

Contents

I. Intermetallics

Modeling of Combined High-Temperature Oxidation and Nitridation under Isothermal and Thermal-Cycling Conditions <i>A. Schimke, S.-Y. Chang, U. Krupp, H.-J. Christ, Universität Siegen (D)</i>	3
High Temperature Low Cycle Fatigue and Fatigue Crack Growth Behaviour of the Udimet 720 Li Alloy <i>M. Marchionni, G. Onofrio, CNR-TeMPE, Milano (I); A. Fischersworring-Bunk, BMW-RR, Dahlewitz (D); N. Järvsträt, VAC, Trollhattan (S)</i>	9
Crack Growth and High Temperature Thermal Stability of INCONEL Alloy 725 <i>S. Mannan, S. Patel, Special Metals Corporation, Huntington, WV (USA); J. Dong, X. Xie, University of Science and Technology Beijing (VRC)</i>	15
Can the High Temperature Tensile Strength of Nickel-base Superalloys be Improved by Pre-rafting ? <i>U. Tetzlaff, H. Mughrabi, Universität Erlangen-Nürnberg, Erlangen (D)</i>	22
FE-Simulation of the Initial Stages of Rafting in Nickel-Base Superalloys <i>H. Biermann, H. Mughrabi, Universität Erlangen Nürnberg, Erlangen (D); H. Feng, Apt. 319, 261 Platts Lane, London, Ontario N6H 4P5 (CDN)</i>	28
Precipitation of Gamma Prime Phase of Nickel-Base Superalloy in Electric Field <i>Y. Yang, Q. Zhang, Z. Hu, Chinese Academy of Sciences Shenyang (VRC)</i>	34
TEM Measurements of Phase Compositions and Lattice Misfits in the Dendritic Macrostructure of Single Crystal Nickel-base Superalloy CMSX-10 <i>C. Schulze, M. Feller-Kniepmeier, Technische Universität Berlin (D)</i>	41
An Overview of M_d –Number Calculations as a Tool for Phase Stability Prediction in Ni-Base Superalloys <i>F. Pyczak, H. Mughrabi, Universität Erlangen Nürnberg (D)</i>	47
Development of New PM Superalloys for High Temperature Applications <i>D. Locq, M. Marty, ONERA, A. Walder, P. Caron, ONERA, Châtillon Cedex (F)</i>	52
Investigation of the Nucleation Mechanism of Dynamic Recrystallization in Alloy 800H <i>X. Wang, E. Briünger, G. Gottstein, RWTH Aachen (D)</i>	58
Analysis Of Cutting Direction When High Speed Ball Nose End Milling A Nickel Based Superalloy <i>E.-G. Ng, D. K. Aspinwall, R. C. Dewes, University of Birmingham (UK); D. W. Lee, Pusan National University (ROK)</i>	64

