



ISSN 1004-0609  
CN 43-1238/TG  
CODEN ZYJXFK

# 中国有色金属学报

The Chinese Journal of Nonferrous Metals

March 2021

Volume 31 Number 3

中国科学技术协会 主管  
中国有色金属学会 主办

## 目 次

### 材料科学与工程

工艺参数对挤压铸造成形 AlSi7Mg 铝合金构件组织与性能的影响

.....姜巨福, 王 迎, 肖冠菲, 邓 腾, 刘英泽, 张 颖(531)

铝箔清洗线卷取过程横向起皱与屈曲.....于海军, 何安瑞, 陈长科, 王修亮, 左小刚(546)

载流搅拌摩擦焊对 2219 铝合金显微组织和力学性能的影响

.....白亚锋, 蒋晓青, 陈树君, 张洪玮, 韩 阳, 袁 涛(556)

掺杂 Fe 基非晶合金调控 Ni-金刚石/Al 复合材料的导热性能

.....方俊晓, 陈庆军, 高雯雯, 崔 霞, 彭新元(566)

自然时效对 AA7075 板材锯齿形屈服行为的影响.....董国疆, 孙宇飞, 樊博成, 王贵开, 赵长财(578)

7075 铝合金挡风梁热冲压成形减薄预测模型.....董晓传, 倪 炀, 蔡玉俊, 潘高峰, 袁斌先(590)

镁合金: 成分、组织与阻燃.....宋 祥, 王忠卫, 曾荣昌(598)

限制模压变形和超声喷丸复合工艺对 AZ31 镁合金表层组织及硬度的影响

.....黄庆国, 朱立华, 王宗申, 管延锦, 陈 浩, 于从潇(623)

热处理对 Mg-6Zn-xCe 合金组织与导热性能的影响.....代晓腾, 马鸣龙, 李永军, 袁家伟, 石国梁(639)

预制孪晶对 AZ31 镁合金板材高速变形行为的影响

.....刘笑霖, 毛萍莉, 王瑞峰, 王 志, 周 乐, 刘 正, 王 峰(649)

高速冲击载荷下预变形 AZ31 镁合金的流变行为及本构模型

.....刘 筱, 杨 辉, 朱必武, 胡铭月, 唐昌平, 刘文辉(659)

激光功率对铝/黄铜熔钎焊接头组织和性能的影响

.....李志勇, 周 利, 何至正, 宋晓国, 张欣盟, 冯吉才(669)

压力-速度因素对 C<sub>f</sub>/PF-Cu 复合材料载流摩擦磨损性能的影响

.....邓朝勇, 张红波, 尹 健, 熊 翔, 王 培, 孙 淼, 吴晓光, 李万千(682)

冷挤压与热时效对 GH4169 合金孔结构高温低循环疲劳寿命的影响  
.....王 欣, 胡仁高, 许春玲, 胡 博, 古远兴, 汤智慧(691)

电子束焊接工艺参数对 Ti<sub>2</sub>AlNb/TC18 接头组织与性能的影响.....刘莹莹, 李洁洁, 张 乐(699)

缩比摩擦副与 1:1 摩擦副温度和摩擦因数偏差的试验研究.....李 兵, 杨俊英, 高 飞(707)

冶金工程 • 矿业工程 • 化学化工

废汞触媒活性炭再生实验.....王盛才, 杨 琴, 张明光, 宋剑飞, 李海龙, 郭学益(715)

砷酸盐的溶解理论在含砷废水处理中的应用.....徐 蕾, 郑雅杰, 彭映林, 龙 华, 何汉兵(724)

钒渣亚熔盐法钒铬共提工艺清洁生产评价  
.....王少娜, 吕页清, 刘 彪, 杜 浩, 白 丽, 王海旭, 王新东, 李兰杰, 张 懿(736)

酸性溶液中铈的电沉积行为.....洪 标, 王友彬, 李 锋, 韦悦周, Toyohisa FUJITA(748)

高岭石与氧化铁还原焙烧过程中二氧化硅固溶体的形成机理.....王洪阳, 张晓雪, 宋少先(756)

铜冶炼渣的矿物学特征及氧压酸浸.....史公初, 廖亚龙, 苏博文, 郝家俊(765)

TBP-仲辛醇协同萃取钽铌萃余液中低浓度钽、铌和钨.....钟岳联, 邓朝勇, 石 波, 代 云, 吴理觉(775)

锡石浮选捕收剂机理研究进展.....郑其方, 刘殿文, 李佳磊, 蔡锦鹏, 申培伦, 陈红兵(785)

