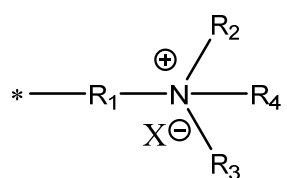
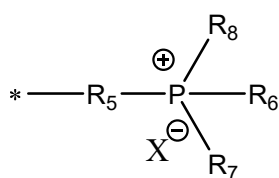


Abstract

A positively charged acid- and alkali-resistant composite nanofiltration membrane and a preparation method therefor and a use thereof. The positively charged acid- and alkali-resistant composite nanofiltration membrane sequentially comprises a bottom layer, a porous intermediate layer, and an acid- and alkali-resistant separation layer. The acid- and alkali-resistant separation layer comprises: (1) the quaternary ammonium salt group shown in formula I and/or the quaternary phosphonium salt group shown in formula II, grafted to the acid- and alkali-resistant separation layer through a N atom,

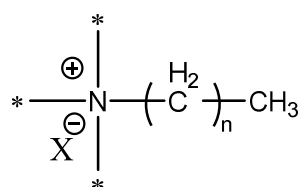


Formula I;

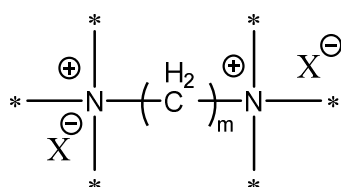


Formula II; wherein, R₁ is

substituted or unsubstituted C1-C9 alkylene or phenylene; R₂, R₃, and R₄ are each independently selected from C1-C3 alkyl or phenyl; R₅ is a C1-C6 alkylene, phenylene, or C7-C10 aralkylene; R₆, R₇, and R₈ are each independently phenyl or C7-C10 aralkyl; X is halogen; or (2) a quaternary ammonium salt structure, wherein the quaternary ammonium salt structure comprises the structural formula shown in formula III and/or the structural formula shown in formula IV,



Formula III;



Formula IV; wherein

X is halogen; n is an integer of 0 to 10; m is an integer of 2 to 10. The acid- and alkali-resistant separation layer is at least one selected from a polyurea separation layer, a polytriazine amine separation layer, a polysulfonamide separation layer, a poly(triazine amine-urea) separation layer, a poly(sulfonamide-urea) separation layer, a poly(triazine amine-sulfonamide) separation layer, and a poly(triazine amine-sulfonamide-urea) separation layer. The nanofiltration membrane has a high metal retention rate while maintaining a

high water flux.

[Fig. 1]