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Experimental and theoretical study of a forward osmosis hollow fiber membrane module with a cross-wound configuration

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Abbreviations: active layer facing the draw solution, AL-DS; active layer facing the feed solution, AL-FS; bulk, b; cellulose triacetate, CTA; draw solution, CFD; computational fluid dynamics, DS; external concentration polarization, ECP; feed solution, FS; forward osmosis, FO; friction-concentration polarization, FCP; hollow fiber, HF; internal concentration polarization, ICP; membrane surface, m; permeate side, p; pressure-assisted osmosis, PAO; pressure-retarded osmosis, PRO; reverse osmosis, RO; thin-film composite, TFC; ultrafiltration, UF.

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