

目 次

综合评述

增材制造技术在永磁材料制备中的应用及展望 朱晓宇, 刘 涛, 王 磊, 王 帅, 方以坤*, 朱明刚 715

稀土发光

UVC 荧光粉 $\text{YPO}_4:\text{Bi}^{3+}$ 的制备及发光性能表征 肖勇强, 陈 鹏*, 朱月华, 张 娜, 卓宁泽 724
稀土双掺 $\text{LiSr}_4(\text{BO}_3)_3:\text{Ce}^{3+}, \text{Tb}^{3+}$ 荧光粉制备及发光性能研究 吴幸雅, 余冬燕* 730
 $\text{Yb}^{3+}/\text{Ho}^{3+}/\text{Tm}^{3+}$ 共掺杂 $\text{NaLa}(\text{WO}_4)_2$ 上转换荧光粉的温度传感特性研究 缪菊红*, 韦 松, 张 祎, 杨欣烨, 李林珂 738

稀土催化

铋复合 $\text{Nd}^{3+}:\text{TiO}_2$ 纳米纤维制备及其光催化产氢性能 孙大伟, 李跃军, 曹铁平*, 赵艳辉, 许彦红* 744

磁学与磁性材料

晶粒尺寸对 NdFeB 晶界扩散效果的影响 程星华*, 李 建, 刘 涛, 周 磊, 喻晓军, 李 波 752

稀土新材料

Ce^{3+} 掺杂浓度对 $\text{Cs}_2\text{LiYCl}_6$ 晶体闪烁性能的影响 王绍涵, 吴云涛, 李焕英, 史 坚, 郑 普, 任国浩* 759

稀土金属学与火法冶金

均匀化处理对 Mg-Nd-Zn-Y-Zr 合金组织及力学性能的影响 苏再军, 姜 辉, 肖宏超* 768
铝热还原制备 Al-Sc 合金的热力学调控 王屹波, 杨 昇*, 蔡 彬 775
扩散偶法测定 La-Nd-Fe 三元系 873 K 等温截面 张 奇, 姚青荣*, 龙乾新*, 周怀营, 王 江, 饶光辉 781
基于 FactSage 计算的稀土氯化物溶液直接制备稀土氧化物热力学分析 郭小惠, 苏欢欢, 伍永福*, 吴文远 788

稀土应用

草酸盐沉淀法制备不同形貌粒度的 La_2O_3 粉体 刘泽芳, 刘永畅, 巫圣喜, 张贵清, 曹佐英, 曾 理, 关文娟, 李青刚* 798

稀土地矿

南海表层沉积物稀土元素分布特征及资源前景 王兆生, 张 盈, 张振国*, 常国民, 刘 娜, 姚纪明, 夏世强, 高莲凤 808
微细粒氟碳铈矿与重晶石浮选行为差异研究 王成行, 时 啓, 邱显扬*, 胡 真* 816
山东某稀土矿浮选过程及工艺优化 郭春雷*, 王维维, 金海龙 823
云南省龙陵县茅草园稀土矿地质特征及成矿条件浅析 何 黎, 吕庆松*, 杨啟岳, 邢永辉, 林相荣, 杨春明, 张 利 832
白云鄂博东矿体深部霓石型铌稀土铁矿石矿物学特征研究 金海龙, 杨占峰, 王其伟*, 王振江, 魏 威 840

