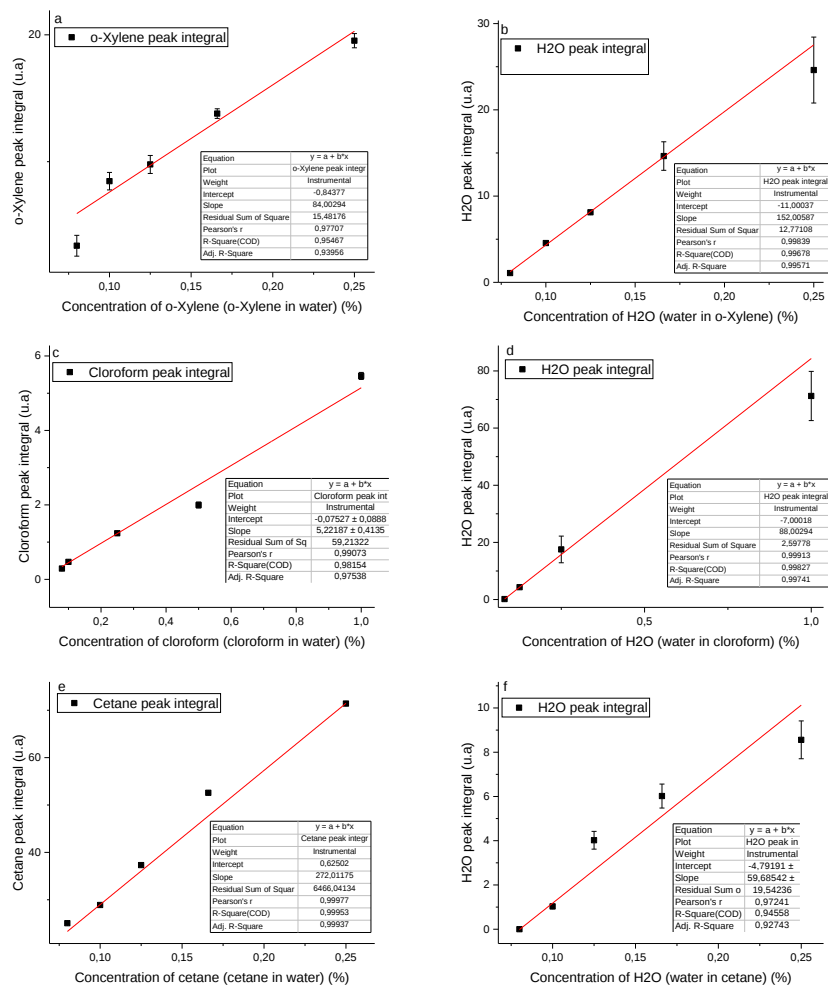


Figure S2. ^1H NMR calibration curves for determining dispersed phase concentrations (C_p) in permeate, used for calculating membrane rejection degree (R) in emulsion separation: o-xylene in water (a), water-in-o-xylene (b), chloroform-in-water (c), water-in-chloroform (d), cetane-in-water (e) and water-in-cetane (f)

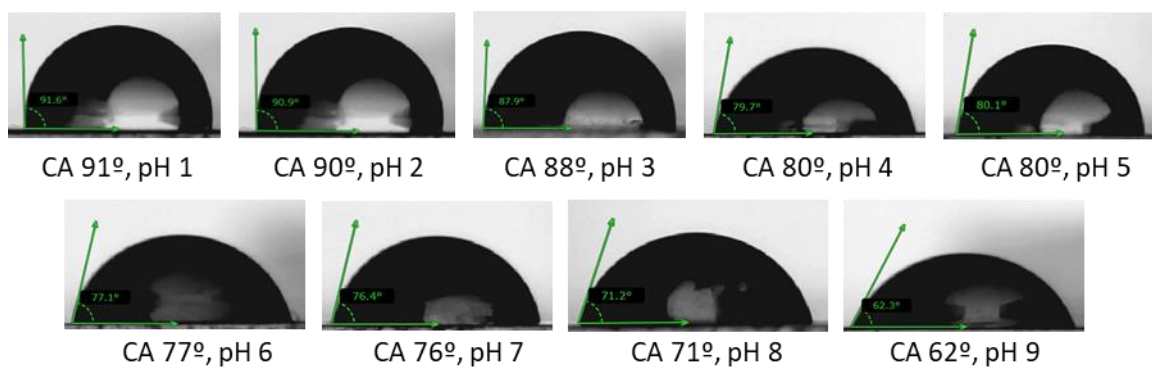
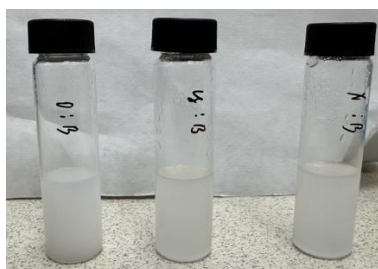


