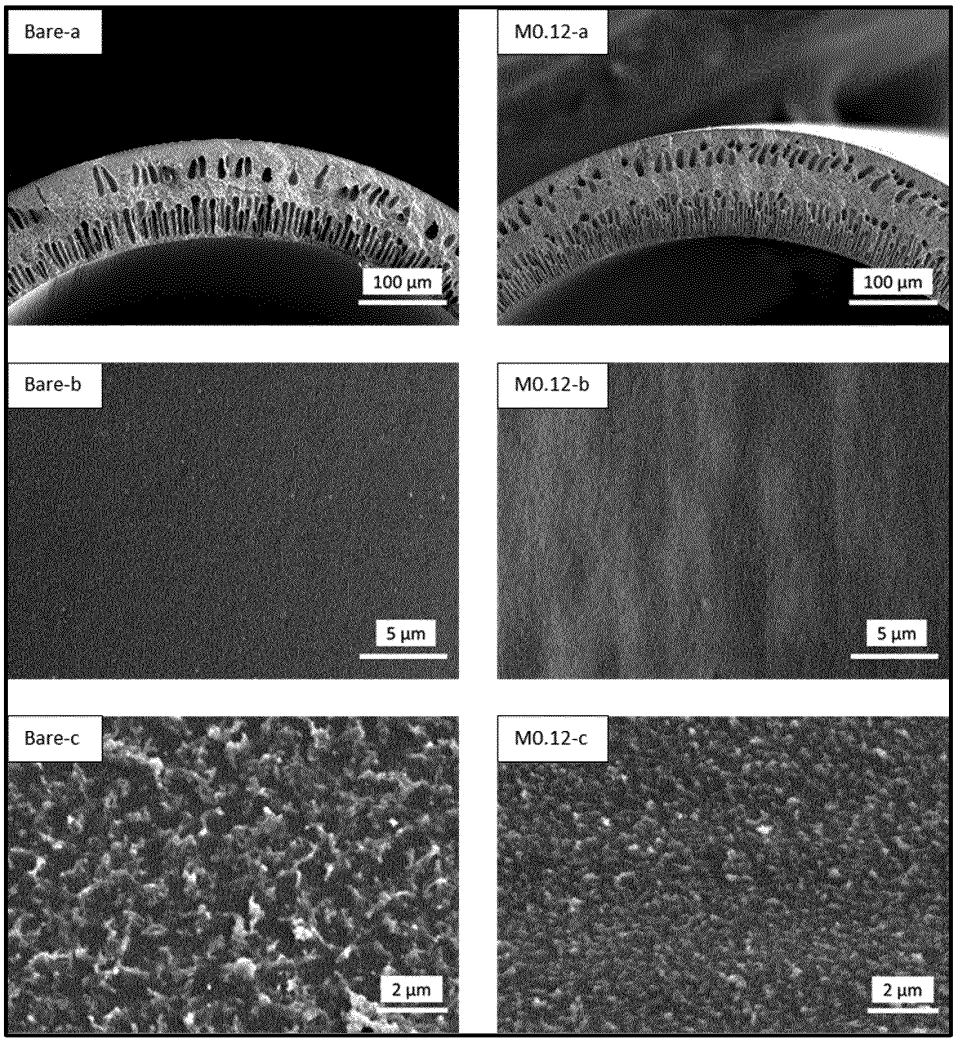

Bare-a
100 µm
M0.12-a
100 µm
Bare-b
5 µm
M0.12-b
5 µm
Bare-c
2 µm
M0.12-c
2 µm

Fig. 1

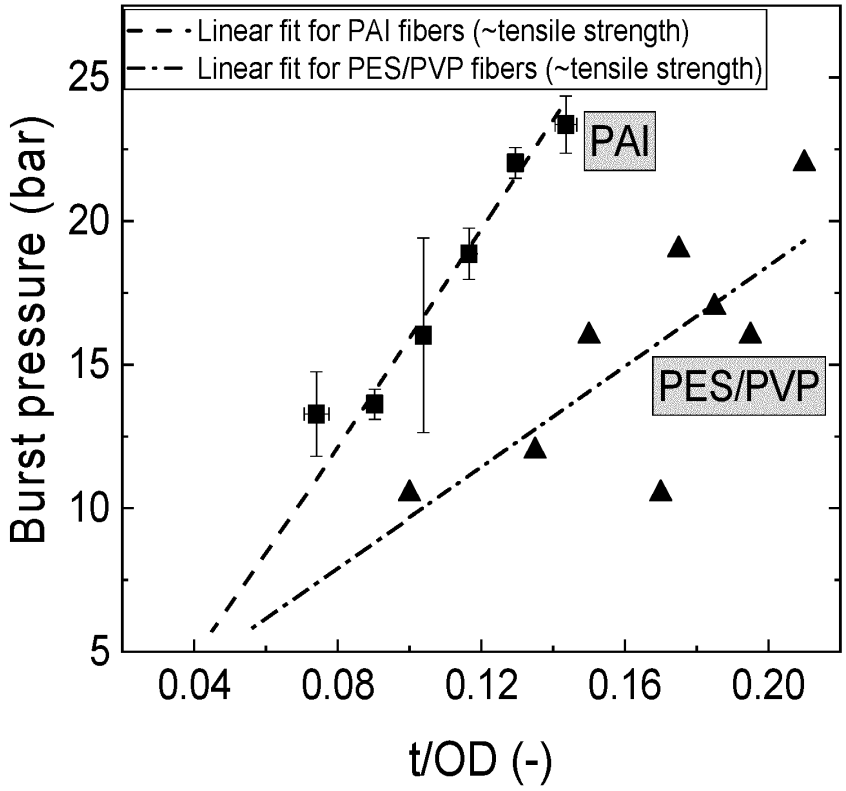

Linear fit for PAI fibers (~tensile strength)
Linear fit for PES/PVP fibers (~tensile strength)
