

Table of Contents

Preface

Model Predictive Control of the Punch Speed for Damage Reduction in Isothermal Hot Forming

M. Bambach and M. Herty 1

Additive Manufacturing Assisting the Design of Closed - Die Forgings

S. Szczepanik and P. Nikiel 7

Further Development of Process Maps for TRIP Matrix Composites during Powder Forging

M. Kirschner, S. Guk, R. Kawalla and U. Prah 15

Autonomous Interpretation of the Microstructure of Steels and Special Alloys

B. Mulewicz, G. Korpala, J. Kusiak and U. Prah 24

A Numerical Model for the Prediction of Microstructure Distribution across the Thickness of Quenched Steel Plates

J. Gawad, I. Iaconeta, S.P. Bhogireddy, P. Hernaut, A. Lebedev, G. Wierink and B.C. de Cooman 32

Effect of Spheroidization Annealing on Pearlite Banding

S. Guk, E. Augenstein, M. Zapara, R. Kawalla and U. Prah 40

A Simulation-Based Approach to Predict the Springback Behavior of Ultra-High Strength Spring Strips

K. Richter, F. Reuther and R. Müller 48

Hot Deformation Behaviour and Processing Maps of an as-Cast Mg-6.8Y-2.5Zn-0.4Zr Alloy

M. Ullmann, M. Schmidtchen, K. Kittner, T. Henseler, R. Kawalla and U. Prah 57

Trends and Solutions for Future Steel Grade Development

A. Rimnac and T. Pfatschbacher 66

Application Specific Microstructure Development in Microalloyed Bainitic Hot Strip

M. Menzel, A. Höhne, G. Gevelmann, A. Tomitz, U. Prah and W. Bleck 76

Flexible Hot Rolling of Extruded Shapes of Aluminum Alloy EN AW-6082

O. Grydin, N. Sotirov, A. Samsonenko, N. Biba, A. Andreiev, M. Stolbchenko, T. Behr, I. Frolov and M. Schaper 85

Modeling of Microstructural Evolution in the Hot Rolling Process of Fe-16Cr-4Mn-4Ni-0.05C-0.17N Austenitic Stainless Steel

M. Turdimatov, A. Nam, R. Kawalla and U. Prah 93

Simulation Assisted Process Development for Tailored Forming

B.A. Behrens, M. Bonhage, D. Bohr and D. Duran 101

Simulation-Based Investigation of the Influence of Process Parameter Deviations on the Quality of Clinch Connections with Preformed Hole

B. Maier, M. Klingler, S. Böhm and B. Awiszus 112

Development of a Friction Welded Joint for Future Industrial Application

N. Schubert, A. Sterzig, R. Mauermann, S. Hilbers, P. Kolbe and C. Kuhn 119

Approach for the Development of Forming Tools for Radial Rotation Profile-Forming

R. Laue, S. Härtel and B. Awiszus 125