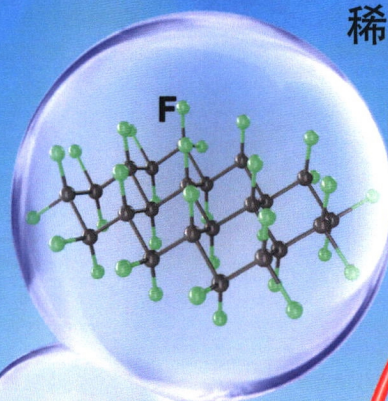
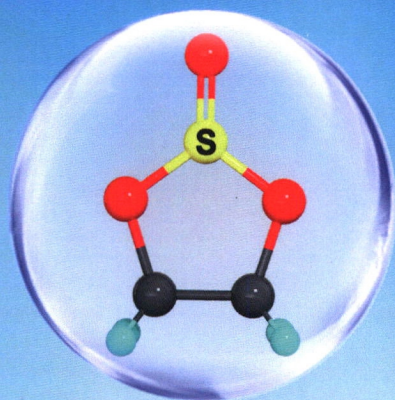


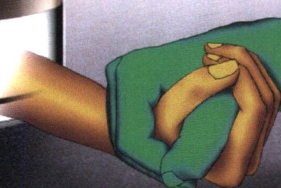
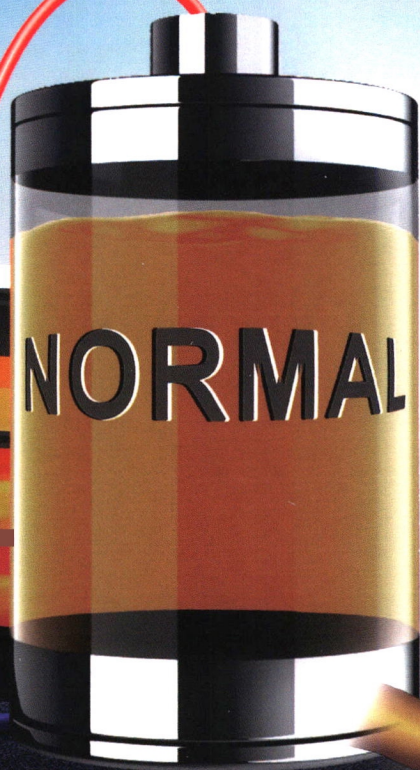
RARE METALS

www.springer.com/journal/12598

稀有金属 (英文版)



$F/C=1.34$



REVIEW

Recent progress in organic hole-transporting materials with 4-anisylamino-based end caps for efficient perovskite solar cells

X.-P. Xu · S.-Y. Li · Y. Li · Q. Peng 1669

ORIGINAL ARTICLES

Cross-linkable fullerene interfacial contacts for enhancing humidity stability of inverted perovskite solar cells

M.-W. An · Z. Xing · B.-S. Wu · F.-F. Xie · S.-Y. Zheng · L.-L. Deng · X. Wang · B.-W. Chen · D.-Q. Yun · S.-Y. Xie · R.-B. Huang · L.-S. Zheng 1691

Machine learning (ML)-assisted optimization doping of KI in MAPbI₃ solar cells

S. Jiang · C.-C. Wu · F. Li · Y.-Q. Zhang · Z.-H. Zhang · Q.-H. Zhang · Z.-J. Chen · B. Qu · L.-X. Xiao · M.-L. Jiang 1698

Fluorinated graphite nanosheets for ultrahigh-capacity lithium primary batteries

X.-X. Yang · G.-J. Zhang · B.-S. Bai · Y. Li · Y.-X. Li · Y. Yang · X. Jian · X.-W. Wang 1708

TiO₂-coated LiNi_{0.9}Co_{0.08}Al_{0.02}O₂ cathode materials with enhanced cycle performance for Li-ion batteries

W.-W. Li · X.-J. Zhang · J.-J. Si · J. Yang · X.-Y. Sun 1719

Plasmonic photo-assisted electrochemical sensor for detection of trace lead ions based on Au anchored on two-dimensional g-C₃N₄/graphene nanosheets

J.-Y. Hu · Z. Li · C.-Y. Zhai · J.-F. Wang · L.-X. Zeng · M.-S. Zhu 1727

Regulation of morphology and visible light-driven photocatalysis of WO₃ nanostructures by changing pH

Y.-S. Fan · X.-L. Xi · Y.-S. Liu · Z.-R. Nie · L.-Y. Zhao · Q.-H. Zhang 1738

Photocatalytic properties of CaTi₂O₅ via a facile additive-free aqueous strategy with different pH values

