



Corrosion and Surface Engineering

Edited by
Joanna Michalska and Maciej Sowa

TTP TRANS TECH PUBLICATIONS

Corrosion and Surface Engineering

Selected, peer reviewed papers from the
International Scientific Conference
Corrosion 2014
November 18-21, 2014, Gliwice, Poland



Edited by

Joanna Michalska and Maciej Sowa



Copyright © 2015 Trans Tech Publications Ltd, Switzerland

All rights reserved. No part of the contents of this publication may be reproduced or transmitted in any form or by any means without the written permission of the publisher.

Trans Tech Publications Ltd
Churerstrasse 20
CH-8808 Pfaffikon
Switzerland
<http://www.ttp.net>

Volumes 227 of
Solid State Phenomena
ISSN print 1012-0394
ISSN cd 1662-9787
ISSN web 1662-9779

(Pt. B of Diffusion and Defect Data - Solid State Data (ISSN 0377-6883))

Full text available online at <http://www.scientific.net>

Distributed worldwide by

Trans Tech Publications Ltd
Churerstrasse 20
CH-8808 Pfaffikon
Switzerland

Fax: +41 (44) 922 10 33
e-mail: sales@ttp.net

and in the Americas by

Trans Tech Publications Inc.
PO Box 699, May Street
Enfield, NH 03748
USA

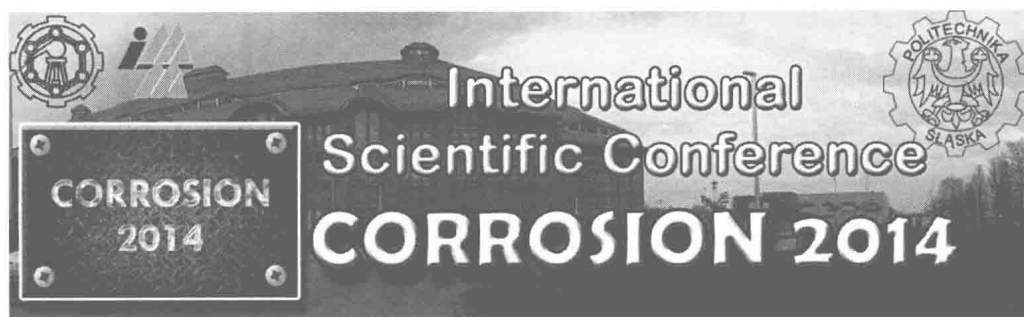
Phone: +1 (603) 632-7377
Fax: +1 (603) 632-5611
e-mail: sales-usa@ttp.net

printed in Germany

Corrosion and Surface Engineering

Edited by
Joanna Michalska
Maciej Sowa

Preface



The CORROSION 2014 conference was held at Silesian University of Technology (Gliwice, Poland) from 18 to 21 November, 2014.

The conference was a continuation of a series of the Polish Corrosion Society meetings, which are organised periodically every three years. The privilege of holding the 11th running conference was given to the Silesian University of Technology, namely its Chemical and Materials Engineering and Metallurgy faculties.

CORROSION 2014 was the major event in Poland in the field of corrosion science and engineering and was a great opportunity to meet and interact with academia, industry and end users within recent developments in all areas of corrosion and corrosion protection.

The conference provided a forum for scientists and engineers from 39 countries throughout the world interested in the degradation of materials and materials technologies for corrosion protection. 172 of participants took a part in the meeting; 87 oral and nearly 100 poster presentations were presented.

