

Article

Influence of the Fabrication Conditions on the Physical Properties and Water Treatment Efficiency of Cellulose Acetate Porous Membranes

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Surface morphological characteristics

The morphological characteristics of the surface and the cross-section of the prepared membranes were investigated using SEM. Figure 1a and b show the upper and lower surfaces, respectively, of a CA membrane obtained with the basic preparation procedure. The images reveal a porous structure on both sides. It should be mentioned here that the in-deep porous structure of the surface could not be achieved using the available techniques due to the burning effect of the light beam. Figure 2 shows cross-sections images of CA membranes obtained by using different thicknesses or different speeds of the film applicator. The images show the anisotropic structure of the membrane, which exhibits different types of pores at the different depths of its thickness.

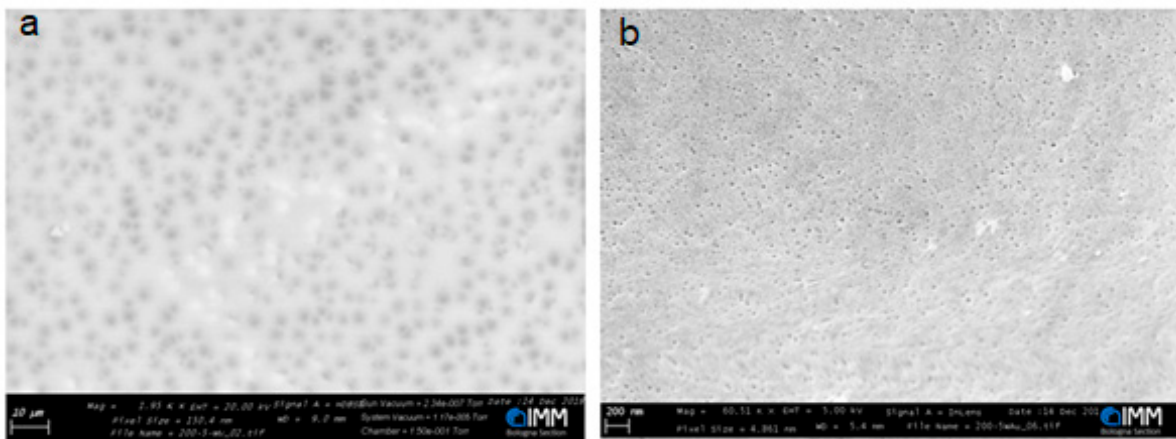


Figure S1. SEM images of the upper (a) and lower (b) surfaces of the CA membrane (fabrication conditions: film applicator speed = 5 mm/sec and casted film thickness = 200 µm).

