Zwitterionic Nanogel Grafted Polymer Porous Membrane for Emulsified Oil/Water Separation

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Compared with the traditional separation method, membrane separation method is considered to be the most effective method for the treatment of oily wastewater because of the easy operation process, no phase change and little secondary pollution. However, traditional membrane separation materials are easy to be blocked by oil, which will cause serious membrane pollution, resulting in the loss of separation performance. In this study, we firstly prepared a zwitterionic nanogel via inverse micro emulsion polymerization. This nanogel is extremely hydrophilic and of water-retaining. Then, by amidation reaction, the nanogels were grafted onto the carboxylated PVDF membrane surface, which was prepared by the NIPS method. As a result, the hydrophilic property and anti-oil fouling performance is substantially enhanced. Using this nanogel grafted PVDF membrane, the emulsified oil droplets in water can be thoroughly removed.

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