The Effect Of Cutting Environments When High Speed Ball Nose End Milling Inconel 718 <i>E.-G. Ng, D. K. Aspinwall, R. C. Dewes, University of Birmingham (UK); D. W. Lee, Pusan National University (ROK)</i>	71
Evaluation of an Arc Saw for the Machining of Inconel 718 Using Statistically Designed Experiments <i>M. A. Paul, D. K. Aspinwall, University of Birmingham (UK)</i>	77
Intricate Shape Superalloy VADER-Ingot for Integrated Rotors with Elevated Properties <i>L. N. Beliantchikov, V. A. Grigorian, Moscow State Institute of Steel and Alloy-Technological University (RUS).....</i>	83
Superductile Nickel-Based Super-Alloys Processed By Freezed-Up-Ingot (FUI) Method <i>L. N. Beliantchikov, V. A. Grigorian, Moscow State Institute of Steel and Alloy-Technological University (RUS).....</i>	87
CBED-Measurement of Residual Internal Strains in the Neighbourhood of TCP-Phases in Ni-Base Superalloys <i>F. Pyczak, H. Mughrabi, Universität Erlangen Nürnberg (D).....</i>	91
Influence of Secondary Precipitates on Strength of Single Crystals of Ni-Based Superalloys <i>K. Kakehi, A. Morioka, Tokyo Metropolitan University (J)</i>	96
CRSS-Modelling at Elevated Temperatures: A Comparison of Three SC Superalloys <i>W. Österle, D. Bettge, Federal Institute for Materials Research and Testing, Berlin (D)....</i>	102
Microstructural Modifications and High-Temperature Strength of Monocrystalline Nickel-Base Superalloys <i>H. Mughrabi, U. Tetzlaff, Universität Erlangen Nürnberg (D)</i>	108
Solidification & Grain Structure Simulation of an Equiaxed Superalloy Investment Casting <i>M. Balliel, ABB Alstom Technology Ltd, Baden-Daettwil (CH); D. Ma, F. Hediger, ACCESS e.V. Aachen (D)</i>	115
II. Superalloys	
Inclusion Behaviour During Vacuum Arc Remelting of Nickel Based Superalloys <i>W. Zhang, P. D. Lee, M. McLean, Imperial College, London (UK)</i>	123
Fatigue Crack Propagation in Two γ -TiAl Sheet Alloys <i>P. Hagedener, R. Pippan, B. Tabernig, University Leoben (A); W. Knabl, Plansee AG, Reutte (A); H. Clemens, Universität Stuttgart (D)</i>	129
Control of Fully Lamellar Microstructures in a γ -TiAl Based Alloy <i>D. Zhang, Max-Planck-Institut für Metallforschung, Stuttgart (D); V. Güther, GfE-Metalle und Materialien GmbH, Nuremberg (D); N. Eberhardt, Montanuniversität, Leoben (D); H. Kesler, Plansee AG, Reutte (A); H. Clemens, Universität Stuttgart (D)</i>	134

Synthesis of Intermetallic Alumina Composites with Interpenetrating Phases by Reactive Metal Infiltration <i>A. Casagrande, G. P. Cammarota, L. Ceschini, University of Bologna (I)</i>	140
Constitution, Microstructure and Mechanical Properties of Ternary Fe-Al-Mo Alloys <i>M. Eumann, M. Palm, G. Sauthoff, Max-Planck-Institut für Eisenforschung GmbH, Düsseldorf (D)</i>	146
Laser Chemical Synthesis of High-Melting Compounds on the Surface of Metals <i>T. Khatko, Physical Technical Institute, Minsk (RUS)</i>	154
Intermetallic Phases in Fe-Nd-B-Al Diffusion Couples <i>A. Luedtke, S. Burr, B. Stahl, G. Schneider, University of Applied Science Fachhochschule Aalen (D); R. Harris, The University of Birmingham (UK)</i>	159
Strain Ageing Phenomena and Fracture Behaviour of Two-phase γ -titanium Aluminides <i>U. Christoph, F. Appel, U. Lorenz, M. Oehring, GKSS Research Centre, Geesthacht (D)</i>	164
Dispersion Strengthened Al-Mo Alloy by Laser Surface Alloying: Study of the Crystallographic Structure <i>X. Song, A. Almeida, R. Vilar, Instituto Superior Técnico, Lisboa (P)</i>	169
Effects of Dislocation Dynamics and Microstructure on Crack Growth Mechanisms in Two-Phase Titanium Aluminide Alloys <i>U. Lorenz, M. Oehring, F. Appel, GKSS Research Centre Geesthacht (D)</i>	175
Composite Powders Based on Metal Silicides FeSi_2 and MoSi_2 for Thermal Spraying <i>I. Morgenthal, R. Scholl, Fraunhofer Institute for Applied Materials Research, Dresden (D); B. Wielage, S. Steinhäuser, G. Reisel, T. Schnick, Chemnitz University of Technology, Chemnitz (D)</i>	181
Intermetallic Phase Formation in Cold Rolled Al-25Ti Bulk Multilayered Structures <i>H. Sieber, University of Erlangen-Nürnberg (D)</i>	188
Effect of the Alloy Microstructure on the Oxidation Behaviour of TiAl Based Alloys <i>P. Pérez, Joint Research Centre of the European Commission, Ispra (I); P. Adeva, Centro Nacional de Investigaciones Metalúrgicas, CSIC, Madrid (E)</i>	194
Magnetic Behaviour of $\text{Y}_2\text{Co}_{7-x}\text{M}_x$ Intermetallic Compound with $\text{M} = \text{Al, Si or Cu}$ and $x = 1$ or 2 <i>V. Pop, E. Burzo, R. Tetean, I. G. Deac, Babes-Bolyai University, Cluj-Napoca (RO)</i>	200
Magnetic Properties of $\text{Y}_3\text{Fe}_{29-x}\text{M}_x$ Compounds where $\text{M} = \text{Si or Al}$ <i>R. Tetean, V. Pop, E. Burzo, I. G. Deac, Babes-Bolyai University, Cluj-Napoca (RO)</i>	204
Cutting Force Evaluation when High Speed End Milling a Gamma Titanium Aluminide Intermetallic Alloy <i>A. L. Mantle, D. K. Aspinwall, University of Birmingham (UK)</i>	209

