

Supporting information:

Ordered nanoporous membranes based on diblock polymers with high chemical stability and tunable separation properties

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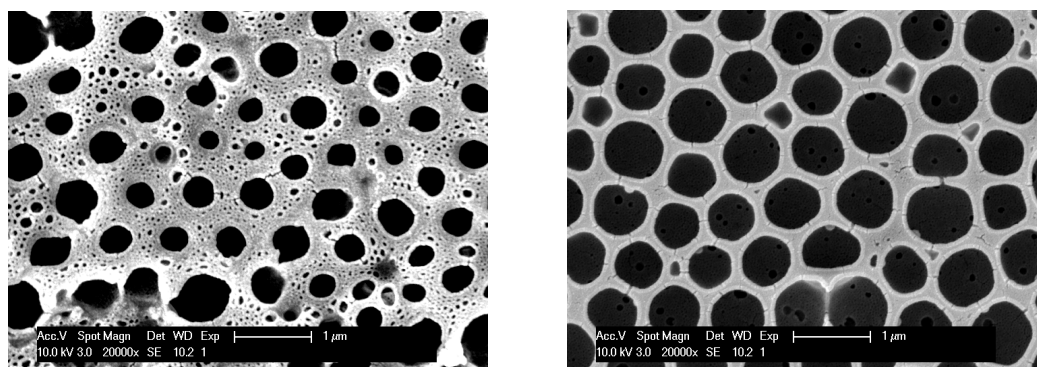


Figure 1. The morphology of composite membranes cast on crosslinking polyimide support filled with isopropanol/glycerol, as determined by SEM. (Left) 5% PAA, (Right) 20% PAA

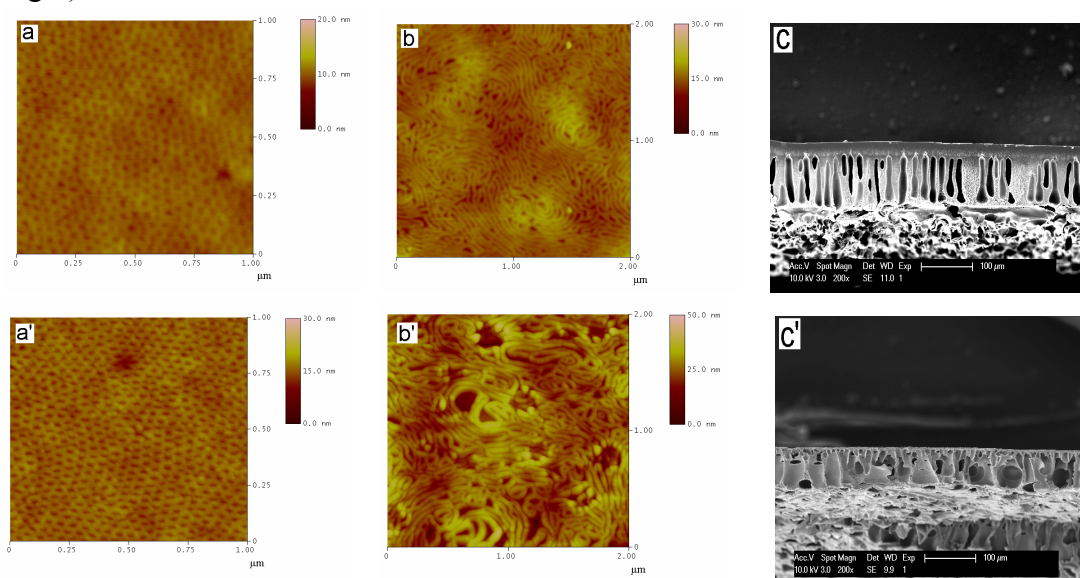


Figure 2. Morphology of PS-b-PEO membranes prepared on porous polymer supports prepared via dipcoating: (a)-(b) SFM of membranes with 10% and 30% PAA respectively on cross-linked PI, (c) SEM of a cross section of a cross-linked PI support; (a')-(b') SFM of membranes with 10% and 30% PAA respectively on PAN support, (c') SEM of a cross section of a PAN support.

