

Contents

Plenary Lectures

1. **Entropy and Dissipative Processes of Friction and Wear**
Michael D. Bryant 3
2. **Tribology Development in Russia and Belarus**
Nikolai K. Myshkin, Denis V. Tkachuk 9
3. **The Effect of Micro-Blasting Procedures on the Cutting Performance of Coated Tools**
K.-D. Bouzakis, G. Skordaris, S. Gerardis, G. Katirtzoglou, S. Makrimalakis, F. Klocke, E. Bouzakis 14
4. **Advanced Methods for Characterisation of Abrasion/Erosion Resistance of Wear Protection Materials**
Friedrich Franek, Ewald Badisch, Martin Kirchgaßner 27
5. **Tribological Potencial of Zinc-Aluminium Alloys Improvement**
Miroslav Babic, Slobodan Mitrovic, Rato Ninkovic 37

Tribological Properties of Solid Materials

6. **The Effect of Temperature and Strain Rate on the Abrasive Wear of Metals**
Albert E. Yousif 53
7. **Influence of the Structure on the Tribological Properties of Low-Carbon Steel**
Vladimir I. Semenov, Leva Sh. Shuster, Song-Jeng Huang, Po-Chou Lin 59
8. **Effect of Microstructure on the Erosive Wear Rate of AISI 1020 and AISI 8620 Steels**
E. Dağaşan, D. Odabaş, E. Gerçekcioğlu 64
9. **The Comparision of Wear Behaviour of Plasma Nitrided of AISI H13 and 722M24 Steels under Different Tribological Conditions**
Eyyup Gercekcioglu, Esen Dagasan, M. Baki Karamiş 68
10. **Self-Lubricating Composite Materials for Dry Friction**
A.G. Kostornov, O.I. Fushchich, T.M. Chevichelova, Y.M. Simeonova, G.S. Sotirov 74
11. **Influence of the Solid Lubricant Particles Rreinforcement on Composites Tribological Properties**
Aleksandar Marinković, Aleksandar Venci 78
12. **Tribological and Electrical Properties of Filled Epoxy Reinforced Composites**
Iulian-Gabriel Bîrsan, Adrian Cîrciumaru, Vasile Bria, Victor Ungureanu 84
13. **Tribological Processes and Products in the Earth's Crust**
Evgenia Kozhoukharova 88
14. **Study on the Profilomtry of Composites with PA Matrix and Micro Glass Spheres after Dry Slindig**
Lorena Deleanu, Sorin Ciortan, Gabriel Andrei, Laura Maftai 93

15. Plastic Deformation Initiation in Sliding Indentation Case Constantin Spanu, Iulian Birsan, Sorin Ciortan	99
16. Tribochemical Synthesis of Alumina-Titania Mixed Oxides as Supports for Hydrodesulfurization Catalysts N.G. Kostova, B. Kunev, M. Achimovichova, E. Dutkova, P. Balaz	103
17. Role of Tribochemical Activation in Synthesis of Nano-Sized Ferrite Materials Z. Cherkezova-Zheleva, J. Krstić, D. Paneva, B. Kunev, D. Jovanović, I. Mitov	109