Organizing Committee

Maria SOZAŃSKA – Chairman
Wojciech SIMKA – Co-Chair
Agnieszka KRZĄKAŁA – Secretary
Agnieszka FORMALCZYK
Joanna MICHALSKA
Aleksander IWANIAK
Artur MACIEJ
Jerzy KROPIWNICKI

Proceedings Editors:

Joanna MICHALSKA (Editor-in-Chief)
Maciej SOWA (Co-Editor)



EFC Event No. 376



Table of Contents

Preface	v
Organizing Committee	vi

Chapter 1: Corrosion and Surface Engineering, Corrosion Protection

Novel Concepts on the Growth of Corrosion Fatigue Small and Short Cracks M. Lukaszewicz, S.G. Zhou and A. Turnbull	3
Corrosion Fatigue Crack Propagation Rates for Steam Turbine Blade 13% Cr Steels A. Bashir, W. Dudziński, M. Dudziński and T. Ptak	7
Corrosion Behaviour of Amorphous and Nanocrystalline Alloys A. Królikowski	11
Influence of Plastic Deformation on the Corrosion Behaviour of As-Cast AlMg2 and AlCu4Mg1 Aluminium Alloys in NaCl Solution V. Vignal, H. Krawiec and Z. Szklarz	15
Influence of the Crystallographic Orientation of Grains and Plastic Deformation on the Electrochemical Behavior of Pure Aluminum in Sodium Chloride Solution Z. Szklarz, H. Krawiec and M. Wróbel	19
Structure and Corrosion Behavior of Mg-Cu-Y-(Zn,Ni) Bulk Metallic Glasses R. Babilas, K. Cesarz-Andraczke, D. Babilas and W. Simka	23
The Influence of Deformation the Corrosion Resistance of Titanium Grade2 M. Zwolińska, A. Sotniczuk, K. Topolski, A. Królikowski and H. Garbacz	27
Influence of Ageing on the Corrosion Resistance of the ZnAl22Cu3 and ZnAl40Cu3 Alloys R. Michalik	31
Resistance to Electrochemical Corrosion of Extruded Magnesium Alloy AZ31 J. Przondziono, E. Hadasik, W. Walke and J. Szala	35
The Corrosion Processes Effect on Surface Roughness of Bonded Magnetic Material Based on Nd-(Fe,Co)-B Powder Type K. Radońska, G. Pawłowska and D. Klimecka-Tatar	39
The Influence of Reinforcement Purity on Corrosion Resistance of AM50/SiC Composites K. Kamieniak and M.A. Malik	43
The Properties of Refined Glasses with Aluminum Hydroxide Nano-Molecules M. Drajewicz, M. Pytel, P. Rokicki and M. Góral	47
Corrosion Resistance of Sinters CNT-Cu/Cu P. Zygoń, M. Gwoździk, Z. Nitkiewicz and K. Jagielska-Wiaderek	51
A Study on the Inhibition of J55 and P110SS Steel in 3.5% NaCl Solution Saturated with CO2 by Seed Extract of <i>Momordica charantia</i> (Karela) A. Singh, Y.H. Lin, W.Y. Liu, L.J. Zhou, K.H. Deng and B. Huang	55

