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Sulfated polyelectrolyte complex nanoparticles structured nanoflitration membrane for dye desalination

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ABSTRACT:

Polysaccharide nanofiltration (NF) membrane with traditional modification normally suffers from poor water permeability as a result of its tight packing of polymeric chains. In this work, a novel membrane building block, polyelectrolyte complex (PEC) nanoparticles (NPs) armed with adjustable content of sulfated groups was developed using chitosan and dextran sulfate sodium. The sulfated polyelectrolyte complex membranes (SPECMs) were first prepared by solution-casting and glutaraldehyde crosslinking process, and their structural characteristics and surface properties were systematically investigated. Intrinsic aggregation structure combined with numerous sulfate groups attenuates packing density of polymeric chains and promotes hydrophilicity, endowing SPECMs with high flux and perm-selectivity.