MATERIALS TESTING

MATERIAL PRÜFUNG

MATERIALS - COMPONENTS - TECHNOLOGY - APPLICATION

EDITOR-IN-CHIEF

Thomas Böllinghaus

ASSOCIATE EDITOR

Thomas Kannengießer

EDITORIAL BOARD

Suresh Babu, Knoxville, Tennessee, USA Manfred Bacher-Höchst, Stuttgart, Germany Y. Frank Chen, Middleton, Pennsylvania, USA Carl E. Cross, Estes Park, Colorado, USA Dan Eliezer, Be'er Scheva, Israel Cagatay Elibol, Istanbul, Turkey Norbert Enzinger, Graz, Austria

Gobboon Lonthongkum, Bangkok, Thailand Peter Mayr, Munich, Germany Andreas Neidel, Berlin, Germany Peter Starke, Kaiserslautern, Germany Frank Walther, Dortmund, Germany Ali Riza Yildiz, Bursa, Turkey

ASSOCIATE INSTITUTIONS

German Association for Materials Research and Testing (DVM), Martin Brune, Munich, Germany German Society for Nondestructive Testing (DGZfP) Matthias Purschke, Berlin, Germany VDI-Society Materials Engineering (VDI-GME) Hans-Jürgen Schäfer, Düsseldorf, Germany

DE GRUYTER

ABSTRACTED/INDEXED IN Baidu Scholar · Chemical Abstracts Service (CAS): CAplus; SciFinder · CNKI Scholar (China National Knowledge Infrastructure) · CNPIEC: cnpLINKer · Dimensions · EBSCO Discovery Service · Google Scholar · J-Gate · Journal Citation Reports/Science Edition · KESLI-NDSL (Korean National Discovery for Science Leaders) · Microsoft Academic · MyScienceWork · Naver Academic · Naviga (Softweco) · Primo Central (ExLibris) · ReadCube · SCImago (SJR) · SCOPUS · Semantic Scholar · Sherpa/RoMEO · Summon (ProQuest) · TDNet · WanFang Data · Web of Science: Science Citation Index Expanded · WorldCat (OCLC) · Yewno Discover

The publisher, together with the authors and editors, has taken great pains to ensure that all information presented in this work (programs, applications, amounts, dosages, etc.) reflects the standard of knowledge at the time of publication. Despite careful manuscript preparation and proof correction, errors can nevertheless occur. Authors, editors and publisher disclaim all responsibility for any errors or omissions or liability for the results obtained from use of the information, or parts thereof, contained in this work. The citation of registered names, trade names, trademarks, etc. in this work does not imply, even in the absence of a specific statement, that such names are exempt from laws and regulations protecting trademarks etc. and therefore free for general use.

ISSN 0025-5300 · e-ISSN 2195-8572

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at www.degruyter.com/mt.

EDITOR-IN-CHIEF Prof. Dr.-Ing. Thomas Boellinghaus, Helmut Schmidt University/University of the Federal Armed Forces Hamburg, mt@degruyter.com

PUBLISHER Walter de Gruyter GmbH, Berlin/Boston, Genthiner Straße 13, 10785 Berlin, Germany

JOURNAL COORDINATOR Bettina Chang, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany, Tel.: +49 (0)30 260 05-356, Fax: +49 (0)30 260 05-250, e-mail: bettina.chang@degruyter.com

RESPONSIBLE FOR ADVERTISEMENTS Markus Kügel, De Gruyter, Rosenheimer Str. 143, 81671 Munich, Germany.

Tel.: +49 (0) 89 76 902-424, e-mail: anzeigen@degruyter.com

© 2022 Walter de Gruyter GmbH, Berlin/Boston, Germany

TYPESETTING TNQ Technologies, Chennai, India

PRINTING Franz X. Stückle Druck und Verlag e.K., Ettenheim



Contents

Stefan Gach, Simon Olschok, Stefan Jakobs and Uwe Reisgen

Utilisation of the X-ray emission of an electron beam capillary for visualisation of the beam-material interaction —— 151

Weerachai Tapalad, Napat Kiatwisarnkij, Tanaporn Rojhirunsakool, Ekasit Nisaratanaporn, Gobboon Lothongkum and Panyawat Wangyao Effect of Re and Ru additions on morphology and long-term stability of gamma prime particles in new modified superalloys prepared by a vacuum arc melting process — 161

S. Osman Yilmaz, Tanju Teker and S. Süreyya Karabeyoğlu Microstructure and fatigue performance of Cu-based M₇C₃-reinforced composites —— 177

Simon Backens, Stefan Ofe, Stefan Schmidt, Nikolai Glück and Wilko Flügge

Influence of peroxide cross-linking temperature and time on mechanical, physical and thermal properties of polyethylene —— 186

Robert Szlosarek and Matthias Kröger

Fatigue behavior of bolted boreholes under various

preloads —— 195

Guanping Dong, Shanwei Sun, Zixi Wang, Nanshou Wu, Pingnan Huang, Hao Feng and Minqiang Pan

Application of machine vision-based NDT technology in ceramic surface defect detection – a review —— 202

He Xue, Yu-Lei Jia, Jing-Zhi Lu, Shuang Wang, Zheng Wang and Shuai Wang

An approach for obtaining surface residual stress based on indentation test and strain measurement — 220

Mehmet Yaz

Adhesive wear behavior of gas tungsten arc welded FeB-FeMo-C coatings — 228

Ahmet Yildiz, Önder Yilmaz and Hüseyin Karabulut

Structural design optimization of the arc spring and
dual-mass flywheel integrated with different optimization
methods — 240

Safiye İpek Ayvaz and İbrahim Aydin

Tribological and adhesion properties of microwaveassisted borided AISI 316L steel — 249

Prasanna Nagasai Bellamkonda, Malarvizhi Sudersanan and Balasubramanian Visvalingam

Mechanical properties of wire arc additive manufactured carbon steel cylindrical component made by cold metal transferred arc welding process — 260

Mehmet Emin Cetin

Improvement of the structural, thermal, and mechanical properties of polyurethane adhesives with nanoparticles and their application to Al/Al honeycomb sandwich panels —— 272

Oguz Kocar, Mehmet Yetmez, Erhan Baysal and Hamdi Alper Ozyigit

Mechanical behavior of a friction welded AA6013/AA7075

beam —— 284

Cihan Kaboglu and Erdem Ferik

Effects of carbon nanotubes on mechanical behavior
of fiber reinforced composite under static
loading —— 294