Surface Engineering and Coating Tribology

18. Theoretical and Experimental Researches Concerning the Adhesion of the Superficial Layers Obtained from Amorphous Alloys by Thermal Spraying with Plasma Jet Doina Petrescu, Niculae Napoleon Antonescu.....	117
19. Tribological Coatings for Aerospace Applications and the Case of WC-CO Plasma Spray Coatings A. Koutsomichalis, N. Vaxevanidis, G. Petropoulos, E. Xatzaki, A. Mourlas, S. Antoniou	123
20. High Temperature Wear Behaviour of Fe-Based Materials E. Badisch, H. Winkelmann, M. Kirchgaßner, N. Gostovic	129
21. Heat Generation During Friction Stir Welding Process Miroslav B. Đurđanović, Miroslav M. Mijajlović, Dragan S. Milčić, Dušan S. Stamenković	135
22. Characterization of Nano Crystalline Lubricant Coating to Study the Effect of Grain Size and Phase Structure on the Coating Behavior Norm Gitis, Vishal Khosla, Paolo Bariani	141
23. Surface Roughness and Friction Coefficient at IBAD Deposited Tin Hard Coating D.Kakaš, B. Škorić, M. Babić, S. Mitrović, A. Miletić, M. Vilotić, P. Terek, L. Kovačević	145
24. Research of Corelation between Friction Coefficient and Nanomorphology of Ion Implanted Dies for Cold Forming Process Damir Kakaš, Marko Vilotić, Maja Popović	149
25. Application of Atomic Force Microscope for Mechanical and Tribological Characterization of Teeth and Biomaterials Marius Pustan, Ovidiu Belcin	155
26. Investigation of Micro and Nano Tribological Phenomenon by EDX D. Kakaš, B. Škorić, A. Miletić, M. Vilotić, P. Terek, L. Kovačević	159

Lubricants and Lubrication

27. Liquid-Solid Lubricants in Conditions Pertinent to Isothermal Elastohydrodynamic Line Contact Lubrication Albert E. Yousif	167
28. The Effect and Comparison of Biodiesel-Diesel Fuel on Crankcase Oil, Diesel Engine Performance and Emissions Levent Yüksek, Hakan Kaleli, Orkun Özener, Berk Özoğuz	173

29. Diesel Engine Oil Quality and Exhaust Emission	
R. Gligorijevic, J. Jevtic, Dj. Borak	179
30. Lubricating Greases for Nuclear Power Plants Equipment	
Ortansa Florea, Marcel Luca	184
31. The Behaviour of Steel Triboelements under Various Testing Conditions	
Nicolae Diaconu, Lorena Deleanu, Iulian Gabriel Birsan	190
32. Lubrication of Manure Spreaders as an Element of Preventive Maintenance	
Mara Kandeve, Viara Požidajeva, Dragan Živković, Zvonko Sajfert	196
33. Importance of Oil Condition Monitoring in Stationary Gas Engine Applications	
Christian Schmied, Bernhard Simmerer, Franz Novotny-Farkas, Denise Kaltenböck	397
34. Inertia Effect in Microbearing Gas Flow	
Nevena Stevanovic, Snezana Milicev	202

Tribology in Machine Elements

35. Film Thickness Prediction of Radial Lip Seal	
G. Di Benedetto, M. Organisciak, G. Popovici, A. Stijepić	211
36. Friction at Rubber-Metal Springs	
Dušan Stamenković, Miloš Milošević	215
37. Evaluation of Mass-Conservative Models for the Tribological Analysis of Porous Bearings	
Victor G. Marian, Bernhard Scheichl, Natchana Tungkunagorn, Georg Vorlauffer, Friedrich Franek	220
38. Research Regarding the Improvements of Tribological Behavior at Three Cone Bits Bearings	
Ion Zidaru, Razvan George Ripeanu, Ioan Tudor, Adrian Catalin Drumeanu	224
39. Ball-Ring Friction at Low Rotating Speed	
Ilie Musca	229
40. Influence of Abrasive Wear on Ball Bearing Internal Geometry	
T. Lazovic, A. Marinkovic, D. Skoko	233
41. Selection of the Gear Materials Based on Tribological Aspects	
Andreja Ilić, Danica Josifović	238
42. Tooth Flanks Scoring Resistance of Noninvolute Teeth Profiles in Plane Toothed Cylindrical Gears	
Miroslava Nemčeková, Miroslav Vereš, Aleksandar Marinković	244

Tribology in Manufacturing Processes

43. Development of Application for Analysis of Machinability Index	
Gordana Globočki Lakić, Stevo Borojević, Đorđe Čiča, Branislav Sredanović	251
44. Some Considerations about Non-Isothermal Fatigue Wear of the Forging Die Steel	
A.C. Drumeanu, S.T. Paraschivoiu, I. Tudor, R.G. Ripeanu	255