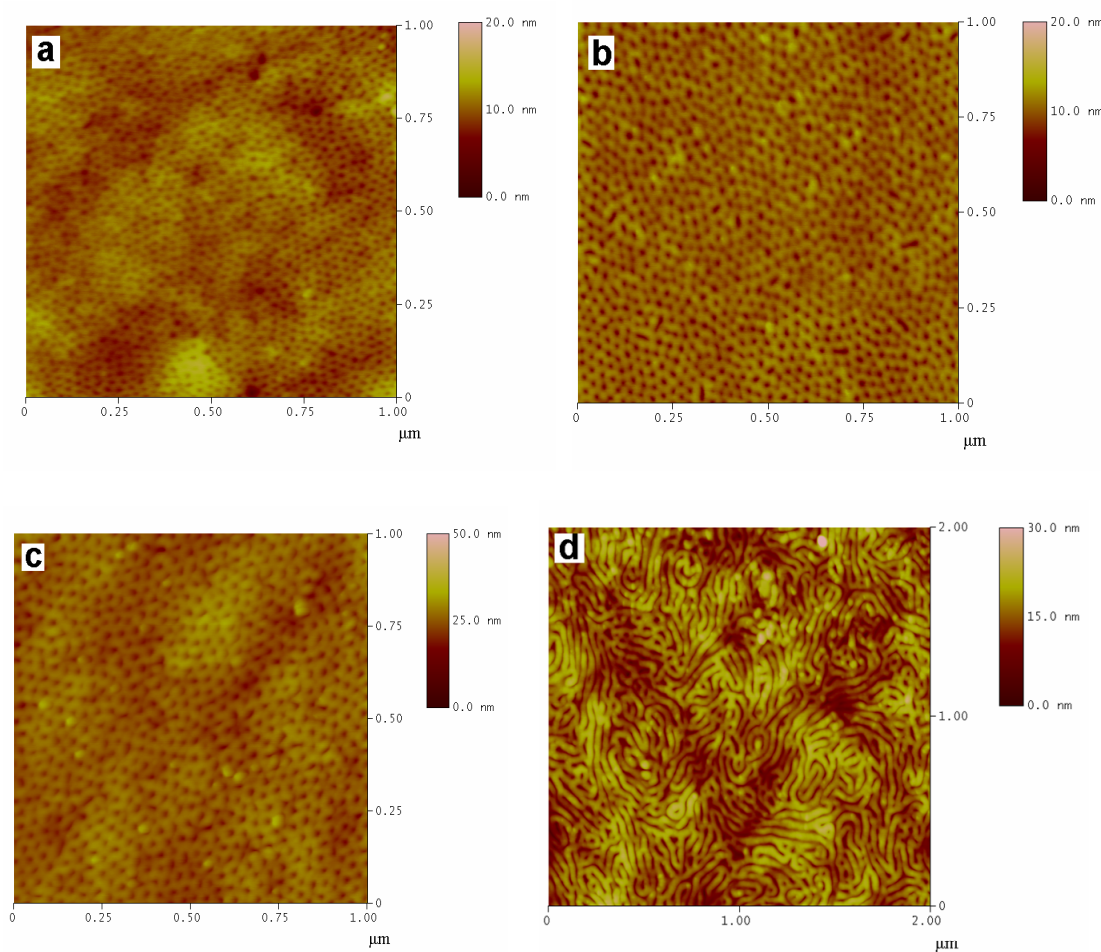


Figure 3. Morphology of the composite membranes with PS-*b*-PEO toplayer after removal PAA (a) 5%; (b) 10% (c) 20% and (d) 30% of PAA.

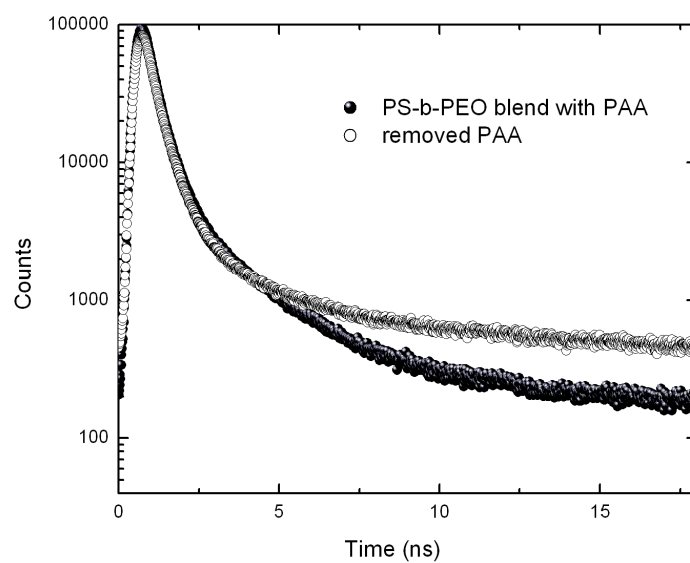


Figure 4. Positron lifetime spectra of composite PS-PEO membranes with 20% PAA cast on alumina support, before and after removal of PAA by water treatment.

