

**International Conference**  
**Advanced Mechanics:**  
**Structure, Materials, Tribology**  
**22.-26. September 2025**

**Venue:**  
Samarkand State University

**Preliminary Program**

**Organizer:**

**Prof. Dr. Valentin L. Popov**  
Technische Universität Berlin  
Germany

**Prof. Dr. Askar Z. Khasanov**  
Samarkand State University,  
Uzbekistan

# Preliminary Program

## Program at a glance

<b>September 22</b>	
8:30 – 9:30	Registration
9:15 – 9:30	<b>Opening</b>
9:30 – 11:00	Plenary lectures
11:00-11:30	Coffee break
11:30 –12:30	Plenary lectures
12:30 – 12:35	Conference Photo
12:35 - 14:00	Lunch
14:00 –15:30	Plenary lectures
15:30-16:00	Coffee break
16:00 –17:30	Plenary lectures
<b>September 23</b>	
9:00 – 10:30	Plenary lectures
10:30 – 11:00	Coffee break
11:00 – 12:30	Plenary lectures
12:30 - 14:00	Lunch
14:00 – 16:00	Plenary lectures
19:00	Conference dinner
<b>September 24</b>	
9:00 – 10:30	Plenary lectures
10:30 – 11:00	Coffee break
11:00 – 12:20	International Symposium on Contact Mechanics and Tribology
12:20 – 14:00	Lunch
14:00 – 15:20	International Symposium on Contact Mechanics and Tribology
15:20 - 15:50	Coffee break
15:50 – 17:30	International Symposium on Contact Mechanics and Tribology
<b>September 25</b>	
9:00 – 10:30	Plenary lectures
10:30 – 11:00	Coffee break
11:00 – 12:20	International Symposium on Contact Mechanics and Tribology
12:20 – 14:00	Lunch
14:00 – 15:20	International Symposium on Contact Mechanics and Tribology
15:20 - 15:50	Coffee break
15:50 – 17:30	International Symposium on Contact Mechanics and Tribology
<b>September 26</b>	
9:00 – 10:30	Plenary lectures
10:30 – 11:00	Coffee break
11:00 – 12:20	Section A
12:20 - 14:00	Lunch
14:00 – 15:20	Section A
15:20 – 15:50	Coffee break
15:50 – 17:10	Plenary lectures
17:10	Closing
<b>September 22-26</b>	Poster Sessions

## September 22

8:30 – 9:15	Registration
9:15 – 9:25	<b>Welcome Address by Rector of Samarkand State University</b> <i>Professor Rustam Ibragimovich Khalmuradov</i>
9:25 – 9:30	<b>Opening:</b> <i>V.L. Popov</i>
<b>Plenary lectures</b>	
<i>Chair: V.L. Popov</i>	
9:30 – 10:00	Jianbin Luo <b>New Progress in Solid-Liquid Combined Superlubricity (SLCS)</b> <i>State Key Laboratory of Tribology in Advanced Equipment, Tsinghua University, Beijing, China</i>
10:00 - 10:30	Daniele Dini <b>Towards a Unified Framework for Modelling Engineering Interfaces Across the Scales</b> <i>Imperial College of London, UK</i>
10:30 - 11:00	Mitjan Kalin <b>Friction Laws of Amontons and Coulomb: Re-Evaluated Through the View of the Real Contact Area</b> <i>Laboratory for tribology and interface nanotechnology, University of Ljubljana, Slovenia</i>
11:00 - 11:30	<b>Coffee break</b>
<i>Chair: J. Luo</i>	
11:30 - 12:00	Koshi Adachi <b>Scientific and Technological Perspectives on Running-in: Toward Ultra-low Friction and High-performance Interfaces</b> <i>Laboratory of Tribology and Nanointerface Engineering, Department of Mechanical Systems Engineering, Tohoku University, Japan</i>
12:00 - 12:30	Seong H. Kim <b>Is Superlubricity an Intrinsic or Extrinsic Property of Hydrogenated Diamond-Like Carbon (HDLC)?</b> <i>Department of Chemical Engineering, Pennsylvania State University, USA</i>
12:30 – 12:35	<b>Conference Photo</b>
12:35 - 14:00	<b>Lunch</b>
<i>Chair: M. Kalin</i>	
14:00 - 14:30	Ramin Aghababaei <b>Contact Mechanics of Soft Polymeric Shells: A Path to Tunable Friction and Adhesion</b> <i>Aarhus University, Denmark</i>
14:30 - 15:00	Ken Nakano <b>Viscoelastic Toy Model Approach to Stick-Slip Instability Without Friction Laws</b> <i>Yokohama National University, Japan</i>
15:00 - 15:30	Alessandro Ruggiero <b>In-Silico Total Hip Replacement Wear: Novel Insights and Perspectives in Synovial Lubrication Modelling of Rough Surfaces</b> <i>Department of Industrial Engineering, University of Salerno, Fisciano (SA), Italy</i>
15:30 – 16:00	<b>Coffee break</b>
<i>Chair: K. Nakano</i>	
16:00 -16:30	<u>Qiang Li</u> <b>Tangential Contact of an Elastic Quarter-Space and its Applications in Partial Slip</b> <i>Institute of Mechanics, Technische Universität Berlin, Germany</i>
16:30 – 17:00	Salvador Pané <b>Magnetic Small-Scale Robots for Biomedical Applications</b> <i>Multi-Scale Robotics Lab, Institute of Robotics and Intelligent Systems, ETH Zurich, Zurich, Switzerland</i>
17:00 – 17:30	Josep Puigmartí-Luis <b>Unlocking Materials Innovation With Microfluidic Technologies</b> <i>University of Barcelona, Spain</i>

