

Table of Contents

Foreword

Effect of Interpass Time on the Hot Rolling Behaviour of Microalloyed Steels J.J. Jonas	3
Microalloyed Strip Steels for the 21st Century A.J. DeArdo	15
Modelling the Austenite Decomposition in Steel on a Physical Basis S. van der Zwaag	27
Alternatives to the Ferrite-Pearlite Microstructures H.K.D.H. Bhadeshia	39
The Role of Microstructure in Toughness Behaviour of Microalloyed Steels J.M. Rodriguez-Ibabe	51
The Production and Mechanical Properties of Ultrafine Ferrite P. Hodgson, M.R. Hickson and R.K. Gibbs	63
Modelling Strain Induced Precipitation of Niobium Carbonitride during Hot Rolling of Microalloyed Steel C.M. Sellars	73
Microalloyed Forging Steels D.J. Naylor	83
Microstructural Change during the Hot Working of As-Cast Austenite R. Priestner	95
Modelling of Microstructure and Texture during Annealing of Titanium Alloyed Interstitial Free Steels D. Artymowicz, W.B. Hutchinson, P.J. Evans and G.J. Spurr	105
Recrystallization Kinetics of Microalloyed Steels Determined by Two Mechanical Testing Techniques K. Airaksinen, L.P. Karjalainen, D. Porter and J. Perttula	119
Effect of the Chemical Composition on the Peak and Steady Stresses of Plain Carbon and Microalloyed Steels Deformed under Hot Working Conditions J.M. Cabrera, J.J. Jonas and J.M. Prado	127
Effect of Coarse γ Grain Size on the Dynamic and Static Recrystallisation during Hot Working in Microalloyed Nb and Nb-Ti Steels A.I. Fernández-Calvo, F.J. Perosanz, B. López and J.M. Rodriguez-Ibabe	135
The Influence of Roughing Strain and Temperature on Precipitation in Niobium Microalloyed Steels after a Finishing Deformation at 900°C E.S. Siradj, C.M. Sellars and J.A. Whiteman	143
Influence of Processing Conditions and Alloy Chemistry on the Static Recrystallisation of Microalloyed Austenite E.J. Palmiere, C.I. Garcia and A.J. DeArdo	151
Comparison of the Deformation Characteristics of a Ni-30wt% Fe Alloy and Plain Carbon Steel P.J. Hurley, B.C. Muddle, P. Hodgson, C.H.J. Davies, B.P. Wynne, P. Cizek and M.R. Hickson	159
Combined Effect of Nb and Ti on the Recrystallisation Behaviour of Some HSLA Steels F.J. Perosanz, B. López and I. Gutiérrez	167
Effect of Composition and Prior Austenite Deformation on the Transformation Characteristics of Ultralow-Carbon Microalloyed Steels P. Cizek, B.P. Wynne, C.H.J. Davies, B.C. Muddle, P. Hodgson and A. Brownrigg	177
Nb and the Transformation from Deformed Austenite M. Onink, T.M. Hoogendoorn and J. Colijn	185
The Effect of the Austenitisation Temperature on the Transformation Kinetics of an Nb-Containing Steel T.A. Kop, P.G.W. Remijn, J. Sietsma and S. van der Zwaag	193
Effect of Retained Strain on the Microstructural Evolution during the Austenite to Ferrite Transformation R. Bengochea, B. López and I. Gutiérrez	201

Transformation Behaviour and Related Mechanical Properties of B-Added ULC- and IF Steels	
G. Krielaart, M. Baetens, S. Claessens, D. Vanderschueren and Y. Houbaert	209
The Influence of Aluminium and Silicon on Transformation Kinetics in Low Alloy Steels	
M.F. Eldridge and R.C. Cochrane	217
Refinement of Ferrite-Pearlite Structures through Transformation from Heavily Deformed Austenite in a Low Carbon Si-Mn Steel	
S. Torizuka, O. Umezawa, K. Tsuzaki and K. Nagai	225
Effect of the Microalloying Elements on Nucleation and Growth Kinetics of Allotriomorphic Ferrite in Medium Carbon-Manganese Steels	
C. García de Andrés, C. Capdevila and F.G. Caballero	231
The Effect of Si on the Microstructural Evolution of Discontinuously Cooled Strip Steels	
E.V. Pereloma, I.B. Timokhina and P. Hodgson	237
Acicular Ferrite Microstructures and Mechanical Properties in a Low Carbon Wrought Steel	
M. Díaz-Fuentes, I. Madariaga and I. Gutiérrez	245
Stability of Retained Austenite in a Nb Microalloyed Mn-Si TRIP Steel	
D.Q. Bai, A. Di Chiro and S. Yue	253
Influence of Coiling Temperature on Toughness of Hot Rolled Microalloyed Steels	
F. Leysen, J. Neutjens, K. Mols, S. Vandeputte and Y. Houbaert	263
Morphology and Mechanical Properties of Bainitic Steels Deformed in Unrecrystallized Austenite Region	
K. Fujiwara and S. Okaguchi	271
Process History, Microstructure and Weldability Interactions in Microalloyed Steels	
D.J. Egner and R.C. Cochrane	279
Low Cycle Fatigue Behaviour of a Continuously Cooled V-Bearing Microalloyed Steel	
P.C. Chakraborti and M.K. Mitra	287
The Role of Carbon in Enhancing Precipitation Strengthening of V-Microalloyed Steels	
S. Zajac, T. Siwecki, W.B. Hutchinson and R. Lagneborg	295
Hydrogen Induced Cracking Processes in Structural Microalloyed Steels Characterization and Modelling	
J.A. Alvarez Laso and F. Gutiérrez-Solana	303
Precipitation of NbC and Effect of Mn on the Strength Properties of Hot Strip HSLA Low Carbon Steel	
V. Thillou, M. Hua, C.I. Garcia, C. Perdrix and A.J. DeArdo	311
The Effect of Mo in Si-Mn Nb Bearing TRIP Steels	
M. Bouet, J.H. Root, E. Es-Sadiqi and S. Yue	319
Effect of Niobium on the Mechanical Properties of TRIP Steels	
W. Bleck, K. Hulka and K. Papamentellos	327
Effect of Microalloying and Thermomechanical Processing on the Structure and Mechanical Properties of Constructional Steel	
G.E. Kodjaspirov	335
Development Trends in HSLA Steels for Welded Constructions	
K. Hulka and F. Heisterkamp	343
Cleavage Fracture Micromechanisms in Ti, Ti-V and C-Mn-B Microalloyed Bainitic Steels	
A. Echeverría, M.A. Linaza and J.M. Rodríguez-Ibabe	351
An Integrated Model for Microstructural Evolution in the Hot Strip Mill and Tensile Properties Prediction of Plain and Microalloyed C-Mn Hot Strip	
M. Piette and C. Perdrix	361
Modelling the Hot Working of Simple Geometries Employing Physical-Based Constitutive Equations and the Finite Element Method	
M. Bini, J.M. Cabrera and J.M. Prado	369
Modeling the Critical Strain for the Initiation of Dynamic Recrystallization during the Hot Strip Rolling of Niobium Microalloyed Steels	
F. Siciliano and J.J. Jonas	377
Numerical Simulation of Temperature Distribution and Cooling Rate in Ship Profiles during Water Spray Cooling	
V. Olden, C. Thaulow, H. Hjerpetjonn, K. Sørli and V. Osen	385