PAI
PES/PVP
Burst pressure (bar)
t/OD (-)
25
20
15
10
5
0.04
0.08
0.12
0.16
0.20

Fig. 2

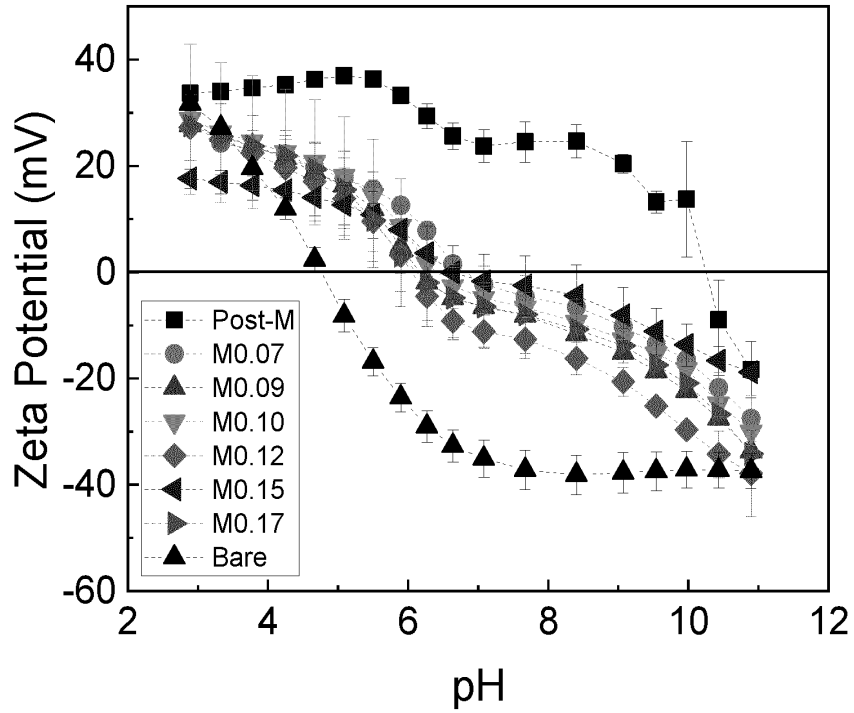

Post-M
M0.07
M0.09
M0.10
M0.12
M0.15
M0.17
Bare
Zeta Potential (mV)
pH
40
20
0
-20
-40
-60
2
4
6
8
10
12

