



Preferential fouling of natural organic matter (NOM) fractions in submerged low-pressure membrane filtration

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ABSTRACT

The interactions between membrane fouling and natural organic matter (NOM) properties were investigated in a series of filtration experiments of raw and flotated water in a submerged low-pressure membrane system of hydrophobic and hydrophilic membranes. Norwegian surface water NOM was characterized by its electrostatic properties i.e., surface charge, charge density, and was fractionated with respect to its hydrophobic/hydrophilic characteristics. Hydrophobic/hydrophilic interaction was a more dominant mechanism compared to charge repulsion in membrane fouling as shown from the preferential adsorption of hydrophobic fraction with the highest charge density onto hydrophilic and hydrophobic membranes, and positively charged hydrophilic fraction onto hydrophilic membrane.

Keywords: Submerge low-pressure membrane; Natural organic matter; Membrane fouling; Hydrophobic/hydrophilic interaction; Charge repulsion

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