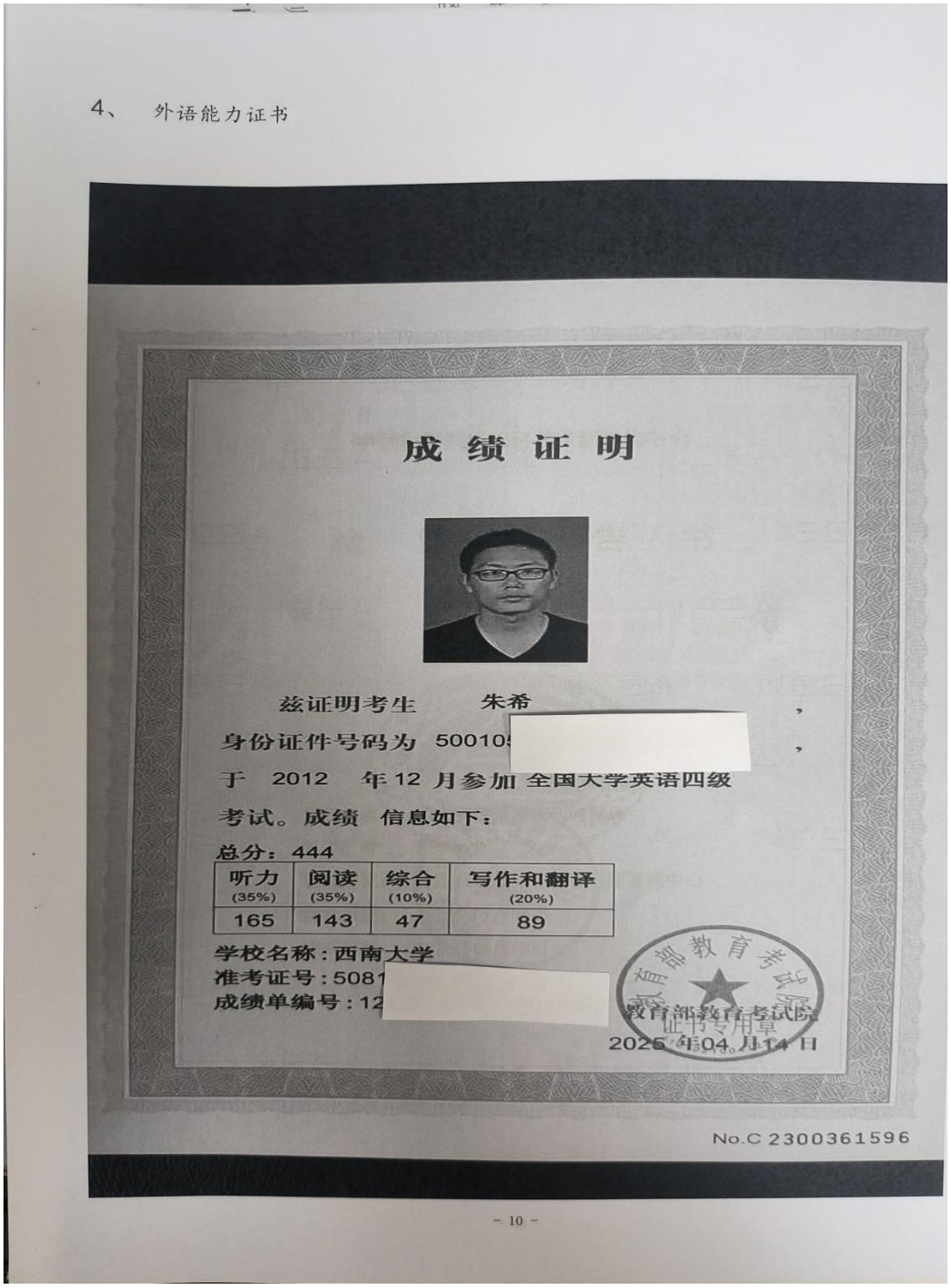
外语能力：

4、 外语能力证书



成 绩 证 明

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总分：444

听力 (35%)	阅读 (35%)	综合 (10%)	写作和翻译 (20%)
165	143	47	89

学校名称：西南大学

准考证号：5081[redacted]

