

CASE ANALYSIS

Operating experience and typical cases of *Rare Metals*: Power of young editorial board members

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ABSTRACT

As an English-language science and technology journal reporting the research of rare metals and their compounds, *Rare Metals* has always adhered to the tenet of “publication quality is the core, content is the key, and enhancement of influence is the goal”. It focuses on new energy, new materials, and other cutting-edge and interdisciplinary fields of rare metals that are “oriented to the world’s scientific and technological frontiers and the country’s major needs”. *Rare Metals* has built a high-end academic exchange platform by publishing high-level papers. After more than 40 years of development, *Rare Metals* has continuously explored and practiced on the path of being a first-class scientific and technological journal and a first-class academic platform. The influence of the journal has been continuously increasing. This article is based on the journal itself, introducing the experience of the journal publication and relevant classic cases to provide reference for peers.

Key words: journals, journal operating experience, case studies, impact

INTRODUCTION

In recent years, the world has witnessed the progress of science and technology in China, which has developed into an important center of research and development worldwide. China is accelerating to be a great power in science and technology. At present, although China is a country with a large output of papers, there is insufficient quantity of scientific and technological journals with broad international influence and competitiveness, which is far from the publishing needs of scientific research output, resulting in a large number of excellent local scientific research papers flowing out of the country. China has become one of the countries with the most severe outflow of papers, and the right to publish and speak of scientific research results is severely restricted.^[1,2] Therefore, it is urgent to promote the

development of Chinese scientific and technological journals, and it is urgent to establish a group of scientific and technological journals with international influence and competitiveness.^[3] Under the strategic deployment of cultivating world-class scientific and technological journals in the country, China’s scientific and technological journals continue to grow, and their competitiveness continues to rise. However, China’s scientific and technological journals still need more international visibility, and the proportion of highly influential journals worldwide still needs to be higher. The recognition of China’s scientific and technological journals by many scientific and technological workers still needs to be improved. How to further enhance the influence of scientific journals has become an urgent problem to be solved.^[4] Therefore, based on the publishing experience of the *Rare Metals* special issue, this article introduces some measures taken by the journal to improve the quality of manuscript sources and increase publicity, aiming to provide references for domestic scientific journal editors.

INTRODUCTION OF RARE METALS

Rare Metals was founded in 1982, its competent authority is the China Association for Science and Technology, and its organizers are the Nonferrous Metals Society of China and China Grimm Group Co., Ltd. In addition, it


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Received: 6 December 2023; Revised: 26 December 2023; Accepted: 27

December 2023; Published: 29 December 2023

<https://doi.org/10.54844/ep.2023.0504>

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is published by Youke Publishing Co., Ltd., and internationally, it cooperates with Springer Nature. It is currently indexed by Science Citation Index-Expanded (SCIE), Engineering Index (EI), Chemical Abstracts Service (CAS), SCOPUS, and other internationally famous search systems or databases. The impact of the journal has been steadily increasing over the past decade, as shown in Figure 1. In 2022, *Rare Metals* had a Journal Citation Reports (JCR) impact factor (IF) of 8.8, ranking fourth in the field of “Metallurgy and Metallurgical Engineering”, issued more than 300 articles, and got into Q1 of the Chinese Academy of Sciences Journals Grading. By working hard to improve the quality of content, *Rare Metals* has improved its academic level and international influence.

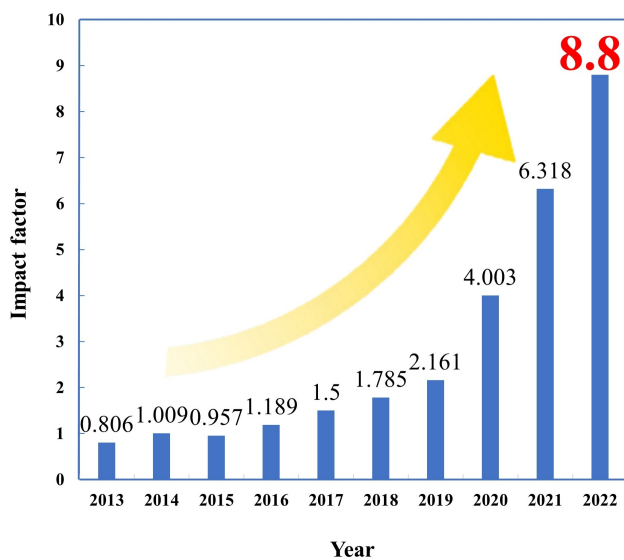


Figure 1. The impact factor of *Rare Metals* in last ten years.