W.-X. Dong · Q.-F. Bao · X.-Y. Gu · H.-J. Shen · P.-Y. Liu 1746

La-enhanced Ni nanoparticles highly dispersed on SiC for low-temperature CO methanation performance

J.-W. Li · Q. Song · J.-B. Li · S.-C. Yang · Y.-S. Gao · Q. Wang · F. Yu 1753

Enhanced positive humidity sensitive behavior of p-reduced graphene oxide decorated with n-WS₂ nanoparticles

Z.-H. Duan · Q.-N. Zhao · C.-Z. Li · S. Wang · Y.-D. Jiang · Y.-J. Zhang · B.-H. Liu · H.-L. Tai 1762

Synthesis and NH₃/TMA sensing properties of CuFe₂O₄ hollow microspheres at low working temperature

K.-D. Wu · J.-Y. Xu · M. Debliquy · C. Zhang 1768

Glycine-nitrate combustion engineering of neodymium cobaltite nanocrystals

E.A. Tugova · O.N. Karpov 1778

Cerium-yttrium binary oxide microflower: synthesis, characterization and catalytic dehydration property

C. Pan · B.-H. Huang · C. Fan · X.-Y. Li · P.-G. Su · A.-Q. Zheng · Y. Sun 1785

Synthesis and formation mechanism of nanocrystalline ZrB₂-Al₂O₃ composite powders via an amorphous precursor

S.-L. Song · Y.-L. Fan · R. Li · Y.-H. Lin · Q. Zhen 1801

Pressure control as an effective method to modulate aggregative growth of nanoparticles

J. Xu · Y. Shu · Q. Xia · Y.-L. Guo · G.-J. Zhou · W.-C. Zhan 1808

Self-propagating synthesis joining of C_f/Al composites and TC4 alloy using AgCu filler with Ni-Al-Zr interlayer

L. Shen · Z.-R. Li · G.-J. Feng · S.-Y. Zhang · Z. Zhou · P. He 1817

Microstructure and properties of Al₂O₃-ZrO₂-TiO₂ composite coatings prepared by plasma spraying

P.-Y. Gao · Y.-D. Ma · W.-W. Sun · Y. Yang · C. Zhang · Y.-H. Cui · Y.-W. Wang · Y.-C. Dong 1825

Post-deposition-annealed lanthanum-doped cerium oxide thin films: structural and electrical properties

V.N. Barhate · K.S. Agrawal · V.S. Patil · A.M. Mahajan 1835

Tribological properties of plasma-sprayed nickel alloy matrix self-lubricating coating at elevated temperatures

W.-S. Li · Y. Sun · W. Hu · S.-Y. Zhu · H.-M. Zhai · J. Yang · X.-J. Fan · W.-M. Liu 1844

The tetragonal-like distortion of Fe–Ga alloys interstitial doped with Cu

X. Zhao · X. Tian · Z.-Q. Yao · L.-J. Zhao · R. Wang · J. Yan 1851

Spontaneous positive exchange bias effect in SrFeO_{3-x}/SrCoO_{3-x} epitaxial bilayer

T.-C. Su · J. Zhang · W. Zhang · Y.-Y. Wang · H.-H. Ji · X.-J. Wang · G.-W. Zhou · Z.-Y. Quan · X.-H. Xu 1858

Microstructural evolution and restoration of creep property for a damaged K403 alloy after rejuvenation heat treatments

L. Wang · X.-G. Yang · H.-Y. Qi · D.-Q. Shi · S.-L. Li 1865

A new insight into rapid oxidation of alloy 925 contaminated by oxide powder

H. Jiang · J.-X. Dong · M.-C. Zhang · J.-Y. Li 1872

Microstructure and mechanical properties of TC4 joints brazed with Ti–Zr–Cu–Sn amorphous filler alloy

H.-H. Zhang · Z.-D. Cui · S.-L. Zhu · S.-W. Guo · X.-J. Yang · A. Inoue 1881

Enhanced strength and electrical conductivity of Al–0.3Ce alloy simultaneously with Ti(C,N) nanoparticle addition

W.-P. Li · Y.-L. Zhang · J. Mao 1890

Microstructures and mechanical properties of a cast Al–Cu–Li alloy during heat treatment procedure

S.-W. Duan · K. Matsuda · T. Wang · Y. Zou 1897

Transformation behavior of precipitates during artificial aging at 170 °C in Al–Mg–Si–Cu alloys with and without Zn addition