Inhibition Effect of Guar Gum on the Corrosion Behaviour of Carbon Steel (K-55) in Fracturing Fluid	
G. Palumbo and J. Banaś.....	59
Investigation of Some Mannich Bases Corrosion Inhibitors for Carbon Steel	
I. Manciulea, C. Bogatu, C. Cazan, L. Dumitrescu and A. Duta	63
The Effect of Chloride Ions on the Passive Films of Titanium in Sulfuric Acids	
J. Liu, A. Alfantazi and E. Asselin.....	67
Effect of Cadmium Addition on the Galvanic Corrosion of AM60 Magnesium Alloy in 0.1 M Sodium Chloride Solution	
M.E. Ikpi, J.H. Dong and W. Ke.....	71
Studies on the Corrosion Properties of High-Mn Austenitic Steels	
M. Jabłońska and R. Michalik.....	75
The Electrochemical and Immersion Corrosion of Casting Magnesium Alloys Containing Rare Earth Elements	
A. Kielbus, J. Michalska and B. Dybowski	79
Corrosion Behavior of MRI153M Magnesium Alloy in 3% NaCl Solution	
O. Gaon, B. Kazanski and A. Lugovskoy	83
Corrosion Behaviour of Magnesium Lithium Alloys in NaCl Solution	
A. Dobkowska, B. Adamczyk-Cieslak, J. Mizera, J. Kubasek and D. Vojtech.....	87
Corrosion of WE43 and AE44 Magnesium Alloys in Sodium Sulfate Solution	
A. Mościcki, B. Chmiela and M. Sozańska	91
Electrochemical Corrosion Behaviour of Stainless Steels AISI 304 and 316L in Caribbean Sea Water	
D.M. Herrera-Zamora, L. Veleva and J.L. López.....	95
Adsorption Kinetics of Benzothiazole and 2-Mercaptobenzothiazole on Microcrystalline Gold and Silver Surfaces	
J. Ramírez Cano and L. Veleva.....	99
Corrosion Resistance in Saline Environment of Colored Based Alumina Spectrally Selective Surfaces	
C. Bogatu, C. Cazan, I. Manciulea and A. Duta	103
The Effects of Inappropriate Corrosion Protection	
M. Janczewski	107
The Effect of Ti and REE Addition on the Corrosion Resistance of the AlZn12Mg3.5Cu2.5 Alloy in "Acid Rain" Environment	
R. Michalik and H. Woźnica.....	111
Corrosion Resistance of AA2024-T3 Coated with Graphene/Sol-Gel Films	
M. Hernandez, J. Genesca, C. Ramos, E. Bucio, J.G. Bañuelos and A. Covelo.....	115
Corrosion Behavior of Hybrid Sol-Gel Films Reinforced with Electrospun Nanofibers	
A. Covelo, J. Genescá, A. Barba, C. Menchaca, J. Uruchurtu and M. Hernández	119
Epoxy-Polyelectrolyte Composites as a Basis of Intellectual Coating for Protection from Underfilm Corrosion on Cathodically Polarizable Structures	
N.N. Petrov, T.V. Koval, I.V. Falina, R.V. Gorokhov, N.V. Sheldeshov and N.N. Bukov	123
Properties of Functional Epoxy Coatings Modified by Carbon Nanoparticles	
L. Diblíková, A. Koukalová, J. Kudláček, M. Zoubek and F. Herrmann	127

Solid State NMR and EIS Examination of SiO₂-Epoxy Hybrid Coatings on Stainless Steel	
J. Masalski, U. Wawrzaszek, M.J. Potrzebowski, B. Kucharczyk, J.G. Chęćmanowski, W. Tylus and B. Szczygieł.....	131
Anticorrosive Property of Potassium Dichromate Film on Galvanized Coating in Distilled Water	
O.R. Adetunji, P.O. Aiyedun and O.S. Bello.....	135
Anodic Treatment of Zn-Ni Alloy in Alkaline Solutions	
A. Maciej, J. Michalska, W. Simka, M. Sowa, T. Gorewoda and G. Dercz.....	139
Electrodeposition of Zinc Coatings from Ionic Liquid	
D. Nieszporek, W. Simka, K. Matuszek, A. Chrobok and A. Maciej.....	143
Galvanic Formation of Zn-Ni/Zn-Co Type Multilayer Alloy Coatings on Steel Substrate	
A. Nagrabia, M. Sowa, W. Simka and A. Maciej.....	147
Microplasma Oxidation of Magnesium Alloy AZ91D by Impulse Current	
G. Nawrat, M. Wierzbńska, T. Wiczorek, Ł. Nieużyła, A. Krząkała, A. Maciej, W. Simka and K. Raga.....	151
XPS Study of Surface Layer Formed on AISI 316L after High-Current Density Electropolishing	
K. Rokosz, T. Hryniewicz and S. Rządiewicz.....	155
Evaluation of the Growth Mechanism of Ti-Containing Conversion Coatings Using XPS	
W. Tylus, J. Winiarski and B. Szczygieł.....	159
Corrosion Resistance of Cerium Based Silane-Zeolite Coatings on AA6061 Alloy	
A. Capri, L. Calabrese, L. Bonaccorsi and E. Proverbio.....	163
Corrosion Resistance of Copper Sheet after Laser Treatment	
T. Onyszcuk, M. Zwolińska, M. Mazurkiewicz, J. Marczak, A. Sarzyński and H. Garbacz.....	167
Thermally Sprayed Coatings as Corrosion Protection for Steel Structures – Influence of the Manufacturing Processes on the Coating Quality	
T. Maghet, J. Mährlein, T. Wilhelm, M. Sallai, S. Friedrich, R. Regenspurger and R. Feser.....	171
Zirconium Modified Aluminide Coatings Obtained by the CVD Method	
J. Romanowska, M. Zagula-Yavorska, M. Góral and J. Sieniawski.....	174
Study of Interaction between Liquid Magnesium Alloy and Glassy Carbon Particles	
A. Olszówka-Myalska and J. Chrapoński.....	178