Fig. 3

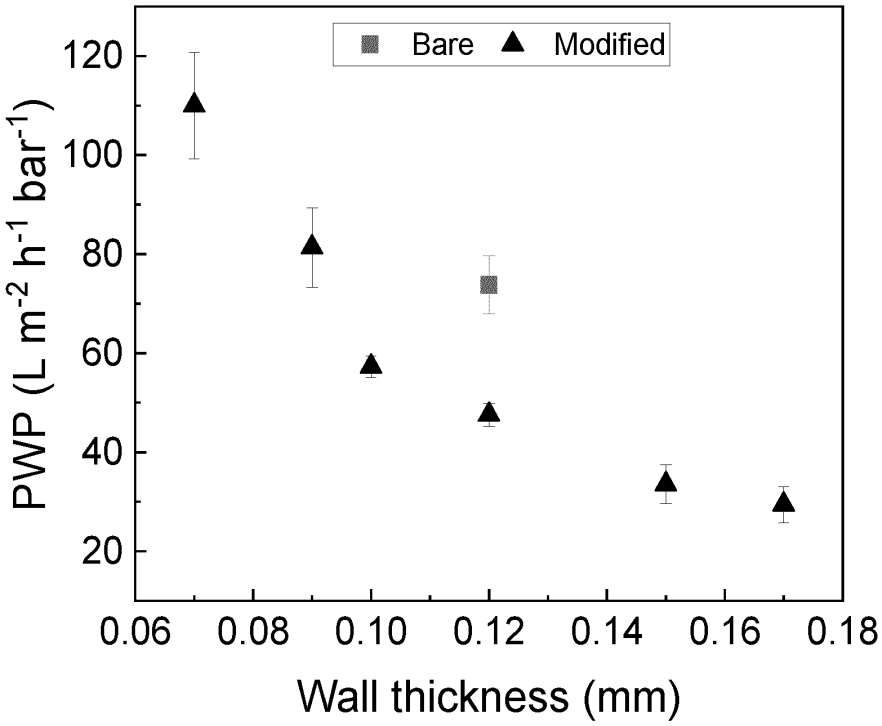

Bare
Modified
PWP (L m-2 h-1 bar-1)
120
100
80
60
40
20
0.06
0.08
0.10
0.12
0.14
0.16
0.18
Wall thickness (mm)

Fig. 4

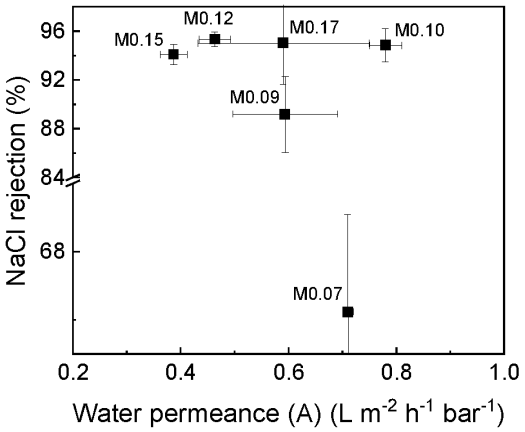

M0.12
M0.15
M0.17
M0.10
M0.09
M0.07
NaCl rejection (%)
96
92
88
84
68
0.2
0.4
0.6
0.8
1.0
Water permeance (A) (L m-2 h-1 bar-1)

Fig. 5A

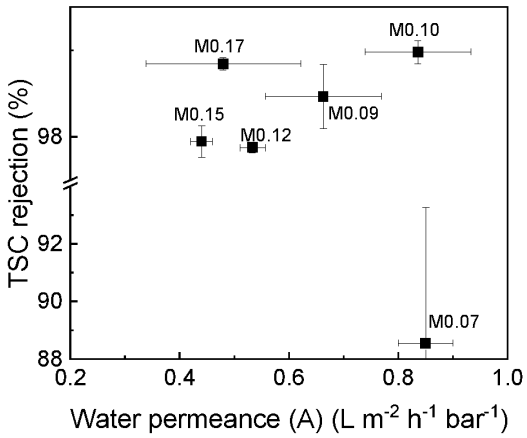

M0.17
M0.10
M0.09
M0.15
M0.12
M0.07
TSC rejection (%)
98
92
90
88
0.2
0.4
0.6
0.8
1.0
Water permeance (A) (L m-2 h-1 bar-1)

