西南林业大学博士研究生招生
“申请-审核制”审核材料

申请人姓名：梁帆帆

申 请 导 师：杨思林

申 请 专 业：（090707）水土保持与荒漠化防治

申 请 学 院：（002）生态与环境学院

考 生 类 别：往届毕业生

申 请 年 度：2024

4、 外语能力证书

报告编号：（2024）SWFU012390

论文收录/引用检索报告

项目名称：西南林业大学梁帆帆发表论文被 SCI 收录、期刊影响因子及中科院 JCR 分区情况

委 托 人： 梁帆帆

委托日期：2024 年 03 月 17 日

完成日期：2024 年 03 月 25 日

西南林业大学图书馆咨询部
地址：云南省昆明市盘龙区白龙寺西南林业大学
电话：（[redacted]

一、项目的技术要求

西南林业大学梁帆帆发表论文被 SCI 收录、期刊影响因子及中科院 JCR 分区情况。

标题：略

二、情报检索情况：

1. 检索数据库：Science Citation Index Expanded(SCI-E) 网络版
Journal Citation Reports (JCR)
中科院 JCR 分区数据库

2. 检索式：略

三、检出文献情况（编号、名称、文献题目及出处）

（一） SCI-E 收录

1.标题：Preparation of structured biochar, its adosrption capacity of N and P and its characterization

作者：Liang, FF (Liang Fanfan) [1];Liu, YG (Liu Yungen) [1];Wang, Y (Wang Yan) [1];Yang, SL (Yang Silin) [2];Ma, R (Ma Rong) [2]

来源出版物：WATER SCIENCE AND TECHNOLOGY 卷:85 期:9 页:2443-2462 出版年:MAY 1 2022

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DOI：10.2166/wst.2022.143

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[2]Yunnan Key Lab Ecol Environm Evolut & Pollut Cont, Kunming 650224, Yunnan, Peoples R China

通讯作者地址：Wang Yan(通讯作者)Southwest Forestry Univ, Coll Ecol & Environm, Kunming 650224, Yunnan, Peoples R China.

电子邮件地址：wycaf@126.com;

ISSN：0273-1223

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2.标题：Electrochemical Oxidation Treatment of Organic Matter in Wastewater from Wet Fermentation of Yunnan Arabica Coffee

作者：Liang, FF (Liang, Fanfan) [1];Wang, Y (Wang, Yan) [1];Liu, YE (Liu, Yungen) [2];Yang, SL (Yang, Silin) [1];Yin, FJ (Yin, Fajin) [1];Peng, LP (Peng, Liping) [1]

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通讯作者地址：Liu, Yungen(通讯作者)Yunnan Key Lab Ecol Environm Evolut & Pollut Contr, Kunming 650224, Peoples R China
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eISSN：2073-4441

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期 刊 全 称	影 响 因 子	
	2022	五年影响因子
WATER SCIENCE AND TECHNOLOGY	2.700	2.600
WATER	3.400	3.500

(三）中国科学院 JCR 期刊分区(2023 年)

期刊全称	ISSN	所属大类	大类分区	Top 期刊
WATER SCIENCE AND TECHNOLOGY	0273-1223	环境科学与生态学	4	不是
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四、检索结论

依照用户委托，通过国际联机数据库检索，具体结果如下：

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检索员（签字）：陈淑明

检索员职称：馆员

审核员（字）：

审核员职称：副研究馆员

西南林业大学图书馆咨询部

2024 年 03 月 25 日

5、 学术能力证明材料

报告编号：（2024）SWFU012390

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西南林业大学图书馆咨询部
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电话：（0871）-63862224

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通讯作者地址：Liu, Yungen(通讯作者)Yunnan Key Lab Ecol Environm Evolut & Pollut Contr, Kunming 650224, Peoples R China
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审核员职称：副研究馆员

