

X International conference



BALTTTRIB' 2019

CONFERENCE PROGRAMME

Vytautas Magnus University Agriculture Academy
Akademija, Kaunas

14-16 November 2019

Conference venue:

4th building of Vytautas Magnus University Agriculture Academy (VMU-AA)
Universiteto str. 8A, Akademija
LT-53345 Kaunas distr.
LITHUANIA

Contacts:

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CONFERENCE ORGANISED BY:



Vytautas Magnus University



Lithuanian Scientific Society Department „Tribologija“



International Tribology Council

Conference topics:

- Friction and wear of friction pairs in agricultural, transport and industrial machinery;
- Lubrication;
- Micro- and nano-scale tribology;
- Tribochemistry;
- Bio-tribology;
- Environmental issues in tribology;
- Surface science and coating engineering;
- Tribology in metal processing;
- Simulation of tribological processes;
- Experimental methods in tribology.

Address:

International Conference “BALTRIB’2019”
Institute of Power and Transport Machinery Engineering
Vytautas Magnus University Agriculture Academy (VMU-AA)
Studentu str. 15, Akademija
LT-53362 Kaunas distr.
LITHUANIA

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CONFERENCE PROGRAMME

14 November 2019

Venue: 4th Building of VMU-AA, Universiteto str. 8A, Akademija

07:30	Registration	4 th Building of VMU, lobby
09:00	Opening Session	Conference Hall (Room 214)
09:15	Plenary Session	Conference Hall (Room 214)
10:45	Coffee break	
11:00	Plenary Session	
12:30	Poster presentations	
13:30	Lunch	
14:10	Scientific sections	
	Section 1. Lubrication and lubricants	Conference Hall (Room 214)
	Section 2. Composite materials	Room 211
	Section 3. Surface processing and surface science I	Room 204
15:30	Coffee break	
16:00	Video presentation Ali Erdemir, President of ITC	Conference Hall (Room 214)
16:45	Scientific sections	
	Section 4. Simulation of tribosystems	Conference Hall (Room 214)
	Section 5. Tribological materials	Room 211
	Section 6. Surface processing and surface science II	Room 204
18:30	Get-together (Lobby, 1 st floor)	
21:00	Bus departure to hotel Best Baltic Kaunas	

15 November 2019

Venue: 4th Building of VMU-AA, Universiteto str. 8A, Akademija

09:00	Plenary Session	Conference Hall (Room 214)
10:30	Coffee break	
11:00	Plenary Session	Conference Hall (Room 214)
12:30	Lunch	
13:30	Scientific sections	
	Section 7. Surface processing and surface science III	Conference Hall (Room 214)
	Section 8. Friction and wear in tribosystems	Room 211
	Section 9. New directions and applications	Room 204
15:15	Discussions; Closing remarks	
15:45	Tour to Tribology and Surface science laboratories at the Institute of Power and Transport Machinery Engineering.	
17:00	Free time in Kaunas downtown.	

Cultural programme

16 November 2019

07:00	Departure for Cultural programme in Northwest Lithuania (Samogitia) (from hotel Best Baltic Kaunas 07:00, from VMU-AA guestrooms 07:15).
20:00	Return to hotel Best Baltic Kaunas and VMU-AA guestrooms.

REMARK: Participation in cultural programme in Northwest Lithuania is charged separately from conference fee. Content of cultural programme is presented at the end of the conference programme.

PLENARY LECTURES

14 November 2019

09:15 – 12:30 Conference Hall of 4th building of VMU-AA (Room 214)

Chairmen: ***R. Rukuiza***, Co-chairman ***J. Padgurskas***

NANOTRIBOLOGY, NANOMECHANICS AND MATERIALS CHARACTERIZATION STUDIES AND APPLICATIONS TO BIO/NANOTECHNOLOGY

B. Bhushan, The Ohio State University, USA

NANOLUBRICANTS

H. Liang, Texas A&M University, USA

ENERGY DISSIPATION IN NANOMETER-SCALE CONTACT AND SLIDING

J. Streater, Georgia Institute of Technology, USA

NATURE OF FRICTION. DEVELOPMENT OF CONCEPT

N. Myshkin, A. Grigoriev, Metal-Polymer Research Institute, Belarus

POLYMER-COMPOSITES PREPARED FROM HIGH RENEWABLE CONTENT: BRIEF OVERVIEW AND PROSPECTS FOR TRIBOLOGICAL STUDIES

E. Frollini, University of Sao Paulo, Brazil

INVESTIGATION OF BLISTERING IN THE SEALING ZONE OF RADIAL LIP SEALS DEPENDENT ON THE OPERATING FACTORS AND THE POWER LOSS

G. Weiser, V. Wollesen, O. von Estorff, Hamburg University of Technology, Germany

Video-conference report:

