

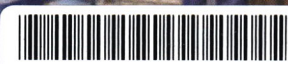
ISSN 1001-0521 • e-ISSN 1867-7185
CN 11-2112/TF • CODEN RARME 8

Volume 42 • Number 4 • April 2023

RARE METALS

www.springer.com/journal/12598

稀有金属 (英文版)



Q K 2 2 5 8 1 2 2

PEIJ
Project for Enhancing International
Impact of China STM Journals

万方数据



RARE METALS (Monthly)

Volume 42 · Number 4 · April 2023

REVIEWS

Single-atom catalysts for electrochemical N₂ reduction to NH₃

M.S. Iqbal · Z.-B. Yao · Y.-K. Ruan · R. Iftikhar · L.-D. Hao · A.W. Robertson · S.M. Imran · Z.-Y. Sun 1075

Recent advances on bioreceptors and metal nanomaterials-based electrochemical impedance spectroscopy biosensors

Z.-B. Chen · H.-H. Jin · Z.-G. Yang · D.-P. He 1098

MINI REVIEW

Recovery of platinum from spent automotive catalyst based on hydrometallurgy

T. Ge · J.-D. He · L. Xu · Y.-H. Xiong · L. Wang · X.-W. Zhou · Y.-P. Tian · Z. Zhao 1118

LETTERS

Weakening CO poisoning over size- and support-dependent Pt_n/X-graphene catalyst (X=C, B, N, n=1–6, 13)

A.-Q. Dong · H. Li · H.-M. Wu · K.-X. Li · Y.-K. Shao · Z.-G. Li · S.-H. Sun · W.-C. Wang · W.-B. Hu 1138

Ultrasonic vibration-assisted multi-scale plastic forming of high-entropy alloys in milliseconds

W.-X. Wen · L.-Y. Li · Z. Li · W.-Q. Ruan · S. Ren · Z.-X. Zhang · X. Liang · H. Liu · J. Ma 1146

Impurities analysis of high-purity osmium target for M-cathode application

J.-D. Ma · Y. Xia · Y.-F. Xie · C. Zhang 1154

ORIGINAL ARTICLES

Highly efficient cobalt-based amorphous catalyst for peroxymonosulfate activation toward wastewater remediation

X.-C. Zhou · S.-Q. Chen · M.-J. Zhou · M. Li · S. Lan · T. Feng 1160

Synergistic etching and intercalation enables ultrathin Ti₃C₂T_x and Nb₂CT_x MXene nanosheets

Q.-Q. Xiong · T. Muhmood · C.-X. Zhao · J.-S. Xu · X.-F. Yang 1175

Ion exchange coupled biomineral self-sacrificial template synthesis of N-enriched porous carbon as robust electrocatalyst for rechargeable Zn-air battery

X. Xiao · H. Zhao · L.-F. Li · B.-L. Qu · Y.-L. Wu · Y.-L. Zhu · B.-B. Chen · G. Pan 1186

N-doped C-coated MoO₂/ZnIn₂S₄ heterojunction for efficient photocatalytic hydrogen production

W. Dong · S.-A. Zhou · Y. Ma · D.-J. Chi · R. Chen · H.-M. Long · T.-J. Chun · S.-J. Liu · F.-P. Qian · K. Zhang 1195

Synthesis of zinc-based metal–organic framework as highly efficient photocatalyst for decomposition of organic dyes in aqueous solution

G. Tan · Y.-Q. Guo · L.-Y. Zuo · K. Zhang · Y.-M. Zhang · L.-L. Zhang · J.-J. Yu · X. Feng · B. Li · L.-Y. Wang 1205

Ultrafine SnO₂ in situ modified graphite felt derived from metal–organic framework as a superior electrode for vanadium redox flow battery

Q.-C. Jiang · J. Li · Y.-J. Yang · Y.-J. Ren · L. Dai · J.-Y. Gao · L. Wang · J.-Y. Ye · Z.-X. He 1214

