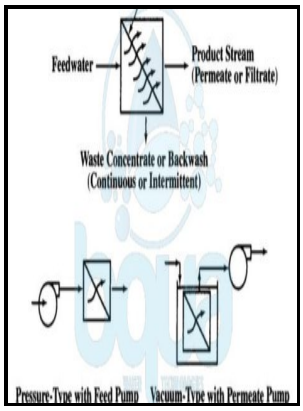
Membrane filtration - the technology of pressure-driven crossflow processes

IOP Publishing - Concentration polarization in pressure driven processes



Description: -
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China -- Religion.
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Membranes (Technology)
Filters and filtration.Membrane filtration - the technology of pressure-driven crossflow processes
-Membrane filtration - the technology of pressure-driven crossflow processes
Notes: Includes bibliography and index.
This edition was published in 1987

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Tags: #Pressure

Enhanced performance for pressure

Contamination issues The contaminants in water supplies that compromise their quality can be organized into the following classes: There are not many absolutes in the water treatment industry, but here is one: it is impossible to make water completely free of all contaminants. They are currently developing large brackish and seawater membranes. The pressure difference on both sides of the membrane will cause the permeate to cross the membrane at a steady state.

Enhanced performance for pressure

However, compaction may also occur in ultrafiltration and microfiltration processes, depending on the pressure employed. This technique is used in a wide range of applications ranging from dairy processing to wastewater treatment.

Membrane Processes: An Introduction

These technologies are described in detail as follows: Microfiltration MF — Typically used to remove particulate material in the submicron range.

Membrane filtration technology development trends toward water & wastewater recovery & reuse

By applying external pressure, molecules can then flow from areas of low concentration to high concentration. Parting thoughts These have been just a few examples of the newer membrane developments, some relatively proven and some still in the commercialization stage. Examples are the honeycomb structure of the beehive, spider silk and shark skin.

Pressure Driven Membrane Processes

MWCO terminology is expressed in Daltons. Microfiltration MF Microfiltration membranes have pore sizes ranging from 0.

Concentration polarization in pressure driven processes

The necessity of overcoming the osmotic pressure, in addition to the extremely narrow pore size found in RO membranes, results in RO processes requiring higher pressures than those previously mentioned. Although the PES polymer will slightly reduce membrane flux, it is essential to provide strength and support. Reverse osmosis Both NF and RO membranes reject salts utilizing a mechanism that is not fully understood.

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These membranes have molecular weight cut-offs for non-ionic solute below 1000 Daltons. Separation using RO is accomplished not only through size exclusion but utilizes a diffusive mechanism as well. In some applications, operating pressures may reach upwards of 1000 PSI.

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Another analogy is illustrated in Figure 1.

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