

Accepted Manuscript

Psychrophilic anaerobic dynamic membrane bioreactor for domestic wastewater treatment: Effects of organic loading and sludge recycling

Yisong Hu, Yuan Yang, Shichun Yu, Xiaochang C. Wang, Jialing Tang

PII: S0960-8524(18)31232-X
DOI: <https://doi.org/10.1016/j.biortech.2018.08.128>
Reference: BITE 20411

To appear in: *Bioresource Technology*

Received Date: 30 June 2018
Revised Date: 29 August 2018
Accepted Date: 30 August 2018

Please cite this article as: Hu, Y., Yang, Y., Yu, S., Wang, X.C., Tang, J., Psychrophilic anaerobic dynamic membrane bioreactor for domestic wastewater treatment: Effects of organic loading and sludge recycling, *Bioresource Technology* (2018), doi: <https://doi.org/10.1016/j.biortech.2018.08.128>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Psychrophilic anaerobic dynamic membrane bioreactor for domestic wastewater treatment: Effects of organic loading and sludge recycling

Yisong Hu^{a,b}, Yuan Yang^a, Shichun Yu^a, Xiaochang C. Wang^{a,b,c,*}, Jialing Tang^d

^a Key Lab of Northwest Water Resource, Environment and Ecology, MOE, Xi'an University of Architecture and Technology, Xi'an 710055, P.R. China

^b International Science & Technology Cooperation Center for Urban Alternative Water Resources Development, Xi'an 710055, P.R. China

^c Key Lab of Environmental Engineering, Shaanxi Province, Xi'an 710055, P.R. China

^d School of Architecture and Civil Engineering, Chengdu University, Chengdu 610106, P. R. China

* Corresponding author: X.C. Wang (Tel.: +862982205841; E-mail: xcwang@xauat.edu.cn)

Abstract: Two upflow anaerobic dynamic membrane bioreactors (AnDMBRs) with and without sludge recycling were operated in parallel at varied organic loadings and psychrophilic temperature for domestic wastewater treatment. A 75 μm nylon mesh, used as a supporting material, enabled quick and stable dynamic membrane formation. The AnDMBRs could operate continuously without relaxation at a high flux rate of 22.5 L/m²h; however, high organic loading accelerated the increasing rate of trans-membrane pressure (TMP). High chemical oxygen demand removal was achieved in both AnDMBRs with removal efficiencies of 70-90%. Sludge recycling enhanced the cross-flow velocity but negatively affected the effluent turbidity, sludge properties (particle size reduction and biopolymer release) and dynamic membrane filterability. Although increased organic loading enhanced biogas yield, the low biogas production was related to the dissolved methane loss in the effluent. Easy-operation, minimal maintenance and low-energy consumption makes the AnDMBR process cost-effective for practical wastewater treatment in temperate areas.

Keywords: psychrophilic anaerobic dynamic membrane bioreactor; wastewater treatment; organic loading; biogas production; membrane fouling

Download English Version:

<https://daneshyari.com/en/article/10146396>

Download Persian Version:

<https://daneshyari.com/article/10146396>

[Daneshyari.com](https://daneshyari.com)