Electrochemically exfoliated WS₂ in molten salt for sodium-ion battery anode

B.-L. Zhang · X. Chen · H.-J. Zhao · H.-W. Xie · H.-Y. Yin 1227

Mechanism of Li⁺/Na⁺ separation by crown ether and butyrate acid root

Y.-P. Tian · C.-C. Wang · F. Zhang · S. Huang · L. Xu · Z. Zhao · B.-H. Tong 1238

Bidirectionally aligned MXene hybrid aerogels assembled with MXene nanosheets and microgels for supercapacitors

P.-X. Li · G.-Z. Guan · X. Shi · L. Lu · Y.-C. Fan · J. Xu · Y.-Y. Shang · Y.-J. Zhang · J.-Q. Wei · F.-M. Guo 1249

BaTiO₃-based ceramics with high energy storage density

Y. Li · M.-Y. Tang · Z.-G. Zhang · Q. Li · J.-L. Li · Z. Xu · G. Liu · F. Li 1261

Surfactant-enhanced electrochemical detection of bisphenol A based on Au on ZnO/reduced graphene oxide sensor

A.-Y. Zha · Q.-B. Zha · Z. Li · H.-M. Zhang · X.-F. Ma · W. Xie · M.-S. Zhu 1274

Preparation of quasi-isotropic thermal conductive composites by interconnecting spherical alumina and 2D boron nitride flakes

H.-T. Niu · Y. Zhang · G. Xiao · X.-H. He · Y.-G. Yao 1283

Lightweight, self-cleaning and refractory FeCo@MoS₂ PVA aerogels: from electromagnetic wave-assisted synthesis to flexible electromagnetic wave absorption

S.-B. Qian · G. Liu · M. Yan · C. Wu 1294

Decomposition of Nb₃Si and mechanical-property improvement by adding appropriate amount of MgO in Nb–16Si–20Ti alloy

D.-Z. Chen · Q. Wang · R.-R. Chen · S. Wang · Y.-Q. Su · H.-Z. Fu 1306

Experimental investigation and thermodynamic assessment of La–Y–Ni ternary system in Ni-rich corner

S.-X. Wu · L. Wang · H.-P. Yuan · Q. Luo · Q. Li · K.-C. Chou 1316

Microstructure, mechanical properties and post-weld heat treatments of dissimilar laser-welded Ti₂AlNb/Ti60 sheet

Y. Wu · G. Liu · Z.-Q. Liu · Z.-J. Tang · B. Wang 1332

Formation mechanism and mechanical properties of surface nanocrystallized Ti–6Al–4V alloy processed by surface mechanical attrition treatment

Y.-F. Li · C. Chen · J. Ranabhat · Y.-F. Shen 1343

Microstructure, cracking behavior and control of Al–Fe–V–Si alloy produced by selective laser melting

S.-B. Sun · L.-J. Zheng · J.-H. Liu · H. Zhang 1353

Thermal storage properties of Mg–LaNi using as a solar heat storage material

Q. Wan · L.-J. Jiang · Z.-N. Li · Y. Yang · S.-M. Wang · X.-P. Liu 1363

Microstructure and mechanical property of Mg–10Gd–2Y–1.5Zn–0.5Zr alloy processed by eight-pass equal-channel angular pressing

H. Liu · J. Ju · X.-W. Yang · Y.-H. Li · J.-H. Jiang · A.-B. Ma 1371

Preparation of W–TiC alloys from core–shell structure powders synthesized by an improved wet chemical method

S.-T. Lang · Q.-Z. Yan · N.-B. Sun · X.-X. Zhang 1378

Properties of Fe–Mn–Al alloys with different Mn contents using density functional theory