## September 23

### Plenary lectures

Chair: S.H. Kim

9:00 - 9:30

Sujeet K. Sinha  
**Challenges in “Soft Matter Tribology” for Applications to Orthopaedic Implants**  
*Department of Mechanical Engineering, Indian Institute of Technology Delhi, India*

9:30 – 10:00

Guoxin Xie, Yi Zhang, Peili Gao, Hao Chen, Yunze Li, Lin Zhang, Xiaoyi Wu, Jianbin Luo  
**Superlubricity Microcapsules**  
*State Key Laboratory of Tribology in Advanced Equipment, Tsinghua University, Beijing, China*

10:00 -10:30

Enrico Gnecco<sup>1</sup>, Hesam Khaksar<sup>1</sup>, Pawel Koczanowski<sup>1</sup>, Juan J. Mazo<sup>2</sup>, Paolo Nicolini<sup>3</sup>  
**Early-Stage Wear of Polymeric and Layered Materials at the Nanoscale**  
<sup>1</sup>*Marian Smoluchowski Institute of Physics, Jagiellonian University, Krakow, Poland*  
<sup>2</sup>*Department of Structure of Matter, Thermal and Electronic Physic, Complutense University Madrid, Spain*  
<sup>3</sup>*Institute of Physics (FZU), Czech Academy of Sciences, Prague, Czech Republic*

10:30 – 11:00

**Coffee break**

Chair: E. Gnecco

11:00 – 11:30

Shingo Ozaki<sup>1</sup>, Kenta Takase<sup>2</sup>, Shunsuke Muryokoji<sup>2</sup>, Masatsugu Otsuki<sup>3</sup>,  
**Sand-Flow Simulation Under Low-Gravity Conditions Using Discrete Element Method**  
<sup>1</sup>*Division of System Research, Faculty of Engineering, Yokohama National University, Yokohama, Japan*  
<sup>2</sup>*Graduate School of Engineering Science, Yokohama National University, Yokohama, Japan*  
<sup>3</sup>*Japan Aerospace Exploration Agency, Sagami-hara-shi, Kanagawa, Japan*

11:30 – 12:00

Linmao Qian, Liang Jiang, Yuan Wu  
**Atomic Level Material Removal Mechanism of Chip Surface**  
*Tribology Research Institute, State Key Laboratory of Rail Transit Vehicle System, Southwest Jiaotong University, Chengdu, China*

12:00 – 12:30

Yiyang Liang, Feng Feng, Pingfa Feng  
**A Multi-Scale Measurement Method and Its Instrumentation to Quantify Honeycomb Composites**  
*Division of Intelligent Instrument and Equipment, Shenzhen International Graduate School, Tsinghua University, Shenzhen, China*

12:30 – 14:00

**Lunch**

Chair: S. Ozaki

14:00 - 14:30

R. Gnanamoorthy and Y. Muluken  
**Fretting Damage of Electric Vehicle Traction Motor Bearing Insulation Coatings**  
*Department of Mechanical Engineering Indian Institute of Technology Madras, Chennai, India*

14:30 - 15:00

Markus Heß  
**On the Influence of an Elastic Material Gradient on Common Problems of Plane Contact Mechanics**  
*Technische Universität Berlin, Berlin, Germany*

15:00 – 15:30

Bagdat Teltayev<sup>1</sup>, Umir Kalybayev<sup>2</sup>, Yerbol Aitbayev<sup>1</sup>, Azamat Zhaisanbayev<sup>3</sup>  
**Comprehensive Study of Plastic Deformation of Road Asphalt Concrete Pavement in Climatic Conditions of South Kazakhstan**  
<sup>1</sup>*U. Joldasbekov Institute of Mechanics and Engineering,*  
<sup>2</sup>*Kazakh Automobile and Road Institute named after L. B. Goncharov (KazADI),*  
<sup>3</sup>*Road Research and Production Center,*