西南林业大学图书馆咨询部

2024 年 03 月 25 日

water

MDPI

Article

Electrochemical Oxidation Treatment of Organic Matter in Wastewater from Wet Fermentation of Yunnan Arabica Coffee

Fanfan Liang [1], Yan Wang [1], Yungen Liu [2,*], Silin Yang [1], Fajin Yin [1] and Liping Peng [1]

[1] College of Ecology and Environment, Southwest Forestry University, Kunming 650224, China; liangffanan@yeah.net (F.L.); wycaf@126.com (Y.W.); swfcysl@126.com (S.Y.); yinfajin98@163.com (F.Y.); 15198913793@163.com (L.P.)

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Abstract: Electrochemical oxidation combined with reagents of O_3, H_2O_2 and $FeCl_2$ was conducted in this study to treat the wastewater from wet fermentation of Yunnan arabica coffee. In addition, the effect of oxidants on the efficiency of wastewater treatment, the binding capacities of the oxidants to proteins, the degradation of organic pollutants in the wastewater, and the formation of oxidized organic components were systematically investigated. The results reveal better performance of O_3-combined electrochemical oxidation (63.60% COD removal efficiency) for treatment of organic species in coffee wastewater than that of the electrochemical processes with H_2O_2 (47.70% COD removal efficiency) and $FeCl_2$ (34.48% COD removal efficiency). The synergy of the electrooxidation/O_3 process (0.0133 A/cm^2, 20 mg/L–2 L/min) could not only raise the pH value (3.70~4.20, 5.14~5.44) of the wastewater and reduce the NaOH dosage of 2.80~3.7 g/L, but also effectively degrade the proteins, lipids, unsaturated hydrocarbons, and carbohydrates, with a total chemical oxygen demand (COD) value above 20,000 mg/L. After the oxidation treatment, some organic components remained in the wastewater, including 31.94% of S-containing organics, lignin, condensed aromatic compounds, and aromatic structural compounds, which are difficult to be utilized by microorganisms. In addition, it was found that OH^- could bind to proteins and affect the required amount of NaOH addition, whereas the protein binding energy of O_3 is higher than that of H_2O_2, indicating a stronger ability of O_3 to oxidize proteins. Therefore, the combination of O_3 and electrochemical oxidation can be considered as an effective method to treat organic pollutants in the wastewater from wet fermentation of Yunnan arabica coffee.

Keywords: coffee wastewater; wet fermentation; electrochemical oxidation; organic components

Citation: Liang, F.; Wang, Y.; Liu, Y.; Yang, S.; Yin, F.; Peng, L. Electrochemical Oxidation Treatment of Organic Matter in Wastewater from Wet Fermentation of Yunnan Arabica Coffee. *Water* **2024**, *16*, 343. https://doi.org/10.3390/w16020343

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1. Introduction

Coffee is one of the most widely produced and traded agricultural products [1]. China's coffee beans are dominated by Yunnan arabica coffee because of the unique climatic conditions of its growth. To meet market demands for coffee beans with better quality, wet fermentation has been becoming the common processing method used by coffee producers. More than 80% of Yunnan arabica coffee is currently fermented using the wet processing method to degrade the mucilage, which consists of hemicelluloses, pectin substances and sugars [2]. However, for the fresh fruit fermentation of Yunnan arabica coffee, a large amount (1~2 tons) of clean water is required. Moreover, a variety of by-products, such as coffee pulp, parchment, and wastewater, are produced during the wet processing [3]. The wastewater from wet fermentation of Yunnan arabica coffee (e.g., at Yunnan Simao Beigui Coffee Co., Ltd. from 2022 to 2023) has been measured to have the following typical parameter values: chemical oxygen demand (COD) of 31,333.33–31,666.67 mg/L, five-day biochemical oxygen demand (BOD_5) of 1270–1350 mg/L, total salt content of 1017–1032 mg/L,

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Preparation of structured biochar, its adsorption capacity of N and P and its characterization