45. The Thermal Stresses of Forging Die Evaluation Using FEM Stelian Paraschivoiu, Alexandru Pupăzescu, Cătălin Drumeanu, Ioan Tudor, Răzvan Ripeanu	261
46. Electrostatic Gecko Mechanism Thomas Prevenslik	266
47. Tribology as one Parameter Necessary for Reliability Engineering and Technical System's Reliability Improvement Miroslav M. Mijajlović, Dragan S. Milčić, Miroslav B. Đurđanović	272
48. Modern Solutions for Selecting the Corresponding Machinery Dedicated to Technological Applications Adrian Neacșa, Doru Bogdan Stoica, Nicolae Napoleon Antonescu	278
49. Trends in the Self-Organization of Tribological Contact Systems Emilia Assenova, Mara Kandeva	282
50. A New Concept of the Universal Tribometer Branko Ivkovic, Nenad Marjanovic, Miroslav Ravlic	286
51. Design of Automatic Computer Control System for the New Universal Tribometer UT-07 Miroslav Ravlic, Milan Matijevec, Branko Ivkovic	290
52. Experimental Investigation of Micron Level Clearances by Fibre Optic Interferometry Murat Yildirim, Zafer Dursunkaya, Tuba Okutucu	296
53. Application of Tribometry in Investigations of Biomaterials Fatima Zivic, Slobodan Mitrovic, Miroslav Babic, Ivana Cvijovic-Alagic	301
Trenje, habanje i podmazivanje	
54. Tribološki procesi mehanizma slobodnog hoda impulsnih frikcionih varijatora Desimir Jovanović	309
55. Promena geometrijskih veličina zupčastih kaiševa u periodu eksploatacije Blaža Stojanović	313
56. Modeliranje habanja tribosistema točak-šina Željko Pletikosić, Radoslav Pletikosić	319
57. Metode smanjenja habanja šina lakih šinskih vozila Jovan Tepić	324
58. Erozija kao osnovni mehanizam obrade abrazivnim vodenim mlazom J. Baralić, B. Nedić	330
59. Uticaj kontaktnih uslova na oblikovanje dvostranim zatezanjem tankih limova Milentije Stefanović, Srbislav Aleksandrović, Dragan Adamović, Milica Samardžić	334
60. Uticaj brzine dubokog izvlačenja sa stanjenjem debljine zida na promenu koeficijenata trenja Dragan Adamović, Milentije Stefanović, Miroslav Živković, Slavoljub Rakić	338

61. Određivanje koeficijenta trenja u procesima obrade istiskivanjem	
Velibor J. Marinković, Tomislav R. Marinković	343
62. Identifikacija triboloških procesa pri profilnoj obradi primenom genetskog algoritma	
B. Sovilj, M. Brezočnik, I. Sovilj-Nikić, V. Đokić, S. Radonjić, P. Kovač	349
63. Specifikacije motornih ulja	
Mile Stojilković	355
64. Monitoring stanja kroz testove analize ulja	
Sreten Perić, Bogdan Nedić	361
65. Istraživanje mazivih masti za podmazivanje ležaja železničkih vozila za konvencionalne brzine	
Predrag Petrović, Zoran Timotijević, Slavica Manojlović, Zoran Ivljanin	367
66. Ponašanje emulzija za obradu metala u eksploatacionim uslovima	
Marica Dugić, Pero Dugić	373
67. Podmazivanje i popravka reduktora zaokretne trake BKH-320	
Vladan Jovičić, Svetislav Lj. Marković, Dragoljub Veličković	379
68. Frikcioni ustavljač kao pomoć u radu hidrodinamičke spojnice na trakastom transporteru	
Zoran Živković, Svetislav Lj. Marković, Dragoljub Veličković	385
69. Prilog dijagnozi tehničkog stanja triboloških sistema hidrauličkog bagera RH-120-E	
Hasan Avdić, Asmir Demirović, Mehmed Hasanović	391
Authors Index	403