Chapter 2: Concrete Corrosion

Corrosion Inhibition of Concrete Steel-Reinforcement in Saline/Marine Simulating-Environment by <i>Rhizophora mangle</i> L.	
J.O. Okeniyi, C.A. Loto and A.P.I. Popoola.....	185
Deterioration of Cement Composites with Silica Fume Addition due to Chemical and Biogenic Corrosion Processes	
A. Estokova, M. Kovalcikova and A. Luptakova.....	190
The Influence of Waste Expanded Perlite on Chemical Durability of Mortars	
W. Pichór, M. Barna, E. Kapeluszna, A. Łagosz and Ł. Kotwica.....	194

Corrosion Behavior of Hybrid Organic-Inorganic Coated Steel in Simulated Concrete Pore Solution

M. Criado, I. Sobrados, J.M. Bastidas and J. Sanz 199

Mild Steel Passivation and Depassivation in Simulated Concrete Pore Solution Containing Bacteria Metabolites

E. Volpi, M. Stefanoni, A. Olietti and S. Trasatti 203

Bio-Corrosion of Fibrous Cement Boards and Cement Composites

V.O. Harbuláková, A. Eštoková, A. Luptáková and M. Kovalčíková 207

Chapter 3: Corrosion and Surface Engineering in Industry

Sulphur Species Corrosivity in Refinery Feed Stock

M.I. Suleiman 213

The Corrosion of HDG Zinc Coatings on the Road and Urban Infrastructures

A. Królikowska and L. Komorowski 217

Comparison of Human Health and Safety Loss due to Corroded Gas Pipeline Failure in Rural and Urban Areas: A Case Study in Malaysia

N.M. Hanafiah, L. Zardasti, N. Yahaya, N.M. Noor and A.A. Safuan 221

The Consequence Assessment of Gas Pipeline Failure due to Corrosion

L. Zardasti, N.M. Hanafiah, N.M. Noor, N. Yahaya and A.S.A. Rashid 225

Investigation of the Degradation Mechanism of Platinum-Rhodium Catalytic Wires during Oxidation of Ammonia Process

J. Pura, P. Kwaśniak, P. Wieciński, H. Garbacz, J. Zdunek,
Z. Laskowski and M. Gieriej 229

Properties of Rubber Lining after Sixteen Years Operation in Different Places of FGD Plant

I. Dreła, J. Masalski, M. Łukaczyńska and B. Szczygieł 233

Chapter 4: Atmospheric Corrosion, Tribocorrosion, Erosion, Hydrogen Degradation and Diffusion

Atmospheric Corrosion Protection of Metallic Structures Using Geocements-Based Coatings

P. Krivenko, S. Guziy and H.A.J. Al-Musaedi 239

Nanocomposite Layers Obtained by Electro-Co-Deposition: Corrosion and Tribocorrosion Properties