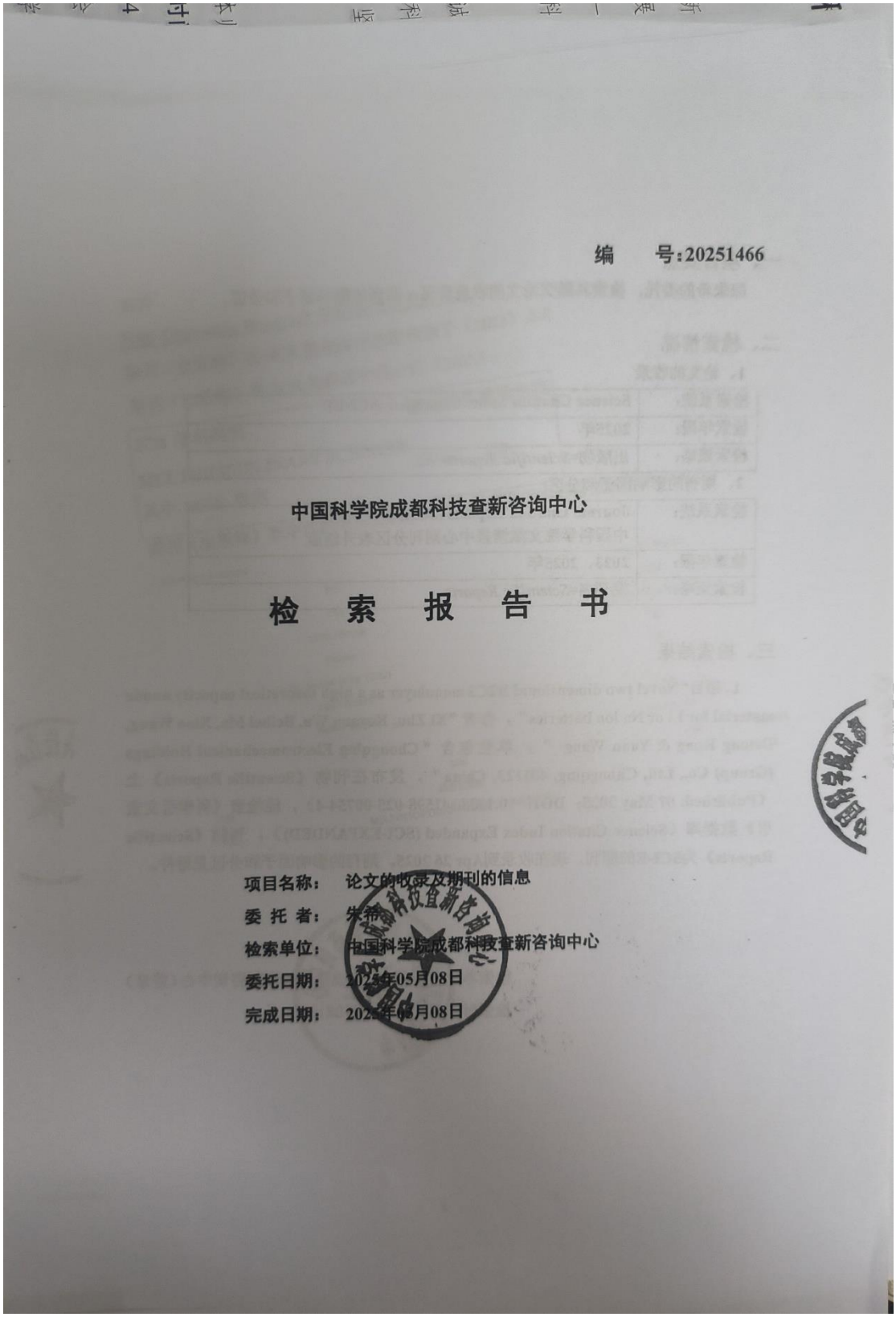
成绩单编号：12[redacted]

教育部教育考试院 证书专用章

2025 年 04 月 14 日

No.C 2300361596

学术能力：



编　　号:20251466

中国科学院成都科技查新咨询中心

检　索　报　告　书

项目名称：　论文的收录及期刊的信息

委 托 者：　朱希

检索单位：　中国科学院成都科技查新咨询中心

委托日期：　2025年05月08日

完成日期：　2025年05月08日

一、项目要点

应朱希的委托，检索其提交论文的收录情况、期刊的影响因子和分区。

二、检索情况

1、论文的收录

检索系统：	Science Citation Index Expanded (SCI-E)
检索年限：	2025年
检索策略：	出版物=*Scientific Reports*

2、期刊的影响因子和分区

检索系统：	Journal Citation Reports (JCR) 中国科学院文献情报中心期刊分区表升级版
检索年限：	2023、2025年
检索策略：	期刊名=*Scientific Reports*

三、检索结果

1、题目“Novel two dimensional B2C3 monolayer as a high theoretical capacity anode material for Li or Na ion batteries”，作者“Xi Zhu, Keyang Wu, Beibei Ma, Xiao Wang, Detong Kong & Yuan Wang ”，单位包含“Chongqing Electromechanical Holdings (Group) Co., Ltd, Chongqing, 401123, China”，发布在刊物《Scientific Reports》上（Published: 07 May 2025；DOI：10.1038/s41598-025-00754-4），经检索《科学引文索引》数据库（Science Citation Index Expanded (SCI-EXPANDED)），刊物《Scientific Reports》为SCI-E的源刊，现在收录到Apr 26 2025。期刊的影响因子和分区见附件。