15:30 – 16:00

Kamaraj Muthuswamy<sup>1</sup>, Usha Rani Shanmugam<sup>1</sup> and Kesavan Dhanasekar<sup>2</sup>  
**Fretting Wear Behaviour of Additively Manufactured Ti-6Al-4V alloys**  
<sup>1</sup>*Dept of Metallurgical and Materials Engineering Indian Institute of Technology Madras, Chennai, India*  
<sup>2</sup>*Dept of Mechanical Engineering Indian Institute of Technology Palakkad, Palakkad, India*

19:00

**Conference dinner**

## September 24

### Plenary lectures

Chair: L. Qian

9:00 - 9:30

Alexander M. Korsunsky<sup>1,2</sup>, Eugene S. Statnik<sup>1,2</sup>, Alexey I. Salimon<sup>1,3</sup>, Iuliia A. Sadykova<sup>1,2</sup>, Maxim V. Sidorov<sup>1,2</sup>  
**Micromechanics of Materials: Some Main Mechanisms, Methods and Models**  
<sup>1</sup>Skolkovo Institute of Science & Technology, Moscow, Russia  
<sup>2</sup>Center for AeroSpace Materials & Technologies (CASM&T), Moscow Aviation Institute, Moscow, Russia  
<sup>3</sup>National University of Science and Technology, Moscow, Russia

9:30 – 10:00

Evgeny Kolubaev, Andrey Chumaevskii  
**Mechanisms of Structure Formation in Friction Stir Welding And Processing**  
Institute of Strength Physics and Materials Science of the Siberian Branch of the Russian Academy of Sciences, Tomsk, Russia

10:00 -10:30

Haytam Kasem and Zain Qatmera  
**A Novel Tribometer for Evaluating Synovial Fluid Lubrication in Osteoarthritic Knee Joints**  
Tribology and Biotribology Research Center, Azrieli College of Engineering, Jerusalem, Israel

10:30 – 11:00

Coffee break

### International Symposium on Contact Mechanics and Tribology

Organizer: Valentin L. Popov (Germany), Ken Nakano (Japan), Daniele Dini (UK), Guoxin Xie (China)

Chair: V.L. Popov

11:00 – 11:20

Kivanc Dulger<sup>1</sup>, Gencaga Purcek<sup>2</sup>  
**In Vitro Wear Behavior of Three Dental Restorative Composites With Different Polymerization Mechanisms in Three Simulated Media**  
<sup>1</sup>Department of Restorative Dentistry, Karadeniz Technical University, Trabzon, Turkey  
<sup>2</sup>Department of Mechanical Engineering, Karadeniz Technical University, Trabzon, Turkey.

11:20 – 11:40

Dennis Konopka, Ricardo Alves da Silva Crespo Martins, Florian Pape, Gehard Poll, Max Marian  
**Tribo-Oxidative Protection Mechanisms of Molybdenum-Based PVD Coatings under Dry Sliding**  
Institute for Machine Design and Tribology (IMKT) / Leibniz Universitaet Hannover, Germany

11:40 – 12:00

Lei Chen<sup>1,2</sup>, Linmao Qian<sup>1,2</sup>  
**Tribological Tuning: Surface Precision and Modification**  
<sup>1</sup>Tribology Research Institute, School of Mechanical Engineering, Southwest Jiaotong University, Chengdu, China  
<sup>2</sup>Atomic-level Manufacturing Research Center, Southwest Jiaotong University, Chengdu, China

12:00 – 12:20

Katarzyna Topczewska, Michał Kuciej, Aleksander Yevtushenko  
**Investigation on Frictional Heating in a Railway Brake Disc During Multiple Braking**  
Faculty of Mechanical Engineering, Bialystok University of Technology, Poland

12:20 – 14:00

Lunch

Chair: G. Xie

14:00 - 14:20

Lei Liu, Rong Kong  
**Numerical Analysis of Adhesive Wear of Gears With Constant Relative Curvature Under Mixed Elastohydrodynamic Lubrication**  
College of Mechanical and Electrical Engineering, Nanjing University of Aeronautics & Astronautics, Nanjing, China

14:20 - 14:40

Yauheni Auchynnikaŭ<sup>1</sup>, Gafur Narzullaev<sup>2</sup>, Aleksandr Voznyakovskiy<sup>3</sup>, Aleksey Voznyakovskiy<sup>3</sup>, Aleksey Auchynnikaŭ<sup>1</sup>  
**Mechanically Activated Doping Modifier for Tribotechnical Polymeric Materials**  
<sup>1</sup>Yanka Kupala state University of Grodno, Belarus  
<sup>2</sup>Samarkand State University, Uzbekistan  
<sup>3</sup>Ioffe Institute, Russia