FRONTIERS OF SUPERLUBRICITY: A HISTORICAL PERSPECTIVE

Ali Erdemir, President of ITC, Argonne National Laboratory, USA

15 November 2019

09:00 – 12:30 Conference Hall of 4th building of VMU (Room 214)

Chairmen: ***B. Bhushan***, Co-chairman ***S. Asadauskas***

ADHESIVE WEAR: BRINGING TOGETHER ARCHARD AND RABINOWICZ

V. Popov, Technische Universität Berlin, Germany

A NEW MIXED LUBRICATION MODEL AND ITS APPLICATION IN MACHINE DESIGN

Jeng-Haur Horng, National Formosa University, Taiwan

EXPERIMENTAL TESTS ON LARGE SIZE TILTING PAD JOURNAL BEARINGS FOR TURBOMACHINERY

E. Ciulli, P. Forte, Università di Pisa, Italy, ***M. Nuti***, AM Testing s.r.l., Italy

BIOINSPIRED MECHANICALLY DURABLE SUPERLIQUIPHILIC/PHOBIC SURFACES

B. Bhushan, The Ohio State University, USA

DEVELOPMENT AND CHARACTERIZATION BITUMINOUS MASTICS, CONTAINING INDUSTRIAL BY-PRODUCTS

J. Zicans, T. Ivanova, R. Merijs-Meri, A. Abele, Riga Technical University, Latvia

TRIBOLOGICAL PROPERTIES OF DIFFERENT VARIETIES OF RAPESEED OIL AND THEIR INFLUENCING FACTORS

R. Rukuiza, J. Padgurskas, M. Legerpušis, Z. Kriaučiūnienė, Vytautas Magnus University, Lithuania

SCIENTIFIC SECTIONS
14 November 2019

Section 1

LUBRICATION AND LUBRICANTS

14:00 – 15:30 Conference Hall (Room 214). Chairmen: **W. Litwin**, Co-chairman **A. Karalis**

SELECTED DESIGN AND RESEARCH PROBLEMS OF WATER LUBRICATION OF SLIDING BEARINGS

W. Litwin, Gdansk University of Technology, Poland

INFLUENCE OF COUPLING AGENT ON WATER BASED LUBRICATING PROPERTIES OF KONJAC GLUCOMANNAN

Huichen Zhang, Tao Ni, Dalian Maritime University, China

INFLUENCE OF SIMULTANEOUS SHOT-PEENING OPERATIONAL PARAMETERS ON THE FRICTIONAL PROPERTIES OF CAST IRON UNDER LUBRICATED CONTACT CONDITIONS

H. Kasem, A. Pearl, Azrieli College of Engineering, Israel

TRIBOLOGICAL PROPERTIES OF WASTE COOKING OIL AND POSSIBILITIES FOR THEIR IMPROVEMENT

A. Karalis, D. Volskis, J. Padgurskas, Vytautas Magnus University, Lithuania

Section 2

COMPOSITE MATERIALS

14:00 – 15:30 Room 211 Chairmen: **E. Frollini**, Co-chairman **A. Žunda**

STUDY THE INFLUENCE OF SIZE AND SHAPE OF SILICA FILLERS IN POLYMER COMPOSITES ON THE TRIBOLAYER FORMATION

A.I. Dmitriev, Institute of Strength Physics and Materials Science SB RAS, Russia, **B.C. Jim, B. Wetzel**, Institute for Composite Materials (IVW), Germany

TRENDS IN TRIBOLOGICAL RESEARCHES OF DIFFERENT RUBBERS USED IN ENGINEERING

A. Mukhopadhyay, Jadavpur University, India

ORGANIC MODIFIED EPOXY RESIN. TRIBOLOGIC ASPECTS.

Mihaela Gorovei, R. Chihai, Cl. Ungureanu, A. Cojan, I.-G. Birsan, A. Cîrciumaru, Dunărea de Jos University of Galați, România

EROSIVE WEAR OF GLASS/EPOXY COMPOSITES COATING FILLED WITH HEXAGONAL BORON NITRIDE NANOPARTICLES

M. Bağcı, Konya Technical University, Turkey, **F.Ozcan**, Selcuk University, Turkey

Section 3

SURFACE PROCESSING AND SURFACE SCIENCE I

14:00 – 15:30 Room 204 Chairmen: *N. Myshkin* Co-chairman *H. Cesiulis*

CHEMICAL-MECHANICAL POLISHING

Hong Liang, Texas A&M University, USA

MECHANOCHEMICAL SURFACE FINISHING: THE REHBINDER EFFECT IN ACTION

B. Zhmud, Applied Nano Surfaces Sweden AB, Sweden, *M. Najjari*, Xtrapid Innovations, Canada

HIGH TEMPERATURE TRIBOLOGICAL PERFORMANCE OF HARD NANOSTRUCTURED MULTILAYERED COATINGS DEPOSITED ON WC-Co SUBSTRATE

A. Alamgir, *A. Bogatov*, *M. Yashin*, *M. Viljus*, Tallinn University of Technology, Estonia; *J. Sondor*, Coating center Platit, Czech Republic; *V. Podgursky*, Tallinn University of Technology, Estonia, Coating center Platit, Czech Republic