基于强度折减与智能算法的井下充填体强度预测.....吉 坤, 韩 斌, 胡亚飞, 吴 凡, 邱剑辉(796)

深部矿体充填开采对上盘斜坡道稳定性影响.....韩 斌, 吴 凡, 孟 科, 胡亚飞, 吉 坤, 骆禧光(806)

责任编辑：王 超，何学锋，龙怀中，李艳红

[期刊基本参数] CN 43-1238/TG\*1991\*m\*A4\*284\*zh\*P\*¥80.0\*1400\*26\*2021-03

**The Chinese Journal of Nonferrous Metals**  
**(ZHONGGUO YOUSE JINSHU XUEBAO)**

Volume 31 Number 3

(Sum 264)

March 2021

**CONTENTS**

**Materials Science and Engineering**

- Influence of process parameters on microstructure and mechanical properties of AlSi7Mg aluminum alloy components formed by squeeze casting.....JIANG Ju-fu, WANG Ying, XIAO Guan-fei, DENG Teng, LIU Ying-ze, ZHANG Ying(531)
- Transverse wrinkling and buckling of aluminum foil in coiling process of cleaning line  
.....YU Hai-jun, HE An-rui, CHEN Chang-ke, WANG Xiu-liang, ZUO Xiao-gang(546)
- Effect of electrically assisted friction stir welding on microstructure and mechanical properties of 2219 aluminium alloy.....BAI Ya-feng, JIANG Xiao-qing, CHEN Shu-jun, ZHANG Hong-wei, HAN Yang, YUAN Tao(556)
- Control of thermal conductivity of Ni-Diamond/Al composite by doping Fe-based amorphous alloy  
.....FANG Jun-xiao, CHEN Qing-jun, GAO Ji-wen, CUI Xia, PENG Xin-yuan(566)
- Effect of natural aging on Portevin-Le Chatelier effect of AA7075 sheet  
.....DONG Guo-jiang, SUN Yu-fei, FAN Bo-cheng, WANG Gui-kai, ZHAO Chang-cai(578)
- Prediction model of hot stamping thinning of 7075 aluminum alloy windshield beam  
.....DONG Xiao-chuan, NI Yang, CAI Yu-jun, PAN Gao-feng, YUAN Bin-xian(590)
- Magnesium alloys: Composition, microstructure and ignition resistance  
.....SONG Xiang, WANG Zhong-wei, ZENG Rong-chang(598)
- Effects of constrained groove pressing and ultrasonic shot peening on surface microstructure and hardness of AZ31 magnesium alloy.....HUANG Qing-guo, ZHU Li-hua, WANG Zong-shen, GUAN Yan-jin, CHEN Hao, YU Cong-xiao(623)
- Effect of heat treatment on microstructure and thermal conductivity of Mg-6Zn-xCe alloy  
.....DAI Xiao-teng, MA Ming-long, LI Yong-jun, YUAN Jia-wei, SHI Guo-liang(639)
- Influence of pre-twinning on high strain rate compressive behavior of AZ31 Mg alloy rolling sheet  
.....LIU Xiao-lin, MAO Ping-li, WANG Rui-feng, WANG Zhi, ZHOU Le, LIU Zheng, WANG Feng(649)
- Flow behavior and constitutive model for pre-deformed AZ31 magnesium alloy under high-speed impact loading.....LIU Xiao, YANG Hui, ZHU Bi-wu, HU Ming-yue, TANG Chang-ping, LIU Wen-hui(659)
- Influence of laser power on microstructure and mechanical properties of Al/brass welding-brazing joints  
.....LI Zhi-yong, ZHOU Li, HE Zhi-zheng, SONG Xiao-guo, ZHANG Xin-meng, FENG Ji-cai(669)

Effect of pressure–velocity factor on sliding friction and wear of C/PF-Cu composites  
 .....DENG Chao-yong, ZHANG Hong-bo, YIN Jian, XIONG Xiang, WANG Pei,  
 SUN Miao, WU Xiao-guang, LI Wan-qian(682)

Effects of cold expansion and aging on high-temperature low-cycle fatigue of GH4169 alloy with  
 hole structure .....WANG Xin, HU Ren-gao, XU Chun-ling,  
 HU BO, GU Yuan-xing, TANG Zhi-hui(691)

Effects of electron beam welding processing parameters on microstructure and properties of  
 Ti<sub>2</sub>AlNb/TC18 joint .....LIU Ying-ying, LI Jie-jie, ZHANG Le(699)

Experimental study on braking temperature and friction coefficient deviation between reduced and  
 1:1 friction pair.....LI Bing, YANG Jun-ying, GAO Fei(707)