14:40 – 15:00

Abhinav Manoj, Guduguntla Dhanu Sree, Piyush Chandra Verma  
**Role of Gas Flow Rate and Beam Size on Laser Hardening Process for Wear Behavior of Brake Disc**  
Department of Mechanical Engineering, Birla Institute of Technology and Science, Pilani, Telangana, India

15:00 – 15:20

Shuai Shi, Xiao Ma, Xinfeng Tan, Dan Guo and Jianbin Luo  
**Microscopic Mechanism of Vibration Controlled Friction**  
State Key Laboratory of Tribology in Advanced Equipment, Tsinghua University, Beijing 100084, China

15:20 – 15:50

Coffee break

Chair: Y. Auchynnikaŭ

15:50 – 16:10

Dursun Meriç<sup>1</sup>, Doğukan Kolcu<sup>2</sup>, Hasan Gedikli<sup>2</sup>, Ömer Necati Cora<sup>2</sup>, Gencaga Purcek<sup>2</sup>,  
**Optimization of Cold Spray Process Parameters for Ti-6Al-4V Using the Taguchi Method**  
<sup>1</sup>Abdullah Kanca Vocational School, Karadeniz Technical University, Trabzon, Turkey  
<sup>2</sup>Department of Mechanical Engineering, Karadeniz Technical University, Trabzon, Turkey

16:10 – 16:30	Ismail Koriba, <u>Alaeddine Kaouka</u> , Khedidja Benarous, and Lakhdar Hachani <b>Boriding of Titanium Alloys: Layer Structure, Diffusion Behavior, and Tribological Properties</b> <i>Laboratoire of Applied Sciences and didactic, Higher School of Teachers, Laghouat-Algeria</i>
16:30 – 16:50	Vladimir I. Pakhaliuk <sup>1</sup> , <u>Aleksandr M. Poliakov</u> <sup>1,2</sup> and Aleksandr I. Ryzhkov <sup>1</sup> <b>A Novel Design of Mechatronic Simulator for Total Knee-Joint Prostheses Wear Testing</b> <sup>1</sup> <i>Laboratory of Biomechanics, Sevastopol State University, Sevastopol, Russia</i> <sup>2</sup> <i>Sirius University of Science and Technology, Sirius Federal Territory, Russia</i>
16:50 – 17:10	<u>Safa Unal</u> , Haci Abdullah Tasdemir <b>Tribological Assessment of Engineering Polymers Sliding Against 6061-T6 Aluminum Alloy Under Dry Conditions</b> <i>Department of Mechanical Engineering, Istanbul Technical University, Istanbul, Turkiye</i>
17:10 – 17:30	Bagdat Teltayev <sup>1</sup> , <u>Aizhan Muta</u> <sup>2</sup> , Yerbol Aitbayev <sup>1</sup> , Azamat Zhaisanbayev <sup>3</sup> <b>Cyclic Freeze-Thaw Characteristics of Asphalt Concrete Pavement in Almaty Region</b> <sup>1</sup> <i>U. Joldasbekov Institute of Mechanics and Engineering,</i> <sup>2</sup> <i>Kazakh National Women's Teacher Training University,</i> <sup>3</sup> <i>Road Research and Production Center,</i>

## Symposium "The Mechanics of Aerospace Materials"

Organizer: Prof. Alexander M. Korsunsky

Skolkovo Institute of Science & Technology, Russia, Professor and Fellow Emeritus, Trinity College, University of Oxford, UK

