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Fouling behavior of negatively charged PVDF membrane in membrane distillation for removal of antibiotics from wastewater

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Abstract:

We have reported on the potential use of membrane distillation (MD) to remove emerging pollutants from wastewater as an alternative to other biological and chemical treatments. For every successful application of MD, the fouling and scaling associated with membrane wetting must be reduced to minimize the deterioration in performance. Here, we have hypothesized that the effectiveness of the antibiotic removal from wastewater can be significantly influenced by the interfacial interaction between the antibiotics and the membrane surface. To verify this, we investigated the applicability of the direct contact MD (DCMD) to treat the antibiotics, including positively-charged tobramycin (TOB), negatively-charged cefotaxime (CTX), and neutral ciprofloxacin (CFX). DCMD tests were performed with negatively-charged commercial polyvinylidene fluoride (PVDF) membranes,

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