

Accepted Manuscript

Evaluation of phase separation in a single-stage vertical anaerobic reactor: performance and microbial composition analysis

Longyi Lv, Weiguang Li, Jiyong Bian, Yang Yu, Donghui Li, Zejia Zheng

PII: S0960-8524(18)30538-8
DOI: <https://doi.org/10.1016/j.biortech.2018.04.025>
Reference: BITE 19805

To appear in: *Bioresource Technology*

Received Date: 21 February 2018
Revised Date: 4 April 2018
Accepted Date: 6 April 2018

Please cite this article as: Lv, L., Li, W., Bian, J., Yu, Y., Li, D., Zheng, Z., Evaluation of phase separation in a single-stage vertical anaerobic reactor: performance and microbial composition analysis, *Bioresource Technology* (2018), doi: <https://doi.org/10.1016/j.biortech.2018.04.025>

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.



**Evaluation of phase separation in a single-stage vertical anaerobic reactor:
performance and microbial composition analysis**

Longyi Lv^b, Weiguang Li^{a, b, *}, Jiyong Bian^b, Yang Yu^b, Donghui Li^b and Zejia Zheng^b

^a State Key Laboratory of Urban Water Resource and Environment, Harbin 150090, PR China

^b School of Environment, Harbin Institute of Technology, Harbin 150090, PR China

Corresponding author

Weiguang Li, State Key Laboratory of Urban Water Resource and Environment, School of Environment, Harbin Institute of Technology, 73 Huanghe Road, Harbin, Heilongjiang 150090, PR China (E-mail: hitlwg@126.com).

Abstract

In order to explore whether the acidogenic phase and methanogenic phase could be separated vertically into a single-stage anaerobic reactor, a controlled double circulation (CDC) anaerobic reactor was proposed for treating traditional Chinese medicine (TCM) wastewater in this study. The results showed that most of the organic pollutants and refractory were removed in the first reaction area where most of the amount of sludge existed. The organic acids were accumulated in the first reaction area, and larger specific methanogenic activity (SMA) and coenzyme F₄₂₀ values were found in the second reaction area. Bacterial and archaeal community structures in the two reaction areas of the CDC reactor were analysed by Illumina MiSeq Sequencing, which revealed that the archaeal community showed larger difference compared with the bacterial community. Differences in the performance and microbial composition of the two reaction areas confirmed that phase separation was implemented in the CDC reactor.

Download English Version:

<https://daneshyari.com/en/article/7066968>

Download Persian Version:

<https://daneshyari.com/article/7066968>

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