



## Effects of water temperature on fouling and flux of ceramic membranes for wastewater reuse

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### ABSTRACT

Membrane filtration is one of the promising technologies to reclaim water, but fouling is a barrier to overcome to be operated economically. Irreversible fouling makes membrane life time short than reversible fouling, because pollutants inside of pores are difficult to remove by physical cleaning and can be eliminated using chemical such as acids and bases. Ceramic membranes have strong heat resistant, so it is possible to treat thermal wastewater. High water temperature can make the viscosity of water down and thus increase permeability. There are controversies between theoretical and real viscosities. The results showed that high water temperature caused initial flux rise the flux became similar to that of low temperature water after 2 h of operation. It also led  $R_{irr}$  ratios bigger than  $R_{rev}$ . High temperature of water can increase irreversible fouling of ceramic membrane probably caused by inorganic scale formation in the membrane pores.

*Keywords:* Ceramic membrane; Thermal water reuse; Irreversible fouling; Reduce chemical cleaning

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