JOURNAL OF RARE EARTHS

Vol. 35 No. 6 (June 2017)

CONTENTS

SPECTROSCOPY, LUMINESCENCE AND PHOSPHORS



J. Rare Earths, (35) 2017: 525-529

 530 Preparation and luminescence properties of rare-earth doped fiber with spectral blue-shift: SrAl₂O₄:Eu²⁺,Dy³⁺ phosphors/triarylsulfonium hexafluoroantimonate based on polypropylene substrate

> LI Jing, WANG Jian, YU Yuan, ZHU Yanan, GE Mingqiao



Energy transfer processes in the rare-earth doped fiber

J. Rare Earths, (35) 2017: 530-535



RARE EARTH CATALYSIS



J. Rare Earths, (35) 2017: 551-558

MAGNETISM AND MAGNETIC MATERIALS

559 Dy gradient and coercivity in grain boundary diffusion processed Nd-Fe-B magnet

> ZHOU Lei, LI Jian, CHENG Xinghua, LIU Tao, YU Xiaojun, LI Bo



Time / min

Fractional-precipitation PEG Sc(NO), NH.OH

Interface

Interfaces

Magnified EPMA mapping of the region included in black rectangle

Core/shell ScSZ nanocomposite

/iew

nside

(heat treatment at 900 ℃)

Formation

mechanism diagram

of ScSZ core/shell

nanocomposite

J. Rare Earths, (35) 2017: 559-566

ADVANCED RARE EARTH MATERIALS

Zirconia nanocrystal core cluster

Layer

Bulk

(hydrothermal treatment at 200 °C



XUE Qiannan, HUANG Xiaowei, ZHANG He, XU Hong, ZHANG Jianxing, WANG Liangshi

J. Rare Earths, (35) 2017: 567-573

CHEMISTRY AND HYDROMETALLURGY

574 Hydrometallurgical recycling of NdFeB magnets: Complete leaching, iron removal and electrolysis

> Mehmet Ali Recai Önal, Chenna Rao Borra, Muxing Guo, Bart Blanpain, Tom Van Gerven

J. Rare Earths, (35) 2017: 574-584



Outline of the flowsheets studied

METALLOGRAPHY AND PYROMETALLURGY

585 Microstructure and mechanical properties of as-cast Mg-5Sn-2Ce-*x*Zn alloys

> DING Wucheng, CHEN Yungui, XIAO Sufen, CUI Zhiming, CHENG Peng



TEM images and the selected area diffraction (SAD) patterns of Ce-containing compounds

(a) and (c): Mg-5Sn-2Ce alloy; (f): Mg-5Sn-2Ce-4Zn alloy; (b), (d), (e) and (g) show the corresponding SAD patterns of Ce-containing compounds of A, B, C and D

J. Rare Earths, (35) 2017: 585-592

RARE EARTH APPLICATIONS



GUO Haiyan, MA Lunjie, SHEN Fei, YANG Gang, ZHANG Yanzong, DENG Shihuai, ZHANG Jing, SONG Chun, ZENG Yongmei

J. Rare Earths, (35) 2017: 593-601

602 CO₂ gas sensors based on $Yb_{1-x}Ca_xFeO_3$ nanocrystalline powders

> ZHANG Panpan, QIN Hongwei, ZHANG Heng, LÜ Wei, HU Jifan



FT-IR spectrum for biomass and biochar

(a) OS, with/without La-involvement; (b) CS, with/without La-involvement



Dynamic gas-sensing characteristics of $Yb_{1-x}Ca_xFeO_3$ (x=0, 0.1, 0.2 and 0.3) sensors to 1000, 5000 and 10000 ppm CO_2 at 260 °C in the background of ambient air (with the room temperature humidity of 28%RH)

J. Rare Earths, (35) 2017: 602-609

610 Stimulatory effect of lanthanum nitrate on the root tuber yield of *Pseudostellaria heterophylla* via improved photosynthetic characteristics

> MA Yingli, ZOU Huichao, GU Hui, SHI Dawei, GAO Wenxiang, ZHANG Yufeng, XIE Yinfeng



Effects of different concentrations of lanthanum nitrate on diurnal variation of net photosynthetic rate (P_n) (a), stomatal conductance (G_s) (b), intercellular CO₂ concentration (C_i) (c) and transpiration rate (T_r) (d) in *P. heterophylla* seedlings (Note: Different lowercase letters indicate a significant difference at 0.05 level between different treatments. CK, La 25, La 100, La 400 and La 700 represent 0, 25, 100, 400 and 700 mg/L lanthanum nitrate treatments, respectively)

J. Rare Earths, (35) 2017: 610-620

GEOLOGY AND ORE DRESSING

621 Flotation performance and adsorption mechanism of styrene phosphonic acid as a 100 90 collector to synthetic (Ce,La)₂O₃ 80 REO 70 CaF, 60 • $Ca_5 F(PO_4)_3$ Recovery/% Flotation recovery as a 50 40 function of pH value by using 30 YANG Zhiren, BIAN Xue, WU Wenyuan SPA as a collector 20 10 -10 10 6 8 pН J. Rare Earths, (35) 2017: 621-628

CONTENTS

SPECTROSCOPY, LUMINESCENCE AND PHOSPHORS

Optically stimulated luminescence (OSL) of LiMgPO4:Tm,Tb phosphor

Structural characterization and temperature-dependent luminescence of CaF₂:Tb³⁺/Eu³⁺ glass ceramics*HU Fangfang, ZHAO Zhangmei, CHI Fengfeng, WEI Xiantao, YIN Min* 536

RARE EARTH CATALYSIS

Propane catalytic cracking on pretreated La-ZSM-5 zeolite during calcination for light olefins production *Roya Pouria, Leyla Vafi, Ramin Karimzadeh* 542 Synthesis and characterization of carbon-TiO₂-CeO₂ composites and their applications in phenol degradation *Y. Lara-López, G. García-Rosales, J. Jiménez-Becerril* 551

MAGNETISM AND MAGNETIC MATERIALS

ADVANCED RARE EARTH MATERIALS

Synthesis and characterization of high ionic conductivity ScSZ core/shell nanocompositesXUE Qiannan, HUANG Xiaowei, ZHANG He, XU Hong, ZHANG Jianxing, WANG Liangshi 567

CHEMISTRY AND HYDROMETALLURGY

METALLOGRAPHY AND PYROMETALLURGY

RARE EARTH APPLICATIONS

Effects of La-involvement on biomass pyrolysis behaviors and properties of produced biocharGUO Haiyan, MA Lunjie, SHEN Fei, YANG Gang, ZHANG Yanzong, DENG Shihuai, ZHANG Jing, SONG Chun, ZENG Yongmei 593 CO₂ gas sensors based on Yb_{1-x}Ca_xFeO₃ nanocrystalline powders

ZHANG Panpan, QIN Hongwei, ZHANG Heng, LÜ Wei, HU Jifan 602 Stimulatory effect of lanthanum nitrate on the root tuber yield of *Pseudostellaria heterophylla* via improved photosynthetic characteristics......*MA Yingli, ZOU Huichao, GU Hui, SHI Dawei, GAO Wenxiang, ZHANG Yufeng, XIE Yinfeng* 610

GEOLOGY AND ORE DRESSING