X. Luo · J. Feng · Y.-H. Liu · M.-Y. Hu · X.-Y. Chong · Y.-H. Jiang 1387

Crystal orientation in Ni–Mn–In melt-spun ribbons

Y. Feng · C. Fang · Y.-L. Ai · H.-B. Wang · L. Gao · H. Chen · X.-H. Bian 1398

Coercivity enhancement of hot-deformed Nd–Fe–B magnets with Pr–Cu alloy addition

J.-M. Wang · Z.-H. Guo · Z. Jing · X. Du · N.-J. Yu · M.-Y. Li · M.-G. Zhu · W. Li 1403

Cyclic oxidation behavior of electron beam physical vapor deposition NiAlHf and NiAlHfCrSi coatings at 1150 °C

S.-J. Liang · H.-H. Song · L. Zheng · H.-B. Guo 1408

Structural properties and crystal orientation of polycrystalline Gd films

Y.-Z. Zhang · S.-R. Zhang · D.-B. Yu · Y. Luo · N.-T. Quan · W.-L. Yan · K.-S. Li 1414

Anti-adsorption mechanism of ion-adsorption type rare earth tailings

W.-F. Huang · H. Wu · X.-D. Li · J.-C. Ou · X.-L. Huang 1420

Cover Picture

X.-C. Zhou et al. Highly efficient cobalt-based amorphous catalyst for peroxymonosulfate activation toward wastewater remediation

Further articles can be found at link.springer.com

Instructions for Authors for *Rare Met.* are available at www.springer.com/12598

Cover story

Highly efficient cobalt-based amorphous catalyst for peroxymonosulfate activation towards wastewater remediation

(Xue-Chun Zhou, Shuang-Qin Chen*, Ming-Jie Zhou, Mai Li, Si Lan*, Tao Feng* pp. 1160–1174)

In recent decades, water pollution aroused by various contaminants has become a critical societal issue, due to its adverse effects on human beings and ecosystem. Metallic glasses (MGs) are rising novae in the catalytic field, due to their unique amorphous structure, such as large residual stress, and high density of low coordination sites. However, there is still an absence of suitable MGs' catalysts for advanced oxidation processes (AOPs) with peroxymonosulfate (PMS), the most efficient and promising wastewater remediation technology. Particularly, PMS was utilized for AOPs, which is suitable for a wider pH range, and generated $\text{SO}_4^{\cdot-}$ possesses high oxidation potential and long half-life. Herein, Co-MG with nominal composition of $\text{Co}_{67}\text{Fe}_4\text{Mo}_{1.5}\text{Si}_{16.5}\text{B}_{11}$ (at%) was utilized as catalyst of PMS for azo dye degradation. Azo dyes are the largest class of synthetic dyes used in the textile industry and have caused serious ecological and environmental problems due to their toxicity, non-biodegradability and potential carcinogenicity. The results demonstrated that the Co-MG/PMS system had an order of magnitude higher efficiency on OII degradation, compared with the Fe-MG/PMS system. For fundamental study and field application, the effect of adding inorganic anions (Cl^- , HCO_3^- , H_2PO_4^- , SO_4^{2-} , NO_3^-), environmental factors, and cycle experiments on the degradation properties of Co-MG was investigated emphatically to evaluate overall catalytic performance. It has demonstrated that the Co-MG with better recyclability, more stability and better corrosion resistance contrasted to Fe-MGs. The present results provide not only a new candidate but also shed light on exploring a new kind of AOPs system based on cobalt MGs for wastewater treatment.

Edited and Published by Youke Publishing Co., Ltd.

(No. 2, Xijiekouwai Str., 100088 Beijing, China)

Tel.: +86 10 82241917; Fax: +86 10 82240869

Email: raremetals@grinm.com

Administrator: China Association for Science and Technology

Sponsor: The Nonferrous Metals Society of China

China GRINM Group Co., Ltd.

Printer: Beijing Shengpinfengshang Technology Development Co., Ltd.,
Beijing, China

ISSN 1001-0521



Price: RMB 500