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Preparation of hybrid ion channel membrane for recognizing and transporting sodium ion

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ABSTRACT

A kind of self-organized hybrid material, 3-(ureidobenzene) propyltriethoxysilane, was obtained from 3-isocyanatopropyltriethoxysilane and aminobenzene with chloroform as solvent. The structure and the morphology of the materials were characterized by FTIR, ^{1}H-NMR, and XRD methods. The ion channel membrane was obtained by coating the hybrid material onto the commercial polyacrylonitrile (PAN) supports via sol-gel process. The chemical structure and surface morphology of the membrane was characterized by ATR-FTIR and SEM separately. The ion transport property of the membrane was tested by our self-made device with the conductivity. SEM showed that the surface of ion channel membrane was dense and thickness of the dense layer was about 8.5 μm. The transport experiment suggested that the membrane had the properties of recognizing and transporting Na^+.

Keywords: Hybrid material; Self-organization; Ion channel membrane; Ion-recognition; PAN membrane; 3-(ureidobenzene) propyltriethoxysilane

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