

鉄 と 鋼 第 76 年 第 1 号 (1 月 号) 目 次

次号目次案内

新年のご挨拶—1990年—……………八木 靖浩
 平成元年鉄鋼生産技術の歩み……………細木 繁郎
特別講演
 溶鉄の Si, Al による脱酸の平衡値……………坂尾 弘
解説
 自動車用塗料の最近の進歩……………増渕 洋一, 他
論文・技術報告
 レーザラマン分光法による高炉内コークスの
 熱履歴推定法……………千野 淳, 他
 含クロム溶鋼の減圧下における脱窒の動力学
 ………………長谷川守弘
 極低炭素冷延鋼板の r 値におよぼす冷延条件の
 影響……………橋本 俊一, 他
 プラズマパウダーメルトンによる Fe-
 炭化物複合材料の作製とその特性……………安斎 正博, 他
 溶融金属浸透法による PCS 系 SiC 繊維強化ブ

リフォームワイヤの強度に与えるマトリック
 ス Al 合金の影響……………今井 義一, 他
 制御圧延, 制御冷却による中炭素鋼のフェライ
 ト・パーライト組織微細化と球状化促進効果
 の関係……………金築 裕, 他
 無方向性電磁鋼板の集合組織に基づく磁化の
 異方性……………立野 一郎
 厚肉高張力鋼の降伏挙動に及ぼす組織の影響
 ………………鹿内 伸夫, 他
 ニオブ添加鋼の高温延性に及ぼす熱履歴の影響
 ………………鎌田 芳彦, 他
 焼入れ焼もどした軸受鋼の被削性に及ぼす硬
 さの影響……………山本 重男, 他
 コバルト基鍛造合金のクリープ破断特性におよ
 ぼす粒界のジグザグ化の影響……………田中 學, 他
 Co 添化による過共析鋼線の伸線性の改善……………金築 裕

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Special Issue on Electromagnetic Processing
of Liquid Materials — Part IIElectromagnetic Processing of Liquid Materials in
Europe
(Review)

By Marcel GARNIER

Research works concerning electromagnetic processing of liquid materials began very early in Europe. Through active cooperative programs between industrial companies and universities original results were obtained which gave rise to new technologies and innovative processes. Some typical examples are given relating to electromagnetic flow control of liquid metals, manufacturing of materials in cold crucible, electromagnetic stirring in continuous casting and in ladle.

Electromagnetic Processing of Liquid Materials in
the USSR and East European Countries
(Review)

By Anatoliy Fedorovich KOLESNICHENKO

The influence of electromagnetic fields on electrically conducting liquid materials is a complex phenomenon attracting more and more interests of specialists in the

fields of metallurgy, technology, energetics, medicine, and geophysics. The major part of the phenomena concerning the movement of electrically conducting liquid media in electromagnetic fields is studied by magneto-hydrodynamics (MHD) which is comparatively a new branch of the science based on the principles of electrodynamics and mechanics of continuous media. In USSR, MHD has passed the full scale distance of the development practically covering all the known fields of the science. This discipline obliged notably, not only by its successes to the development of the MHD method for the generation of electric power, but also by the development of MHD theory and MHD technology in metallurgy and material science which have enriched MHD with new ideas and turned it into productive force helping it out of the sphere of abstractions.

The current review of basic Soviet publications obviously appears for the first time in the Western journals and demonstrates the uneasy way for MHD and the main achievements along the way of MHD developed. The extremely great value of information containing in Soviet publications on hydrodynamics of conducting media cannot be in essence concentrated in the style of a journal article. Nevertheless, it is possible to mark out the main fields, where the most significant results have been achieved.

1) Magneto-hydraulics and -hydromechanics including