Figure S3. CA of PET TeMs-g-PS-g-PMAA ($DG_{\text{PMAA}} 1.1 \pm 0.06\%$) as a function of pH (1–9), used to select optimal pH values for emulsion separation experiments

Tabel S1. Stability of the emulsions before separation

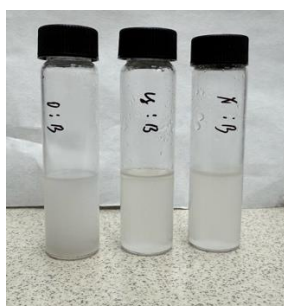
Emulsion	Time after emulsion formation, min	Avarage droplet size (according to DLS), um
Chloroform-in-water	5	0.4
	15	5.3
	40	5.6
<i>o</i> -Xylene-in-water	5	0.6
	15	4.4
	40	4.5
Cetane-in-water	5	2.1
	15	4.2
	40	4.5
Water-in-chloroform	5	0.4
	15	0.7
	40	0.8
Water-in- <i>o</i> -xylene	5	0.2
	15	1.3
	40	1.7
Water-in-cetane	5	0.4
	15	6.3
	40	8.6



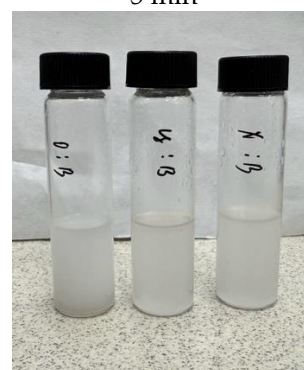
1 min



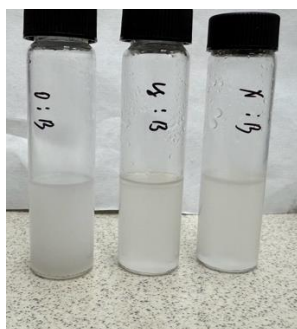
5 min



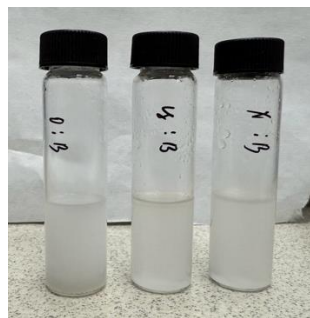
15 min



30 min

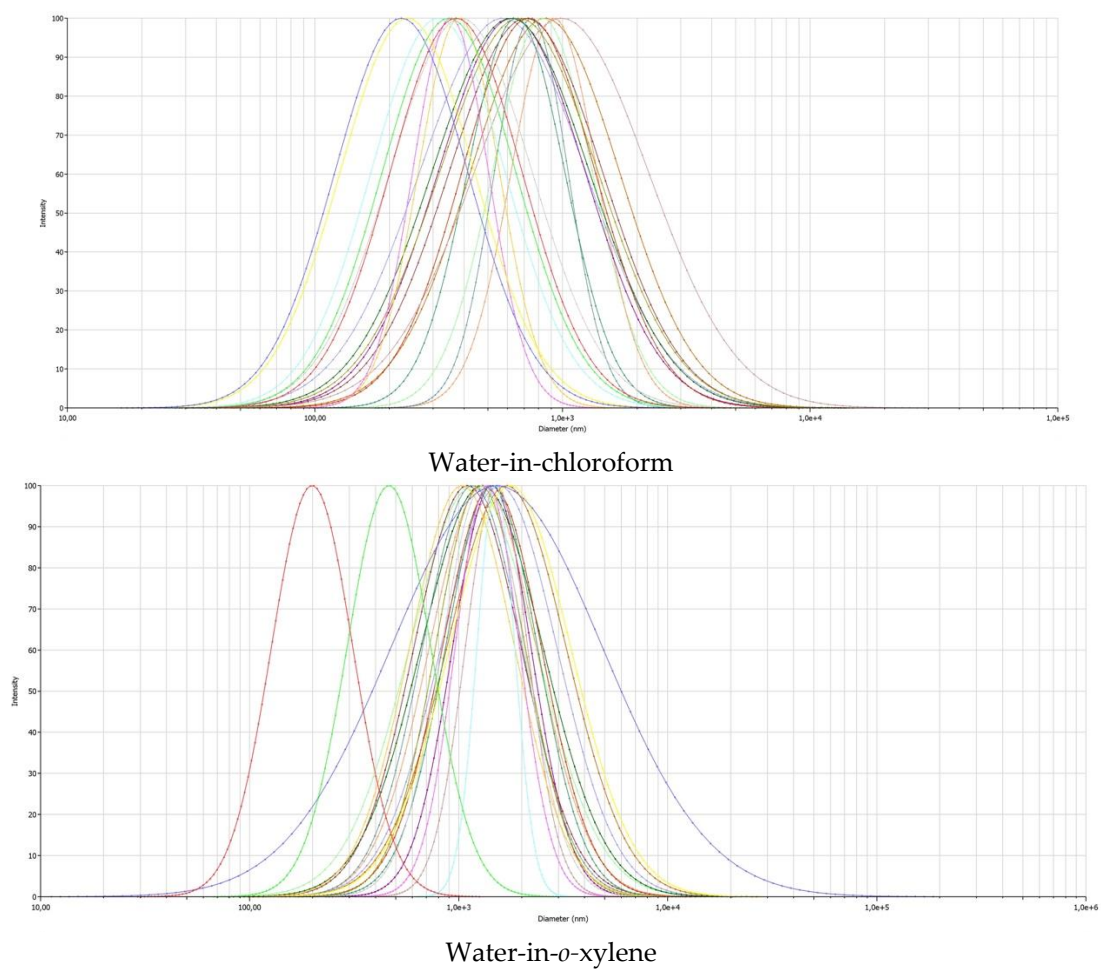


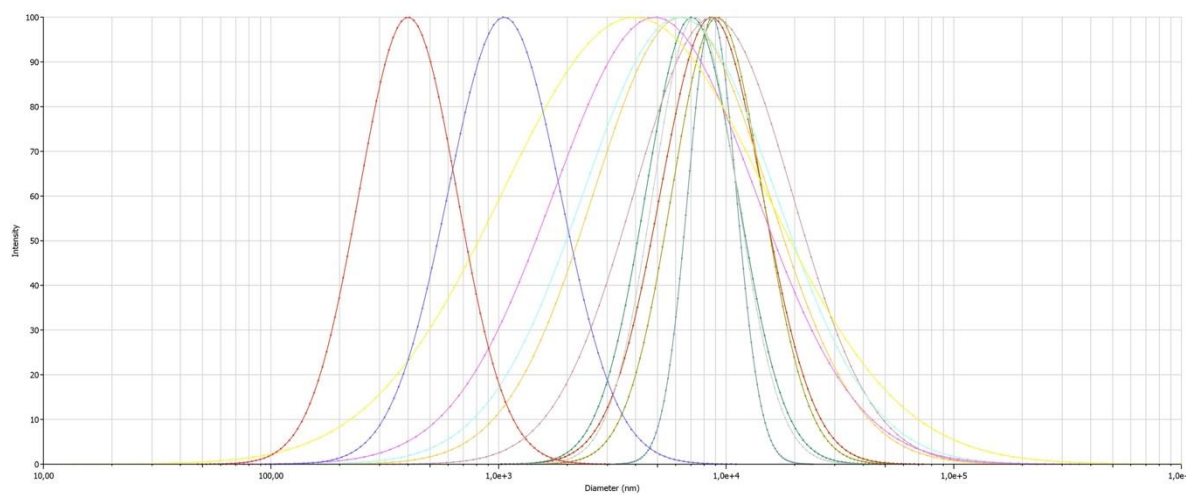
60 min



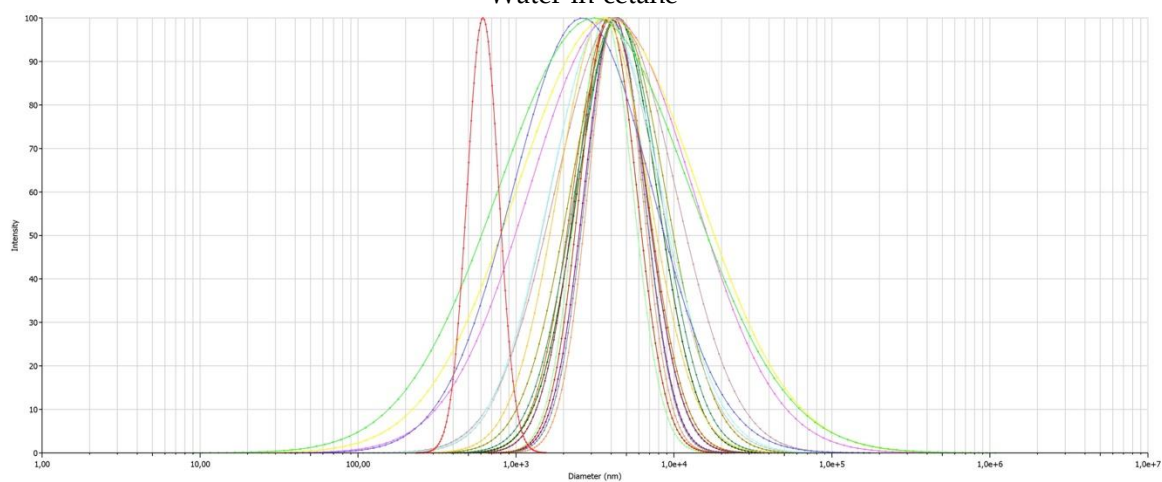
120 min

Figure S4. Pictures of emulsions during time (before filtrations) as example for *o*-Xylene-in-water, Cetane-in-water and Chloroform-in-water (prepared by Ultra-Turrax IKA disperser)