MICRO- AND NANOTRIBOLOGICAL CHARACTERIZATION OF MOLYBDENUM OXIDE BASED COATINGS ON 100CR6 BEARING STEEL SURFACES

D. Konopka, *F. Pape*, *N. Heimes*, *T. Matthias*, *S. Schöler*, *K. Möhwald*, *B.-A. Behrens*, *G. Poll*, Leibniz Universität Hannover, Germany

Section 4

SIMULATION OF TRIBOSYSTEMS

16:30 – 18:00 Conference Hall (Room 214)

Chairmen: *Jeng-Haur Horng*, Co-chairman *E. Katinas*

REFLECTIONS ABOUT ELEMENTARY TRIBOSYSTEM

S.V. Fedorov, Kaliningrad State Technical University, Russia

DEVELOPMENT OF CONCEPTIONS ABOUT TRIBOSYSTEMS WEAR IN THE LIGHT OF QUANTUM TRIBOLOGY

D. Lyubimov, Southern Federal University, Russia, *A. Patsekha*, *V. Patsekha*, Grodno State Agrarian University, Belarus

ON THE EFFECT OF COMBINING DIFFERENT BIONIC MICROSTRUCTURES TO IMPROVE THEIR ADHESION AND FRICTION PROPERTIES

D. Badler, Technion, Israel, H. Kasem, Azrieli College of Engineering, Israel

APPLICATION OF VARIATIONAL APPROACH TO NON-NEWTONIAN FLUID FLOW MODELLING

A.V. Kornaeu, *E.P. Kornaeva*, *L.A. Savin*, *A.S. Fetisov*, Orel State University named after I S Turgenev, Russia

Section 5

TRIBOLOGICAL MATERIALS

16:30 – 18:00 Room 211 Chairmen: **J. Streator**, Co-chairman **A. Griguzevičienė**

SHORT-TERM AND LONG-TERM VOLATILITIES OF FILMS FROM POLYOL ESTER AND ETHER-BASED OILS OF VARIOUS MOLECULAR WEIGHTS

D. Bražinskienė, G. Bikučius, A. Griguzevičienė, S. Asadauskas, Center for Physical Sciences and Technology (FTMC), Lithuania

LOCALIZATION OF PLASTIC DEFORMATION IN HCP-, BCC- AND FCC-ALLOYS AT INDENTATION

M.A. Skotnikova, A.A. Popov, G.V. Ivanova, G.V. Tsvetkova, Peter the Great Saint-Petersburg Polytechnic University, Russia, **J. Padgurskas**, Vytautas Magnus University, Lithuania

METHODOLOGY FOR CONFIRMING THE SAFETY OF OPERATION OF THE DRIVE BOX AND THE CENTRAL DRIVE OF PROSPECTIVE ENGINES, BASED ON TRIBOLOGY

L. Shabalinskaya, A. Maslov, L. Milinis, D. Frolov, K. Chumak, E. Ageeva, Central Institute of Aviation Motors, Russian Federation

EFFECT OF CHEMICAL COMPOSITION AND SHOT PEENING TREATMENT ON HADFIELD STEEL SWING HAMMERS EXPOSED TO IMPACT WEAR

F. Delgado, Military Aviation School of Colombian Air Force, Colombia **S.A. Rodriguez, J.J. Coronado**, Universidad del Valle, Colombia

Section 6

SURFACE PROCESSING AND SURFACE SCIENCE II

16:30 – 18:00 Room 204 Chairmen: **H. Liang**, Co-chairman **M. Rukanskis**

ELECTRODEPOSITED IRON-GROUP BASED ALLOYS COMPOSITE COATINGS WITH ALUMINA AND THEIR PROPERTIES

H. Cesuliis, Vilnius University, Lithuania, **A. Nicolenco**, Institute of Applied Physics of ASM, Moldova, **N. Tsyntsar**, Vilnius University, Lithuania, Institute of Applied Physics of ASM, Moldova

THE EFFECT OF THE NITROGEN-SATURATING COMPONENT OF THE ELECTROLYTE ON THE PROPERTIES OF COATINGS OBTAINED BY ANODIC PLASMA ELECTROLYTE NITRIDING

S.A. Silkin, S.A. Kusmanov, Kostroma State University, Russia

NEW ASPECTS OF THE PHYSICAL-CHEMICAL PROCESSING OF METALS – IN PARTICULAR, THE USE OF ELECTROSPARK ALLOYING

I. Bulan, V. Maslov, JVSC plant Topaz, Moldova

INVESTIGATION OF TRIBOLOGICAL CHARACTERISTICS OF BRONZE, Mo AND TiAlC ALLOY COATINGS DEPOSITED ON STEEL C45 USING ELECTRO SPARK METHOD