The Effect Of Wheel Dressing Parameters On The Surface Integrity Of A Surface Ground Gamma Titanium Aluminide Intermetallic Alloy <i>S. A. Bentley, S. Z. Lim, D. K. Aspinwall, University of Birmingham (UK)</i>	216
Properties of Spray Formed Gamma Titanium Aluminides <i>R. Gerling, F. P. Schimansky, GKSS-Forschungszentrum, Geesthacht (D); K. W. Liu, Universität des Saarlandes, Saarbrücken (D)</i>	222
Microstructural Examination of Mn Alloyed Fe-Al Based Intermetallics <i>M. Vedat Akdeniz, A. O. Mekhrabov, F. Agdas, Middle East Technical University, Ankara (TR)</i>	228
Adjustment of Differently Spaced Fully Lamellar Microstructures in a γ -TiAl Based Alloy and their Creep Behaviour <i>A. Chatterjee, Max-Planck-Institut für Metallforschung, Stuttgart (D); U. Bolay, U. Sattler, H. Clemens, Universität Stuttgart (D)</i>	233
Processing and Properties of Novel High Strength Gamma-TiAl <i>J. D. H. Paul, F. Appel, U. Christoph, S. Eggert, U. Lorenz, M. Oehring, GKSS Research Centre, Geesthacht (D)</i>	240
Gamma-TiAl Alloy Development <i>T. Cheng, D. Hu, M. H. Loretto, I. P. Jones, The University of Birmingham (UK)</i>	246
The Influence of Microstructure and Texture on the Creep Behaviour of a Ti-47Al-2Cr-2Nb Alloy <i>M. Thomas, S. Naka, ONERA (DMMP), Châtillon Cedex (F)</i>	251
Effect of Postweld Heat Treatment on Gamma Titanium Aluminide Fusion Zone Microstructure and Hardness <i>V. L. Acoff, M. Arenas, S. Agee, The University of Alabama, Tuscaloosa, (USA)</i>	257
Isothermal Forging of Near Gamma Titanium Aluminide on an Industrial Scale. <i>J. Müllauer, F. Appel, S. Eggert, L. Eggers, U. Lorenz, M. Oehring, GKSS-Research Centre Geesthacht, Geesthacht (D); P. Janschek, Thyssen Umformtechnik Remscheid (D)</i>	265
Improved Hot-Workability of Gamma-TiAl-Based Composites by Grain Refinement <i>R. Bohn, G. Fanta, R. Bormann, GKSS Forschungszentrum GmbH, Geesthacht (D)</i>	271
Brazing of Gamma-TiAl for High Temperature Applications <i>M. Sirén, VTT Manufacturing Technology, Espoo (FIN); K.-H. Bohm, V. Ventzke, M. Koçak, GKSS Research Center, Geesthacht (D)</i>	277
Fatigue Behavior of an Orthorhombic Titanium Aluminide Alloy <i>S. Lütjering, LMPPM - ENSMA, Futuroscope (F); P. R. Smith, AFRL, WPAFB, Ohio (USA); D. Eylon, University of Dayton, Ohio (USA)</i>	283