Statistical Modelling of Mechanical Properties of Microalloyed Steels by Application of Artificial Neural Networks	
C. Dumortier, P. Leher, P. Krupa and A. Charlier	393
Microstructural Evolution during Induction Hardening Heat Treatment of a Vanadium Microalloyed Steel	
A.L. Rivas and G.M. Michal	403
Microalloying and a New Post Forging Treatment of Medium Carbon Steels	
I. González-Baquet, R. Kaspar, J. Richter, G. Nussbaum and A. Köthe	411
Acicular Ferrite Microstructures and Mechanical Properties in a Medium Carbon Forging Steel	
I. Madariaga and I. Gutiérrez	419
Effect of Vanadium Alloying on the Precipitation Reactions during Pearlite Formation in Medium and High Carbon Steels	
G. Fourlaris	427
Warm Forging of a Vanadium Microalloyed Steel	
C. García, J.L. Romero and J.M. Rodríguez-Ibabe	435
Microstructural Characterization and Structure/Property Relations of Microalloyed Medium Carbon Steels with Ferrite-Bainite/Martensite Microstructure	
G. Nussbaum, J. Richter, A. Gueth, A. Koethe, R. Kaspar and I. González-Baquet	443
Induction Heating of Microalloyed Forging Steels	
W.F. Peschel	451
The Hot Ductility of V, Nb/V and Nb Containing Steels	
B. Mintz and R. Abushosha	461
The Influence of Composition on the Hot Cracking Susceptibility during Casting of Microalloyed Steels Processed to Simulate Thin Slab Casting Conditions	
D.N. Crowther, M.J.W. Green and P.S. Mitchell	469
Hot Ductility of Certain Microalloyed Steels under Simulated Continuous Casting Conditions	
L.P. Karjalainen, H. Kinnunen and D. Porter	477
The Effects of Ti and S in Direct Rolled Thin Slab Cast Low Carbon Steel	
L.D. Frawley and R. Priestner	485
Precipitation of TiN and (Ti,Nb)(C,N) during Solidification, Cooling and Hot Direct Deformation	
A. Köthe, J. Kunze, G. Backmann and C. Mickel	493
Influence of Thin Slab Casting on the Properties of Microalloyed Steel for High Cold Forming Requirements	
B. Engl and C. Klinkenberg	501
Effect of Additional Elements on the Morphology of TiS in Steels during Solidification	
Y. Ouchi, K. Oikawa, I. Ohnuma and K. Ishida	509
Eutectic Precipitation of (TiNbV)(CN) in Cast, Microalloyed Low-C Austenite and Effects of Reheating	
P.H. Li, A.K. Ibraheem and R. Priestner	517
Recrystallization in Ultra Low Carbon (ULC) Steel: Influence of the As-Deformed Microstructure and Texture	
B. Verlinden, I. Samajdar, P. van Houtte and L.A.I. Kestens	527
Effect of Al Content on r-Value and Recrystallization Texture of B-Bearing Al-Killed Steel Sheets	
Y. Funakawa, T. Inazumi, Y. Hosoya and T. Murayama	535
Effect of Boron Addition on the Dynamic Strain Aging Behavior of a Medium Carbon Steel Wire Rod	
B.H. Cao, J.J. Jonas, P.R. Hastings and N. Nickolopoulos	543
Towards a Controlled Bake Hardening by Numerical Calculation of the Precipitate Behaviour during Continuous Annealing of TiNb and Nb Alloyed IF BH Steels	
R.A. Hubert, S. Vandeputte, A. Van Snick and C. Xhoffer	551
Simulation of Hot-Dip Galvanizing for Automotive Applications: Requirements for Modern Steel Product Design	
A. Pérez-Tomás, L.J. Andrés, B. Fernández, I. González and J.M. Puente	559
Influence of Bake Hardenability on the Properties of the IF, BH and Isotropic Sheet Steels	
J. Janovec, F. Mohelsky and J. Ziegelheim	567