M. Rukanskis, J. Padgurskas, A. Sabalius, A. Žunda, Vytautas Magnus University, Lithuania, **V. Mikhailov**, Institute of Applied Physics, Moldova, **R. Kriūkienė**, Lithuanian Energy Institute, Lithuania

15 November 2019

Section 7

SURFACE PROCESSING AND SURFACE SCIENCE III

13:30 – 15:15 Conference Hall (Room 214)

Chairmen: **C. G. Figueiredo-Pina**, Co-chairman **N. Tsyntsaru**

TRIBOCORROSION OF CO-BASED ALLOY AND COATINGS UNDER INDUSTRIAL CONDITIONS

E. Huttunen-Saarivirta, **E. Isotahdon**, **V. Heino**, **H. Ronkainen**, VTT Technical Research Centre of Finland Ltd, Finland

CORROSION AND CORROSION-WEAR EVALUATION OF WC-12Co COATING IN SALINE SOLUTION

J. Pablo, **A. Almeida**, **C. G. Figueiredo-Pina**, Instituto Politécnico de Setúbal, Universidade de Lisboa, Portugal

STUDY OF CERMET Ni-BASED COATINGS BY LASER CLADDING FOR WEAR PROBLEMS IN AGRICULTURAL APPLICATION.

T. Perrin, **Fr. Sanchette** & **S. Achache**, University of Technology of Troyes, France

TRIBOCORROSION PROPERTIES OF NANOCRYSTALLINE W-rich Co-W, Ni-W AND Fe-W COATINGS

N. Tsyntsaru, **E. Vernickaite**, **H. Cesulius**, Vilnius University, Lithuania, **V. Martínez Nogues**, CIDETEC, Spain

INFLUENCE OF THICKNESS OF NANOLAYERS IN MULTILAYERED COMPOSITE NANOSTRUCTURED Ti-TiN-(Ti, Al, Cr) N COATING ON ADHESIVE COMPONENT OF FRICTION COEFFICIENT AND TOOL LIFE

A. Vereschaka, **G. Oganian**, **E. Sotova**, MSTU STANKIN, Russia, **M. Migranov**, Ufa State Aviation Technical University, Russia. **N. Sitnikov**, National Research Nuclear University MEPhI, Russia, **F. Milovich**, National University of Science and Technology 'MISIS', Russia, **J. Bublikov**, IKTI RAN, Russia

THE STUDY OF REINFORCED PLOUGH POINTS DURABILITY

V. Jankauskas, **E. Katinas**, **M. Pusvaškis**, Vytautas Magnus University, Lithuania, **R. Leišys**, JSC "Dangu inžinerijos centras", Lithuania

Section 8

FRICTION AND WEAR IN TRIBOSYSTEMS

13:30 – 15:15 Room 211

Chairmen: **I. Hussainova**, Co-chairman **N. Tagawa**

QUANTITATIVE INVESTIGATION OF WEAR PROPERTIES OF SOFT-METAL/DLC NANOCOMPOSITE BY TRANSMISSION ELECTRON MICROSCOPY

M. Goto, **M. Maruyama**, National Institute of Technology, Ube College, Japan

MICROSTRUCTURAL BEHAVIOUR IN WEAR OF THE BRASS CONTACT ON STEEL IN LUBRICATED MODE

S. Senhadji, **F. Belarifi**, Université d'Oran, Algeria, **F. Robbe-Valloire**, SUPMECA, France

EVALUATION OF ENERGY EFFICIENCY OF THRUST HYBRID BEARINGS WITH ACTIVE CONTROL OF LUBRICATION REGIME

A. Babin, **L. Savin**, **A. Kornaev**, Orel State University, Russia

EFFECT OF LASER HEATING ON THE SMEAR BEHAVIOR OF PFPE LUBRICANT FILMS ON MAGNETIC DISKS IN AIR AND HELIUM

N.Tagawa, K.Yakata, H.Tani, S.Koganezawa, and R.Lu, Kansai University, Japan

TRIBOLOGICAL BEHAVIOR OF Ti-6Al-4V MATRIX COMPOSITES REINFORCED WITH TiC

**I.M. Pohrelyuk, S.M. Lavrys, Karpenko Physico-Mechanical Institute of the NAS of Ukraine, Ukraine,
D.G. Savvakin, Kurdyumov Institute for Metal Physics of the NAS of Ukraine, Ukraine**

REGULATION OF THE FRICTIONAL CHARACTERISTICS DISC BRAKE

**Y.I. Osenin, Berdyansk Management and Business University, Ukraine, O.V. Malakhov, V.V. Malakhova,
Private individual, A.V. Chesnokov, University of Technology, Korolev, Russia**

Section 9

NEW DIRECTIONS AND APPLICATIONS

13:30 – 15:15 Room 204 Chairmen: ***M. Wasilczuk***, Co-chairman ***D. Kazlauskas***