Influence of Oxygen on the Microstructure and Mechanical Properties of Ti ₅₂ Al ₄₈ Alloys <i>F. Perdrix, M.-F. Trichet, J.-L. Bonnentien, M. Cornet, J. Bigot, CECM-CNRS 15, Vitry sur Seine (F)</i>	289
Fatigue Crack Propagation Mechanisms in Ti-Al Alloys at Room and Elevated Temperatures <i>G. Hénaff, C. Mabru, A. Tonneau, J. Petit, Laboratoire de Mécanique et Physique des Matériaux - UMR CNRS 6617, ENSMA - Futuroscope-Chasseneuil (F)</i>	294
Correlation of Point Defects, Ordering and Ultra-Microhardness of B2 / D0 ₃ ordered Ironaluminides <i>J. Laakmann, C. Hartig, H. Mecking, Technische Universität Hamburg - Harburg (D)</i>	300
Industrial Applications of FeA40Grade3, a high specific properties Iron Aluminides <i>S. Revol, F. Moret, CEA/CEREM, Grenoble Cedex (F).....</i>	307
TEM Investigations on the Precipitates in a Ti-47Al-2W-0.5Si Alloy <i>R. Yu, L. L. He, Z. X. Jin, J. T. Guo, H. Q. Ye, Chinese Academy of Sciences, Shenyang (VRC).....</i>	312
Phase Stability in the Nb-rich Region of the Nb-B-Si System <i>C. A. Nunes, G. C. Coelho, D. M. Pinto Junior, K. C. de Camargo Gandolpho, L. A. Borges Júnior, G. Rodrigues, Departamento de Engenharia de Materiais, Lorena (SP), (BR)</i>	317
Intermetallic Phase Formation in Bulk Multilayered Structures <i>H. Sieber, University of Erlangen-Nürnberg, Erlangen (D); J. H. Perepezko, University of Wisconsin-Madison (USA)</i>	324
A Crystallographic Study of TiAl-Cr Alloys <i>G. Shao, P. Tsakiroopoulos, University of Surrey, Guildford, (UK).....</i>	330
DTA-Investigations of Phase Transformations in Al-rich Ti-Al-Alloys <i>F. Stein, M. Palm, Max-Planck-Institut für Eisenforschung GmbH, Düsseldorf (D)</i>	336
Microstructural Studies of Mo-Si-Al Alloys <i>A. Arvanitis, M. J. Whiting, P. Tsakiroopoulos, University of Surrey, Guildford (UK).....</i>	345
Effect of Nb on the Aging and Cyclic and Static Oxidation Behavior of Ti-44Al-xNb Alloys <i>S. K. Varma, A. Chan, C. Hernandez, E. Corral, The University of Texas at El Paso, TX (USA); R. N. Mahapatra, V. Agarwala, Naval Air Warfare Center, Patuxent River, MD (USA)</i>	350
The Influence of Gas Composition on the Oxidation Behavior of Nb-containing Ti-based Alloys at 800 °C <i>P. Pérez, V. A. C. Haanappel, M. F. Stroosnijder, Joint Research Centre of the European Commission, Ispra (Va) (I).....</i>	356
Effect of Nb Addition on the Phase Transformation of Gamma-TiAl Alloys <i>W. J. Zhang, G. L. Chen, University of Science and Technology Beijing (VRC); F. Appel, GKSS Research Center, Geesthacht (D).....</i>	362

Widmanst�tten Co ₃ W: HRTEM study of DO ₁₉ precipitation in an fcc matrix <i>P. A. Carvalho, P. Bronsveld, B. J. Kooi, J. T. M. De Hosson, University of Groningen (NL)</i>	368
Gas Atomized Gamma-Titanium Aluminide Alloys <i>U. Habel, C. F. Yolton, B. J. McTiernan, Crucible Research, Pittsburgh, PA (USA)</i>	
Mechanical Anisotropy in Textured Sheets of Gamma-TiAl <i>W. Schillinger, A. Bartels, Materials Science and Technology, TUHH, Hamburg (D); K. Kyosuke, University of Illinois at Chicago (USA)</i>	378
Gamma-TiAl for Aeroengine and Automotive Applications <i>H. Baur, DaimlerChrysler AG, Ulm (D); R. Joos, MTU M�nchen GmbH (D); H. Clemens, Universit�t Stuttgart (D)</i>	
Author Index	391
Subject Index	395