S. Zhu · Z.-H. Li · L.-Z. Yan · X.-W. Li · S.-H. Huang · H.-W. Yan · Y.-A. Zhang · B.-Q. Xiong 1907

Chip morphology and cutting temperature of ADC12 aluminum alloy during high-speed milling

X.-X. Meng · Y.-X. Lin 1915

Microstructure and corrosion properties of Mg–0.5Zn–0.2Ca–0.2Ce alloy with different processing conditions

C. Zhang · L. Wu · G.-S. Huang · G.-G. Wang · B. Jiang · F.-S. Pan 1924

Microstructural development of vanadium–nickel crystalline alloy membranes

P. Jiang · X.-B. Shi · B.-L. Sun · H.-C. Wang · M. Doland · G.-S. Song 1932

Oxidation behavior of multi-component Ta–W–Al–Ti alloy at 1173 K

J.-X. Li · Y.-H. Chen · Z.-J. Bai · B.-J. Zhao · L. Jiang · L.-E. Wu 1940

Hot pressing sintering process and sintering mechanism of W–La₂O₃–Y₂O₃–ZrO₂

B.-G. Fu · J.-C. Yang · Z.-K. Gao · Z.-R. Nie 1949

Dual-property blue and red emission carbon dots for Fe(III) ions detection and cellular imaging

Y.-L. Xu · R.-X. Mo · C.-Y. Qi · Z. Ren · X.-Z. Jia · Z.-G. Kan · C.-L. Li · F. Wang 1957

Development of sandwich joining piece to fabricate segmented half-Heusler/skutterudite thermoelectric joints

W.-A. Wang · X.-Y. Li · Y.-F. Xing · M. Gu · L.-H. Fang · Y.-F. Bao · J.-H. Fan 1966

Using highly concentrated chloride solutions to leach valuable metals from cathode-active materials in spent lithium-ion batteries

A.-F. Yi · Z.-W. Zhu · Y.-H. Liu · J. Zhang · H. Su · T. Qi 1971

A novel approach to extract Nb, Y and Ce from a niobium-bearing ore of low grade by roasting KHSO₄–H₂SO₄ system

W.-C. Gao · J.-K. Wen · B. Wu · H. Shang · X. Liu 1979

Equilibrium and mechanism studies of gold(I) extraction from alkaline aurocyanide solution by using fluorine-free ionic liquids

Y.-T. Wang · M. Liu · N. Tang · S.-J. Li · Y. Sun · S.-X. Wang · X.-J. Yang 1987

Cover Picture

X.-X. Yang et al. Fluorinated graphite nanosheets for ultrahigh-capacity lithium primary batteries

Further articles can be found at link.springer.com

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

Cover story

(Xiao-Xia Yang, Guan-Jun Zhang, Bao-Sheng Bai, Yu Li, Yi-Xiao Li, Yong Yang, Xian Jian, Xi-Wen Wang*, pp. 1708–1718)

Fluorinated graphite nanosheets for ultrahigh-capacity lithium primary batteries

Lithium fluorocarbon (Li/CF_x) battery is the battery system with the highest specific energy in solid electrode chemical power supply. The F/C limit of conventional fluorocarbons is 1, and the theoretical specific capacity is $865\text{mAh}\cdot\text{g}^{-1}$. Because the energy of the material is difficult to be fully utilized in the practical battery, the specific energy of the battery is usually lower than $700\text{Wh}\cdot\text{kg}^{-1}$. At this concern, Wang et al. carried out innovative research on the preparation of fluorocarbon materials and electrodes, breaking through the F/C and specific capacity limits of existing fluorocarbon materials, and providing a new strategy for the realization of ultra-high specific energy lithium galvanic battery. By adjusting the temperature, the edge defects and $-\text{CF}_2$, $-\text{CF}_3$ perfluorinated functional group active sites are introduced into graphite nanosheets (NSs) in the form of covalent/ semi-covalent/ semi-ionic bonds, which broke the restriction of fluoro-carbon ratio to achieve ultra-thin microstructure with high performances. Using the ultra-high specific capacity CF_x NSs, combined with the "dual function" electrolyte that both conduct lithium ions and participate in the lithium synthesis reaction, and the lightweight battery structure design, a 24-Ah soft-packed lithium fluorocarbon primary battery with specific energy up to $1116\text{Wh}\cdot\text{kg}^{-1}$ was developed, which is the highest level reported in the relevant field at present.

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

GRINM Group Co., Ltd.

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

Beijing, China

万方数据

ISSN 1001-0521



9 771001 052213

Price: RMB 300