L. Benea 243

Microstructure and Tribocorrosion Properties of Titanium Matrix Nanocomposites Manufactured by Selective Laser Sintering/Melting Method

A. Biedunkiewicz, P. Figiel, W. Biedunkiewicz, D. Grzesiak,
M. Krawczyk and A. Stasiukiewicz 247

The Influence of Temperature on Erosion Resistance of Carbide Coatings Deposited by APS Method

P. Sosnowy, M. Góral, S. Kotowski, G. Hanula, J. Gwizdała, J. Drzał, M. Kobylarz,
P. Borowski and R. Gargala 251

Microstructural Phenomena Occurring during Early Stages of Cavitation Erosion of Al-Si Aluminium Casting Alloys B. Dybowski, M. Szala, A. Kielbus and T. Hejwowski.....	255
Hydrogen Diffusion Characteristics in the TRIP 800 C-Mn-Si Steel J. Sojka, M. Sozańska, P. Váňová, V. Vodárek and F. Filuš	259
Hydrogenation and Corrosion Properties of LaNi_{4.5}Co_{0.5}-Based Alloy Doped with 1.7 at% Sn M. Dymek, H. Bala, H. Drulis and A. Hackemer	263
The Effect of Pre-Hydrogen Charging on Corrosion Behaviour of Superduplex Stainless Steel Welded Joints J. Labanowski, A. Świerczyńska and J. Michalska.....	267
Hydrogen Absorption by Co-Substituted Nd-Fe-B High Coercivity Magnetic Material H. Bala, M. Dymek, S. Szymura and Y.M. Rabinovich	271
Nickel Electrode Precursor Covered by Pt, Ni and Pt/Ni Layers Using Sol-Gel Method A. Jaroń and Z. Żurek	275

Chapter 5: Microbiological Corrosion

Inhibition of Steel-Rebar Corrosion in Industrial/Microbial Simulating-Environment by <i>Morinda lucida</i> J.O. Okeniyi, C.A. Loto and A.P.I. Popoola	281
Growth of <i>Acidithiobacillus thiooxidans</i> Biofilm on Glass, Concrete and Stoneware W. Dec, B. Cwalina, J. Michalska and D. Merkuda	286
Differences between <i>A. thiooxidans</i> and <i>A. ferrooxidans</i> Biofilms Formed on Concrete and Stoneware W. Dec, B. Cwalina, J. Michalska and A. Parzentna	290
Microbiologically Induced Corrosion Monitoring Using Open-Circuit Potential (OCP) Measurements R. Mohd Rasol, A. Abu Bakar, N. Md Noor, N. Yahaya and M. Ismail	294
Turbidity Method to Measure the Growth of Anaerobic Bacteria Related to Microbiologically Influenced Corrosion A. Abu Bakar, R. Mohd Rasol, N. Yahaya, N. Md Noor and M.K.F. bin Mohd Ali	298
Biofilm Formation on NiTi Surface by Different Strains of Sulphate Reducing Bacteria (<i>Desulfovibrio desulfuricans</i>) B. Cwalina, W. Dec, W. Simka, J. Michalska and M. Jaworska-Kik.....	302

Chapter 6: High-Temperature Corrosion and Surface Strength, Thermal Coating

The Effect of Pretreatment on the Corrosion Resistance of Superheater Materials J. Lehmusto, P. Yrjas and M. Hupa	309
The Effect of the Aluminide Coating on the Thermal Properties and Oxidation Resistance of Inconel 625 Ni-Base Superalloy M. Zagula-Yavorska, J. Sieniawski, R. Filip and M. Drajewicz	313