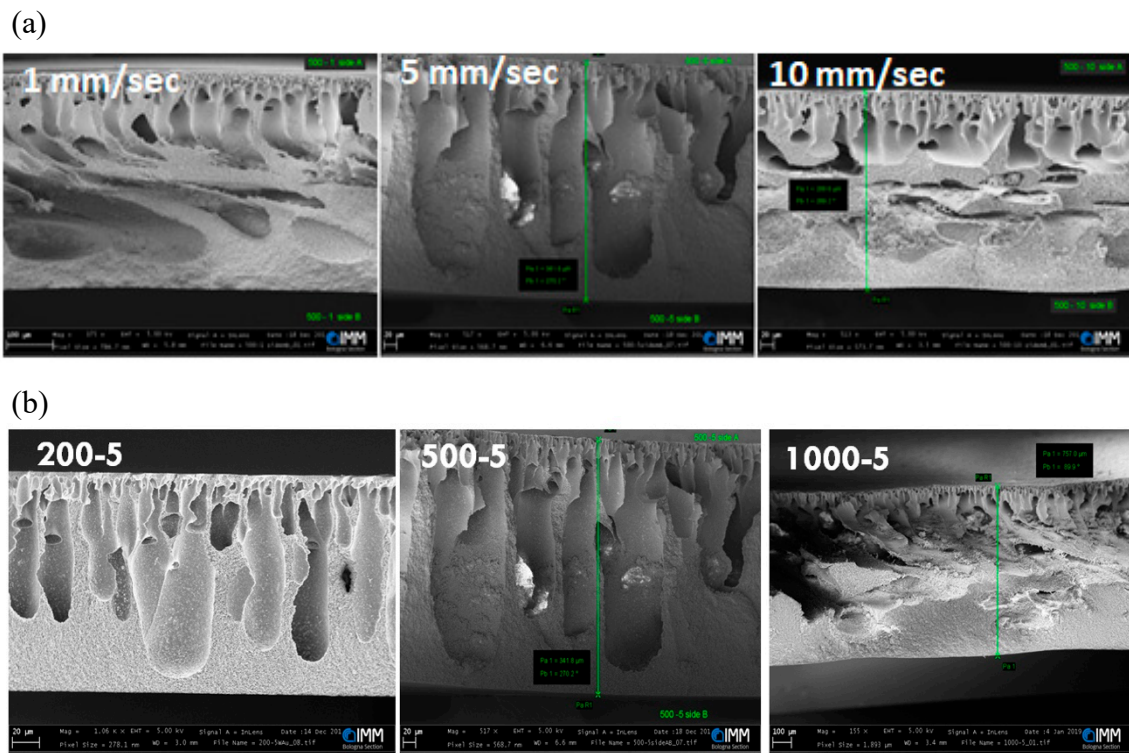


Figure S2. (a) SEM images of cross-sections of CA membranes obtained with different film applicator speeds (1, 5 and 10 mm/sec, the thickness was fixed at 500 μm) and (b) cross-section of CA membranes of different thicknesses (the film applicator speed was fixed at 5 mm/sec).

Additional spectroscopic data

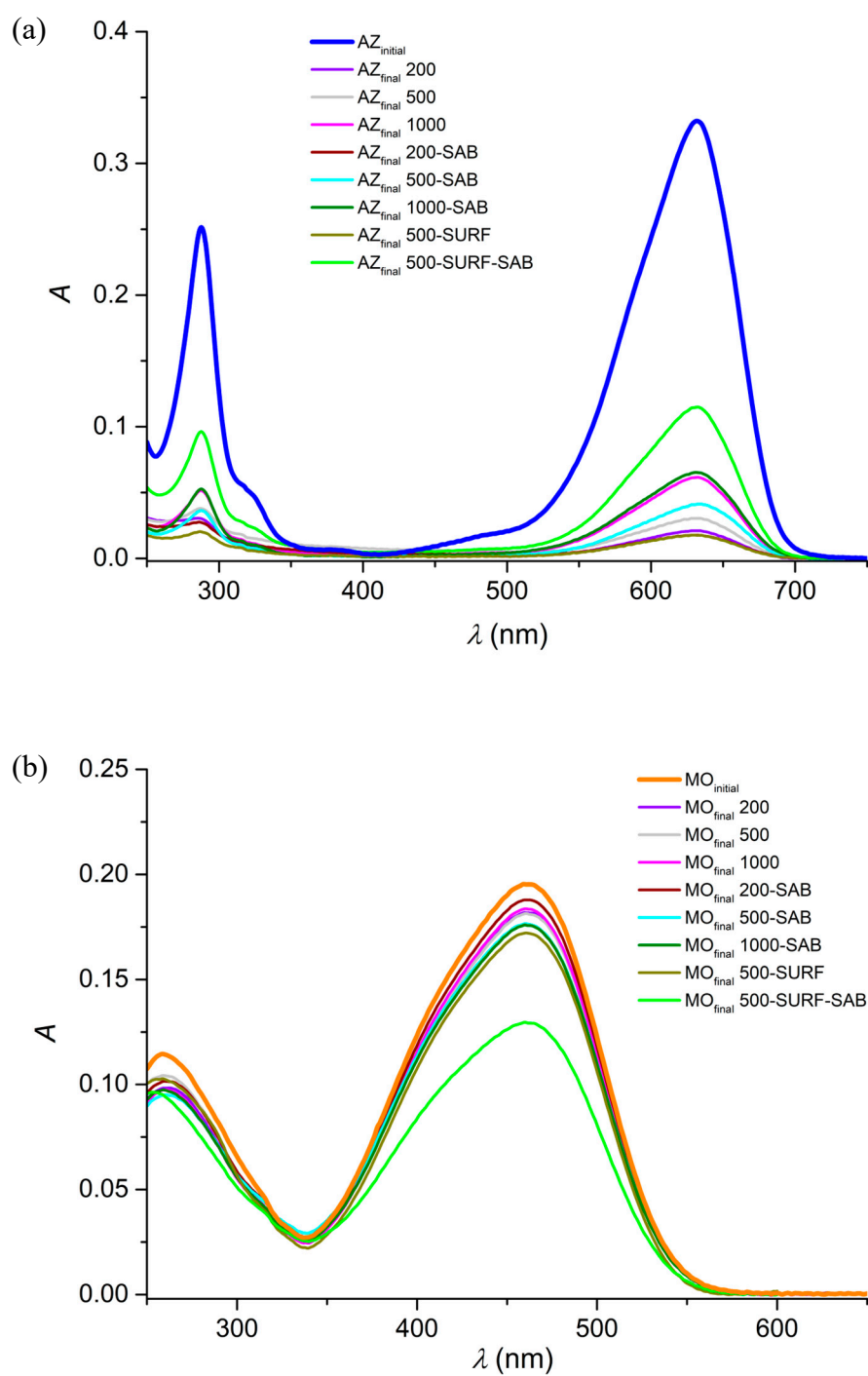


Figure S3. Absorption spectra of the dye solutions prior (thicker curves, initial) and after (thinner curves, final) the overnight immersion of the membrane samples (0.05 g in 5 ml solution: 1% wt/vol) for (a) AZ and (b) MO.