The scope of *Rare Metals* includes scientific research results in rare and non-ferrous metal beneficiation, smelting, alloy processing, material development, physical and chemical analysis, and testing, as well as the application of rare metals in new materials (including superconductors, semiconductors, compounds, and ceramics). It also covers research results in cutting-edge fields related to non-ferrous metals, such as energy, catalysis, two-dimensional, and biomedical applications. As an English science and technology publication reporting research on rare metals and their compounds, *Rare Metals* is always committed to serving the “promotion of academic exchanges, scientific research, and technological progress in the rare metal industry”. It has contributed to developing China’s rare metal industry and serves scientific and technological workers. In recent years, *Rare Metals* has been closely following academic hotspots, focusing on scientific research issues related to a community with a shared future for

mankind, and has published multiple influential articles. In 2021, *Rare Metals* published one original achievement: Professor Zhiqi Liu from Beihang University successfully prepared nickel-based superconducting materials (ranked 5th in the world) and took the lead in conducting research on the strong magnetic field (up to 50 T) electrical transport performance of nickel-based superconducting materials internationally. His team discovered that near the superconducting critical temperature, nickel-based superconducting materials exhibited complex Fermi surface electric transport with multiple electron hole pockets under strong magnetic fields. In order to publish this innovative scientific research results as soon as possible, Professor Liu contacted the editor of *Rare Metals*, hoping to publish this breakthrough achievement in China’s journal. After being evaluated and recognized by the editorial board, the article was submitted through the “Green Channel” on April 14, 2021, accepted in one week, and launched in one month. After the research results were published online, they attracted great attention both domestically and internationally. Within two weeks of publication, this paper has been cited three times in arXiv nickel-based superconductivity research papers.

Based on the outstanding performance of the journal, *Rare Metals* has received several honors: it has been selected as one of the journals of “China Science and Technology Journal Excellence Action Plan”, “China Science and Technology Journal International Influence Enhancement Program”, “Top 100 Newspapers and Periodicals”, and “China’s Most Internationally Influential Academic Journals” (awarded for the twelfth consecutive year). It is the flagship of China’s Nonferrous Metal Science and Technology Journal Cluster, one of the T1 journals in the “Classification Catalogue of High-quality Science and Technology Journals in the Field of Nonferrous Metals”. It is one of the journals winning the “China Society of Nonferrous Metals Academic Journal First Prize”, one of the scientific and technological journals administrated by the Chinese Association for Science and Technology with excellent grades in reviewing. *Rare Metals* participated in the 2017 Frankfurt International Book Exhibition on behalf of Chinese publishing (Figure 2).

SPECIFIC MEASURES TO IMPROVE THE JOURNAL

After more than 40 years of exploration and practice, *Rare Metals* has embarked on building a first-class journal by taking multiple measures with the support of the young editorial board.^[5] The journal focuses on the initiative and creativity of young scholars and encourages them to participate in running the journal. In addition, *Rare Metals* extends the direction of articles to emerging



Figure 2. *Rare Metals* in the Frankfurt International Book Exhibition on behalf of Chinese publishing.

frontier fields so that the journal is constantly revitalized. *Rare Metals* enhances its influence by organizing special issues and topics. Lastly, young editorial board members of *Rare Metals* contribute a lot to promote the journal.

Target young scientists and lay the foundation for sustainable journal development

It was reported that the age range of 36 to 45 years old is the age stage where research talents have the most robust innovation ability and research willingness, and it is also the peak period for scientific research output. Meanwhile, considering that the current upper limit for the selection of outstanding young people is generally set at 40 years old (especially outstanding individuals are relaxed to 45 years old),^{16,71} *Rare Metals* has publicly recruited a group of young editorial board members, hiring experts and scholars under the age of 45 with specific academic achievements and influence in the field of the discipline to serve as young editorial board members, and fully leveraging the role of young editorial board members in special issue planning and article organization.¹⁸¹ The first youth editorial board of *Rare Metals* was established through global open recruitment in 2020. Since then, under the gathering power of the journal platform, the editorial board youth members have formed a highly active team with a high academic level and the spirit to contribute and take responsibility for the academic ecology. The editorial board youth members have published high-quality papers, planned topics in cutting-edge fields, undertaken the work of reviewing manuscripts, shared and exchanged scientific successes, organized and participated in academic conferences, and selected the annual excellence. The number of editorial board youth members has exceeded 500, most of whom are from China, and their organizations cover Peking University, Tsinghua University,

Shanghai Jiaotong University, Fudan University, Beihang University, Chinese Academy of Sciences, etc. The editorial office attaches great importance to the work of young editors, maintains interaction with them, regularly communicates and exchanges thoughts with them, and promptly informs them any progress or difficulties encountered by the journal. At the same time, the editorial office regularly convenes editorial board meetings (at least once a year) to inform the editorial board members of their powers and obligations. In addition, the editorial department will conduct statistics on the annual work of the editorial board at the end of the year, commend outstanding editorial board members, outstanding young editorial board members, and so on. Through the efforts of recent years, the editorial office has formed a relatively mature work plan for the editorial board and has formulated a management mechanism for editorial board youth members, adopting the mechanism of “up and down, in and out” and maximizing the enthusiasm and initiative of young scientists through annual task assessment, dynamic adjustment, and continuous absorption.