The Formation of TBCs Using LPPS, CVD and PS-PVD Methods on CMSX-4 Single-Crystal Nickel Superalloy	
M. Goral, M. Pytel and M. Drajewicz.....	317
The Influence of Overalluminizing on TGO Formation on Thermal Barrier Coatings Deposited by Low Pressure Plasma Spraying and Chemical Vapour Deposition Methods on Rene 80 Nickel Superalloy	
M. Góral, M. Pytel, W. Cmela and M. Drajewicz	321
Microstructure and Isothermal Oxidation Resistance of Thermal Barrier Coatings Deposited by LPPS, CVD and PS-PVD Methods on Inconel 617 Nickel Superalloy	
S. Kotowski, J. Sieniawski and M. Drajewicz	325
Heat Resistance and Heat Capacity of the Selected Nickel Superalloys	
R. Przeliorz and M. Góral	329
Microstructure of Thermal Barrier Coatings Deposited by Low Pressure Plasma Spraying and Chemical Vapour Deposition Methods on Rene 80 Nickel Superalloy	
M. Góral, M. Pytel, W. Cmela and S. Kotowski.....	333
Evaluation of Hot Corrosion Resistance of Directionally Solidified Nickel-Based Superalloy	
M. Sozańska, B. Kościelniak and L. Swadźba.....	337
The Impact of the Organic Form of Sulphur Originating from Coal on the Performance of Solid Oxide Fuel Cells	
M. Dudek	341
Oxidation Behavior of Aluminide Coated Ti-Al-Cr-Nb-Zr-Y Alloys at High Temperatures	
E. Basuki, D. Prajitno and Pawawoi	345
Degradation of Diffusive Aluminide Coating after Service in ZhS6K Superalloy	
B. Chmiela, M. Kianicová and M. Sozańska	349
Hafnium Modified Aluminide Coatings Obtained by the CVD and PVD Methods	
M. Zagula-Yavorska, J. Romanowska, J. Sieniawski and M. Wierzbńska.....	353
The Influence of Activator on Vapour Phase Aluminizing of TiAl Intermetallics	
M. Góral, A. Gradzik, J. Sieniawski, R. Filip, J. Sieniawski and M. Wierzbinska	357
The Oxidation Resistance of Nonmodified and Zr-Modified Aluminide Coatings Deposited by the CVD Method	
R. Filip, M. Zagula-Yavorska, M. Pytel, J. Romanowska, M. Maliniak and J. Sieniawski	361
The Influence of the Chemical Composition of Superalloys on the Oxidation Resistance of Aluminide Coating	
M. Zagula-Yavorska, J. Sieniawski and R. Filip	365
Influence of Deposition Parameters on Structure of TDCs Deposited by PS-PVD Method	
M. Góral, T. Kubaszek, S. Kotowski, J. Sieniawski and S. Dudek	369
Microstructure of TBC Coatings Deposited by HVOF and PS-PVD Methods	
K. Szymański, M. Góral, T. Kubaszek and P.C. Monteiro	373
The Technology of TBC Deposition by EB-PVD Method	
P. Pędrak, A. Nowotnik, M. Góral, K. Kubiak, M. Drajewicz and J. Sieniawski	377
Analysis of Crystallite Size Changes in an Oxide Layer Formed on Steel during Long-Term Operation at an Elevated Temperature	
M. Gwoździk.....	381