* 通讯联系人

Journal of the Chinese Society of Rare Earths

Volume 38 Number 6 December 2020

Contents

Application and Prospect of Additive Manufacturing Technology in Preparation of Permanent Magnetic Materials	Zhu Xiaoyu et al. 715
Synthesis and Luminescent Properties of $\text{YPO}_4:\text{Bi}^{3+}$ UVC Phosphors	Xiao Yongqiang et al. 724
Preparation and Luminescence Properties of Rare Earth Co-doped $\text{LiSr}_4(\text{BO}_3)_3:\text{Ce}^{3+}, \text{Tb}^{3+}$ Phosphors	Wu Xingya et al. 730
Temperature Sensing Performances of $\text{NaLa}(\text{WO}_4)_2$ Up-conversion Phosphor Co-doped with $\text{Yb}^{3+}/\text{Ho}^{3+}/\text{Tm}^{3+}$	Miao Juhong et al. 738
Preparation of Bismuth Composite $\text{Nd}^{3+}:\text{TiO}_2$ Nanofibers and Photocatalytic Hydrogen Production	Sun Dawei et al. 744
Effect of Grain Size on Magnetic Properties in Grain Boundary Diffusion NdFeB Magnet	Cheng Xinghua et al. 752
Effect of Ce^{3+} Doping Concentration on Scintillation Performance of $\text{Cs}_2\text{LiYCl}_6$ Crystal	Wang Shaohan et al. 759
Effects of Homogenizing Treatment on Microstructures and Mechanical Properties of Mg-Nd-Zn-Y-Zr Alloy	Su Zaijun et al. 768
Thermodynamic Control of Preparation of Al-Sc Alloy by Aluminothermic Reduction	Wang Yibo et al. 775
Determination of Isothermal Section of La-Nd-Fe Ternary System at 873 K by Diffusion Triple Method	Zhang Qi et al. 781
Thermodynamic Analysis of Phase Diagrams Simulated by FactSage in Process of Rare Earth Oxides Production by Spray Pyrolysis Method	Guo Xiaohui et al. 788
Preparation of La_2O_3 Powder with Different Morphology and Particle Size by Oxalate Precipitation	Liu Zefang et al. 798
Distribution Characteristics and Resource Prospects of Rare Earth Elements in Surface Sediments of the South China Sea	Wang Zhaosheng et al. 808
Difference in Flotation Behavior Between Fine-Grained Bastnaesite and Barite	Wang Chenghang et al. 816
Flotation and Process Optimization of One Rare Earth Ore in Shandong Province	Guo Chunlei et al. 823
Geological Characteristics and Metallogenetic Conditions of Maocaoyuan Rare Earth Mine in Longling County, Yunnan Province	He Li et al. 832
Mineralogical Characteristics of Aegirine Type Nb-REE-Fe Ore at Depth of East Ore in Bayan Obo	Jin Hailong et al. 840

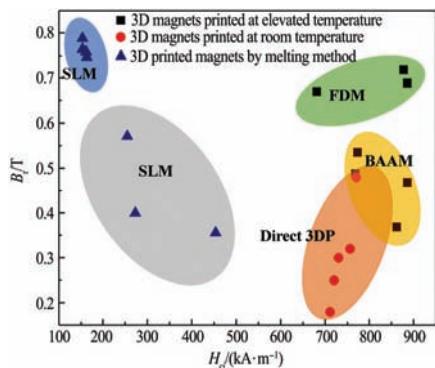
目录

综合评述

715 增材制造技术在永磁材料制备中的应用及展望

朱晓宇, 刘涛, 王磊, 王帅, 方以坤*,
朱明刚

中国稀土学报, 2020, 38(6): 715-723

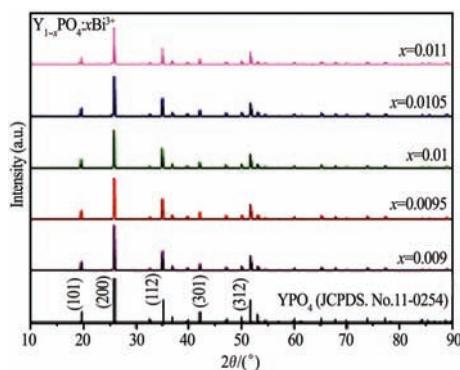


Magnetic performance distribution of 3D printed magnets prepared by three kinds of methods

稀土发光

724 UVC 荧光粉 $\text{YPO}_4:\text{Bi}^{3+}$ 的制备及发光性能表征

肖勇强, 陈鹏*, 朱月华, 张娜, 卓宁泽

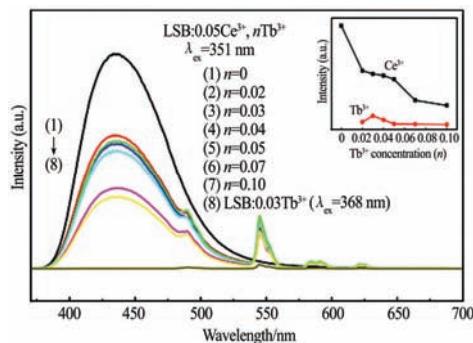


XRD patterns of $\text{Y}_{1-x}\text{PO}_4:\text{xBi}^{3+}$ with different Bi^{3+} doping concentrations