DURABILITY OF WIND TURBINE GEARBOXES - SELECTED ISSUES

M. Wasilczuk, Gdansk University of Technology, Poland

A COMPARISON OF AIRBORNE WEAR PARTICLE EMISSION MODELS BASED ON METRO STATION MEASUREMENTS

M. Tu, J. Wahlström, Y. Lyu, U. Olofsson, KTH Royal Institute of Technology, Sweden

A PENDULUM RIG STUDY ON AIRBORNE TRANSMISSION AND MIGRATION OF PARTICLES FROM ARTIFICIAL FOOTBALL TURF. U. Olofsson, Y. Lyu, KTH Royal Institute of Technology, Sweden

CENTERING AND FRICTION REDUCTION BETWEEN PARTS OF THE CYLINDER-PISTON GROUP

Y. Kligerman, I. Cohen, A. Shinkarenko, Technion – Israel Institute of Technology, Israel

DEVELOPING BIO-INSPIRED MUCOADHESIVE MICROSTRUCTURES FOR LOCAL BUCCAL DRUG DELIVERY

Muhammad Abd El-haq, Kareem Abd-Rbo, Haytam Kasem, Aiman Abu Ammar, Azrieli College of Engineering Jerusalem

TRIBOMECHATRONICS AS A FIELD OF STUDY. L. Savin, A. Kornaev, R. Polyakov, A. Babin, Orel State University, Russia

POSTER PRESENTATIONS

P-1. FORMATION OF THE FRICTION SURFACE OF A FRICTION MATERIAL BASED ON COPPER DEPENDING ON THE AMOUNT OF TIN UNDER LUBRICATION CONDITIONS.

A.Ph. Ilyushchanka, A.V. Leshok, L.N. Dyachkova, N.A. Alekseenko The State Scientific Institution "O.V. Roman Powder Metallurgy Institute", Belarus

P-2. DYNAMIC BALANCE AND WEAR CONDITIONS OF AN CONIC WIND TURBINE WITH AN INCLINED AXIS.

A. Geguchadze, B. Zivzivadze Z. Geguchadze, A. Kuparadze, LEPL - Center for internships, advanced training and employment support for IDPs from Abkhazia - "Business Incubator"

P-3. POLYPROPYLENE COMPOSITES WEAR RESISTANCE PROPERTIES DUE TO SPELT AND OAT GRAIN HUSKS SHORT FIBER PREPARATION TECHNOLOGY.

I. Bochkov, M. Varkale, R. Merijs Meri, J. Zicans, Riga Technical University, Latvia, *P. Franciszczak, A.K. Bledzki*, West Pomeranian University of Technology Szczecin, Poland

P-4. EXPERIMENTAL STUDIES OF TRIBOLOGICAL PROPERTIES OF TiCN, CRN AND DLC COATED TUNGSTEN CARBIDE ROUTER CUTTERS DURING WOOD MILLING.

D. Kazlauskas, V. Jankauskas, Vytautas Magnus University, Lithuania, *G. Keturakis*, Kaunas University of Applied Sciences, Lithuania

P-5. WEAR BEHAVIOR OF CERAMIC-METAL COMPOSITES AS TOOL MATERIALS FOR FSW OF STAINLESS STEEL

M. Kolnes, J. Kübarsepp, F. Sergejev, M. Kolnes, M. Tarraste, V. Mikli, Tallinn University of Technology, Estonia

P-6. COMPOSITION OPTIMIZATION OF THE LUBRICANT BASED ON VEGETABLE RAW MATERIAL AND BIODEGRADABLE ADDITIVES

V.V. Podgornaya, L.N. Marchenko, F.A. Grigoriev, I.N. Kavaliova, A.Ya. Grigoriev, Metal-Polymer Research Institute, Belarus

P-7. COMPARISON OF TRIBOLOGICAL PROBLEMS OF IONIC LIQUIDS IN DIFFERENT LOADING CONDITIONS

R. Kreivaitis, Vytautas Magnus University Agricultural Academy, Lithuania, National Formosa University, Taiwan, *A. Rudzevičius, M. Gumbytė, A. Kupčinskas*, Vytautas Magnus University Agricultural Academy, Lithuania

P-8. TRIBOLOGICAL PROPERTIES OF PLASMA SPRAYED ALUMINA-BASED COMPOSITE COATINGS.

