

Sulfonated polysulfone composite membranes for ammonium rejection

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In the present investigation, synthesized composite membranes were prepared by simultaneous casting of two polymer solutions using the technique of phase inversion by immersion / precipitation. The support layer was prepared using polyethersulfone and polysulfone as base polymer, and for the top layer was used sulfonated polysulfone (SPSU) with 50% sulfonation degree. The morphology of the resulting membranes was characterized by scanning electron microscopy (SEM) Figure 1 [1-4].

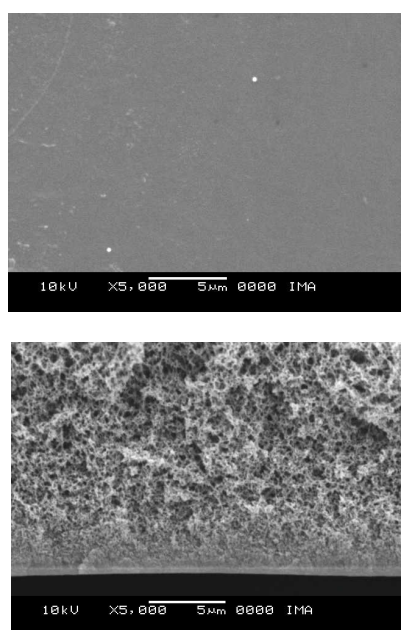


Figure 1 - Surface and cross section of the membrane synthesized (M-15)

The final results showed that it is possible to prepare composite membranes by simultaneous casting of two polymer solutions with adherence between the two layers. Regarding the permeation tests, the developed membranes presented values of

hydraulic permeability within the range of commercial nanofiltration (NF) membranes (Table 1). Values rejection of 80% ammonium ions can be increased by using a SPSU with a greater degree of sulfonation [5-6].

Table 1 - Transport Properties of the composite membranes synthesized and commercial

Code Membrane	Permeate flux (L/m ² . h)	Hydraulic permeability (L/m ² h. bar)	(%) R _{NH4+}	
			(NH ₄) ₂ SO ₄	NH ₄ Cl
M-12	18	2.0	71	4
M-15	2	1.2	80	4
M-22	24	4.1	78	4
M-23	29	8.0	15	3
M-30	131	22.1	< 1	< 1
M-32	123	19.1	< 1	< 1
*DK	12	2.4	99	3
*DL	11	2.0	92	3

*commercial

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