中国稀土学报, 2020, 38(6): 724-729

730 稀土双掺 $\text{LiSr}_4(\text{BO}_3)_3:\text{Ce}^{3+}, \text{Tb}^{3+}$ 荧光粉制备及发光性能研究

吴幸雅, 余冬燕*

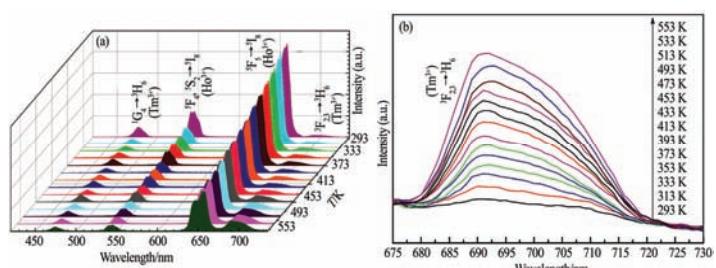


Emission spectra of LSB:0.05Ce^{3+}, nTb^{3+} ($n=0, 0.02, 0.03, 0.04, 0.05, 0.07, 0.1 \text{ mol}$) ($\lambda_{\text{ex}}=351 \text{ nm}$) and LSB:0.03Tb^{3+} ($\lambda_{\text{ex}}=368 \text{ nm}$); inset is intensity of Ce^{3+} and Tb^{3+} in LSB:0.05Ce^{3+}, nTb^{3+} depending on Tb^{3+} concentration

中国稀土学报, 2020, 38(6): 730-737

738 $\text{Yb}^{3+}/\text{Ho}^{3+}/\text{Tm}^{3+}$ 共掺杂 $\text{NaLa}(\text{WO}_4)_2$ 上转换荧光粉的温度传感特性研究

缪菊红*, 韦松, 张祎, 杨欣烨, 李林珂



Temperature-dependent up-conversion emission spectra (a) and magnified spectra in range of 675~730 nm (b) of NLW:Yb^{3+}/Ho^{3+}/Tm^{3+}