	Chair: A.M. Korsunsky
11:00 – 11:20	<u>Taiyo Maeda</u> <sup>1</sup> , Toshio Osada <sup>2,3</sup> , Shingo Ozaki <sup>2,3</sup> <b>An Evaluation Scheme for Strength Scatter in Ceramic Components Based on Defect Size Distribution Inversely Estimated From Standardized Test Results</b> <sup>1</sup> <i>Graduate School of Engineering Science, Yokohama National University, Japan</i> <sup>2</sup> <i>Division of System Research, Faculty of Engineering, Yokohama National University, Japan</i> <sup>3</sup> <i>High-Reliability Heat-Resistant Materials Group, Research Center for Structural Materials, National Institute for Materials Science, Japan</i>
11:20 – 11:40	Kamal M.W. Hammad <b>Review Article on Composite Material Prediction Based on Rational Experimental-Computational Correlation</b> <i>Skolkovo Institute of Science and Technology, Moscow, Russia</i>
11:40 – 12:00	<u>Igor A. Zorin</u> <sup>1</sup> , Eugene S. Statnik <sup>1,2</sup> , Eugene N. Prokopev <sup>2</sup> , Alexey I. Salimon <sup>1,2</sup> , Alexander M. Korsunsky <sup>1</sup> , Vladimir S. Pisarev <sup>3</sup> , Sviatoslav I. Eleonsky <sup>3</sup> , Andrey I. Shtypel <sup>2</sup> <b>Double Indentation ('Dimpling') Deformation and Residual Stress Analysis in Aluminium Alloy 2024-T6 Plates</b> <sup>1</sup> <i>Skolkovo Institute of Science and Technology, Moscow, Russia</i> <sup>2</sup> <i>National University of Science and Technology "MISIS", Moscow, Russia</i> <sup>3</sup> <i>The Zhukovsky Central Aero-Hydrodynamics Institute (TsAGI), Zhukovsky, Moscow Region, Russia</i>
12:00 – 12:15	<u>Gregory V. Fedotenkov</u> <sup>1</sup> and Yana A. Vahterova <sup>2</sup> <b>Solving Classical and Generalized Heat Conduction Equations Using Deep Learning Technologies and Physics-Informed Neural Networks</b> <sup>1</sup> <i>Moscow Aviation Institute (National Research University), department «Strength of Materials, Dynamics and Strength of Machines», Institute of Mechanics of Lomonosov Moscow State University, Dynamic Test Laboratory</i> <sup>2</sup> <i>Moscow Aviation Institute (National Research University), department «Strength of Materials, Dynamics and Strength of Machines»</i>
12:15 – 12:30	<u>Pshenichnov S.G.</u> , Korovaytseva E.A., Razorenova A.M. <b>Study of Non-Stationary Processes in Inhomogeneous Viscoelastic Materials</b> <i>Lomonosov Moscow State University, Institute of Mechanics, Dynamic Test Laboratory, Moscow, Russia</i>

12:30 – 14:00

**Lunch**

	Chair: G.V. Fedotenkov
14:00 - 14:20	Viktor P. Kuznetsov, <u>Igor A. Vorontsov I.A.</u> , Andrey S. Skorobogatov <b>Definition of the Feed Influence During the FSP Process of Steel Surfaces on Hardening by Alloying With Wc-Co Tool Particles. Modeling And Experiment</b> <i>Ural Federal University, Yekaterinburg, Russia</i>
14:20 - 14:40	<u>Isik Cetintav</u> , Auezhan Amanov <b>Advanced Finite Element Modeling of Ultrasonic Nanocrystal Surface Modification (UNSM) on Inconel 718: A Computational Approach to Surface Integrity and Residual Stress Distribution</b> <i>Trakya University, Turkey</i>
14:40 – 15:00	<u>Yi Luo</u> , Xiangjun Zhang <b>Passive Localization of Medical Intubation Tips Using Acoustic Metamaterials</b> <i>Tsinghua University, Beijing, China</i>

15:00 – 15:20	<u>Sergey Lupuleac</u> , Artem Eliseev, Alexander Koloskov, Julia Shinder, Nadezhda Zaitseva <b>Hybrid Joining in Aircraft Assembly: Mathematical Modeling and Numerical Simulation</b> <i>Peter the Great St. Petersburg Polytechnic University, Russia</i>
15:20 – 15:50	<b>Coffee break</b>
	Chair: S. Lupuleac
15:50 – 16:10	Ming-Hsiang Ku <sup>1</sup> , Shou-Wun Chen <sup>1</sup> , Chien-Lun Li <sup>2</sup> , and <u>Ming-Wei Wu</u> <sup>1</sup> <b>The compressive properties of a new hybrid lattice structure of Corrax maraging stainless steel metamaterial</b> <sup>1</sup> <i>Department of Material and Mineral Resources Engineering, National Taipei University of Technology, Taipei, Taiwan</i> <sup>2</sup> <i>voestalpine Technology Institute (Asia) Co., Ltd., Nantou, Taiwan</i>
16:10 – 16:30	<u>Chen Xiao</u> , Yang Wang, Lei Chen, Linmao Qian <b>Capillary Adhesion Governs the Multi-Asperities Contact Friction Behavior: Experiments and BEM Contact Calculations</b> <i>Research Institute of Frontier Science, Southwest Jiaotong University, Chengdu, China</i>
16:30 – 16:50	<u>Jing Wang</u> <sup>1</sup> , Zihong Ma <sup>1</sup> , Antonius Adrianus Lubrecht <sup>2</sup> , Zhuo Meng <sup>1</sup> , Yize Sun <sup>1</sup> <b>Efficient Multi-Grid Solver for Local Stress Concentrations in Fiber-Reinforced Materials</b> <sup>1</sup> <i>College of Mechanical Engineering, State Key Laboratory of Advanced Fiber Materials, Donghua University, Shanghai, China</i> <sup>2</sup> <i>Univ Lyon, INSA Lyon, LaMCoS, CNRS UMR, Villeurbanne, France</i>
16:50 – 17:10	<u>Merkhat Dautbekov</u> <sup>1,2</sup> , Leila Sulyubayeva <sup>3</sup> , Daur Kakimzhanov <sup>1,2</sup> , Nazerke Mukhtanova <sup>1,2</sup> <b>Investigation of the Performance Characteristics of Power Equipment Components Operating Under Load Conditions</b> <sup>1</sup> <i>PlasmaScience LLP, Ust-Kamenogorsk, Kazakhstan</i> <sup>2</sup> <i>D. Serikbayev East Kazakhstan Technical University, Ust-Kamenogorsk, Kazakhstan</i> <sup>3</sup> <i>S. Amanzholov East Kazakhstan University, Ust-Kamenogorsk, Kazakhstan</i>
17:10 – 17:30	<u>Ibrakhim Mirzaev</u> <sup>1</sup> , Djumaev Khikmatulla <sup>1</sup> , Malikjon Turdiev <sup>1</sup> , Jakhongir Shomurodov <sup>2</sup> and Rakhmatov Nodirbek <sup>3</sup> <b>On the Equations of Dynamics of a Roller Seismic Isolation Bearing</b> <sup>1</sup> <i>Tashkent State Transport University, Faculty of Civil Engineering, Department of Applied Mechanics, Uzbekistan</i> <sup>2</sup> <i>Renaissance Education University, Faculty of Mathematics and Economics, Department of Mathematics and Natural Sciences, Uzbekistan</i> <sup>3</sup> <i>National University of Uzbekistan, Faculty of Mathematics, Department of differential equations and mathematical physics, Uzbekistan</i>