检 索 人：徐小丽

检索单位：中国科学院成都科技查新咨询中心（盖章）

检索时间：2025年05月08日

附件

刊物《Scientific Reports》的影响因子及分区：

期刊（出版物）在 JCR 数据库中的影响因子（2023）:3.8

期刊（出版物）在 JCR 数据库中的分区（2023）：

JCR 学科类别	类别排序	类别分区
MULTIDISCIPLINARY SCIENCES	25/134	Q1
其中 SCIE 版本		

期刊（出版物）在中国科学院文献情报中心期刊分区表升级版的分区（2025）：

Scientific Reports

期刊	Scientific Reports	
年份	2025	
ISSN / EISSN	2045-2322 / 2045-2322	
Review	否	
OA Journal Index (OAJ)	否	
Open Access	是	
Web of Science	SCIE	
标注	Mega-Journal	
学科	分区	Top期刊
大类 综合性期刊	3	否
小类 MULTIDISCIPLINARY SCIENCES 综合性期刊	3	-

scientific reports

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Novel two dimensional B2C3 monolayer as a high theoretical capacity anode material for Li or Na ion batteries

Xi Zhu[1,5], Keyang Wu[2,5], Beibei Ma[3], Xiao Wang[4], Detong Kong[2]✉ & Yuan Wang[2]✉

In this study, we utilized first-principles calculations to design a novel class of two-dimensional (2D) polycyclic materials composed of carbon and boron atoms, termed *k*-B_2C_3, which hold significant promise as high-capacity, fast-diffusing anode materials for Li/Na-ion batteries. We investigated the thermodynamic stability, mechanical properties, electronic structure, and energy storage characteristics of *k*-B_2C_3. The results reveal that *k*-B_2C_3 exhibits a density of states at the Fermi level of 0.18 states/eV, a Young's modulus of $274.43\mathrm{GPa}\cdot\mathrm{nm}$, and a Poisson's ratio of 0.43, indicating excellent metallic conductivity and mechanical ductility, which are crucial for stability during charge/discharge cycles. Furthermore, the Li/Na diffusion barriers for *k*-B_2C_3 are 0.55 eV and 0.17 eV, respectively, which are vital for efficient charge/discharge processes. Most notably, *k*-B_2C_3 demonstrates a high theoretical storage capacity of 930 $mAhg^{-1}$ for both Li and Na, coupled with low open-circuit voltages (1.30–0.54 V for Li and 1.17–0.34 V for Na). These findings suggest that 2D *k*-B_2C_3 is a promising candidate for use as an anode material in Li/Na-ion batteries and provides valuable insights for the development of advanced 2D electrode materials.

With the rise of the global electric vehicle industry, lithium-ion batteries (LIBs) have gained widespread adoption due to their high reliability, long cycle life, and other advantages[1]. However, current lithium-ion batteries face several challenges, including limited capacity, low cost-effectiveness, safety concerns, insufficient global lithium resources, and significant price fluctuations, which hinder their ability to fully meet the growing demand for energy storage[2–6]. Consequently, the search for more economical, safer, and sustainable alternatives has become a key direction in battery development. In contrast to lithium, sodium is more abundant, offers higher safety, superior energy density, and excellent high-temperature performance, making Sodium-ion batteries (NIBs) one of the most promising alternatives to LIBs[7,8]. Developing high-performance advanced electrode materials has thus become a major research focus in this field[9].

In recent years, significant efforts have been dedicated to the development of electrode materials suitable for LIBs/NIBs[10–13]. Among these materials, two-dimensional (2D) materials have garnered considerable attention due to their high surface area and unique physicochemical properties, such as graphene, carbides, and phosphides[14–16]. However, most of the 2D anode materials studied to date have failed to address critical issues, such as the structural stability of the material and the formation of Li/Na dendrites during the energy storage process, which in turn leads to a significant reduction in energy storage capacity. Therefore, the development of high-performance 2D anode materials for NIBs, with excellent energy storage capability, electrochemical performance, mechanical properties, and thermal stability, remains a major challenge[17–20].