Influence of Surface Condition on Oxides Layer Morphology on NiCrAlY Coating during Oxidation at Temperature 1000°C and 1100°C	
G. Moskal and D. Niemiec.....	385
Studies on the Adhesion of Oxide Layer Formed on Steel Long-Term Operated at an Elevated Temperature	
M. Gwoździk.....	389
Comparison of High-Temperature Oxidation Onset Behavior of Sanicro 28 Steel with KCl, NaCl and K₂CO₃	
J.X. Sui, J. Lehmusto, M. Bergelin and M. Hupa.....	393
Evaluation of High-Temperature Corrosion on 16Mo3 Steel Long-Term Operated at an Elevated Temperature	
M. Gwoździk.....	397
High-Temperature Corrosion Resistance of Welded Joints in Sanicro 25 Steel	
P. Jamrozik and M. Sozańska.....	401
High-Temperature Corrosion Resistance of Welded Joints in HR6W Alloy	
P. Jamrozik and M. Sozańska.....	405
The Morphology of Corrosion Products in FeAl Alloys after Heat-Resistance Tests at Different Temperatures	
A. Fornalczyk, J. Cebulski and P. Dorota.....	409
Thermal Properties of YSZ Powders for Plasma Spraying	
M. Drajewicz, K. Dychtoń and M. Góral.....	413
Oxidation Resistance of Diffusion Silicide Coatings on Mo and TZM Alloy	
G. Moskal, B. Witala, J. Tracz, P. Kałamarz, W. Supernak, S. Polis, S. Jucha, A. Wrona and M. Osadnik.....	417
Nonstoichiometry and Chemical Diffusion in Co₃O₄ Cobalt Oxide	
Z. Grzesik, A. Kaczmarek and S. Mrowec.....	421
Process Temperature Effect on Surface Layer of Vacuum Carburized Low-Alloy Steel Gears	
K. Dychtoń, P. Rokicki, A. Nowotnik, M. Drajewicz and J. Sieniawski.....	425

Chapter 7: Corrosion of Biomaterials

Corrosion and Mechanical Behavior of Biodegradable Metallic Biomaterials	
D. Vojtech, J. Kubasek, J. Capek, A. Michalcova and I. Pospisilova.....	431
Corrosion Behaviour of Ti6Al4V and TiMo10Zr4 Alloys in the Ringer's Solution: Effect of pH and Plastic Strain	
J. Loch, A. Łukaszczyk, V. Vignal and H. Krawiec.....	435
Corrosion Study of Amorphous Mg₆₇Zn₂₉Ca₄ Alloy	
R. Nowosielski, K. Cesarz-Andraczke, R. Babilas, A. Maciej and G. Nawrat.....	439
Effect of Polarization Scan Rate on the Pitting Potential of the Self-Passivated NiTi Shape Memory Alloy in a Simulated Body Fluid	
P. Osak, T. Goryczka and B. Łosiewicz.....	443
Electrochemical Behavior of Materials Used in Dental Implantological Systems	
A. Ziębowicz, B. Ziębowicz and B. Bączkowski.....	447
Electrochemical Behaviour of Co-Cr and Ni-Cr Dental Alloys	
J. Loch, A. Łukaszczyk, J. Augustyn-Pieniążek and H. Krawiec.....	451

