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# Preparation of multifunctional hollow fiber nanofiltration membranes by dynamic assembly of weak polyelectrolyte multilayers

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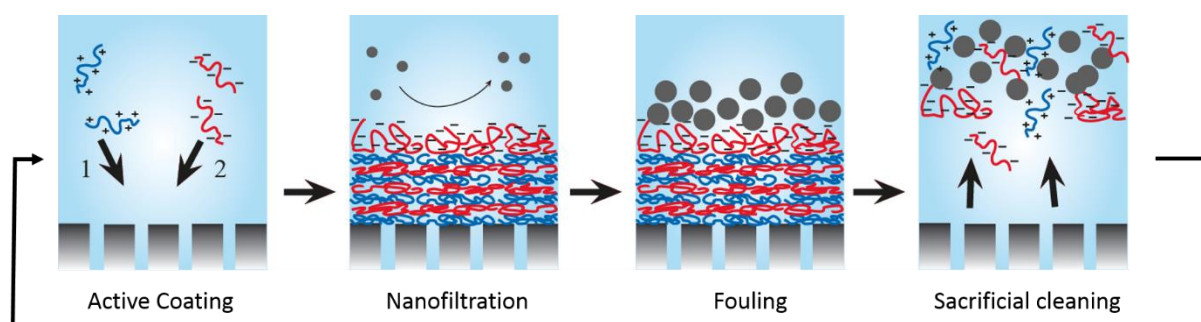
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## Graphical Abstract



## Abstract

In this work, we investigate the effect of preparation conditions for dynamic layer-by-layer (LbL) coating, to prepare multifunctional hollow fiber nanofiltration (NF) membranes. Dynamic coating was performed at constant pressure and at variable cross flow speeds. In this way, polyelectrolyte multilayers (PEMs) were formed of the weak polyelectrolytes poly(acrylic acid) (PAA) and poly(allylamine hydrochloride) (PAH), on a negatively charged polyethersulfone ultrafiltration (UF) support. The resulting membrane performance was investigated and compared to membranes prepared by different methods (dip coating and dead end filtration), and it was found to be comparable. It was shown that PAH/PAA multilayers can be fabricated reproducibly and homogeneously using optimised dynamic LbL deposition conditions on single fibre module (surface area of 6.2 cm<sup>2</sup>) as well as on a module of 15 fibres (surface area of 67 cm<sup>2</sup>). Moreover, the approach of dynamic coating could be easily up scaled to

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