Previous studies have shown that doping 2D materials with elements such as P, B, and Ta can enhance their energy storage performance[21–23]. In this context, we propose a novel 2D material, termed *k*-B_2C_3, and predict its structural properties through first-principles calculations. The results indicate that *k*-B_2C_3 possesses stable mechanical properties and thermal stability, exhibits high electrical conductivity, and demonstrates excellent energy storage capability. Both sodium and lithium atoms experience low diffusion barriers and high specific capacities within this material. Therefore, the 2D material based on *k*-B_2C_3 holds great potential as a high-

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编　　号:20251388

中国科学院成都科技查新咨询中心

检　索　报　告　书

项目名称：　论文的收录及期刊的信息

委 托 者：　朱希

检索单位：　中国科学院成都科技查新咨询中心

委托日期：　2025年04月29日

完成日期：　2025年04月29日

一、项目要点

应朱希的委托，检索其提交论文的收录情况、期刊的影响因子和分区。

二、检索情况

1、论文的收录

检索系统：	Science Citation Index Expanded (SCI-E)
检索年限：	2025年
检索策略：	出版物=*Frontiers in Environmental Science*

2、期刊的影响因子和分区

检索系统：	Journal Citation Reports (JCR) 中国科学院文献情报中心期刊分区表升级版
检索年限：	2023、2025年
检索策略：	期刊名=*Frontiers in Environmental Science*

三、检索结果

1、题目“Coupled and coordinated development of China's green economy efficiency and new-type urbanization under the dual-carbon goal”，作者“Xi Zhu，Yuangu Wei，Qingqing Gui，Guangming Yang，Yizhi Qin，Siyi Cheng”，单位包含“Chongqing Machinery & Electronics Holding (Group) CO., Chongqing, China；School of Public Administration, Chongqing University, Chongqing, China”，发布在刊物《Frontiers in Environmental Science》上（Volume 13 - 2025 ；DOI：10.3389/fenvs.2025.1518952），经检索《科学引文索引》数据库（Science Citation Index Expanded (SCI-EXPANDED)），刊物《Frontiers in Environmental Science》为SCI-E的源刊，现在收录到2025年第13卷。期刊的影响因子和分区见附件。

检 索 人：徐 [illegible]

检索单位：中国科学院成都科技查新咨询中心（盖章）

检索时间：2025年04月29日

附件

刊物《Frontiers in Environmental Science》的影响因子及分区：

期刊（出版物）在 JCR 数据库中的影响因子（2023）:3.3

期刊（出版物）在 JCR 数据库中的分区（2023）：

JCR 学科类别	类别排序	类别分区
ENVIRONMENTAL SCIENCES		
其中 SCIE 版本	159/358	Q2

期刊（出版物）在中国科学院文献情报中心期刊分区表升级版的分区（2025）：

Frontiers in Environmental Science

刊名	Frontiers in Environmental Science	
年份	2025	
ISSN / EISSN	2296-665X / 2296-665X	
Review	否	
OA Journal Index（OAJ）	否	
Open Access	是	
Web of Science	SCIE	
	学科	分区	Top期刊
大类	环境科学与生态学	4	否
小类	ENVIRONMENTAL SCIENCES 环境科学	4	-

5、 学术能力证明材料

frontiers | Frontiers in Environmental Science

TYPE Original Research
PUBLISHED 16 April 2025
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Zhu X, Wei Y, Gui Q, Yang G, Qin Y and Cheng S (2025) Coupled and coordinated development of China's green economy efficiency and new-type urbanization under the dual-carbon goal. *Front. Environ. Sci.* 13:1518952. doi: 10.3389/fenvs.2025.1518952

Coupled and coordinated development of China's green economy efficiency and new-type urbanization under the dual-carbon goal

Xi Zhu[1,2], Yuangu Wei[3], Qingqing Gui[4]*, Guangming Yang[5], Yizhi Qin[6] and Siyi Cheng[6]

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Promoting the coupling and coordinated development of green economic efficiency (GEE) and new-type urbanization (NTU) is of great significance for high-quality regional development. Based on the data of 30 provinces (autonomous regions and municipalities directly under the Central Government) in China from 2006 to 2021, the coupling coordination model is used to measure the coupling coordination level between GEE and NTU, and the Dagum Gini coefficient is used to analyze the difference between the two coupling coordination degrees (CCD). Fuzzy set qualitative comparison analysis (fsQCA) was used to explore the influencing factors of the two from the perspective of configuration, so as to clarify the conditional configuration and multiple paths that drive the improvement of the coupling coordination degree of the two. The results show that: (1) GEE and NTU in China are on the rise in most areas of the country. (2) The CCD between GEE and NTU in China is generally on the rise; The spatial distribution showed a decreasing trend in East China, Central China, Northeast China and West China. (3) The Gini coefficient of CCD between the two shows an overall upward trend, and the overall gap of the coupling relationship is gradually increasing. (4) Openness to the outside world is the core condition of high coupling coordination degree, and the industrial structure-opening to the outside world cooperative and opening to the outside world leading path can produce high coupling coordination degree. According to the provinces and regions of different coordination levels, different policy suggestions are put forward to promote the continuous collaborative development of GEE and NTU.

KEYWORDS

green economic efficiency, new-type urbanization, coupling coordination, dual-carbon goal, fsQCA, regional difference decomposition