



ISSN 1006-706X

# Journal of IRON and STEEL RESEARCH

International  
钢铁研究学报 (英文版)

Volume 24 Issue 10  
October 2017

Journal Indexed in SCI, EI  
Sponsored by China Iron and Steel Research Institute Group

CONTENTS

Sintering flue gas desulfurization with different carbon materials modified by microwave irradiation .....  
..... Shan Ren , Fu-qiang Guo , Qi Zhao , Jie Yang , Lu Yao , Ming Kong (979)

Non-isothermal study of gasification process of coal char and biomass char in CO<sub>2</sub> condition .....  
..... Tao Xu , Guang-wei Wang , Jian-liang Zhang , Teng-fei Song , Run-sheng Xu (985)

Recovery of iron and copper from copper tailings by coal-based direct reduction and magnetic separation .....  
..... Chao Geng , Hua-jun Wang , Wen-tao Hu , Li Li , Cheng-shuai Shi (991)

Three-dimensional structure and micro-mechanical properties of iron ore sinter .....  
..... Wei Wang , Ming Deng , Run-sheng Xu , Wei-bo Xu , Ze-lin Ouyang , Xiao-bo Huang , Zheng-liang Xue (998)

Comparison of sintering performance of typical specular hematite ores with distinct size distributions .....  
..... Cong-cong Yang , De-qing Zhu , Ben-jing Shi , Jian Pan , Li-ming Lu , Xiao-bo Li , Ya-ping Mo (1007)

Corrosion mechanism research and microstructure analysis of Baosteel No. 3 blast furnace hearth .....  
..... Xun-fu Wang , Qi-jie Zhai (1016)

Interfacial microstructure and mechanical properties of diffusion-bonded joints of titanium TC4 (Ti-6Al-4V) and Kovar  
(Fe-29Ni-17Co) alloys ..... Ting-feng Song ,  
Xiao-song Jiang , Zhen-yi Shao , De-feng Mo , De-gui Zhu , Min-hao Zhu , Christina H. Young , Zhi-ping Luo (1023)

Effects of Al contents on microstructure and properties of hot-dip Zn-Al alloy coatings on hydrogen reduced hot-rolled steel without  
acid pickling ..... Zhi-feng Li , Yong-quan He , Guang-ming Cao , Jun-jian Tang , Xiang-jun Zhang , Zhen-yu Liu (1032)

Scaling laws and mechanical properties of nanoporous copper ..... Lin-kai Guo , Lei Wang , Dong-hui Yang (1041)

Microstructural evolution of Al-Si coating and its influence on high temperature tribological behavior of ultra-high strength  
steel against H13 steel ..... Meng-xuan Guo , Kai-xiang Gao , Wu-rong Wang , Xi-cheng Wei (1048)

Effect of cellular recrystallization on tensile properties of a nickel-based single crystal superalloy containing Re and Ru .....  
..... Zhen-xue Shi , Shi-zhong Liu , Xiao-dai Yue , Li-jie Hu , Wan-peng Yang , Xiao-guang Wang , Jia-rong Li (1059)

Erosion corrosion of low-alloy wear-resistant steels in alkaline slurry ..... Feng-ming Song , Lin-xiu Du (1065)



# Journal of IRON and STEEL RESEARCH International

## EDITORIAL COMMITTEE

### Honorary Editor-in-Chief

Rui-yu Yin (China)

### Editor-in-Chief

Zhi-ling Tian (China)

### Associate Editor-in-Chief

Han Dong (China) Jian-xin Xie (China) Xing-zhong Zhang (China)

### Advisory Board

Hong-nian Cai (China) Yong Gan (China) Hai-zhou Wang (China)

Xi-shan Xie (China) Zeng-yong Zhong (China) Jing Zhu (China)

### Editorial Board

Fujio Abe (Japan)

Visvalingam Balasubramanian (India)

Wolfgang Bleck (Germany)

Jian-chun Cao (China)

Dao-lun Chen (Canada)

Man-sheng Chu (China)

Yu-wen Cui (Spain)

Chen-hong Deng (China)

Jian-xin Dong (China)

Alan P Druschitz (USA)

Si-chen Du (Sweden)

Feng Fang (China)

Zhan-cheng Guo (China)

Ke Han (USA)

Xiao-xu Huang (China)

Qing Jiang (China)

Yong-lin Kang (China)

Hui-jun Li (Australia)

Jin-shan Li (China)

Sheng-li Li (China)

Wei Li (China)

Yan-dong Liu (China)

Yong-chang Liu (China)

Hong-ming Long (China)

Xiao-gang Lu (China)

Xiong-gang Lu (China)

Alan A. Luo (USA)

Jia-ming Luo (China)

Zhi-ping Luo (USA)

Han Ma (China)

Yong-lin Ma (China)

Xin-ping Mao (China)

Hiroyuki Matsuura (Japan)

Devesh Misra (USA)

Zuo-ren Nie (China)

Hiroshi Nogami (Japan)

Fu-sheng Pan (China)

Jun-wei Qiao (China)

Cheng-jia Shang (China)

Chang-jiang Song (China)

Prakash Srirangam (UK)

Kiet Tieu (Australia)

Cong Wang (China)

Fu-hui Wang (China)

Guo-dong Wang (China)

Shu-qi Wang (China)

Xin-hua Wang (China)

Zhao-dong Wang (China)

Bryan Webler (USA)

Kai-ming Wu (China)

Ying Wu (China)

Zhi-dong Xiang (China)

Qing-yan Xu (China)

Wei Xu (China)

Ke Yang (China)

Zhi-gang Yang (China)

Man Yao (China)

Xiao-qin Zeng (China)

Qi-jie Zhai (China)

Ji Zhang (China)

Jie-yu Zhang (China)

Li-feng Zhang (China)

Yu-zhu Zhang (China)

Ming-yi Zheng (China)

Ke-chao Zhou (China)

Shao-xiong Zhou (China)

Miao-yong Zhu (China)

**Director** Yuan-qi Wang (China)

**Deputy Director** Jun-liang Ge (China) Ruo-lin Wu (China)

---

**JOURNAL OF IRON AND STEEL RESEARCH INTERNATIONAL (Monthly, Started in 1994)**

### Editor-in-Chief

Zhi-ling Tian

### Administrated by

China Iron and Steel Association

### Sponsored by

China Iron and Steel Research Institute Group

### Edited and Published by

CISRI Boyuan Publishing Co., Ltd.

No.76 Xueyuan Nanlu, Beijing 100081, China

### Printed by

Beijing Kexin Printing Co., Ltd.

### Domestic Distribution

Beijing Newspapers and Periodicals Distribution Bureau

China Post Group (Code: 82-767)

### Abroad Distribution

China International Book Trading Corporation (M 1464)

### Copyright ©

The Editorial Board of

JOURNAL OF IRON AND STEEL RESEARCH INTERNATIONAL

Tel.: +86 10 62182295

Fax: +86 10 62182817

E-mail: jisri@cisri.com.cn; gtyjxb-e@163.com

http://www.chinamet.cn

Domestic cost ¥100

Abroad cost \$100

**ISSN 1006-706X**

**CN 11-3678/TF**

**ISSN 1006-706X**



9 771006 706173

万方数据