Fig. 5B

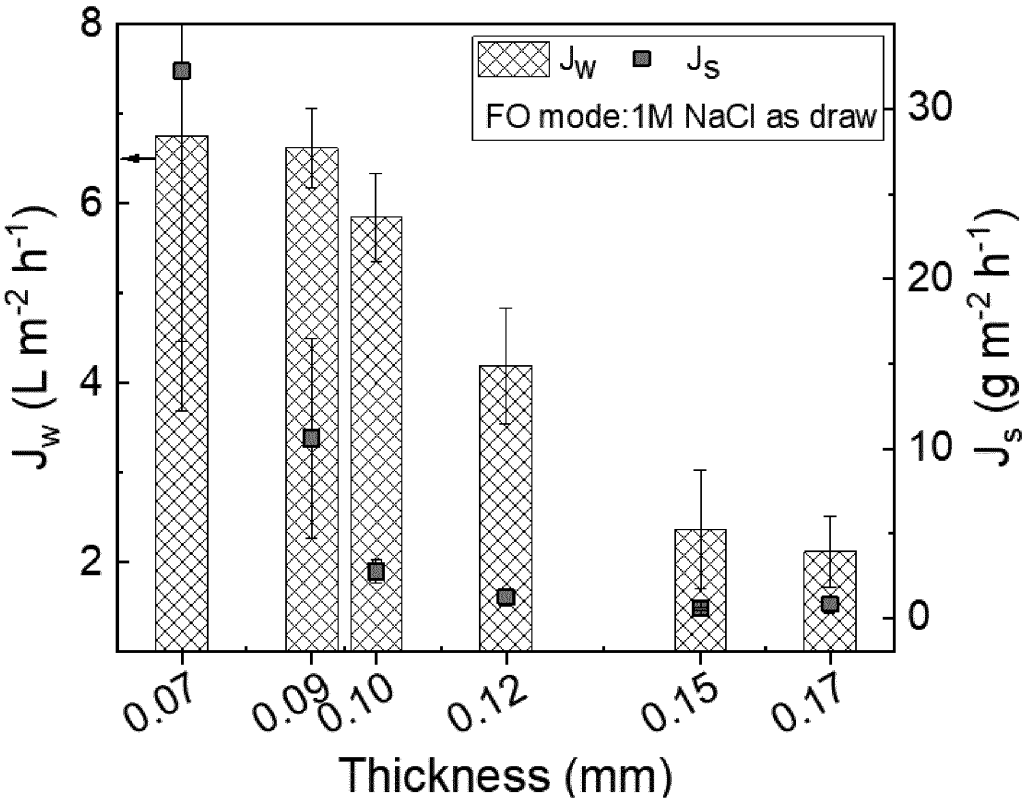

JW
JS
FO mode:1M NaCl as draw
8
6
4
2
30
20
10
0
Jw (L m-2 h-1)
Js (g m-2 h-1)
0.07
0.09
0.10
0.12
0.15
0.17
Thickness (mm)

Fig. 6A

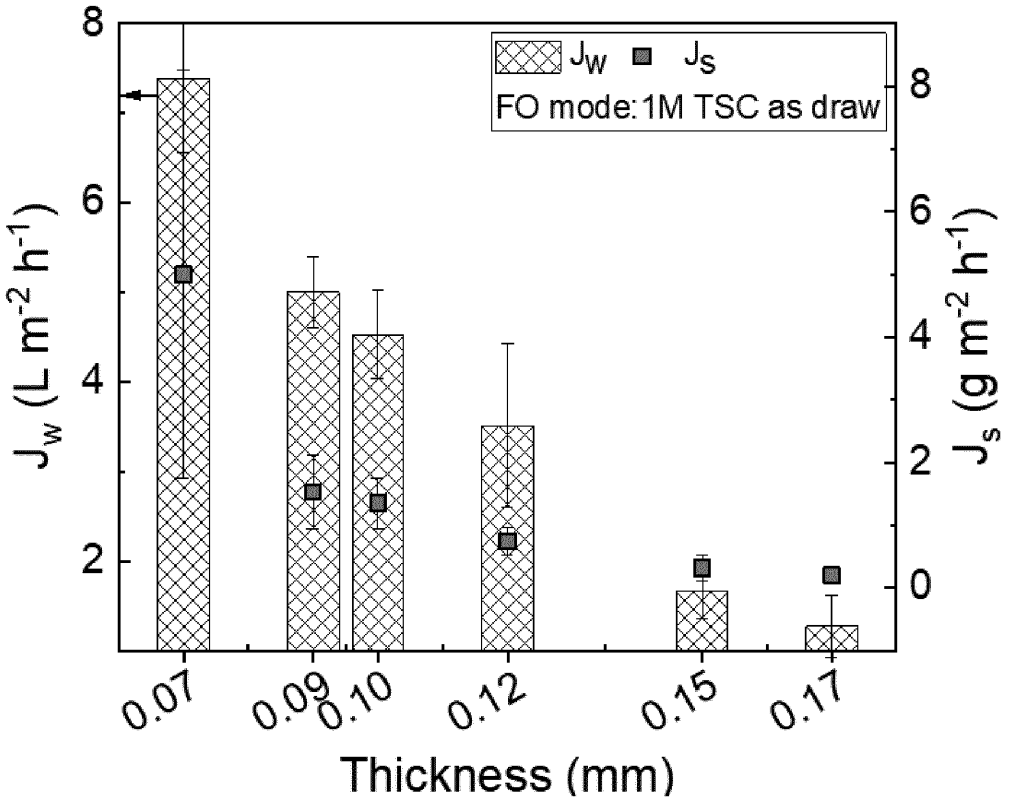

J_W
J_S
FO mode: 1M TSC as draw
J_w (L m^{-2} h^{-1})
J_s (g m^{-2} h^{-1})
0
2
4
6
8
0.07
0.09
0.10
0.12
0.15
0.17
Thickness (mm)