## September 25

### Plenary lectures

	Chair: D. Dini
9:00 - 9:30	<u>Vladislav A. Yastrebov</u> <sup>1</sup> and Paul Beguin <sup>2</sup> <b>Modelling of Contact Electric Resistance of Rough Surfaces in Presence of Oxides</b> <sup>1</sup> <i>Mines Paris - PSL University, CNRS, Centre des matériaux, Versailles, France</i> <sup>2</sup> <i>SKF Magnetic Mechatronics, Vernon, France</i>
9:30 – 10:00	<u>Anatoly Vershinin</u> <sup>1</sup> , Michael Cartsev <sup>2</sup> , Viktor Kozlov <sup>2</sup> , Vladimir Levin <sup>1</sup> <b>Application of spectral element method for solving problems of geomechanics and soil mechanics in CAE Fidesys</b> <sup>1</sup> <i>Lomonosov Moscow State University</i> <sup>2</sup> <i>Fidesys LLC</i>
10:00 -10:30	<u>Feodor M. Borodich</u> <sup>1</sup> , Zhizhen Jiang <sup>1</sup> , Zaida Gao <sup>1</sup> , Nikolay V. Perepelkin <sup>2</sup> , Xiaoqing Jin <sup>1</sup> <b>The Johnson-Kendall-Roberts Formalism for Adhesive Contact Problems and Its Numerical Implementation</b> <sup>1</sup> <i>College of Aerospace Engineering, Chongqing University, Chongqing, China.</i> <sup>2</sup> <i>School of Built Environment, Engineering and Computing, Leeds Beckett University, Leeds, UK.</i>
10:30 – 11:00	<b>Coffee break</b>

### International Symposium on Contact Mechanics and Tribology

Organizer: Valentin L. Popov (Germany), Ken Nakano (Japan), Daniele Dini (UK), Guoxin Xie (China)

	Chair: F.M. Borodich
11:00 – 11:20	<u>Igor V. Tatarintsev</u> <sup>1</sup> , Viktor P. Kuznetsov <sup>1</sup> , Kazokboy Mamasoliev <sup>2</sup> <b>Impact of Nanostructuring Burnishing and Deformation Profiling of Lubricating Microcavities on Tribological Properties of Aisi 3135 Steel Surface</b> <sup>1</sup> <i>Ural Federal University</i> <sup>2</sup> <i>Samarkand State University</i>

