

## 鉄と鋼 第76年 第2号(2月号) 目次

## 次号目次案内

<b>展 望</b>	
航空機機体材料の開発動向……………伊藤 好二	
<b>解 説</b>	
セラミックスの強度と靱性……………小林 俊郎	
<b>委員会報告</b>	
チタン系金属間化合物—結晶構造と機械的性質をどう理解するか—……………古林 英一	
鉄鋼石の全鉄分析および蛍光 X 線分析—ISO/TC102 (鉄鉱石) /SC2 (化学分析) 日本委員会での検討—……………大坪 孝至	
<b>論文・技術報告</b>	
Fe <sub>2</sub> O-(CaO+MgO)-(SiO <sub>2</sub> +P <sub>2</sub> O <sub>5</sub> ) 系りん酸塩スラグと溶鉄間の硫黄分配平衡……………長林 烈, 他	連続鋳造スラブの内部割れ発生限界歪みの推定……………長田 修次, 他
酸化亜鉛および酸化ニッケルを含有する溶融 Ca-SiO <sub>2</sub> 系酸化物中の酸素の輸送現象……………雀部 実, 他	微量錫被覆を施したクロムめっき鋼板の特性……………清水 信義, 他
酸素ガス上吹きによる溶銑脱炭時のスブラッシュ発生挙動……………北村 信也, 他	低圧タービンローター用鋼の過熱脆化に及ぼす成分元素及び製造条件の影響……………勝亦 正昭, 他
取鍋内溶鋼の酸素上吹き昇熱時の Al, Si, Mn の酸化反応モデル……………樋口 善彦, 他	過熱脆化した Ni-Cr-Mo-V 鋼の延性粒界破壊と MnS の関係……………勝亦 正昭, 他
	高 Cr 高 Ni 鋼の高温クリープにおいて形成される転位下部組織に及ぼす固溶元素の効果……………近藤 義宏, 他
	圧延ステンレスクラッド鋼の接合強度特性と界面性状……………福田 隆
	Ti-6Al-4V 合金の大気中におけるフレッティング疲労強度の解析……………丸山 典夫, 他
	SUS304/SUS316L 複合材の 35% MgCl <sub>2</sub> 水溶液中における応力腐食割れ伝播挙動……………沼田 英夫, 他
	B/Al 複合材料の引張強度に及ぼす製造条件の影響……………篠原 嘉一

## ISIJ International, Vol. 30 (1990), No. 2 (February) 掲載記事概要

## Special Issue on Artificial Intelligence in Iron and Steel Production

## Artificial Intelligence in Materials Processing Operations: A Review and Future Directions (Review)

By Stavros A. ARGYROPOULOS

The evolution of artificial intelligence (AI) from its early days to the present is reviewed. The various concepts currently utilised are defined. The strides that have been made in recent years in applying expert systems to numerous engineering problems, and most notably in the area of materials processing operations, are reviewed. The rate of new applications of artificial intelligence to engineering problems is constantly increasing, as it becomes more feasible to build on earlier theoretical research. Ultimately, we can expect that artificial intelligence will be applied in all areas of human endeavour, as its benefits in terms of cost/effectiveness become more apparent. For the near future, however, one's expectations need to be more circumspect. Areas in materials processing operations that

are most promising for expansion into AI in the near future are considered.

## Expert System Building Tools

## Rapid Prototyping Tools for Real-time Expert Systems in the Steel Industry

By L. G. LOCK LEE *et al.*

The application of artificial intelligence (AI) and expert systems techniques to process management tasks within the iron and steel industry is now gaining wide acceptance. This paper describes the development and application of software tools which have been successful in significantly reducing the time required to produce real-time expert system prototypes.

BHP's SHERPA (System for HEuristic Real-time Process Assistance) is a facility which integrates modules for knowledge base development, signal processing, operator displays, on-line numerical models and data