Fig. 6B

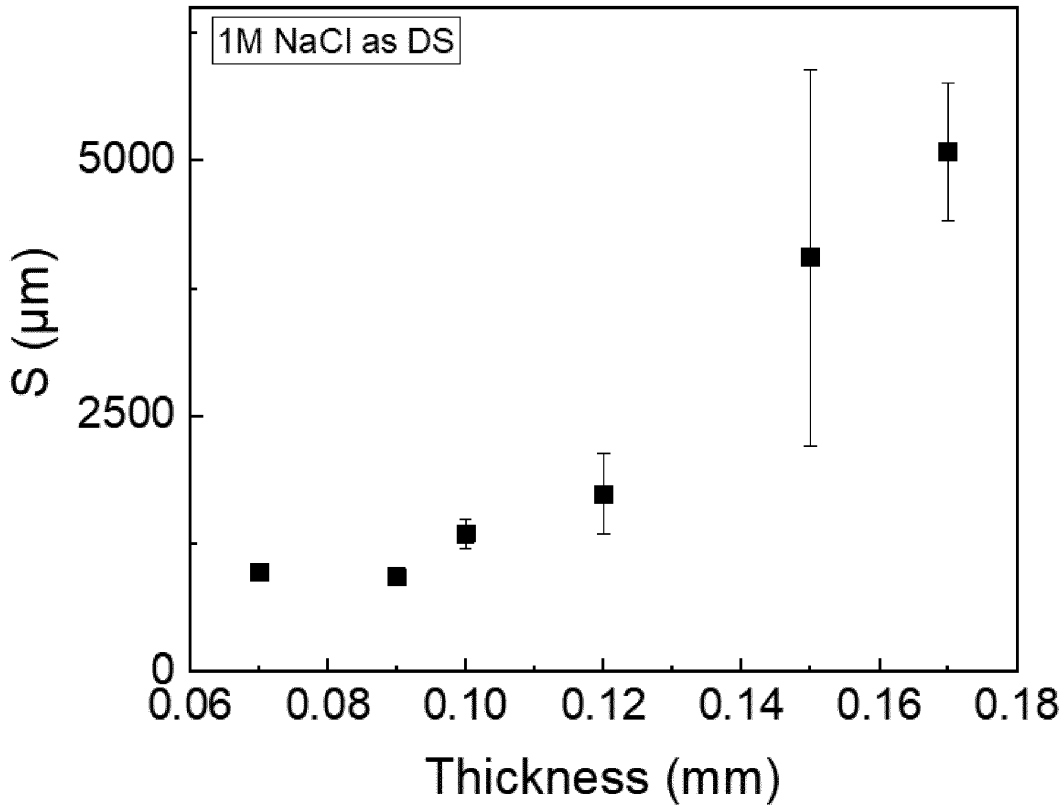

1M NaCl as DS
5000
2500
0
S (µm)
0.06
0.08
0.10
0.12
0.14
0.16
0.18
Thickness (mm)