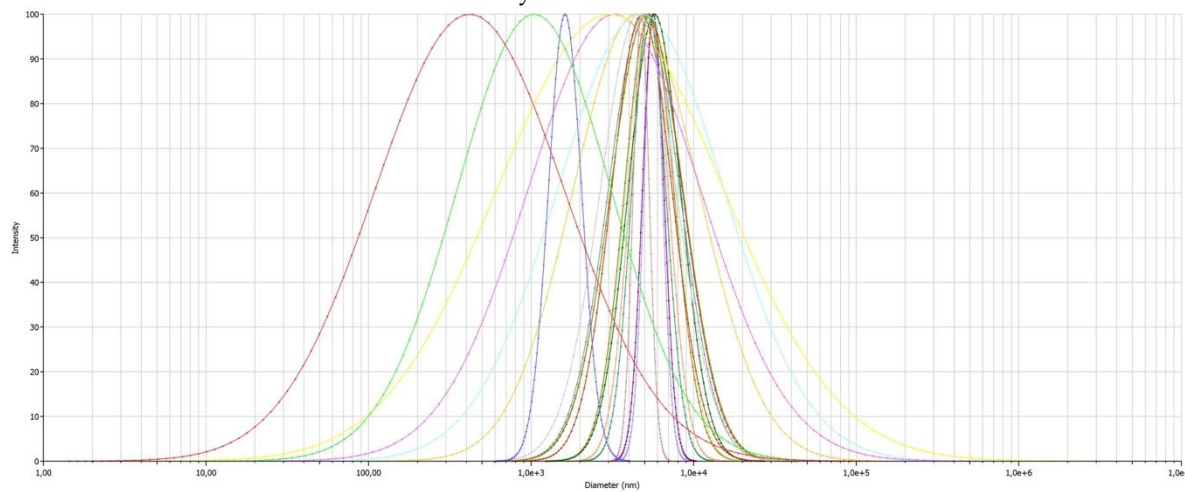




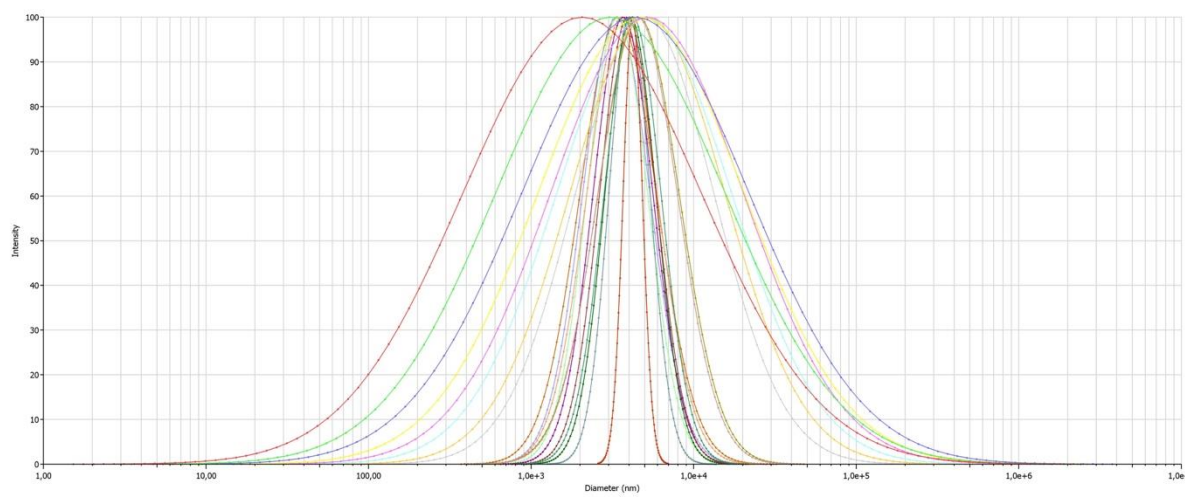
Water-in-cetane



o-Xylene-in-water



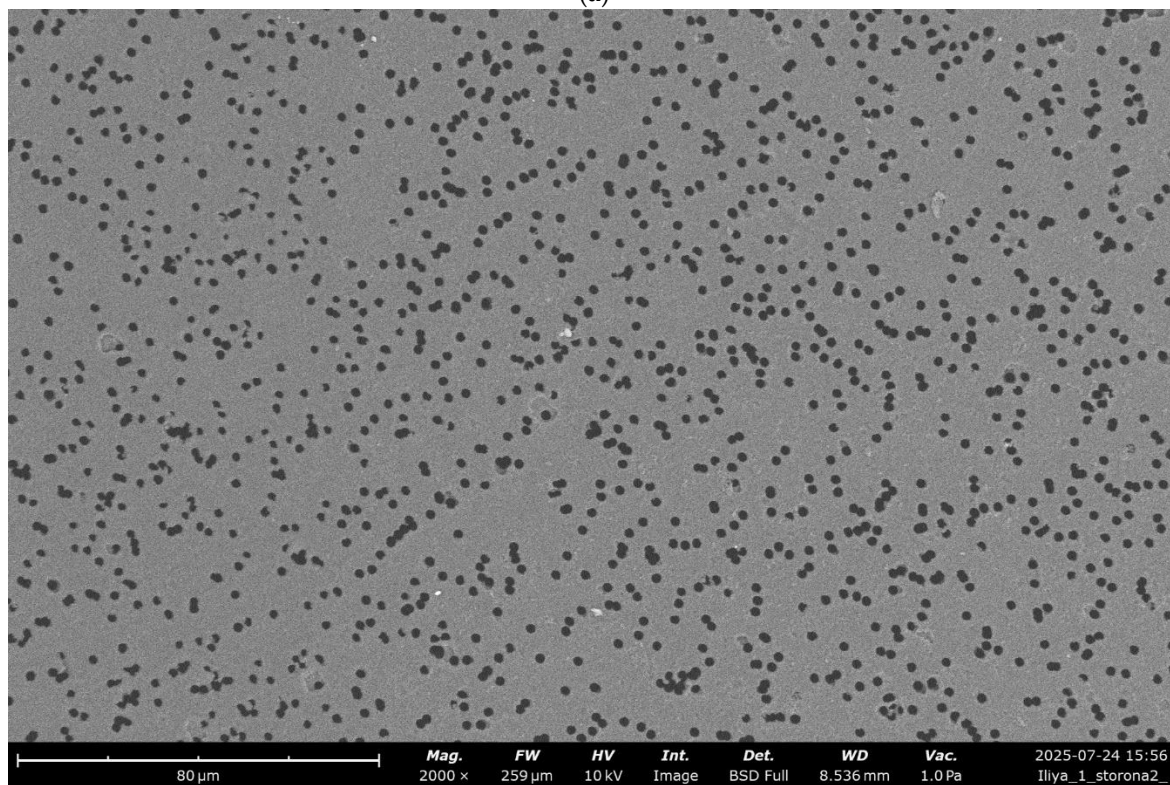
