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Modelling and Simulation of Nanofiltration Membranes

By Gamze Artug

Cuvillier Verlag Dez 2007, 2007. Taschenbuch. Book Condition: Neu. 211x146x17 mm. Neuware - Nanofiltration (NF) is a relatively recent membrane process and offers a plethora of application areas due to its selective removal for ions and removal of organic matter above 200 g/mol molar mass. Application fields enlarged substantially in the last 25 years. Accordingly, there is an increasing need for process design and optimisation tools. Therefore, current research studiesfocus on a better understanding of mass transport phenomenon as well as the application and enhancement of the existing models to the real process streams.In this thesis work, characterisation of NF membranes and investigations of their mass transport phenomenon through both experimental and modelling studies were of concern. For these purposes, flat sheet samples of four commercially available membranes were selected. Since the performance of a NF membrane is related to its structural and charge properties, membrane characterisation studies by microscopy, contact angle and electrokinetic measurements were conducted. A systematic experimental program was applied covering a wide spectrum of feed streams concerning both charged and uncharged solutes. Particularly charged streams regardingsingle salts and their mixtures were emphasised. Moreover, the effects of the operating conditions and the solution pH on membrane performances...

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