V. Dovydatis, L. Marcinauskas, Jacob Shiby Mathew, B. Abakevičienė, Kaunas university of technology, Lithuania, *M. Milieška, R. Kėželis, M. Aikas*, Lithuanian Energy Institute, Lithuania, *Mitjan Kalin*, University of Ljubljana, Slovenia

P-9. TRIBOTECHNICAL CHARACTERISTICS OF NANOSTRUCTURED COATINGS FORMED BY EIL METHOD

E. Auchynnika, Grodno State University named after Yanki Kupaly, Belarus, N. Kazak, V. Mikhailov, S. Ivashcu, A. Shkurpelo, Institute of Applied Physics, Moldova

P-10. EVALUATION OF THE EFFECT OF CITRIC AND BENZOIC ACIDS ON THE ENAMEL MORPHOLOGY AND WEAR RESISTANCE

C. Cardoso, Instituto Politécnico de Setúbal, Portugal, *A.C. Branco*, Instituto Politécnico de Setúbal, Universidade de Lisboa, Portugal, *A. P. Serro*, Universidade de Lisboa, Instituto Universitário Egas Moniz, Portugal, *C. G. Figueiredo-Pina*, Instituto Politécnico de Setúbal, Instituto Universitário Egas Moniz, Universidade de Lisboa, Portugal

- P-11. THE EFFECT OF LYSOZYME ON TRIBOLOGICAL RESPONSE OF Ti6Al4V/ZIRCONIA INTERFACE**
H. Teixeira, Instituto Politécnico de Setúbal, Portugal, *R. Colaço*, Universidade de Lisboa, Portugal, *A. P. Serro*, Universidade de Lisboa, Instituto Universitário Egas Moniz, Portugal, *C. G. Figueiredo-Pina*, Instituto Politécnico de Setúbal, Universidade de Lisboa, Portugal
- P-12. EFFECT OF INORGANIC AGENTS DISPERSION MODE ON THE ORGANIC MODIFIED EPOXY**
M. Carp, *R. Chihai*, *S. M. Draghici*, *A. Cîrciumaru*, Dunărea de Jos University of Galați, România
- P-13. EFFECT OF ORGANIC AGENTS DISPERSION MODE ON THE ORGANIC MODIFIED EPOXY**
R. Chihai, *M. Carp*, *S. M. Draghici*, *A. Cîrciumaru*, Dunărea de Jos University of Galați, România
- P-14. A TRIBOLOGICAL ANALYSIS OF RESINS MIXTURES**
T. Gîrnet, *I. Țicu*, *I. Paduraru-Graur*, *R. Bosoancă*, *I.-G. Bîrsan*, Dunărea de Jos University of Galați, România
- P-15. NANOSTRUCTURED CRYSTALS OF ZIRCONIUM DIOXIDE FOR MECHANICAL MODULES OF INSTRUMENTS**
V.V. Alisin, Mechanical Engineering Research Institute of the Russian Academy of Sciences, Russia
- P-16. INFLUENCE OF SECONDARY STRUCTURES FORMATION ON TRIBOLOGICAL PROPERTIES OF ALUMINUM ALLOYS- STEEL FRICTION PAIRS**
A. Mironov, *I. Gershman*, *P. Podrabinnik*, *E. Kuznetsova*, Moscow State University of Technology "STANKIN", Russia
- P-17. TRIBOLOGICAL PROPERTIES OF CARBON FIBER AND MULTI-WALLED CARBON NANOTUBE FILLED POLYAMIDE 66 COMPOSITES**
B. Ozsarikaya, Ihlas Home Appliances Manufacturing Industry and Trade Co., Turkey, *S. H. Yetgin*, Kütahya Dumlupınar University, Turkey, *H. Unal*, Sakarya University of Applied Science, Turkey
- P-18. THE INFLUENCE OF THICKENERS AND FILLERS ON THE PROPERTIES OF GREASES SYNTHESIZED FROM WASTE POLYETHYLENE TEREPHTHALATE**
I. Mandziuk, *K. Prysiazhna*, Khmelnytskyi National University, Ukraine
- P-19. MODEL OF ACCUMULATION OF TRIBO DAMAGE IN HIGH-SPEED FRICTION**
A. Dykha, *R. Sorokatyi*, *V. Dytyniuk*, Khmelnsky National University, Ukraine
- P-20. TRIBOLOGICAL BEHAVIOR OF PEO LAYERS SYNTHESIZED ON LIGHT ALLOY**
M. Student, *V. Dovhunyk*, *H. Chumalo*, *V. Posuvailo*, *V. Hvozdetzkyi*, Karpenko Physico-Mechanical institute of the National Academy of Sciences of Ukraine, Ukraine, *J. Padgurskas*, Vytautas Magnus University Agriculture Academy, Lithuania
- P-21. TRIBOLOGICAL BEHAVIOR OF PLASMA ELECTROLYTIC OXIDATION LAYERS SYNTHESIZED ON AMG6 AND D16 ALLOYS IN COUPLES WITH CAST IRON SCH 21-40**
M. Student, *V. Dovhunyk*, *H. Chumalo*, *V. Posuvailo*, *V. Hvozdetzkyi*, Karpenko Physico-Mechanical institute of the National Academy of Sciences of Ukraine, Ukraine, *J. Padgurskas*, Vytautas Magnus University Agriculture Academy, Lithuania
- P-22. THE METHOD OF DETERMINING THE RESOURCE OF THE WEAR RESISTANCE OF POLYETHYLENE PIPES FOR PULP TRANSPORTATION**
I.V. Knyazkina, *V.V. Kovriga*, POLYPLASTIC Group, Russia
- P-23. FEATURES OF THE REARRANGEMENT ON AN ATOMIC SCALE OF THE NEAR-SURFACE STRUCTURE OF A COPPER POLYCRYSTAL UNDER DYNAMIC LOADING**
A. Nikonov, *A. Nikonova*, Tomsk State University, Russia