Fig. 7A

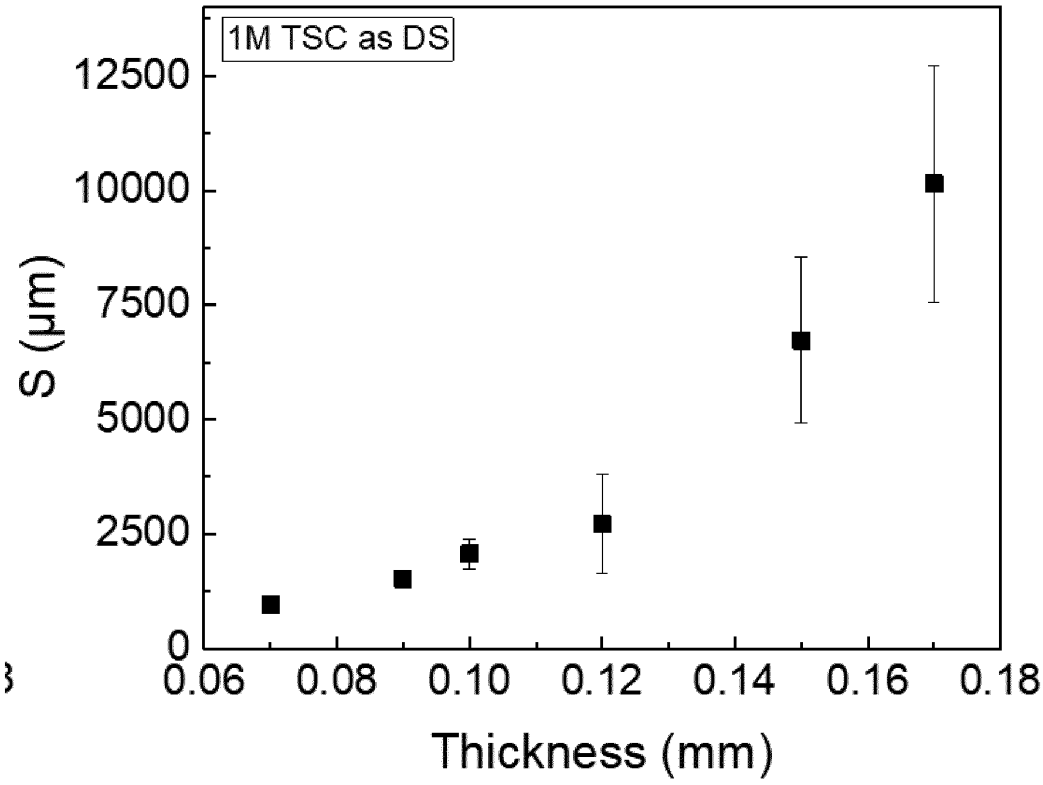

1M TSC as DS
12500
10000
7500
5000
2500
0
S (µm)
0.06
0.08
0.10
0.12
0.14
0.16
0.18
Thickness (mm)

Fig. 7B

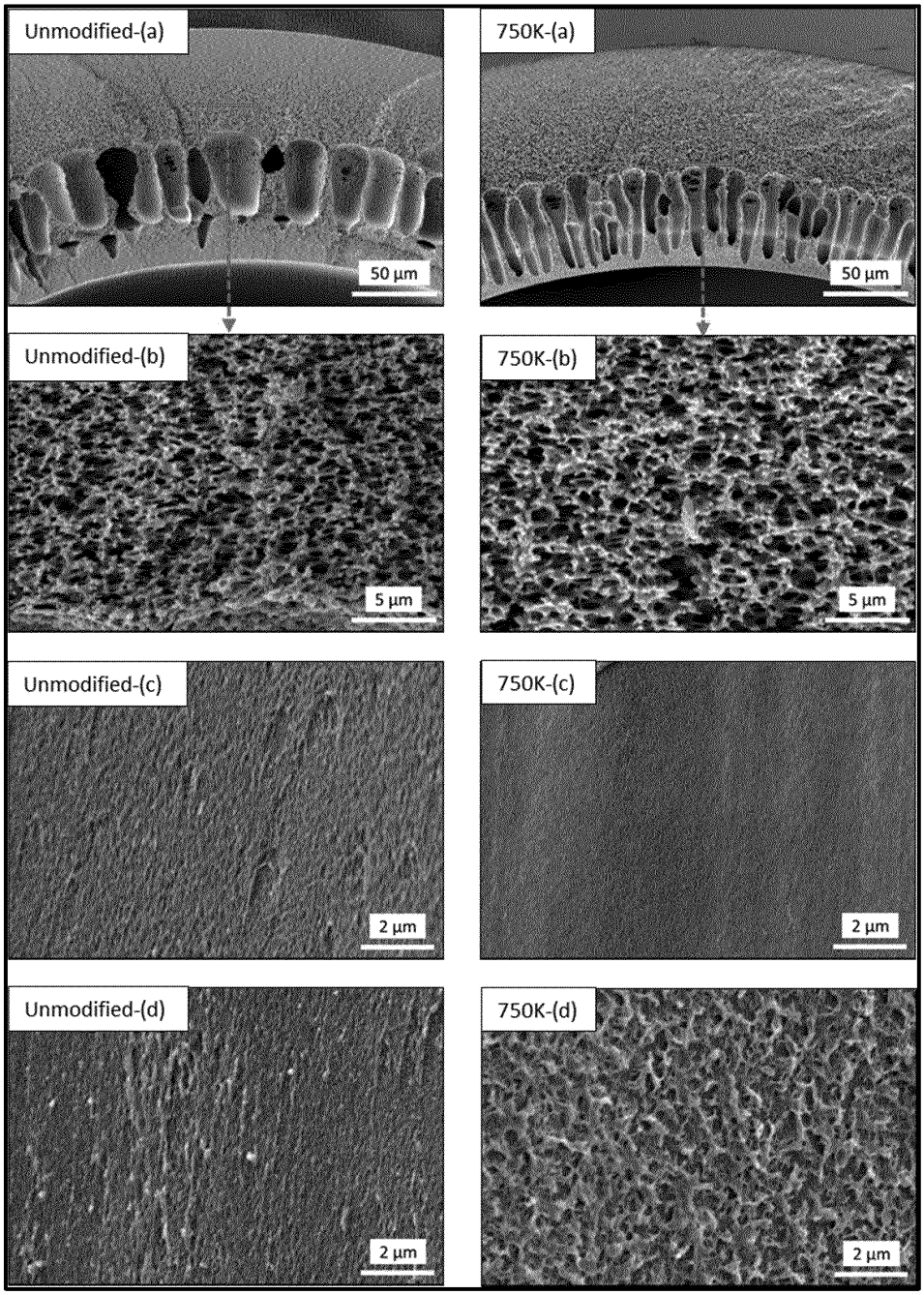

Unmodified-(a)
50 µm
750K-(a)
50 µm
Unmodified-(b)
5 µm
750K-(b)
5 µm
Unmodified-(c)
2 µm
750K-(c)
2 µm
Unmodified-(d)
2 µm
750K-(d)
2 µm