Pass on heritage and innovate, extending layout to emerging frontier areas

Suggested and inspired by editorial board youth members, the editorial office breaks the inertia of the definition of “rare metals”. It innovates the latest interpretation of it: advanced, innovative, essential, and nonferrous related materials and applications. And the journal of *Rare Metals* mainly reports the latest scientific research results and applications related to nonferrous (rare) metals. Based on inheriting the characteristics of the journal, *Rare Metals* face the frontiers of science and technology in the world and the country’s significant needs, focusing on the interdisciplinary applied research of non-ferrous (rare) metals in advanced materials. By comparing the direction of the published articles in the year 2015–2016 and 2021–2022, as shown in Figure 3, the total number of the articles published has doubled: the total number of articles was 280 in 2015–2016 and 625 in 2021–2022. What’s more, the direction of the journal’s published articles at present mostly covers metal and metallurgical materials, ceramic materials, composite materials, magnetic materials, battery materials, thermoelectric materials, catalytic materials, coating materials, hydrogen storage materials, two-dimensional materials, biomaterials, solar cell materials, rare-earth materials, environmental materials, microwave absorbing materials, photovoltaic materials, etc. But in 2015–2016, most articles of *Rare Metals* focused on metal and metallurgical materials, ceramic materials, composite materials, magnetic materials, and rare-earth materials. A few articles focused on battery materials, thermoelectric materials, catalytic materials, coating materials, and hydrogen storage materials. Very few articles mentioned

two-dimensional materials, biomaterials, solar cell materials, environmental materials, microwave absorbing materials, and photovoltaic materials.

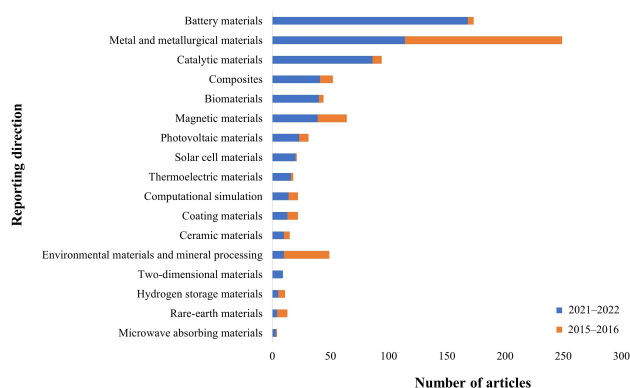


Figure 3. The comparison of the direction of the published articles by *Rare Metals* in the year 2015–2016 and 2021–2022.

Regard academics as the foundation and continuously strengthen the quality of contents

The particular issues or topics are collections of articles published by an academic journal targeting a particular academic focus. These are systematic reports organized around representative articles on hot topics in a scientific research field. The content of particular issues or topics can comprehensively showcase the academic progress in the field, making it easier for readers to have a more comprehensive and in-depth understanding of a specific preface issue.^[9] Its knowledge-based, speculative, exploratory, and controversial natures are relatively strong. Generally speaking, the quality of academic, special issues organized by scientific and technological journals, including content quality, editing, proofreading quality, dissemination quality, etc., is often high, and the articles in the columns are highly cited and downloaded, resulting in significant influence.^[10] Publishing special issues or topics has been considered an essential means to enhance the academic influence of journals.

As a flagship journal in the field of nonferrous metals, *Rare Metals* has taken organization and appointment of excellent articles as the focus of enhancing the academic influence, having formed normality of mainly inviting young scientists' articles and aiming to invite articles in hot areas and of high-influence teams. The editorial office has improved the efficiency of topic publication by developing a process checklist for topic appointments. Only in 2022, 10 topics in hot areas were organized and about 140 articles (1/3 of the yearly

publication) were published as virtual topics, while more than 30 articles were invited from highly cited researchers. Some of the unique issues/topics organized by the journal in the last three years are shown in Table 1. The editorial office regards academic quality as the lifeblood of the journal. It has established a working system of academic editors, through which young scientists are employed as academic editors (10 persons) in different fields to serve as gatekeepers for the academic content of the journal and undertake the work of sending articles for review. Every article is pre-checked by academic editors before being peer-reviewed, and the rate of return of manuscripts is maintained at more than 85%.

