

目 次

专家论坛

人工智能推动冶金工业变革 刘 珍 1

综合论述

中国废钢资源发展战略研究 上官方钦, 郎秀萍, 周继程, 王方杰, 卜庆才, 张春霞 8
钢包内衬用耐火材料对钢中非金属夹杂物的影响 侯新梅, 刘云松, 王恩会 15

原料与炼铁

高炉喷吹兰炭的最佳配比 毕传光, 黄椿朝, 宁晓钧, 张建良, 王广伟, 彭政富 25
含 NaOH 碱性钒钛磁铁矿球团矿的制备 程相魁, 赵英涛, 赵 旭, 王 军, 黄晓丽, 蒲春雷 33
外矿型烧结矿矿相结构与冶金性能的定量关系 杜 亮, 韩秀丽, 张全胜, 周 祥, 杨宏达, 王 英 38

炼钢

超低碳 IF 钢脱氧合金化过程中夹杂物的行为 于会香, 潘 明, 杨德新 46
漩流氧枪转炉炼钢熔体的喷溅行为 李 琳, 李明明, 李 强, 邹宗树 54
帘线钢凝固过程夹杂物生成热力学及工业实践 牛凯军, 杨 文, 张立峰, 储焰平, 张洪起, 郭子强 61

压力加工

二次冷轧轧辊表面油膜厚度模型及其影响因素 钱 承, 张佳胜, 白振华, 崔亚亚, 华长春, 陈树宗 68

钢铁材料

平整压下率对 TS290 组织性能的影响 孙超凡, 方 圆, 王雅晴, 刘 伟 75
铝对高铝铁素体耐热钢组织与性能的影响 魏统宇, 邹德宁, 张英波, 陈婉婉 80
铈对低合金超高强钢马氏体相变行为的影响 蒋月月, 王昭东, 邓想涛 84
控冷工艺下组织及 M/A 岛对管线钢韧性的影响 牛延龙, 刘清友, 贾书君, 童 帅, 汪 兵, 任 毅 91
热处理工艺对 20Cr1Mo1VTiB 螺栓钢持久性能的影响 武志广, 龚雪婷, 李 鑫, 赵吉庆, 龚志华 101
铌微合金化对高铁车轴钢淬透性的影响 曹燕光, 李昭东, 丁灿灿, 张锦文, 雍岐龙, 高建兵 107

装备技术

宽厚板多点柔性压力矫直装置设计与反弯量计算 孙登月, 侯海涛, 汝文弟, 许石民 113

技术交流

冲击微动磨损条件下 304 不锈钢管道的变薄现象 李积武, 曹倩倩, 杨海茹 118
升温速率与预熔过程对含氟渣熔点影响分析 赵忠宇, 赵俊学, 谭泽馨, 屈波樵, 卢 亮, 崔雅茹 123

征稿启事

..... (7)

CONTENTS

Expert Forum

Artificial intelligence drives changes in metallurgical industry LIU Jie 1

Technical Reviews

Strategic research on development of steel scrap resources in China

SHANGGUAN Fang-qin, LI Xiu-ping, ZHOU Ji-cheng, WANG Fang-jie, BU Qing-cai, ZHANG Chun-xia 8

Effect of ladle-lining refractory on non-metallic inclusions in steel

..... HOU Xin-mei, LIU Yun-song, WANG En-hui 15

Raw Material and Ironmaking

Best ratio of semi-coke for blast furnace injection

BI Chuan-guang, HUANG Chun-chao, NING Xiao-jun, ZHANG Jian-liang, WANG Guang-wei, PENG Zheng-fu 25

Preparation of V-Ti magnetite ore basic pellet containing NaOH

..... CHENG Xiang-kui, ZHAO Ying-tao, ZHAO Xu, WANG Jun, HUANG Xiao-li, PU Chun-lei 33

Quantitative relation between mineralogical structure and metallurgical properties of sinter of import iron

ore DU Liang, HAN Xiu-li, ZHANG Quan-sheng, ZHOU Xiang, YANG Hong-da, WANG Ying 38

Steelmaking

Behavior of inclusions in ultra-low carbon IF steel during deoxidation and alloying process

..... YU Hui-xiang, PAN Ming, YANG De-xin 46

Melt splashing behavior of steelmaking converter with nozzle-twisted lance

..... LI Lin, LI Ming-ming, LI Qiang, ZOU Zong-shu 54

Thermodynamics and industrial practice of formation of inclusions during solidification of tire cord steels

..... NIU Kai-jun, YANG Wen, ZHANG Li-feng, CHU Yan-ping, ZHANG Hong-qi, GUO Zi-qiang 61

Metal Forming

Oil film thickness model of roll surface and its influencing factors during double cold rolling

..... QIAN Cheng, ZHANG Jia-sheng, BAI Zhen-hua, CUI Ya-ya, HUA Chang-chun, CHEN Shu-zong 68

Materials

Influence of temper rolling reduction rate on microstructure and mechanical properties of TS290 steel

..... SUN Chao-fan, FANG Yuan, WANG Ya-qing, LIU Wei 75

Effect of aluminum on microstructure and properties of high alumina ferritic heat resistant steel

..... WEI Tong-yu, ZOU De-ning, ZHANG Ying-bo, CHEN Wan-wan 80

Effect of trace rare earth Ce on martensitic transformation behavior of ultra-high strength low alloy steel

..... JIANG Yue-yue, WANG Zhao-dong, DENG Xiang-tao 84

Influence of microstructure and M/A island evolution on toughness of pipeline steel under controlled

cooling process NIU Yan-long, LIU Qing-you, JIA Shu-jun, TONG Shuai, WANG Bing, REN Yi 91

Effect of heat treatment process on creep-rupture property of 20Cr1Mo1VTiB bolt steel

..... WU Zhi-guang, GONG Xue-ting, LI Xin, ZHAO Ji-qing, GONG Zhi-hua 101

Effect of niobium addition on hardenability of high-speed railway axle steel

..... CAO Yan-guang, LI Zhao-dong, DING Can-can, ZHANG Jin-wen, YONG Qi-long, GAO Jian-bing 107

Equipment Technology

Design of multi-point flexible pressure straightening device for wide and heavy plates and calculation of

reverse bending amount SUN Deng-yue, HOU Hai-tao, RU Wen-di, XU Shi-min 113

Technology Exchange

Thinning of 304 stainless steel pipeline under impact fretting wear

..... LI Ji-wu, CAO Qian-qian, YANG Hai-ru 118

Effect of heating rate and pre-melting process on melting point of fluorine-containing slag

..... ZHAO Zhong-yu, ZHAO Jun-xue, TAN Ze-xin, QU Bo-qiao, LU Liang, CUI Ya-ru 123

Contribution Wanted

..... (7)