Chloroform-in-water



Cetane-in-water

Figure S5. DLS results for each emulsion (stability before separation during 5 min to 40 min with the step of 105 sec)

(a)



(b)

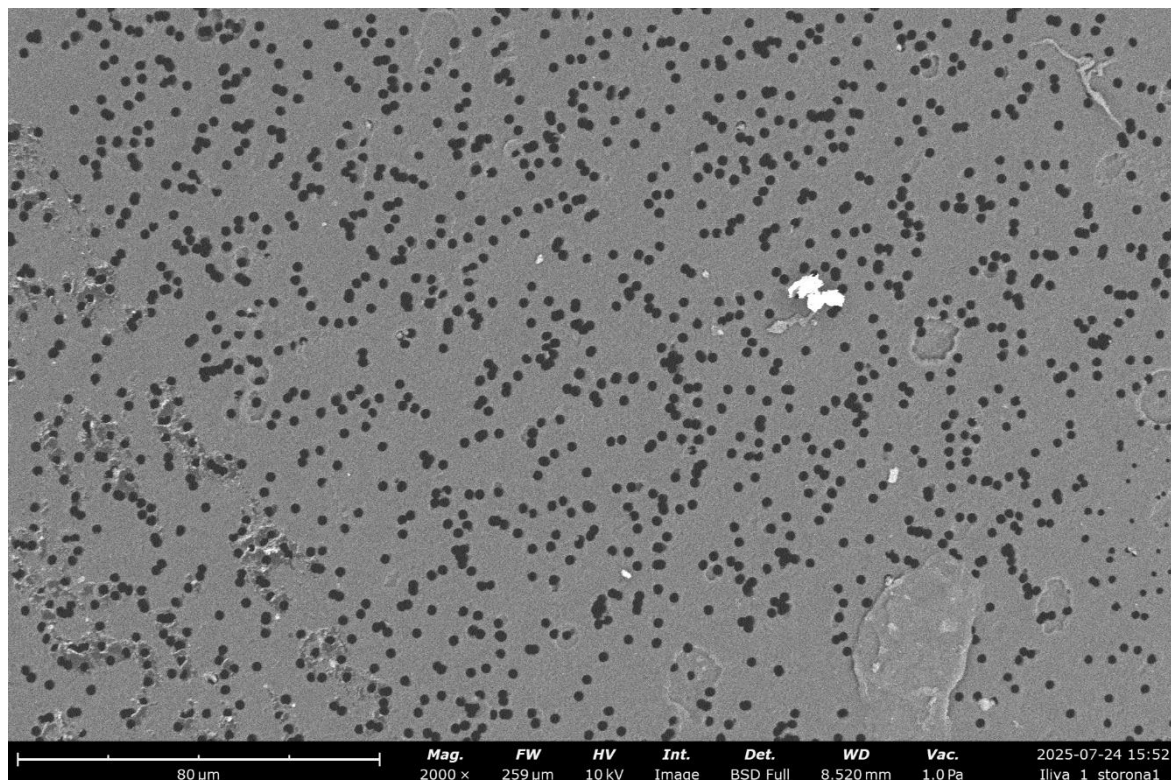


Figure S6. SEM images of PET TeMs-g-PS-g-PMAA membranes before (a) and after (b) five separation cycles showing the development of surface fouling