Fretting – Corrosion of Co-Cr-Mo Alloy in Oral Cavity Environment	
M. Klekotka, J.R. Dąbrowski and W. Karalus.....	455
Improvement of the Corrosion Resistance of Biomedical Magnesium Alloys in the Ringer's Solution Using Protective Coatings	
I. Kot and H. Krawiec	459
Influence of Ultrasound Bone Union Stimulation on Corrosion Resistance of Titanium Alloys	
J. Szewczenko, A. Zabuga, M. Kaczmarek, M. Basiaga, W. Kajzer, Z. Paszenda and K. Nowińska.....	463
Corrosion Properties of Anodically Oxidised and Alkaline Treated Titanium Nitride	
A. Brojanowska, K. Kowalczyk, D. Sadłowska and J.R. Sobiecki.....	467
Corrosion Properties of Plasma Oxidized Titanium Nitride for Biomedical Applications	
J.R. Sobiecki, A. Brojanowska and K. Kowalczyk.....	471
Corrosion Properties of Oxide Layers Produced on Titanium Nitride by Means of Plasma Electrolytic Oxidation of Various Duration	
K. Kowalczyk, A. Brojanowska and J.R. Sobiecki.....	475
Effect of the High Voltage Anodic Oxidation on the Titanium Corrosion Resistance	
J.K. Koper and J. Jakubowicz	479
Corrosion Resistance of Ti6Al7Nb Alloy after Various Surface Modifications	
J. Szewczenko, M. Basiaga, M. Kiel-Jamrozik, M. Kaczmarek and M. Grygiel	483
Electrochemical Properties of cpTi with Modified Surface Used for Implants in Blood and Vascular System	
W. Walke, Z. Paszenda, M. Basiaga, P. Karasiński and M. Kaczmarek	487
Impact of Surface Modification of Ti-6Al-7Nb Alloy on Electrochemical Properties in the Environment of Artificial Blood Plasma	
M. Basiaga, Z. Paszenda, W. Walke, P. Karasiński and J. Marciniak	491
Increasing the Surface Functionality of Mg Alloys by Means of Plasma Electrolytic Oxidation	
L. Kwiatkowski, A. Kapuścińska, A. Bałkowiec and R. Lutze	495
Influence of Electrolytic Polishing and Anodic Passivation on Corrosion Resistance of Ti-15Mo Alloy	
D. Babilas, J. Michalska, E. Pamuła and W. Simka	499
Corrosion Behaviour of Thermodiffusion Coatings on Titanium Implants in Simulated Body Fluids	
O. Tkachuk, R. Proskurnyak, I. Pohrelyuk and V. Fedirko	503
Corrosion Behavior of a Novel Hybrid Co/UHMWPE Composite Biocoating with Potential Application as a Biomaterial	
E. Danaila, L. Benea and I. Bounegru.....	507
Potential of Superhydrophobic Layer on the Implant Surface	
E. Stodolak-Zych, A. Rapacz-Kmita and M. Dudek.....	511
Electrochemical Impedance Spectroscopy Behaviour of NdFeB Coated Magnets in Saliva Solution for Orthodontic Applications	
L. Calabrese, L. Bonaccorsi, C. Borsellino, A. Capri, F. Fabiano and E. Proverbio	515
Corrosion Properties of Ti Scaffolds Prepared with Sucrose as a Space Holder	
G. Adamek, K. Pałka and J. Jakubowicz	519

Corrosion Resistance of Hip Endoprosthesis Cups in the Initial State and after Implantation	
A. Kajzer, W. Kajzer, J. Semenowicz and A. Mroczka	523
Effect of Artificial and Inflammatory Saliva on <i>Desulfovibrio desulfuricans</i> Growth and Biofilm Formation on NiTi Alloy	
B. Cwalina, W. Dec, W. Simka, A. Mościcki, M. Jaworska-Kik and E. Kaczmarek.....	527
Effects of Sn and Mo Contents on the Electrochemical Behavior of Biomedical Ti-Mo-Sn Alloys Prepared in the Powder Metallurgy Process	
G. Dercz, W. Simka, A. Kazek-Kęsik, A. Maciej and S. Ogierman.....	531

Chapter 8: Testing Methods

Experimental Corrosion Tests on Weathering Steel Bridges	
V. Krivy, K. Kreislova and V. Urban	537
Application of Research Methods in Expert Opinions	
M. Zubielewicz and A. Królikowska	541
Detection of the Corrosion of Axisymmetric Elements by Means of the Eddy Current Testing Method	
A. Zbrowski and W. Jóźwik.....	545
Application of the Electrochemical Microcell Technique in Solid State Surface Analysis	
H. Krawiec	549
The Concept of Using Model Gas Turbine for Burner Rig Corrosion Test	
M. Góral, R. Filip and J. Dyrda.....	553
Machine Vision System for Corrosion Detection as an Additional Tool beside EIS for Evaluation of Protective Properties of Electrolessly Deposited Ni-P Coatings	
A. Stankiewicz, M. Stankiewicz, J. Winiarski, I. Szczygieł and B. Szczygieł	557
Equipment for Low Pressure Plasma Spraying Processes – A Review	
M. Góral and T. Kubaszek	561
Keyword Index	565
Author Index.....	571