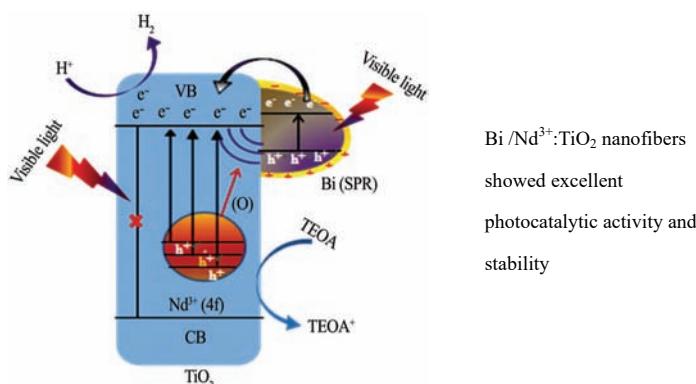
中国稀土学报, 2020, 38(6): 738-743

稀土催化

744 钷复合 Nd³⁺:TiO₂纳米纤维制备及其光催化产氢性能

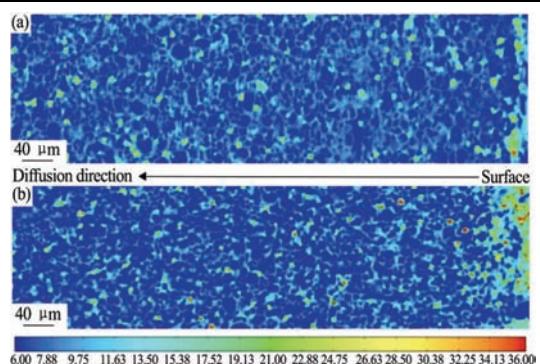
孙大伟, 李跃军, 曹铁平*, 赵艳辉,
许彦红*

中国稀土学报, 2020, 38(6): 744-751



752 晶粒尺寸对 NdFeB 晶界扩散效果的影响

程星华*, 李建, 刘涛, 周磊, 喻晓军,
李波



Dy mapping images of diffused samples in 300 μm depth from surface

中国稀土学报, 2020, 38(6): 752-758

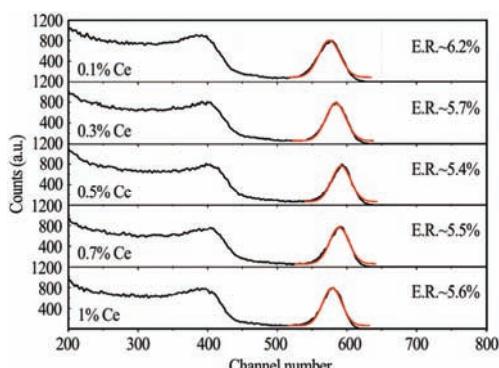
(a) Sample A1; (b) Sample A4

稀土新材料

759 Ce³⁺掺杂浓度对 Cs₂LiYCl₆ 晶体闪烁性能的影响

王绍涵, 吴云涛, 李焕英, 史坚, 郑普,
任国浩*

中国稀土学报, 2020, 38(6): 759-767

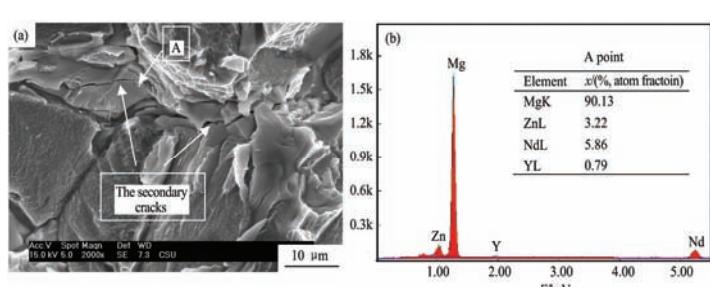


Pulse height spectrum of CLYC:0.1%~1% Ce of $\Phi 11 \text{ mm} \times 5 \text{ mm}$ excited by ^{137}Cs source

稀土金属学与火法冶金

768 均匀化处理对 Mg-Nd-Zn-Y-Zr 合金组织及力学性能的影响

苏再军, 姜辉, 肖宏超*

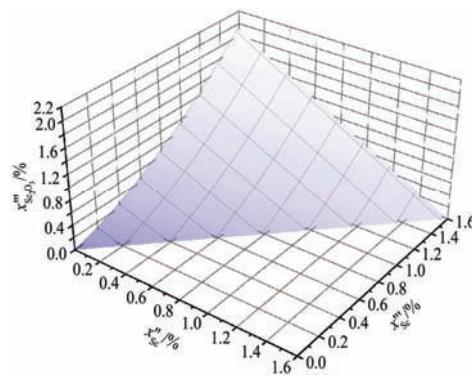


SEM and EDS images of eutectic phase along secondary crack in as-cast alloy

中国稀土学报, 2020, 38(6): 768-774

(a) SEM image; (b) EDS image

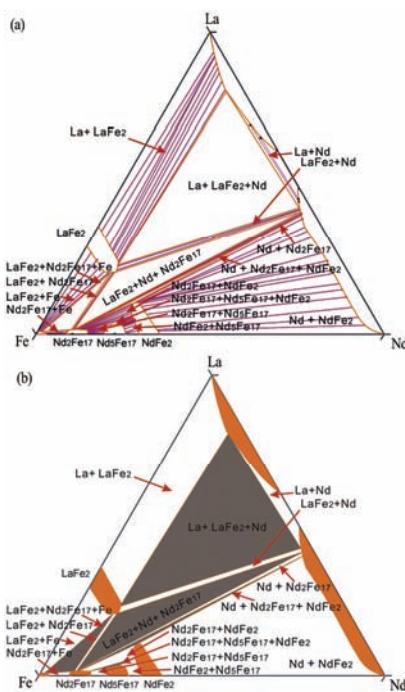
王屹波, 杨昇*, 蔡彬



Relationship between initial and final Sc content and Sc_2O_3 addition contents in final reduction

