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# Cellulose nanofiber intermediary to fabricate highly-permeable ultrathin nanofiltration membranes for fast water purification

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## Abstract

Highly-permeable nanofiltration membranes are highly desired in water production and dissolved solutes removal due to environmental and energy concerns. Here a facile approach is presented to prepare ultrathin polymeric nanofiltration membrane using surface modification of ultrafine cellulose nanofiber (UCN) membrane *via* interfacial polymerization. The hydrophilic UCN membrane endows an interconnected nanoporous microstructure containing free spaces for the growth of the crosslinked-PEI layer creating narrow permeation channels that are responsible for the transport of water moleucles. The resultant membranes comprising an ultrathin selective layer intertwined with cellulose nanofiber matrix are smooth and allow fast permeation of water.