Liang Fanfan[a], Liu Yungen[a], Wang Yan[a,*], Yang Silin[b] and Ma Rong[b]

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[b] Yunnan Key Laboratory of Ecological Environment Evolution and Pollution Control in Mountainous Rural Areas, Kunming 650224, China
*Corresponding author. E-mail: wycaf@126.com

ABSTRACT

Structured biochar (SC) was prepared by biochar from cattail-sludge mixture (CS) and high-density polyethylene (HDPE) and treated as an adsorbent, and the KH_2PO_4 and NH_4Cl solution were treated as adsorbates, to explore the adsorption capacity of phosphorus (P) and nitrogen (N) on SC in water. A single factor experimental method was employed to determine the optimal parameters for SC. The results showed that: 60% sizing amount, 5 N $(cm^2)^{-1}$ molding pressure, 160 °C molding temperature and 95 min molding time were optimal parameters for SC preparation. The adsorption of P and N on SC conforms to the Langmuir model, with the distribution of adsorption sites on the surface tending to be even. The adsorption of P and N on SC is favorable and spontaneous, and the adsorption tends to be monolayer adsorption with a major role for chemical adsorption. The higher the temperature, the higher the adsorption capacity of P and N on SC is, and the affinity of SC with P is higher than that with N. The pseudo-second-order kinetic model for the adsorption of N and P by SC has a high degree of fit. The pH_{pzc} value of SC was 8.57. The hydrophobicity and stability of SC are rather high, with the surface particles closely bonded and increased roughness and pore diameter. The adsorption mechanism of P and N on SC can be attributed to pore filling, electrostatic attraction and hydrogen bonding. The results can provide a new technology for the resource utilization of cattails and sludge, a new idea for the recycling and reuse of biochar, and a basis for the selection of materials for the treatment of eutrophic water bodies.

Key words: adsorption mechanism, cattail-sludge, nitrogen, phosphorus, structured biochar

HIGHLIGHTS

- The optimal parameters for SC preparation was determined as follows: the composite with HDPE (200 mesh) mixed with CS at a mass ratio of 3:2 was first molded under a pressure of 5 N$(cm^2)^{-1}$, heated at 160 °C for 95 min, and finalized after cooling.
- The adsorption mechanism of P and N on SC can be attributed to pore filling, electrostatic attraction and hydrogen bonds.

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中国科技核心期刊（中国科技论文统计源期刊）
美国《化学文摘》（SciFinder ScholarWeb）来源期刊
俄罗斯《文摘杂志》（AJ）收录期刊
美国《剑桥科学文摘（自然科学）》（CSA）来源期刊
美国《史蒂芬斯全文数据库》（EBSCO host）来源期刊
美国《乌利希期刊指南》（Ulrichsweb）收录期刊
瑞典《开放获取期刊指南》（DOAJ）来源期刊
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HARBIN LIGONG DAXUE XUEBAO

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结构生物炭的制备及对水体氮磷的吸附性能

梁帆帆[1]，苏 倩[1]，马 荣[1,2]，刘云根[1]
（1. 西南林业大学 生态与环境学院，昆明 650224；2. 云南省山地农村生态环境演变与污染治理重点实验室，昆明 650224）

摘 要：以香蒲污泥基生物炭和聚乙烯制备结构生物炭为吸附剂，KH_2PO_4 和 NH_4Cl 为吸附质，研究结构生物炭的制备及对水体中氮磷的吸附性能。采用单因素实验法，筛选结构生物炭的最佳参数，并对其进行表征。研究结果表明：采用60 %施胶量、5 N·cm^{-2}成型压力、160℃成型温度、95 min成型时间制备结构生物炭；结构生物炭对氮磷的吸附符合Langmuir模型，为单分子层吸附，对磷的亲和力比氮高，且氮磷在结构生物炭上的吸附是自发的有利的；结构生物炭较香蒲污泥基生物炭，提高结构生物炭的疏水性和稳定性，其表面颗粒结合紧密，对氮磷的吸附机制可归因为孔隙填充、静电吸附、氢键结合。