中国稀土学报, 2020, 38(6): 775-780

781 扩散偶法测定 La-Nd-Fe 三元系 873 K 等温
截面

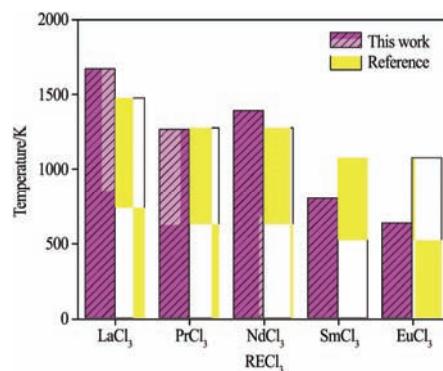
张奇, 姚青荣*, 龙乾新*, 周怀营, 王江,
饶光辉

Isothermal section of La-Nd-Fe ternary system at 873 K
(a) Isothermal section with tie line;
(b) Isothermal section without tie line

中国稀土学报, 2020, 38(6): 781-787

788 基于 FactSage 计算的稀土氯化物溶液直接
制备稀土氧化物热力学分析

郭小惠, 苏欢欢, 伍永福*, 吴文远

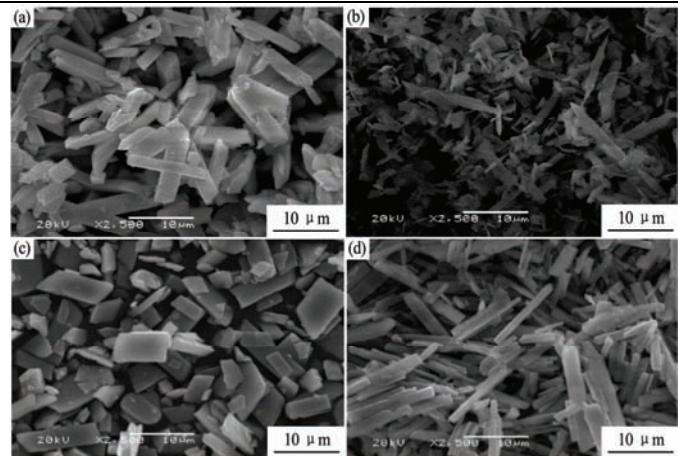


Pyrolysis reaction temperature of RECl₃ conversion into RE₂O₃

中国稀土学报, 2020, 38(6): 788-797

稀土应用

798 草酸盐沉淀法制备不同形貌粒度的 La_2O_3 粉体



刘泽芳, 刘永畅, 巫圣喜, 张贵清,
曹佐英, 曾理, 关文娟, 李青刚*

中国稀土学报, 2020, 38(6): 798-807

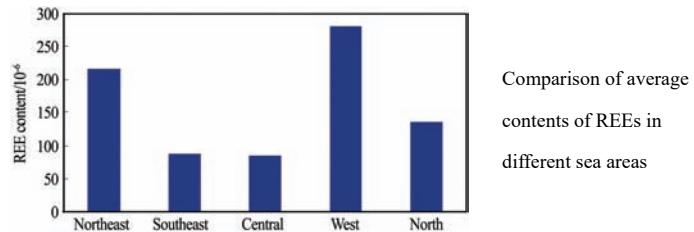
SEM of lanthanum oxalate crystal with different morphology and particle size
(a) $\text{pH}=0.4$; (b) $\text{pH}=1.6$, one time feeding; (c) $\text{LaCl}_3=0.022 \text{ mol}\cdot\text{L}^{-1}$, $\text{Na}_2\text{C}_2\text{O}_4=0.0495 \text{ mol}\cdot\text{L}^{-1}$; (d) $\text{LaCl}_3=0.11 \text{ mol}\cdot\text{L}^{-1}$, $\text{Na}_2\text{C}_2\text{O}_4=0.2475 \text{ mol}\cdot\text{L}^{-1}$