P-24. MODELLING FRICTION SURFACE WEAR OF STEEL BASED ON FATIGUE THEORY

M.G. Shalygin, A.P., Bryansk State Technical University, Russia

P-25. POSSIBILITY OF INCREASING WEAR RESISTANCE OF STEEL BY COMBINING ANODIC PLASMA ELECTROLYTIC TREATMENT

Kusmanov S.A., Tambovskiy I.V., Silkin S.A., Korableva S.S., Belkin P.N., Kostroma State University, Russia

P-26. ON FINITE ELEMENT MODEL FOR HYDRODYNAMIC JOURNAL BEARING WITH MICROPOLAR LUBRICATION

S. Majorov, Orel State University named after I.S. Turgenev, Russia

P-27. TRIBOLOGICAL PROPERTIES OF PTFE FILLED WITH CARBON FIBERS AND SOLID LUBRICANT PARTICLES

A.P. Vasilev, T.S. Struchkova, A.A. Okhlopkova, A.G. Alekseev, North-Eastern Federal University, Russia

P-28. PERFORMANCE OF THE HYBRID BEARING WITH AIR-LUBRICATED FOIL BEARING AND ACTIVE CONTROL

M.Bondarenko, R.Polyakov, A.Gorin, Orel State University, Russia

P-29. STUDY OF OPERATIONAL CHARACTERISTICS OF TRIBOLOGICAL CONJUNCTION BY DISCRETE-EVENT COMPUTER SIMULATION

A.A. Rachishkin, Tver State Technical University, Russian Federation, **O.V. Sutyagin**, Science and Innovation center of operational reliability of mechanical systems, Russian Federation

P-30. LOAD CAPACITY OF FOIL GAS DYNAMIC BEARINGS WITH CONICAL SURFACES LUBRICATED WITH LOW-VISCOSITY CRYOGENIC FLUIDS

Li Sheng-Bo, Xiamen University of Technology, China, **L.A. Savin, A.V. Sytin, V.O. Tyurin**, Orel State University named after S. Turgenev, Russia

P-31. THE TECHNIQUE OF THIN ZINC OXIDE FILMS SYNTHESIS BY ALD METHOD

O. Kulakov, Mechanical Engineering Research Institute of the Russian Academy of Sciences, Physical Technological Institute, MIREA – Russian Technological University, Russia

P-32. INCREASING WEAR RESISTANCE OF Ti6Al4V ALLOY BY ANODIC SATURATION WITH CARBON AND NITROGEN

I.V. Tambovskiy, S.A. Kusmanov, S.S. Korableva, M.I. Tambovskaya, M.R. Komissarova, P.N. Belkin, Kostroma State University, Russia

P-33. STUDY OF TRIBOTECHNICAL AND ECOLOGICAL EFFICIENCY OF MOTOR CAR TRANSMISSION OIL “KOLKHETI-2” PREPARED WITH NANOTECHNOLOGY

J. Iosebidge, L. Kakashvili, G. Abramishvili, E. Machavariani, N. Diasamidze, M. Khvedelidze, D. Aladashvili, Georgian Technical University, Georgia

P-34. IMPROVEMENT IN THE RAILWAY FRICTION BRAKE DESIGN. **Y. Osenin**, Berdyansk Management and Business University, Ukraine, **Y. Krivosheya**, Donetsk Railway Transport Institute, Ukraine, **L. Antoshkina**, Berdyansk Management and Business University, Ukraine, **A. Chesnokov**, University of Technology, Korolev, Russia, **V. Bugaenko**, Retired employee, Ukraine

LANGUAGE

The conference language is English.

INFORMATION FOR SPEAKERS

Duration of oral reports:

- Plenary sessions – 30 min (including 5 minutes discussion)
- Scientific sessions – 20 min (including discussion)

Sections' rooms will be equipped for **Multimedia presentations**.

Area of poster presentation should not exceed **A1 format**.

