

Accepted Manuscript

A robust and cost-effective integrated process for nitrogen and bio-refractory organics removal from landfill leachate via short-cut nitrification, anaerobic ammonium oxidation in tandem with electrochemical oxidation

Wu Li-na, Liang Da-wei, Xu Ying-ying, Liu Ting, Peng Yongzhen, Zhang Jie

PII: S0960-8524(16)30528-4
DOI: <http://dx.doi.org/10.1016/j.biortech.2016.04.041>
Reference: BITE 16400

To appear in: *Bioresource Technology*

Received Date: 8 February 2016
Revised Date: 4 April 2016
Accepted Date: 10 April 2016

Please cite this article as: Li-na, W., Da-wei, L., Ying-ying, X., Ting, L., Yongzhen, P., Jie, Z., A robust and cost-effective integrated process for nitrogen and bio-refractory organics removal from landfill leachate via short-cut nitrification, anaerobic ammonium oxidation in tandem with electrochemical oxidation, *Bioresource Technology* (2016), doi: <http://dx.doi.org/10.1016/j.biortech.2016.04.041>

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.



1 **A robust and cost-effective integrated process for nitrogen and bio-refractory**
2 **organics removal from landfill leachate via short-cut nitrification, anaerobic**
3 **ammonium oxidation in tandem with electrochemical oxidation**

4 WU Li-na^{1,2}, LIANG Da-wei^{3, *}, XU Ying-ying², Liu Ting², PENG Yongzhen^{1,4,**}, ZHANG Jie¹

5 1. State Key Laboratory of Urban Water Resource and Environment, School of Municipal and Environmental
6 Engineering, Harbin Institute of Technology, Harbin 150090, China.

7 2. Beijing Institute of Petrochemical Technology, Beijing 102617, China.

8 3. School of Space and Environment, Beihang University, Beijing, 100191, China

9 4. Key Laboratory of Beijing for Water Quality Science and Water Environment Recovery Engineering, Beijing
10 University of Technology, Beijing, China.

11 **Abstract:** A cost-effective process, consisting of a denitrifying upflow anaerobic sludge blanket
12 (UASB), an oxygen-limited anoxic/aerobic (A/O) process for short-cut nitrification, and an
13 anaerobic reactor (ANR) for anaerobic ammonia oxidation (anammox), followed by an
14 electrochemical oxidation process with a Ti-based SnO₂-Sb₂O₅ anode, was developed to remove
15 organics and nitrogen in a sewage diluted leachate. The final chemical oxygen demand (COD),
16 ammonia nitrogen (NH₄⁺-N) and total nitrogen (TN) of 70, 11.3 and 39 (all in mg/L), respectively,
17 were obtained. TN removal in UASB, A/O and ANR were 24.6%, 49.6% and 16.1%, respectively.
18 According to the water quality and molecular biology analysis, a high degree of anammox besides
19 short-cut nitrification and denitrification occurred in A/O. Counting for 16.1% of TN removal in

*Corresponding author. Yongzhen Peng, Tel/fax:+86 10 67392627, E-mail address: pyz@bjut.edu.cn,

liangdw@buaa.edu.cn

Download English Version:

<https://daneshyari.com/en/article/7071286>

Download Persian Version:

<https://daneshyari.com/article/7071286>

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