关键词：香蒲；污泥；结构生物炭；机械强度；氮磷
DOI：10.15938/j.jhust.2022.05.018
中图分类号：X524 **文献标志码**：A **文章编号**：1007-2683(2022)05-0136-11

Preparation of Biochar and Its Adsorption Performance for Nitrogen and Phosphorus in Water

LIANG Fan-fan[1], *SU Qian*[1], *MA Rong*[1,2], *LIU Yun-gen*[1]
(1. College of Ecology and Environment, Southwest Forestry University, Kunming 650224, China;
2. Yunnan Key Laboratory of Ecological Environment Evolutiong and Pollution Control in Mountainous Rural Areas, Kunming 650224, China)

Abstract: Using cattail-sludge biochar and polyethylene to prepare structured biochar as adsorbents, KH_2PO_4 and NH_4Cl as adsorbents, the preparation of structured biochar and its adsorption performance to nitrogen and phosphorus in water were studied. The single factor experiment method was used to screen and characterize the optimal parameters of structural biochar. The research results show that: structured biochar is prepared with 60% sizing amount, 5 N·cm^{-2} molding pressure, 160℃ molding temperature, and 95 min molding time; the adsorption of nitrogen and phosphorus by the structured biochar conforms to the Langmuir model, which is simple Molecular layer adsorption, has higher affinity for phosphorus than nitrogen, and the adsorption of nitrogen and phosphorus on structural biochar is spontaneously beneficial; structural biochar is better than cattail-sludge biochar, which improves the hydrophobicity and stability of structural biochar. The surface particles are tightly bound, and the adsorption mechanism of nitrogen and phosphorus can be attributed to pore filling, electrostatic adsorption, and hydrogen bonding.

Keywords: cattail; sludge; structural biochar; mechanical strength; nitrogen phosphorus

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作者简介：梁帆帆(1994—)，男，博士研究生；
苏 倩(1997—)，女，博士研究生.
通信作者：刘云根(1978—)，男，副教授，硕士研究生导师，E-mail：henryliu1008@163.com.

8、 硕士研究生阶段成绩单

西南林业大学研究生成绩单

姓名	梁帆帆	性别	男	出生年月	1994-05-19	学号	20191102011
学科专业	恢复生态学(0713Z5)				指导教师	刘云根	
入学年月	2019-09-15		毕业年月		2022-06-16	学制	3

类别	课程名称	学时数	学分	开课学期	成绩	备注
学位课	学位英语		0.0	2	61.00	61.00
	生态学理论与实践		2.0	1	75.00	75.00
	恢复生态学		2.0	1	85.00	85.00
	英语口语		0.0	1	83.00	83.00
	英语听力		0.5	2	68.00	68.00
	英语精读		1.5	1	64.00	64.00
	生态学研究方法		2.0	1	69.00	69.00
	中国特色社会主义理论与实践研究		2.0	2	68.00	68.00
	英语写作		0.0	2	80.00	80.00
	专业英语		2.0	2	88.00	88.00
	英语精读		1.5	2	67.00	67.00
	自然辩证法概论		1.0	1	83.00	83.00
	现代生态学		2.0	1	82.00	82.00
	英语听力		0.5	1	60.00	60.00
	学位课小计		17.0			
非学位课	SCI论文写作		2.0	2	93.00	93.00
	土壤生态学		2.0	1	62.00	62.00
	多元统计分析与应用		3.0	1	85.00	85.00
	非学位课小计		7.0			

学位（毕业）论文题目	基于污泥-香蒲共热解制备生物炭及其对水体中氮磷的吸附效能		
论文答辩时间	2022-05-20	论文答辩成绩	84
备注			

学院（部）（盖章）
2024年03月20日

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2024年03月20日