11:20 – 11:40	<p><u>Debottam Datta</u><sup>1</sup>, Enrico Gnecco<sup>2</sup>, Nitya Nand Gosvami,<sup>3</sup> J. P. Singh<sup>4</sup>  <b>Nanotribological Studies of Bioinspired Titania Nanotextured Surfaces</b>  <sup>1</sup><i>School of Interdisciplinary Research, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India</i>  <sup>2</sup><i>Marian Smoluchowski Institute of Physics, Jagiellonian University, Krakow, Poland</i>  <sup>3</sup><i>Department of Material Science and Engineering, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India</i>  <sup>4</sup><i>Department of Physics, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India</i></p>
11:40 – 12:00	<p>Yiyang Liang, Pingfa Feng, Jie Xu, Qizhong Yue, Feng Feng  <b>Tool Wear Mechanisms in Machining Nomex Honeycomb Composites Based on Dual-Periodic Load Experiment</b>  <i>Lab for Intelligent Manufacturing Equipment and Systems, Shenzhen International Graduate School, Tsinghua University, Shenzhen, China</i></p>
12:00 – 12:20	<p><u>Auezhan Amanov</u><sup>1</sup>, Milad Zohrevand<sup>1</sup>, Jari Likonen<sup>2</sup>, Jan W. Coenen<sup>3,4</sup>  <b>Role of Surface Modification on Tribological Interactions and Contact Mechanics</b>  <sup>1</sup><i>Faculty of Engineering and Natural Sciences, Tampere University, PO Box 589, Tampere FIN-33014, Finland</i>  <sup>2</sup><i>VTT Technical Research Centre of Finland, VTT, PO Box 1000, FIN-02044, Finland</i>  <sup>3</sup><i>Forschungszentrum Jülich GmbH, Institute for Fusion Energy and Nuclear Waste Management, Jülich 52425, Germany</i>  <sup>4</sup><i>Department of Nuclear Engineering &amp; Engineering Physics – UW Madison, Madison, USA</i></p>
12:20 – 14:00	<b>Lunch</b>
	<i>Chair: A. Vershinin</i>
14:00 - 14:20	<p><u>Qingwen Dai</u>, Wei Huang, Xiaolei Wang  <b>Mechanisms of the Thermocapillary Migration of Liquid Lubricants and Regulation Strategies</b>  <i>College of Mechanical and Electrical Engineering, Nanjing University of Aeronautics &amp; Astronautics, Nanjing, China</i></p>
14:20 - 14:40	<p><u>Yauheni Auchynnikau</u><sup>1</sup>, Gafur Narzullaev<sup>2</sup>, Ludmila Suleimanova<sup>3</sup>, Andrei Svistyn<sup>1</sup>  <b>Tribology of Mechanically Activated Lubricants</b>  <sup>1</sup><i>Yanka Kupala state University of Grodno, Belarus</i>  <sup>2</sup><i>Samarkand State University, Uzbekistan</i>  <sup>3</sup><i>Belgorod State Technological University</i></p>
14:40 – 15:00	<p><u>Haiyan Huang</u>, Pingfa Feng, Jiawei Shen, Hanhui Zhan, Feng Feng  <b>Fabrication of Hierarchical Micro-textures on Ti6Al4V Implants via Longitudinal-Torsional Ultrasonic Vibration Milling and Their Oral Tribological Mechanisms</b>  <i>Lab for Intelligent Manufacturing Equipment and Systems, Shenzhen International Graduate School, Tsinghua University, Shenzhen, China</i></p>
15:00 – 15:20	<p>Wen Wang  <b>Contributions of Edge and Internal Atoms to the Friction of 2D Hetero-Junctions</b>  <i>School of Mechanical Engineering, Southwest Jiaotong University, Chengdu, China</i></p>
15:20 – 15:50	<b>Coffee break</b>
	<i>Chair: X. Wang</i>
15:50 – 16:10	<p>Yang Wang  <b>Activation volume in interfacial bonding reaction at frictional interface: Theoretical answer to what it is and how to compute</b>  <i>Southwest Jiaotong University, China</i></p>
16:10 – 16:30	<p><u>Yu Zhang</u>, Pingfa Feng, Qiang Li, Jie Xu, Yuan Ma, Feng Feng  <b>On the Evaluating Surface Quality of Nomex Honeycomb Composites by Using Surface Roughness</b>  <i>Lab for Intelligent Manufacturing Equipment and Systems, Shenzhen International Graduate School, Tsinghua University, Shenzhen, China</i></p>
16:30 – 16:50	<p><u>Wei Huang</u>, Qingwen Dai and Xiaolei Wang  <b>The support and lubrication behaviors of magnetic fluids: From the droplets to liquid ring</b>  <i>Nanjing University of Aeronautics &amp; Astronautics, Nanjing, China</i></p>
16:50 – 17:10	<p>Mukhammadiev Iskandar Akhtamovich  <b>Research of Optimal Composition of Low Water Demanding Cements</b>  <i>Samarkand State architectural and construction university, Uzbekistan</i></p>
17:10 – 17:30	<p>Olimjon M. Dusmatov<sup>1</sup>, Muradjon U. Khodjabekov<sup>2</sup>, <u>Bakhtiyor I. Ashurov</u><sup>2</sup>  <b>Random Parametric Transverse Vibrations of a Beam With Elastic Dissipative Characteristics of the Hysteresis Type</b>  <sup>1</sup><i>Samarkand state University, Samarkand, Uzbekistan</i>  <sup>2</sup><i>Samarkand State Architecture and Civil Engineering University, Samarkand, Uzbekistan</i></p>

## Section A

Chair: V.A. Skripnyak

11:00 – 11:20

Zhenmao Chen

**Studies on Nondestructive Evaluation and Integrity Evaluation of Mechanical Structures**  
State Key Lab for Strength and Vibration of Mechanical Structures, Xi'an Jiaotong University, Xi'an, China.