稀土地矿

808 南海表层沉积物稀土元素分布特征及资源前景

王兆生, 张盈, 张振国*, 常国民, 刘娜,
姚纪明, 夏世强, 高莲凤

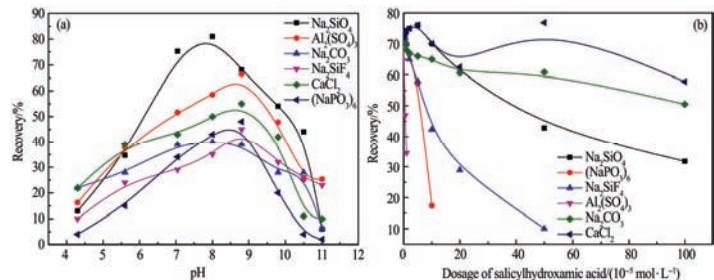
中国稀土学报, 2020, 38(6): 808-815



816 微细粒氟碳铈矿与重晶石浮选行为差异研究

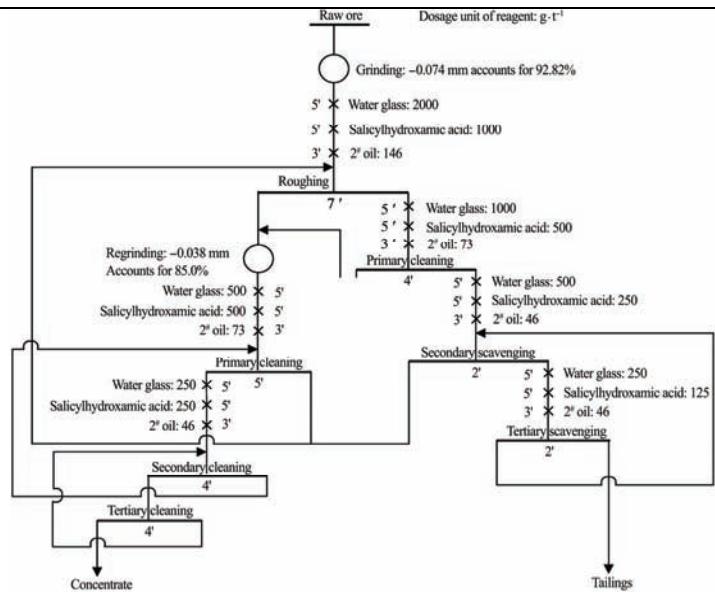
王成行, 时晗, 邱显扬*, 胡真*

中国稀土学报, 2020, 38(6): 816-822



823 山东某稀土矿浮选过程及工艺优化

郭春雷*, 王维维, 金海龙



中国稀土学报, 2020, 38(6): 823-831

832 云南省龙陵县茅草园稀土矿地质特征及成
矿条件浅析

何黎, 吕庆松*, 杨啟岳, 邢永辉, 林相荣,
杨春明, 张利

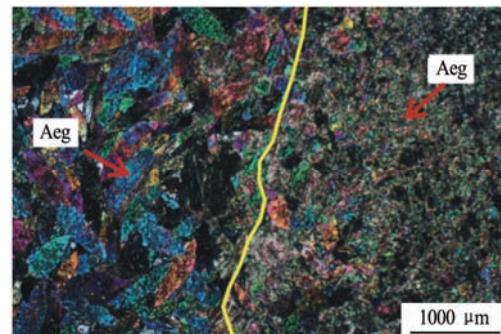


Monzogranite
weathering crust type
rare earth ore

中国稀土学报, 2020, 38(6): 832-839

840 白云鄂博东矿体深部霓石型铌稀土铁矿石
矿物学特征研究

金海龙, 杨占峰, 王其伟*, 王振江, 魏威



Features of hand
specimen and
micrograph of
aegirine type
Nb-REE-Fe ore at
depth of east ore
(Obvious
recrystallization and
boundary)

中国稀土学报, 2020, 38(6): 840-846