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Enzymatic Treatment of Alginate to Reduce Membrane Fouling for Municipal Wastewater Reuse

An enzyme-based cleaning process cost-effectively eliminates membrane fouling by degrading polysaccharides, improving performance, and extending membrane life in water filtration systems.

Water shortage problems have been addressed by increasing wastewater reuse. Wastewater reuse has proven effective for water conservation; however, there are strict safety and quality requirements that must be met. This requires the use of advanced treatment technologies such as membrane filtration. Currently, microorganisms in wastewater secrete polysaccharides which deposit in the pores of the membrane, which requires the membrane to be cleaned or replaced. Cleaning or replacing the membranes is expensive. Cleaning can also damage the membrane, and it is not very effective for tightly adhered contaminants such as polysaccharides.

Purdue University researchers have developed a method for cleaning the membranes. This process uses an enzyme to degrade the polysaccharides that have built up on the membrane. This method is cost effective by eliminating the need for expensive chemical cleaners or membrane replacement.

Advantages:

-Improves membrane performance by reducing clogging and extending membrane life

-Applicable to reverse osmosis, nanofiltration, ultrafiltration, and microfiltration membranes

Potential Applications:

-Wastewater industry

TRL: 4

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Category
Biotechnology & Life Sciences/Bioprocessing & Biomanufacturing
GreenTech/Water & Resource Management
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