11:20 – 11:40

Nikita Kharin<sup>1</sup>, Pavel Bolshakov<sup>1</sup>, Kirill Akifyev<sup>1</sup>, Ksenia Spiridonova<sup>1,2</sup> and Oskar Sachenkov<sup>1,3</sup>  
**Advanced in Situ 4d X-Ray Tomography System for Materials Testing**

<sup>1</sup>Kazan Federal University, N.I. Lobachevsky Institute of Mathematics and Mechanics, department of Computer Mathematics and Informatics, Russia

<sup>2</sup>Kazan Federal University, Institute of Information Technology and Intelligent Systems, Russia

<sup>3</sup>Samarkand State University, Engineering Physics Institute, Department of Theoretical and Applied Mechanics, Uzbekistan

11:40 – 12:00

Emil Oynakov, Radan Ivanov, Irena Aleksandrova, Maria Popova and Petya Trifonova

**Comparison of Non-linear and Equivalent-Linear Site Response Analysis for Two Representative Soil Profiles in Sofia City**

National Institute of Geophysics, Geodesy and Geography - Bulgarian Academy of Sciences, Bulgaria

12:00 – 12:20

Lorenzo Maccioni<sup>1</sup>, Michele Benetti<sup>1</sup>, Michael Plogmann<sup>2</sup>, Kay Juckelandt<sup>2</sup>, Franco Concli<sup>1</sup>  
**CFD Modeling and Rheological Calibration of Lubricating Grease**

<sup>1</sup>Free University of Bozen-Bolzano, Italy

<sup>2</sup>Schaeffler Technologies AG & Co. KG

12:20 – 14:00

**Lunch**

Chair: Z. Chen

14:00 - 14:20

Zarina Aringozhina<sup>1</sup>, Arnur Askhatov<sup>1</sup>, Akbota Apsezhanova<sup>1</sup>, Bauyrzhan Rakhadilov<sup>2</sup>, Auezhan Amanov<sup>3</sup>  
**Enhanced Surface Hardening of Ti-6Al-4V Alloy Via Pre-Nitriding Ultrasonic Impact Treatment**

<sup>1</sup>Daulet Serikbaev East Kazakhstan Technical University, Ust-Kamenogorsk, Kazakhstan

<sup>2</sup>PlasmaScience LLP, Ust-Kamenogorsk, Kazakhstan

<sup>3</sup>Faculty of Engineering and Natural Sciences, Tampere University, Tampere, Finland

14:20 - 14:40

Vladimir V. Skripnyak, Natalia V. Skripnyak, Alexander E. Kiryushkin, and Vladimir A. Skripnyak

**Deformation Instability of Light Alloys under Dynamic Compression**

National Research Tomsk State University, Tomsk, Russia

14:40 – 15:00

S.A. Zelepugin<sup>1,2</sup>, V.V. Skripnyak<sup>1</sup>, V.A. Skripnyak<sup>1</sup>, A.E. Kiryushkin<sup>1</sup>

**Modeling of AZ31 Magnesium Alloy Fracture Under Dynamic Loading Using a Failure Model of Active Type**

<sup>1</sup>National Research Tomsk State University, Tomsk, Russia

<sup>2</sup>Tomsk Scientific Centre SB RAS, Tomsk, Russia

15:00 – 15:20

Arystanbek Kussainov<sup>1,2</sup>, Indira Abizhanova<sup>2</sup>, Rauan Bolatbek<sup>2</sup>, Nurmukhambet Raisov<sup>3</sup>, Bauyrzhan Rakhadilov<sup>1</sup>  
Bauyrzhan Rakhadilov<sup>1</sup>

**Comparative Analysis of Properties of WC-Co-Cr, WC-Ni, WC-NiCr Coatings Obtained by Detonation Spraying Under Different Regimes**

<sup>1</sup>PlasmaScience LLP, Ust-Kamenogorsk, Kazakhstan

<sup>2</sup>D. Serikbaev East Kazakhstan Technical University, Ust-Kamenogorsk, Kazakhstan

<sup>3</sup>Sarsen Amanzholov East Kazakhstan University, Ust-Kamenogorsk, Kazakhstan

15:20 – 15:50

**Coffee break**

Chair: Kh. Buranov

15:50 – 16:10

Shulong Feng<sup>1</sup>, Pingfa Feng<sup>2</sup>, Xiangyu Zhang<sup>2</sup>, Feng Feng<sup>1</sup>

**Coupled Analytical-Numerical Model for Residual Stress Prediction in Rotary Ultrasonic Rolling Chamfer**  
<sup>1</sup>Lab for Intelligent Manufacturing Equipment and Systems, Shenzhen International Graduate School, