

**2023 年全国炉外精炼年会**  
**暨第二十届钢质量与非金属夹杂物控制学术年会**

2023 International Conference on Secondary Refining and Inclusion Controlling

<b>8 月 23 日 全天</b> (地点: 圆通楼一楼, Lobby of Yuantong Building)		
09:00-22:00	注册 Registration	
<b>8 月 24 日 上午</b> (地点: 礼堂一楼大会议室, First floor of assembly hall)		
主持人 (Chairmen)      李文秀、陈兆平      Wenxiu Li, Zhaoping Chen		
08:00-08:10	欢迎词 (Welcome Address)	包燕平 Yanping Bao USTB 王华 Hua Wang KUST
08:10-08:35	基于氧化物冶金技术的微合金化理论及其最新进展 (Micro-alloying Theory and Its Recent Advances Based on Oxide Metallurgy)	朱立光 Liguan Zhu HEBUST
08:35-09:00	炉外精炼过程中钢中非金属夹杂物控制与演变 (Evolution and Control of Non-metallic Inclusions in Steel During Secondary Refining Process)	朱苗勇 Miaoyong Zhu NEU
09:00-09:25	宝钢精准 RH 一键精炼技术开发及应用 (Development and application of one-key refining technology for Baosteel's precision RH)	马志刚 Zhigang Ma Baowu Group
09:25-09:50	基于清洁脱氧技术的炼钢新技术 (Advanced steelmaking technology based on clean deoxidation methods)	包燕平 Yanpin Bao USTB
09:50-10:05	Coffee break	
主持人 (Chairmen)      曾加庆、李树森      Jiaqing Zeng, Shusen Li		
10:05-10:30	Progress on Oxide Metallurgy Technology (氧化物冶金技术的进展)	杨健 Jian Yang SHU
10:30-10:55	洁净钢用耐火材料服役评价及应用 (Performance evaluation and application of refractories applied in clean steels)	侯新梅 Xinmei Hou USTB
10:55-11:20	首钢电工钢炼钢工序的技术进步 (The recent development of Shougang electrical steel in steelmaking process)	龚坚 Jian Gong Shougang
11:20-11:45	The functional reconstruction of active components in	王金淑

	steel slag and its heavy metal removal capability (钢渣中活性成分的功能重建及其对重金属的去除能力)	Jinshu Wang BJUT
11:45-12:10	Non-equilibrium transformation of inclusions during the refining of Al-killed clean steel (铝脱氧洁净钢精炼过程中夹杂物非平衡转变机制)	高旭 Xu Gao CSU
12:10	Lunch (圆通楼二楼叠翠厅, Diecui Hall in the 2rd floor of Yuantong Building)	
<b>8月24日 下午</b> (地点: 礼堂一楼大会议室, First floor of assembly hall)		
主持人 (Chairmen) Jong-Jin Pak, Menghuai Wu		
13:30-13:55	Application of Thermodynamic database to the steelmaking process simulations (热力学数据库在炼钢过程模拟中的应用)	In-Ho Jung SNU
13:55-14:20	TPO-An Enabler for better Quality and Higher Performance (TPO--一个提高质量和工艺优化的助力系统)	Yuyou Zhai PriMetal
14:20-14:45	In-situ observation study of Al <sub>2</sub> O <sub>3</sub> dissolution phenomena in steelmaking slag (钢渣中 Al <sub>2</sub> O <sub>3</sub> 溶解现象的原位观测研究)	Yongsug Chung TU Korea
14:45-15:10	Modelling of two-phase emulsion behaviour (两相乳化行为模型)	G. S. Gupta IISc
15:10-15:35	Understanding Behavior of Ti in Ultra-Low C Liquid Steel (Ti 在超低碳钢液中的行为)	Youn-Bae Kang POSTECH
15:35-15:50	Coffee break	
主持人 (Chairmen) Min Jiang, Huixiang Yu		
15:50-16:15	Design of mold flux for advanced high strength steels based on mixed alkali effects (基于混合碱效应的先进高强度钢模具助熔剂设计)	Jungwook Cho POSTECH
16:15-16:40	Understanding nonmetallic inclusion behavior in SEN clogging - a modelling approach (浸渍水口堵塞非金属夹杂物行为)	Menghuai Wu MUL
16:40-17:05	Development of ladle furnace automation system (LF 精炼智能系统开发)	Geunho Park HSC
17:05-17:30	High temperature physical chemistry of secondary refining slags for producing clean steels (洁净钢炉外精炼渣高温物理化学)	Joohyun Park HYU

17:30	Dinner (圆通楼三楼螺峰厅, Loufeng Hall in the 2rd floor of Yuantong Building)	
<b>8月25日 上午</b> (地点: 礼堂一楼大会议室, First floor of assembly hall)		
主持人 (Chairmen) 胡晓军、王丽君 Xiaojun Hu, Lijun Wang		
08:00-08:25	Comprehensive study for elucidation and control of non-metallic inclusions and steel microstructure through secondary refining, casting, and mechanical processing (通过二次精炼、铸造和机械加工实现非金属夹杂物和钢组织控制机理的综合研究)	H. Matsuura UTokyo
08:25-08:50	Microstructure optimization and strengthening and toughening mechanism of rare earth Ce/La on weld metal of ultra-low temperature high manganese steel (稀土添加对超低温高锰钢焊缝金属的组织优化及力学性能改善)	李光强 Guangqiang Li WUST
08:50-09:10	LF 炉智慧精炼过程自动控制系统研发与应用 (Development & Application of Intelligent Refining Process Automatic Control System for LF Furnace)	田运辉 Yunhui Tian Ramon
09:10-09:35	C56E2 轴承钢炼钢过程中 H 行为及其去除 (The H Effect Behavior in C56E2 Bearing Steel and Its Removal in Steelmaking)	刘吉刚 Jigang Liu XingCheng
09:35-09:50	Coffee break	
主持人 (Chairmen) 关勇 李海波 Yong Guan, Haibo Li		
09:50-10:15	基于大涡模拟的钢包夹杂物运动及去除行为研究 (Research on inclusion movement and removal behavior in ladle based on Large eddy simulation)	李宝宽 Baokuan Li NEU
10:15-10:40	稀土处理油套管用钢中夹杂物控制及其性能的研究 (Investigation on the control of inclusions and performance in oil casing steel by rare earth treatment)	王林珠 Linzhu Wang GZU
10:40-11:05	基于不同钢种精炼处理的生产实践 (Production practices based on refining treatment of different steel grades)	齐江华 Jianghua Qi Lianyuan
11:05-11:30	基于结晶器弯月面控热的低碳钢皮下夹杂控制研究 (Research on subcutaneous inclusion control of low carbon steel based on thermal control of mold meniscus)	唐萍 Ping Tang CQU

11:30-11:50	Removal of inclusion by fine bubbles in molten steel (钢中微小气泡去除夹杂物技术研究)	刘建华 Jianhua Liu USTB
11:50-12:00	前进中的 IJMMM (IJMMM in Progress)	陈佩仙 Peixian Chen USTB
12:00	Lunch(圆通楼二楼叠翠厅, Diecui Hall in the 2rd floor of Yuantong Building)	
<b>8月25日 下午 Section A (地点:礼堂三楼报告厅, 3th floor of assembly hall)</b>		
主持人 (Chairmen) 陈敏、史成斌 Min Chen, Chenbin Shi		
13:30-13:50	(KN) Fundamentals of a novel electrochemical processing method for desulfurizing steels (脱硫钢生产新电化学工艺技术基础研究)	Sanghoon Lee Yonsei Uni.
13:50-14:10	(KN) Thermodynamic study on the formation of some precipitations in high alloy steels (高合金钢中某些沉淀物形成的热力学研究)	Youngjo Kang Dong-A Uni.
14:10-14:30	(KN) Evolution of Inclusions in Ti-Bearing Gear Steel During Heating Process (含钛齿轮钢加热过程夹杂物演变行为)	邓志银 Zhiyin Deng NEU
14:30-14:45	Application of tracing techniques to determine the source of alumina inclusions in the clogging layer of Ti-stabilized ULC-steels (应用示踪技术确定钛稳定超低碳钢结瘤层中氧化铝夹杂物来源)	K. Thiele MUL
14:45-15:00	The impact of tramp elements on the wetting behavior of non-metallic inclusions in a medium-carbon steel (中碳钢中残余元素对非金属夹杂物润湿行为的影响)	J. Cejka MUL
15:00-15:20	(KN) Multiscale characterization and control of inclusions in steel (钢中夹杂物多尺度表征与调控)	李涛 Tao Li NCUST
15:20-15:30	Coffee break	
主持人 (Chairmen) 李建立、祝明妹 Jianli Li, Mingmei Zhu		
15:30-15:50	(KN) Effect of Nitrogen content on TiN inclusions precipitation & fatigue properties of Ti-containing steel (氮含量对含钛钢中氮化钛夹杂析出及其疲劳性能的影响)	宋生强 S. Q. Song WUST

15:50-16:10	(KN) Exploration and Practice of Hybrid Intelligent Model for Refining Process Control and Optimization (精炼过程控制与优化混合智能模型的探索与实践)	何杨 Yang He USTB
16:10-16:30	(KN) Thermodynamic Study on the Al Deoxidation Behavior of High Mn and Al content Fe-Mn-Al-O Melt (高 Mn、Al 含量 Fe-Mn-Al-O 熔体中 Mn 与 Al 相互作用参数的测定及 Mn 对 Al <sub>2</sub> O <sub>3</sub> 夹杂物形成的影响)	张杰 Jie Zhang USTB
16:30-16:40	下降管吹氩对 RH 精炼流动特性影响的水模型研究 (A water model study on the effect of down-leg argon injection on flow characteristics of RH refining)	张硕 Shuo Zhang USTB
16:40-16:50	高通量第一性原理研究 Ni 和 Cr 在铁素体和奥氏体相界面处共偏析对贫铬区和耐腐蚀性的影响机理 (High-throughput first principles study on the influence mechanism of co-segregation of Ni and Cr at the interface between ferrite and austenite on the Cr-depleted zone and corrosion resistance)	徐泽坤 Zekun Xu WUST
16:50-17:00	超声表面滚压对 TWIP 钢微观组织与力学性能影响研究 (Effect of ultrasonic surface rolling on microstructure and mechanical properties of TWIP steel)	张泽中 Zezhong Zhang GZU
17:00-17:10	CaO-Al <sub>2</sub> O <sub>3</sub> -SiO <sub>2</sub> 熔渣微观结构的深度势分子动力学研究 (Study on the Microstructure of CaO-Al <sub>2</sub> O <sub>3</sub> -SiO <sub>2</sub> Slags by Deep Potential Molecular Dynamics)	孙雨含 Yuhan SUN NCUST
17:10-17:20	表面缺陷对 TiN(100) α-Fe(100) 界面稳定性影响的第一性原理研究 (First principles study of the effect of surface defects on stability of TiN(100)/α-Fe(100) interface)	李丰 华北理工大学
<b>8 月 25 日 下午 Section B</b>		
(地点: 礼堂一楼西一厅, West hall in the 1st floor of assembly hall)		
主持人 陶镛、刘承志		
13:30-13:50	(KN) 高铝钢连铸共性技术研究 (Study on Generic Technology for High Aluminum Steel Continuous Casting)	崔衡 北科大
13:50-14:10	(KN) 铸坯清理深度对高品质汽车外板表面质量的影响 (Effect of scarfing depth on the surface quality of automobile steel sheets)	邓小旋 首钢

14:10-14:30	(KN)外部加入钛氧化物对钢中夹杂物性质影响的研究 (The effect of titanium oxide adding on inclusion characteristics)	孔辉 安工大
14:30-14:40	转炉渣与 LF 渣制备胶凝性材料基础研究 (The fundamental investigation of cementitious material from converter slag and LF slag)	李文博 攀枝花学院
14:40-14:50	RH 高效脱氢工艺的研究与应用 (Study and application of RH efficient dehydrogenation process)	雷辉 攀钢
14:50-15:10	(KN) 铜含量对 S32205 双相不锈钢中夹杂物和点蚀的影响 (Effects of Cu content on inclusions and pitting corrosion in S32205 duplex stainless steel)	侯延辉 武科大
15:10-15:30	(KN) 中间包二次氧化对钙处理钢中夹杂物的影响 (The influence of reoxidation in Tundish on inclusions in Ca treatment)	杨光维 宝武
15:30-15:40	Coffee Break	
主持人 富强、吴华杰		
15:40-16:00	(KN) 椭圆形钢包内部流场优化及夹杂物去除研究 (Optimization of flow field in an elliptical ladle and research on the inclusions removal)	陈超 太原理工
16:00-16:20	(KN) 氧化物冶金过程中 Nb-Mo-Ti 系粒子作用机制研究 (Study on microalloying mechanism of Nb-Mo-Ti particles in oxide metallurgical process)	陈伟 华北理工
16:20-16:40	(KN) 含铝钢 42CrMoA 精准钙处理研究及实 (Research and practice on precise calcium treatment of 42CrMoA steel containing aluminum)	刘建 南钢
16:40-17:00	(KN) $Al_2O_3-SiO_2-CaO$ 体系夹杂物的结晶特性分析 (Analysis on the crystallinity of $Al_2O_3-SiO_2-CaO$ system inclusions)	杨文 北科大
17:00-17:10	Fe-12Mn-1Al-0.2C 合金定向凝固硫化锰夹杂物析出行为研究 (MnS inclusion precipitation behavior in unidirectional solidified Fe-12Mn-1Al-0.2C alloy)	范越文 北科大

17:10-17:20	精炼过程中夹杂物分离动力学因素分析 (Analysis of Dynamic Factors for Inclusion Separation during Refining Process)	赵吉轩 武科大
17:20-17:30	低碱度精炼渣 MgO 含量对镁碳砖溶解行为的影响 (Effect of MgO on Evolution of Interface Structure between Low-Basicity Refining Slag and MgO-C Refractory)	于雯春 武科大
<b>8 月 25 日 下午 Section C</b> (地点: 礼堂二楼西三厅, 3 <sup>rd</sup> west hall in the 2 <sup>nd</sup> floor of assembly hall)		
主持人 刘中秋、郭志红		
13:30-13:50	(KN)钢铁铸造过程宏观偏析数值模拟预测及连铸过程快速预测初探 (Numerical Simulation and Prediction of Macro-segregation in Steel Casting Process and Rapid Prediction of Continuous Casting Process)	李军 上海交大
13:50-14:00	20MnVTiB 钢中大尺寸夹杂物形成机理 (Mechanism of Formation of Large-Size Inclusions in 20MnVTiB Oil Well Pipe Steel)	郑宏光 宝武
14:00-14:10	双相钢-精炼渣反应的影响研究 (Effect of slag-steel reaction between dual phase steel and refining slag)	于会香 北科大
14:10-14:30	(KN)低碱度渣对钢水纯净度和夹杂物控制原理和工艺选择 (Principle and Process Selection of Low Alkalinity Slag for Controlling the Purity and Inclusion of Molten Steel)	郭靖 北科大
14:30-14:50	(KN)旋流喷吹 RH 真空精炼多相流及全熔池混匀脱气反应行为研究 (Study on multiphase flow, mixing phenomenon and degassing behavior during RH swirling-flow injection refining process)	倪培远 东北大学
14:50-15:10	(KN)高性能钢中夹杂物特征调控的研究进展与思考 (Research progress & consideration on regulation of inclusion characteristics in high performance steels)	郑万 武科大
15:10-15:20	稀土 Ce 对 TRIP 钢中夹杂物和冲击性能的影响 (Effects of cerium content on the nonmetallic inclusions and impact toughness of TRIP steel)	王蓝卿 武科大

15:20-15:30	激光废气分析仪在首钢京唐 300t RH 的应用实践 (Application Practice of Laser Exhaust Gas Analyzer in Shougang Jingtang 300t RH)	王雷川 首钢
15:30-15:40	Coffee Break	
主持人 储建华、刘福海		
15:40-16:00	(KN) 精炼渣系对特殊钢洁净度的影响 (Effect of Refining Slag on the Cleanliness of Special Steel)	战东平 东北大学
16:00-16:20	(KN) 高碳钢线材夹杂物控制技术研究及应用实践 (Research and Application of the Inclusion Control Technology for High Carbon Steel Wire Rod)	赵家七 沙钢
16:20-16:40	(KN) 铝对 MnS 夹杂物离异共晶转变的影响 (The effect of aluminum on the divorced eutectic transformation of MnS inclusions)	夏云进 安工大
16:40-17:00	(KN) 电池壳用深冲钢中表面缺陷分析与冶金工艺控制 (Initiations of the surface defect in battery cups and prevention of surface defect by optimal steelmaking process)	姜敏 北科大
17:00-17:10	基于特征线法的曲面超音速拉瓦尔喷管射流运动特性研究 (Flow characteristic of supersonic jet generated by the curved supersonic Laval nozzle related to characteristic method)	刘福海 北科大
17:10-17:20	钇-氧在铁液中的热力学平衡 (Equilibrium between Yttrium and Oxygen in Liquid Iron)	康健 重庆大学
17:20-17:30	低密度钢拉伸变形过程中典型夹杂物诱导孔洞形成的机理 (The Mechanism of Typical Inclusions Induced Voids Formation in Low Density Steel during Tensile Deformation)	郭帅 武科大
<b>8 月 25 日 下午 Section D</b>		
(地点: 礼堂西侧门二楼西四厅, 4 <sup>th</sup> west hall in the 2 <sup>nd</sup> floor of assembly hall)		
主持人 陈天明、杨晓东		



13:30-13:50	(KN) 提高钢水洁净度关键技术实践 (The key technology practice of improving the cleanliness of molten steel)	曾凡政 涟钢
13:50-14:10	(KN) 铁水包脱磷工艺优化与工业试验研究 (Optimization of iron ladle dephosphorization process and industrial test research)	林路 钢研总院
14:10-14:30	(KN) 铝-氮-锰-硫对钙处理无取向硅钢夹杂物特性的影响 (Effect mechanism of aluminum-nitrogen-manganese-sulfur on inclusions characteristics of calcium-treated non-oriented Silicon Steels)	朱诚意 武科大
14:30-14:50	(KN) 基于分散及能效特性的 KR 搅拌桨形优化 (Optimization of Blade Dimension in Kanbara Reactors based on the Characterization of Slag Dispersion and Energy Efficiency)	李强 东北大学
14:50-15:00	一种 GEN3 钢在不同淬火工艺后的微观组织、力学性能和析出行为 (The Microstructure, Mechanical Properties and precipitates behavior in a kind of GEN3 steel after various quenching processes)	宁安刚 太原理工
15:00-15:10	基于分子动力学的 CaO-SiO <sub>2</sub> -B <sub>2</sub> O <sub>3</sub> 精炼渣微观结构研究 (Study on the Microstructure of CaO-SiO <sub>2</sub> -B <sub>2</sub> O <sub>3</sub> Refining Slag by Molecular Dynamics Simulation)	朱光北 华北理工
15:10-15:20	IF 钢铸坯浅表层大尺寸夹杂物分布及其与凝固钩的关系 (The distribution of macro inclusions in surface layer of IF steel slabs and the influence of hook structure)	潘宇康 北科大
15:20-15:30	Coffee break	
主持人 朱航宇、李强		
15:30-15:50	(KN) 铝脱氧钢中卷渣类夹杂物成分转变的动力学 (Kinetic study on the evolution of slag-entrained inclusions in a Al-killed steel)	王举金 北方工业大学
15:50-16:10	(KN) 冶金熔体与耐火材料相互作用的智能化研究 (Intelligent Research on Interaction Between Metallurgical Melt and Refractory Lining)	王强 武科大

16:10-16:30	(KN) 基于疲劳寿命预测的洁净钢夹杂物控制与设计 (Control and design of inclusions in clean steel based on fatigue life predictions)	顾超 北科大
16:30-16:50	(KN) 高强韧稀土钢关键技术研发及产业化 (Key Technology Research and Industrialization of High Strength and Toughness Rare Earth Steel)	于彦冲 太原理工
16:50-17:00	脱氧工艺对含铋易切削钢中夹杂物的影响 (Effect of deoxidization processes on inclusions of bismuth-containing free-cutting steel)	黄罗翼 东北大学
17:00-17:10	废钢预热包结构优化设计数值模拟 (Numerical Simulation Optimization Design of Scrap Preheating Container)	王涛涛 东北大学
17:10-17:20	碱度对电炉渣中铁元素磁选效率的影响研究 (Influence of basicity on iron elements migration and magnetic separation efficiency in electric arc furnace (EAF) slag)	刘昕 北科大
17:30	Dinner (圆通楼二楼叠翠厅, Diecui Hall in the 2rd floor of Yuantong Building)	