

Table of Contents

Preface

The Application of Physical Simulation in Hot and Cold Rolling of Steels F. Siciliano	1
Development and Application of a Thermal Microstructure Model of Laminar Cooling of an API X70 Microalloyed Steel J.B. Wiskel, R. Karl, M. Emakpor, F. Fazeli, C. Cathcart, T. Zhou, S. Yu, D.G. Ivey and H. Henein	7
Characterization and Separation of Damage Mechanisms of Extruded Case-Hardening Steel AISI 5115 under Cyclic Axial-Torsional Loading L.A. Lingnau and F. Walther	13
Effect of Mo and Mo+Nb Additions on the Phase Transformation and Microstructure of a Developed Low-Carbon CrNiMnB Ultrahigh-Strength Steels with a Preceding Hot Deformation M. Ali, T. Alatarvas, T. Nyo and J.I. Kömi	19
Effect of Rapid Induction Tempering on the Mechanical Properties and Microstructure of Ultra-High Strength Steel O. Haiko, A. Kaijalainen, T. Iso-Junno, M. Jaskari and J.I. Kömi	29
Effect of Nitrogen Impurity on the Tensile Ductility and Impact Toughness of Al-Bearing DQP Steels P.K. Kantanen, S. Pallaspuro, M.C. Somaní, H. Tervo, A. Kaijalainen and J.I. Kömi	35
Microstructural Characteristics and Mechanical Properties of Nanostructured Bainite Processed through High and Low Temperature Ausforming and Isothermal Holding near Ms in a Medium Carbon Steel S. Ghosh, P. Kaikkonen, M.C. Somaní and J.I. Kömi	41
Assessment of Mechanical Properties and Microstructure of EUROFER97 Steel after Thermo-Mechanical Treatments G. Stornelli, A. Di Schino, R. Montanari, C. Testani and A. Varone	47
Impact of Ultra-Flash Tempering Treatment on the Microstructure and Mechanical Properties of High-Strength Carbon Steel A.S. Hamada, M. Jaskari, M. Ali, A. Kaijalainen and A. Järvenpää	53
Phenomenon-Based Model for Virtual Hot Strip Rolling J. Ilmola, J. Paananen, O. Seppälä, J. Pyykkönen and J. Larkiola	61
Hot Stamping of Heavy-Gaged - Full Development and the Effect of Press Hardening Process on the Microstructure and Mechanical Properties of 22MnB5 + NbMo Alloyed V. Braga, E.J.M. Taiss, D.T. de Almeida and A.L.V. da Costa e Silva	81
Grain Refinement in 441 Ferritic Stainless Steel: High Versus Low Ti/Al Ratio after Casting and Hot Rolling C.W. Siyasiya, J. Asante and R. Matengaifa	87
Back-Annealing of Hot Dip Galvanised Strip Steel Microalloyed with Vanadium J.S. Steyn, K.M. Banks and C.W. Siyasiya	93
Comparative Study of Quench and Partition Processes in High Si and High Al Steels V. Kurup, C.W. Siyasiya and R. Mostert	99
Thermomechanical Processing of V-N Structural Plate Steels in Low Temperature Austenite K.M. Banks and D.R.N. Maubane	105
Influence of Hot Rolling Practice and Furnace Residence Time on the Strength and Toughness of Normalised Nb-Ti-V Structural Steel Plate D.R.N. Maubane, K.M. Banks and V. Kurup	111
Medium Carbon Q&P Steel with High Product of Strength and Elongation R. Mishnev, Y. Borisova, A. Pikina, S. Gaidar and R. Kaibyshev	117
Delamination Fracture in a Medium-Carbon Low-Alloy Steel Subjected to Tempforming V. Dudko, D. Yuzbekova, S. Gaidar, S. Mironov and R. Kaibyshev	123
Effects of Pre-Strain and Tempering on Mechanical Properties in High-Strength Martensitic Steels N. Tsuchida, R. Ueji, W. Gong, T. Kawasaki and S. Harjo	129

Effect of Pressure on High-Temperature Oxidation of Ferritic Stainless Steels R. Spotorno and P. Piccardo	135
Tribological Behaviour of Low Temperature Plasma Assisted Carburized 316 L Steel Produced by L-PBF Technique A. Lanzutti, F. Sordetti, M. Magnan, E. Vaglio, A. Varone, R. Montanari, C. Verona and E. Pakhomova	141
Recent Development of Hot-Rolled AHSS for Lightweight Chassis J. Lee, S.I. Kim and Y. Im	147
Effect of Thermomechanical Rolling on Mechanical Properties of TRIP-Aided Steel Sheet J. Kobayashi, T. Kimura, S. Kudo, G. Kojima, T. Hojo, S. Kuramoto and G. Itoh	153
Prediction of TTR Diagrams via Physically Based Creep Simulations of Martensitic 9-12% Cr-Steels L. Witzmann, F. Riedlsperger, J. Mergl, G. Zuderstorfer, B. Krenmayr and B. Sonderegger	159
Influence of the Holding Thickness and Process in the Microstructure and Mechanical Properties of a Microalloyed 380 MPa Structural Steel J.A.C. Cohn, A.L. de Souza, N. Isasti, P. Uranga, P. Haddad, M.A. Rebellato and A.A. Gorni	167
Application of CALPHAD for the Prediction of Matrix Phase Transformations in Steel J. Kreyca, A. Schwarz-Gsxner and S. Zamberger	173
Towards High Strength-Ductility Balance Using Double Annealing Cycles A. Arlazarov, J.M. Pipard, N. Kabou, P. Targy and M.O. Thénot	179
Quench and Bainite (Q&B) Thermal Cycle as an Alternative to Standard Quench and Partitioning (Q&P) Annealing to Produce AHSS A. Arlazarov, J.M. Pipard, N. Kabou, P. Targy and M.O. Thénot	185
Importance of through Hardening of Low-Alloy High Performance Martensitic Steels for Large Section Applications M.C. Rupinen, A.J. Clarke and J.G. Speer	191
Effects of Substrate Microstructure and Chemical Composition on Liquid Metal Embrittlement in Galvanized 3rd Generation AHSS J.G. Speer, D. Bhattacharya, J.A. Colburn and J. Klemm-Toole	199
Double Soaking of Medium Manganese Steels E. De Moor, A. Glover, J. Mueller, J.G. Speer and D.K. Matlock	207
On High Performance Steels for Fasteners H.C. Lu, J. Hu, X.L. Yang, C.D. Hu, W. Shi and H. Dong	213
Design and Properties of Hot Rolled Tough Carbide Free Bainitic Steels R. Rana, E. Cordova-Tapia, L. Morales Rivas and C. Garcia-Mateo	219
Low Temperature Hot Press Forming of a Zinc Coated Third Generation Advanced High Strength Steel R. Rana, T. Kop, P. Beentjes and E. van der Aa	225