

Table of Contents

Preface

Advanced Aerospace Metals Requirements and Characteristics - An Overview

F.H. Froes, C. Suryanarayana, W. Quist, E.J. Lavernia, B.I. Bondarev, N.F. Anoshkin, I.S. Polkin, O.K. Fatkullin, V. Samarov and A.B. Notkin 1

Materials for Advanced Aerospace Applications

A.R.C. Westwood 39

Aerospace Applications of Advanced Aluminum Alloys

D.J. Chellman and S.L. Langenbeck 49

Advanced Ti₃Al-Base Alloy Property Comparison

R.G. Rowe 61

Advances in Steels for Aerospace Applications

M.G.H. Wells 71

Advanced Aluminum Aerospace Alloys in the USA - An Overview

J.S. Benjamin 81

Advances in Titanium Alloys

S.R. Seagle and J.R. Wood 91

Advances in Cost Effective Processing of Titanium

O.E. Nelson 103

Powder Metallurgy of Advanced Titanium Alloys

W.T. Nachtrab, P.R. Roberts and H.A. Newborn 115

Design of a Forging Processing Route for a Gas Turbine Compressor Disc in IMI 834

G.S. Clark 141

Nanometer Scale Materials - Characterization and Fabrication

J.S. Murday, R.J. Colton and B.B. Rath 149

Nanostructured Crystalline and Amorphous Solids

J. Weissmüller, R. Birringer and H. Gleiter 161

Advanced Aerospace Alloys via Rapid Solidification

L.A. Davis 171

Recent Developments in Superalloy Melting Technology

A. Mitchell 177

Rebirth of Mechanical Alloying

J.J. de Barbadillo 187

Kinematics of the Mechanical Alloying Process

M. Bodart, D. Brenet and F. Moret 197

Advances in Plasma Melting Technology

R. Eschenbach and W. Hoffelner 205

Thermodynamic Properties and Crystal Growth of Undercooled Liquid Alloys

F. Sommer and M. Müller 217

Modelling of the Hot-Working of High Performance Alloys

R.W. Evans 227

The Simulation of Single Crystal Turbine Blade Solidification

J.-. Desbiolles, T. Imwinkelried, M. Rappaz, S. Rossmann and P. Thévoz 241

High Performance Al Alloy by Cryogenic Milling

K. Asboll and E. Hellum 253

Wet Powder Pouring

A. Ruder, H.P. Buchkremer, R. Hecker and D. Stöver 259

Advances in High Performance P/M Materials and Processes

E.J. Dulis, J.H. Moll and W. Stasko 263

Advanced Aluminum Alloy Powders

P. Smith 273

Fracture Toughness and Fatigue Crack Growth of Intermetallics and Continuous Fibre Reinforced Titanium Based Alloys

P. Bowen 279

Aerospace Applications of Intermetallics D.J. Duquette and N.S. Stoloff	289
Designing New Multi-Phase Intermetallic Materials Based on Phase Compatibility Considerations S. Naka and T. Khan	305
The Production of Nickel Aluminide (NiAl) by Various Routes N.J.E. Adkins and G.P. Yiasemides	315
Environmental Effects in Titanium Aluminides Alloys D. Eliezer and F.H. Froes	321
Processing of Fiber Reinforced Titanium Composites P.R. Hoffman, J. Henshaw and M. Mitnick	329
The World Won't Beat a Path to Your Door D.M. Schuster	337
Coating Particulate SiC in Aluminum Metal Matrix Composites E. Nyberg	349
Development of Cast Aluminium Metal Matrix Composites P. Davies, J.L.F. Kellie and J.V. Wood	357
An ODS Material with Outstanding Creep and Oxidation Properties above 1100°C B. Kazimierzak, J.M. Prignon and R.I. Fromont	363