

Table of Contents

Preface, Committee and Prof. Balitskii 60th Anniversary of Birthday	
Electrochemical Hydrogen in Metals - Can we Effectively Control this Harm? S.M. Beloglazov and G.S. Beloglazov	1
Modelling Macroscopic Properties of Organic Species on the Basis of Quantum Chemical Analysis (on an Example of Inhibiting Efficiency of Ureides and Acetylides against Corrosion) G.S. Beloglazov, A.A. Sikachina and S.M. Beloglazov	7
A Critical Review of Existing Hydrogen Diffusion Models Accounting for Different Physical Variables J. Toribio and V. Kharin	13
Cavitation Erosion and Corrosion of Pearlitic Gray Cast Iron in Non-Standardized Cavitation Conditions J. Chmiel, R. Jasionowski and D. Zasada	19
Analysis of the Effect of the Wearing Type on Surface Structural Changes of Ni₃Al-Based Intermetallic Alloy D. Zasada, W. Polkowski and R. Jasionowski	25
Hydrogen Diffusion in Metals Assisted by Stress: 2D Numerical Modelling and Analysis of Directionality J. Toribio, V. Kharin, D. Vergara and M. Lorenzo	33
Hydrogen Degradation of the Pressure Gas Tanks Materials after Long-Term Service A. Balitskii, M. Semerak, W. Balitska, A. Subota and O. Wus	39
Investigating Fatigue Strength of Vacuum Carburized 17CrNi6-6 Steel Using a Resonance High Frequency Method P. Kula, K. Dybowski, S. Lipa, R. Pietrasik, R. Atraszkiewicz, L. Klimek, B. Januszewicz and E. Wołowiec	45
Hydrogen Influence on Electrochemical Properties of Gallium Monoselenide O.A. Balitskii, J. Elias, N. Kvashnivska, N. Polishchuk and S. Gryshchenko	53
Role of Hydrogen in Cavitation Degradation of Iron in Water Solutions J. Chmiel and E. Łunarska	59
Effect of Nanostructurisation of Structural Steels on its Wear Resistance and Hydrogen Embrittlement Resistance H. Nykyforchyn, V. Kyryliv and O. Maksymiv	65
Hydrogen Embrittlement of Biodegradable Magnesium W. Dietzel	71
Microstructure Evolution of Aluminum Deformed by Combination of KoBo Extrusion and Differential Speed Rolling (DSR) A. Brzostowicz and W. Polkowski	77
Description of the Experimental Method and Procedure of Model Wear Test of Refrigeration Compressors' Parts K. Górny, P. Tyczewski and W. Zwierzycki	85
An Analysis of the Tribocorrosion Wear by Means of Wear Maps A. Stachowiak and W. Zwierzycki	93
Tribological Wear in the Complex Service Conditions P. Tyczewski	101
Influence of Spatial Structures of 316L Stainless Steel on its Cavitation Erosion Resistance B. Śniegocka, M. Szkodo and J. Chmiel	109
Multi Parameter Sliding Test Result Evaluation for the Selection of Material Pair for Wear Resistant Components of a Hydraulic Motor Dedicated for Use with Environmentally Friendly Working Fluids J. Łubiński and P. Sliwiński	115
Evaluation of Wear Resistance of Ti Alloys Used for Elements Friction of Knee Endoprosthesis B. Majkowska, M. Jądzewska, D. Miotke, E. Wołowiec and A. Zieliński	123

Stresses in the Surface Layer and Hydrogen Absorption and Diffusion in Cavitation Condition	
J. Chmiel, J. Baranowska, R. Jędrzejewski and A. Rzeczycki	131
Effect of some Sulphur Additives on the Degradation of 9Cr-1Mo Steel after its 10 Years Service in the CCR Platforming Unit	
J. Dampc and M. Szkodo	139
Physico-Mechanical Wear Processes of Cell Guides in Container Ships - Phenomenology	
M. Szyszko	145
Effect of Surface Treatment of Titanium Elements on the Bond Strength to Zirconium Dioxide	
B. Śmielak, M. Gołębiowski, L. Klimek and E. Wołowiec	151
Complex XRD and XRF Characterization of TiN-TiCN-TiC Surface Coatings for Medical Applications	
K. Banaszek, B. Januszewicz, E. Wołowiec and L. Klimek	159