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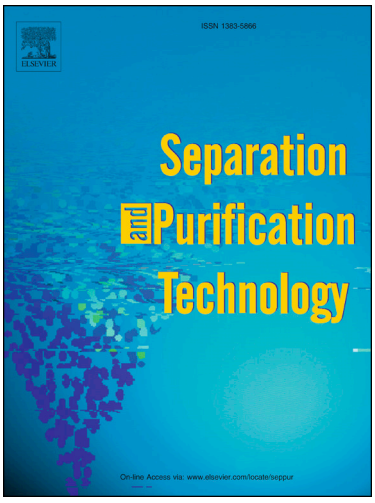

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Recent Developments in Biofouling Control in Membrane Bioreactors for Domestic Wastewater Treatment

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Abstract

Biofouling is a long-standing problem in membrane bioreactors (MBRs) for domestic wastewater treatment because it deteriorates membrane permeability, thus demanding frequent chemical cleaning which can shorten membrane life-time. Recently, several anti-biofouling strategies have been suggested under scientific and engineered attentions from aerobic or anaerobic MBR systems. Nevertheless, researches are still needed to better understand biofouling and develop novel approaches to control this inevitable phenomenon. In this review, recent advances and emerging issues associated with biofouling control in aerobic and anaerobic MBR technologies are critically discussed. Existing challenges and future research perspectives are also addressed to achieve MBR sustainability with biofouling control. This also suggests that integration of MBR with hybrid approach could effectively enhance MBR performance in terms of biofouling mitigation. Future works should elucidate biofouling behavior in integrated MBRs more clearly for sustainable wastewater treatment applications.

Keywords: Biofouling, Low-biofouling composite membranes, Microbial immobilization, Membrane bioreactors, Quorum quenching

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