

## Effect of a low concentration of aluminum sulfate on the treatment performance of a submerged membrane bioreactor

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### ABSTRACT

Phosphorus is a crucial element in the eutrophication process. According to China's water pollutant discharge Class 1A standard, treated wastewater must meet 0.5 mg/L of phosphorus prior to discharge to a sensitive water body. In recent years, wastewater treatment technologies such as membrane bioreactors have been demonstrated to achieve high-quality effluent and present the potential for wastewater reuse applications. However, an efficient and cost-effective phosphorus removal process is still not warranted. In this study, a submerged membrane bioreactor (SMBR) with addition of a low concentration of aluminum sulfate ([mol Al : mol P ≤ 1] was used to evaluate its treatment performance. The results showed that significant phosphorus removal could be achieved with addition of a low aluminum sulfate dosage to meet national phosphorus discharge standard; however, no significant effect was observed on the removal of COD and ammonia. The addition of a low concentration of aluminum sulfate could offer as an economical solution to increase the phosphorus removal efficiency of a SMBR, and thereby improve the water quality of the water bodies.

*Keywords:* Membrane bioreactor; Low concentration; Aluminum sulfate; Treatment performance

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