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Zwitterionic Functionalized Layered Double Hydroxides Nanosheets for a Novel Charged Mosaic Membrane with High Salt Permeability

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Abstract

Charged mosaic membranes containing equivalent cationic and anionic exchange capacities are capable of decreasing the Donnan effect and thus accelerating salts permeation, while maintaining a high rejection of low molecular weight organics. In this study, charged nanosheets zwitterion-hydrotalcite (ZHT) was synthesized by grafting sulfobetaine methacrylate (SBMA) on the surface of positively charged Mg/Al hydrotalcite *via* surface initiated reverse atom transfer radical polymerization (RATRP). Subsequently, charged mosaic membranes were prepared by embedding different amounts of zwitterion-hydrotalcite into polyethersulfone (PES) casting solution *via* non-solvent induced phase separation (NIPS). Fourier transforms infrared