**Metallurgical Engineering, Mine Engineering, Chemistry and Chemical Engineering**

Regeneration of activated carbon from waste mercury catalyst  
 .....WANG Sheng-cai, YANG Qin, ZHANG Ming-guang,  
 SONG Jian-fei, LI Hai-long, GUO Xue-yi(715)

Application of dissolution theory of arsenate in treatment of arsenic-containing wastewater  
 .....XU Lei, ZHENG Ya-jie, PENG Ying-lin, LONG Hua, HE Han-bing(724)

Assessment for cleaner production of vanadium and chromium co-extraction from vanadium slag by  
 sub-molten salt method.....WANG Shao-na, LÜ Ye-qing, LIU Biao, DU Hao,  
 WANG Hai-xu, WANG Xin-dong, LI Lan-jie, ZHANG Yi(736)

Electrodeposition of rhenium from acidic solution  
 .....HONG Biao, WANG You-bin, LI Feng, WEI Yue-zhou, Toyohisa FUJITA(748)

Formation mechanism of silica solid solution during reduction roasting of kaolinite and ferric oxide  
 .....WANG Hong-yang, ZHANG Xiao-xue, SONG Shao-xian(756)

Mineralogical characteristics and oxygen pressure acid leaching process of copper smelting slag  
 .....SHI Gong-chu, LIAO Ya-long, SU Bo-wen, XI Jia-jun(765)

Synergistic solvent extraction of Ta/Nb/W from Ta/Nb extraction raffinate by using TBP and 2-octanol as  
 extractants.....ZHONG Yue-lian, DENG Chao-yong, SHI Bo, DAI Yun, WU Li-jue(775)

A review on mechanism of flotation collector for cassiterite  
 .....ZHENG Qi-fang, LIU Dian-wen, LI Jia-lei,  
 CAI Jin-peng, SHEN Pei-lun, CHEN Hong-bing(785)

Prediction of backfill strength in underground stope based on strength reduction and intelligent algorithm  
 .....JI Kun, HAN Bin, HU Ya-fei, WU Fan, QIU Jian-hui(796)

Influence of deep orebody filling mining on stability of hanging wall ramp  
 .....HAN Bin, WU Fan, MENG Ke, HU Ya-fei, JI Kun, LUO Xi-guang(806)

(Managing Editors: WANG Chao, HE Xue-feng, LONG Huai-zhong, LI Yan-hong)

# 中国有色金属学报

(ZHONGGUO YOUSE JINSHU XUEBAO)

(月刊, 1991 年创刊)

第 31 卷第 3 期(总第 264 期) 2021 年 3 月 28 日出版

# The Chinese Journal of Nonferrous Metals

(Monthly, Started in 1991)

Volume 31 Number 3 (Sum 264), 28 March 2021

主 管: 中国科学技术协会

主 办: 中国有色金属学会

主 编: 黄伯云

副主编: 邱冠周

编辑部主任: 龙怀中

编辑部副主任: 何学锋

编 辑: 《中国有色金属学报》编辑部

410083 湖南省长沙市中南大学内

电 话: (0731)88876765, 88877197

E-mail: f-ysxb@csu.edu.cn

http://www.ysxbcn.com

http://www.tnmsc.cn

出 版: 中国科技出版传媒股份有限公司

100717 北京东黄城根北街 16 号

印 刷: 长沙市宏发印刷有限公司

国内发行: 中国邮政集团有限公司湖南省报刊发行局

邮发代号: 42-218

国外发行: 中国国际图书贸易总公司

(北京 399 信箱)

Superintended by China Association for Science and  
Technology

Sponsored by The Nonferrous Metals Society of China

Chief Editor: HUANG Bai-yun

Deputy Chief Editor: QIU Guan-zhou

Editorial Director: LONG Huai-zhong

Deputy Editorial Director: HE Xue-feng

Edited by Editorial Office of

The Chinese Journal of Nonferrous Metals

(Central South University,

Changsha, Hunan 410083, China)

Tel: +86-731-88876765, 88877197

E-mail: f-ysxb@csu.edu.cn

http://www.ysxbcn.com

http://www.tnmsc.cn

Published by China Science Publishing & Media Ltd.

(16 Donghuangchenggen North Street,

Beijing 100717, China)

Distributed abroad by

China International Book Trading Corporation

(P. O. Box 399, Beijing, China)

ISSN 1004-0609

80.00 元/册

CN 43-1238/TG

国内定价:

960.00 元/年

国 内 外 公 开 发 行

ISSN 1004-0609