Table 1: PALS-data obtained from a composite PS-PEO membrane containing 20% PAA, before and after removal of PAA by water treatment.

	Ops Lifetime 1 (ns)	Ops Intensity 1 (%)	Ops Lifetime 2 (ns)	Ops Intensity 1 (%)
With PAA	1.96 ± 0.02	17.5 ± 0.2	^a 25 ± 1	6.0 ± 0.2
After PAA removal	^c 1.97 ± 0.04	11.0 ± 0.2	^b 29 ± 1	15.3 ± 0.2

The PAL-data were taken at 2keV. Following relation between lifetimes and free volume element sizes then exists.

^a25 ns = 9.7 angstrom radius

^b29 ns = 10.2 angstrom radius

1.965 ns= 2.8 angstrom radius

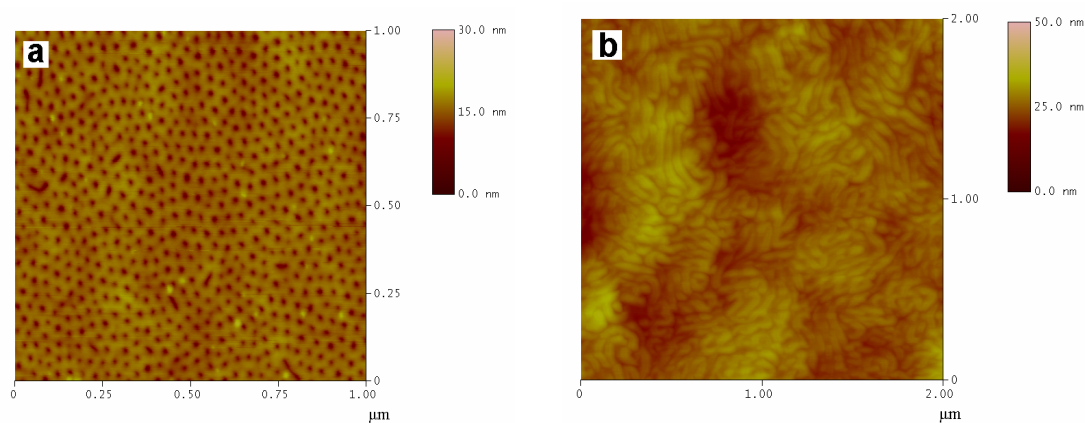


Figure 5. The morphology of membranes after treating with 1000 ppm ClO buffer solutions (a) 10% PAA and (b) 30% PAA.

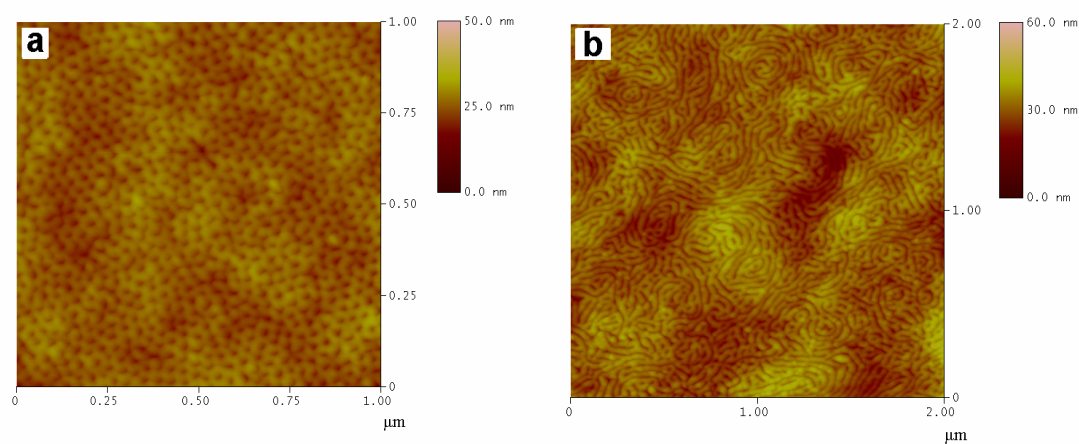


Figure 6. Morphology of composite membranes after crosslinking (a) 10% PAA and (b) 30% PAA.