Fig. 8

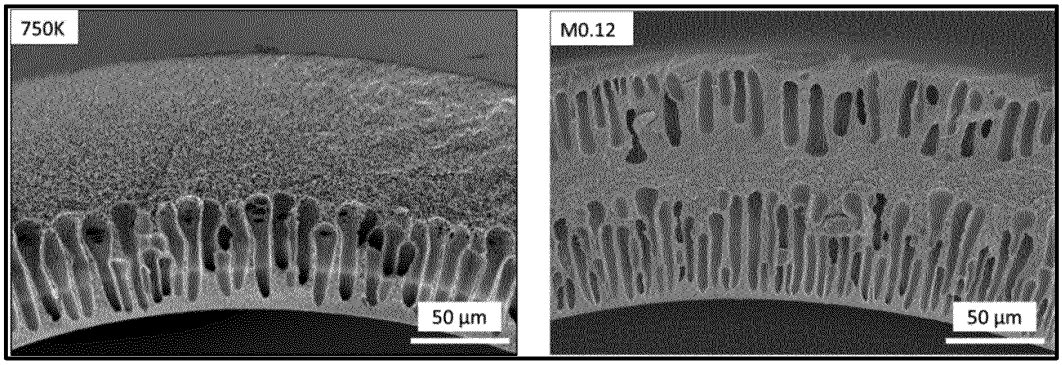

750K
50 µm
M0.12
50 µm

Fig. 9

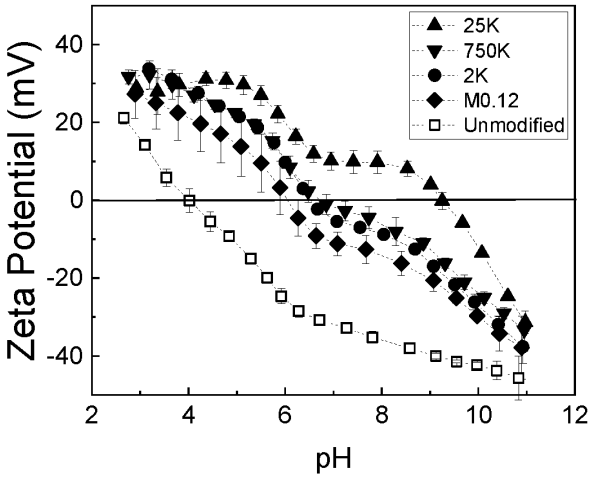

25K
750K
2K
M0.12
Unmodified
Zeta Potential (mV)
40
20
0
-20
-40
2
4
6
8
10
12
pH