Emphasize service promotion and enhance the influence of journals through multiple measures

Young scholars are rich in time, energetic, and creative and they hope to expand their academic resources with the help of science and technology journals. Therefore, they show great enthusiasm in the publicity and promotion of journals. In the academic conferences organized and deeply participated in by the editorial board youth members, *Rare Metals* has been promoted in all aspects, including cooperative media, co-organizers, support units, etc., which were presented in forms of promotional videos, journal logos, leaflets (Figure 4), roll-up banners, centered exhibition booths, and sponsored awards, etc. Especially in 2023, the editorial office designed promotional playing cards of *Rare Metals* and printed over 7000 decks. The editorial office used them as promotional materials to pack into academic conference materials bags (e.g., the Third Functional Materials and International Science Conference & Young Scientists' Forum on Energy, as shown in Figure 5), which won widespread attention and praise from attendees and had a good promotional effect. "Academic presentation + journal introduction" has become the norm in various academic activities attended by editorial board youth members (about 500 times a year). For journal academic news, the editorial board youth members spare no effort to publicize and transfer them in their respective academic circles (more than ten times a year). For work on a particular topic, the young editorial board regularly tracks unique topic manuscript submissions, publication progress, and post-publication publicity. For citation analysis, the young editorial board also proposed essential measures such as citation tracking, precise publicity, and 0-cited reminders, rapidly improving the influence of journals and academic citation indicators.

SUMMARY

Based on the advantages of China's rare metal

Table 1: Part of special issues/topics organized by *Rare Metals* in the last three years

Year	Special issues/topics	
2021	Antibacterial materials	
	2D materials: synthesis, characterizations, and application	
	Structural, mechanical, and functional properties in high entropy alloys	
	Topological magnetic materials and devices	
	Transition metal-based materials for photo- and electro-catalysis	
	Metal ion capacitors	
	Solid-state alkaline metal batteries with high energy density and safety	
	2022	Dielectric materials for energy storage applications
		Efficient catalyst for hydrogen production from hydrides
		Nanocatalytic diagnosis and treatment
Chiral nanomaterials and their applications		
High efficiency and green recycling of spent lithium-ion battery		
Recycling of rare and precious metals		
Trends and recent advances in nanoscience and nanomaterials		
Micro-nanoscale heat transfer		
Electro-/photocatalysis of N ₂ reduction reaction		
Nanomaterials-based advanced sensors and devices		
2023	Polyoxometalates-based assembly and application	
	New hydrides for energy storage	
	Rare-earth materials for environmental application	
	Magnetic phase transition materials	
	Metal-based functional materials for electrochemistry	
	Transition metal-based materials for energy storage and energy conversion	
	Advanced photocatalytic materials	
	Extreme electronic and energy devices	
	Single-atom nanomaterials for energy catalysis	
	Single-atom catalysis	
Carbon for metal-ion batteries		
Advanced rare metals catalysts for hydrogen production		
Photothermal catalytic materials for carbon neutrality goals		
Innovative medicine and novel strategies for disease diagnosis and treatment		
High-safety and high-energy density aqueous zinc batteries		

resources, *Rare Metals* closely focuses on the significant issues in its field and social issues and actively plans, organizes, implements, and innovates thematic publications to improve the academic quality and influence of the journal continuously. Under the national strategic plan of fostering world-class science and technology journals, China's scientific and technological journals have grown in strength and competitiveness. *Rare Metals* will seize the opportunity to strengthen the content construction further, actively do an excellent job publicizing and promoting the special issues, and strive to improve the journal's impact significantly. *Rare Metals*

**Figure 4.** Leaflet of *Rare Metals*. EIC, Editor-in-Chief; SCIE, science citation index-expanded; JCR, journal citation reports; IF, impact factor.**Figure 5.** Promotion of *Rare Metals* in meeting.

aims to become an essential platform for developing rare metal science and technology and academic exchanges at home and abroad and leads the academic progress of rare metal fields worldwide. *Rare Metals* will lead the academic progress in the field of rare metals in the world, occupy the position of international discourse in the strategic field, and gather strength for realizing the “Chinese Dream” of the great rejuvenation of the Chinese nation.

DECLARATION

Author contributions

Qiao S: Conceptualization, Writing—Original draft preparation. Ma W: Conceptualization, Writing—Review and Editing. Zhao N: Formal analysis, Writing—Original draft preparation. Xu ZY: Literature research and organization, participation in paper revision, finalization. Huang QH: Participate in paper revision and finalization. All authors have read and

approved the final version.

Source of funding

This study was financially supported by the China Science and Technology Journal Excellent Action Plan-Team Project (Excellent Action Plan-C-120).

Conflict of interest

The author has no conflicts of interest to declare.

Data sharing

Data used to support the findings of this study are available from the corresponding author upon request.

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