

Nanofibrous Ion Exchangers

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Abstract : The main goal of this study was to find simple and industrially applicable production of ion exchangers based on nanofibrous polystyrene matrix and characterization of prepared material. Starting polystyrene nanofibers were sulfonated and crosslinked under appropriate conditions at the same time by sulfuric acid. Strongly acidic cation exchanger was obtained in such a way. The polymer matrix was made from polystyrene nanofibers prepared by Nanospider technology. Various types postpolymerization reactions and other methods of crosslinking were studied. Greatly different behavior between nano and microsize materials was observed. The final nanofibrous material was characterized and compared to common granular ion exchangers and available microfibrinous ion exchangers. The sorption properties of nanofibrous ion exchangers were compared with the granular ion exchangers. For nanofibrous ion exchangers of comparable ion exchange capacity was observed considerably faster adsorption kinetics.

Keywords : electrospinning, ion exchangers, nanofibers, polystyrene

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