ARRIVAL

There are three means of most popular regular public transport in Lithuanian cities - buses, trolleybuses and minibuses. It is possible to buy the ticket at a driver. Buses No 18 and 32 arrives from city centre to conference venue at Vytautas Magnus University. Comprehensive information about arrival and tickets:

<http://int.asu.lt/arrivtoLT.html>

Arriving from airports:

After arrival to **Kaunas airport** you may transfer to Kaunas railway and bus stations by bus No 29 or go with taxi (price ca 20 EUR) to Kaunas downtown or directly to VMU AA campus. Timetables of public transport in Kaunas are available at

<https://www.stops.lt/kaunas/#kaunas/en>

After arrival to **Vilnius airport** to Vilnius railway and bus stations (same place) is possible by buses No 1, 2 and 4. Timetables of public transport in Vilnius are available at:

<https://www.stops.lt/vilnius/#vilnius/en>

Timetable of buses from Vilnius to Kaunas (buses every 20-30 min) at:

<http://www.autobusubilietai.lt/>

Timetable of trains from Vilnius to Kaunas at <https://www.traukiniobilietas.lt/portal/en>

Other transport information:

University's campus map at:

<http://int.asu.lt/tsenwhere.pdf>

Touristic information of Kaunas:

<http://visit.kaunas.lt/en/>

Touristic information of Lithuania:

<https://www.lithuania.travel/en/>

CULTURAL PROGRAM

16 November 2019

Agenda of cultural program in Northwest Lithuania (Samogitia)

Samogitia (Žemaitija) is one of the largest regions of Lithuania, located in Northwest Lithuania. It is distinguished by its peculiar culture, language, even human character. Here people have a slow, calm, often stubborn character. This year Samogitia, as well as Lithuania as a whole, commemorates the 800th anniversary of the first commemoration of Samogitia in historical sourcebooks.

07:00 Departure from hotel Best Baltic Kaunas at the downtown (A. Mickevičiaus str. 28, LT-44311 Kaunas)

07:15 Departure from VMU-AA guestrooms (Universiteto str. 8, Akademija)

10:00 Visit at Telšiai (Telšė – unofficial capital city from Samogitia).



Telšiai is a city in [Lithuania](#) with about 25,000 inhabitants. It is the capital of [Telšiai County](#) and [Samogitia](#) region, and it is located on the shores of Lake Mastis.

Lake Mastis is mentioned in various legends and myths. The city was named after a small rivulet, the Telšė, which flows into Lake Mastis. A legend has it that a knight named Džiugas founded the city. Telšiai was first mentioned in written sources around 1450, but the oldest archeological findings in the area of the city are from the [Stone Age](#).

In 1897, the Jewish population numbered 3088, 51% of the total population. Jews were expelled during

World War I, but by 1939, 2800 had returned, out of a general population of 8000. Many were involved in trade which included produce, wood, and crafts. A major source of income was the famous Telšiai Yeshiva, (a school for Talmudic study, sometimes called a rabbinical college). It was the largest and most famous yeshiva in Lithuania between 1875 and 1941, establishing Telšiai as a center of Torah studies (the entire body of religious law and learning, including both sacred literature and oral tradition).

https://www.youtube.com/watch?v=-aBeeKJ_64I

12:00 Departure to the Cold War Museum and Samogitia National Park.

13:00 Visit at COLD WAR MUSEUM.

Cold War Museum is located in the former Soviet Union`s complex of ballistic missile silo launch. Since 1963 up to 1978, there had been deployed four medium- range ballistic missiles SS-4, armed with 2- megaton power thermonuclear warheads. These missiles, together with the nearby terrestrial platforms of analogue missile launching, had created a common Soviet nuclear armament group in Lithuania, which was able to destroy all the Europe.

<https://www.youtube.com/watch?v=XYhkvArA6-w>



15:00 Departure to ethnographic countryside style houses „Pas tėvukus“:

Visit at ethnographic countryside style houses „Pas tėvukus“ (To my parents) on the shore of the Beržoras lake. Lunch and tasting of Samogitian food.



17:00 Departure to VMU-AA.

20:00 Return to hotel and VMU-AA guestrooms and Best Baltic Kaunas.

Participation at cultural programme on Saturday costs 60 EUR.

CULTURAL PROGRAMME IS NOT INCLUDED IN CONFERENCE FEE AND SHOULD BE PAID SEPARATELY AT THE REGISTRATION.



VMU AA Campus Plan

1. Central Building (Faculty of Agronomy, Faculty of Forest Sciences and Ecology)
2. II Building (Faculty of Agricultural Engineering)
3. III Building (Faculty of Bio economy Development, Faculty of Water and Land Management)
4. IV Building **Conference BALTRIB 2019** (Agricultural Science and Technology Park)
5. VI Building
6. VII Building (Institute of Forest Management and Forestry Institute)
7. VIII Building (Open Access Research Centre)
8. I Dormitory
9. II Dormitory
10. III Dormitory (Kindergarten-nursery)
11. IV Dormitory (Health Care Centre PSPC)
12. V Dormitory (Subdistrict administration)
13. VII Dormitory
14. Exhibition Pavilion No.1
15. Exhibition Pavilion No.2
16. Exhibition Pavilion No.3
17. Communication and Technology Transfer Centre.