Fig. 10

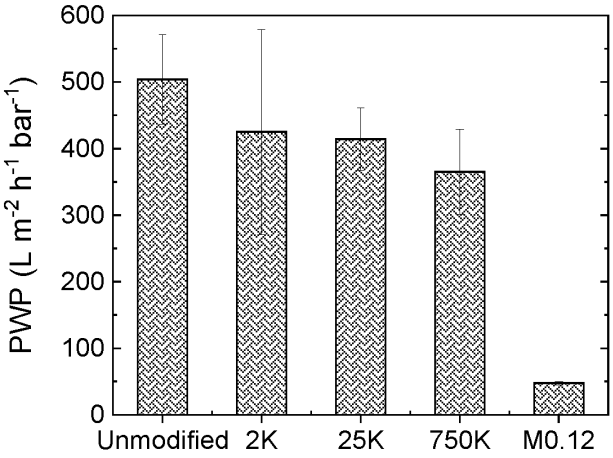

600
500
400
300
200
100
0
PWP (L m-2 h-1 bar-1)
Unmodified
2K
25K
750K
M0.12

Fig. 11

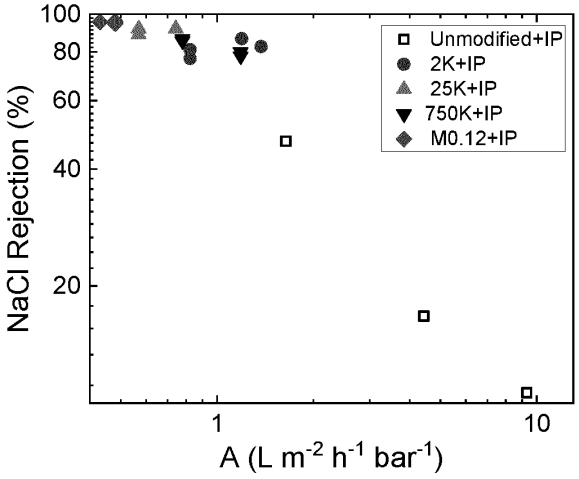

100
80
60
40
20
NaCl Rejection (%)
1
10
A (L m-2 h-1 bar-1)
Unmodified+IP
2K+IP
25K+IP
750K+IP
M0.12+IP

Fig. 12

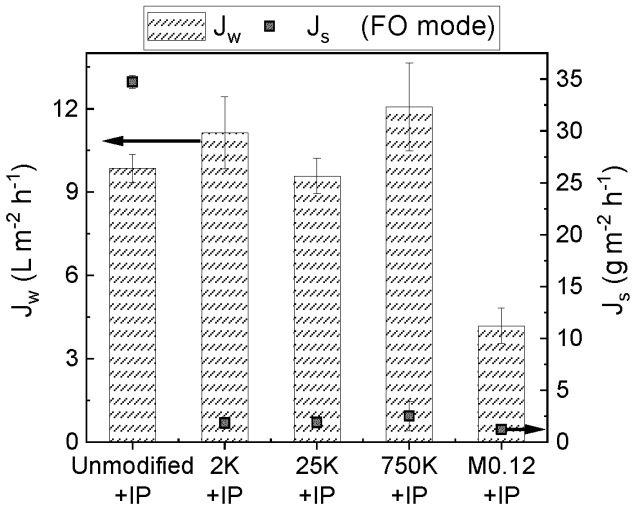

J_w
J_s
(FO mode)
J_w (L m^-2 h^-1)
J_s (g m^-2 h^-1)
0
3
6
9
12
0
5
10
15
20
25
30
35
Unmodified +IP
2K +IP
25K +IP
750K +IP
M0.12 +IP

Fig. 13

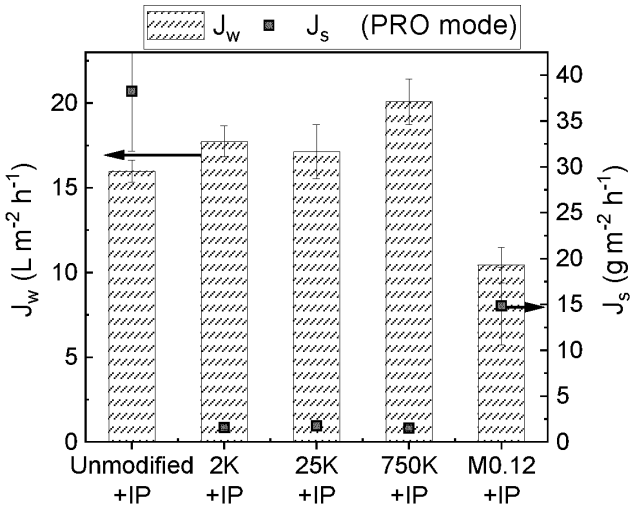

J_w
J_s
(PRO mode)
J_w (L m^-2 h^-1)
J_s (g m^-2 h^-1)
0
5
10
15
20
0
5
10
15
20
25
30
35
40
Unmodified +IP
2K +IP
25K +IP
750K +IP
M0.12 +IP

Fig. 14

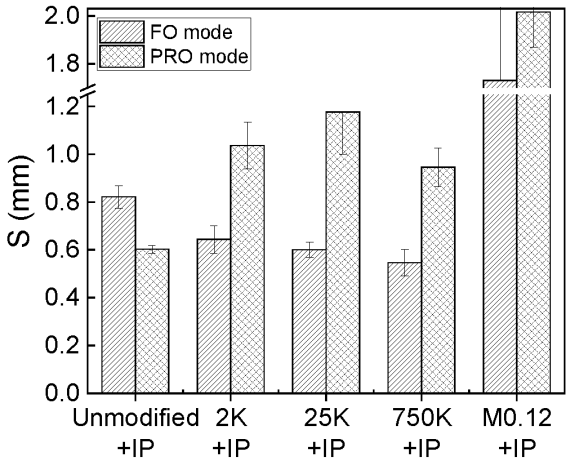

FO mode
PRO mode
S (mm)
2.0
1.8
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Unmodified +IP
2K +IP
25K +IP
750K +IP
M0.12 +IP

Fig. 15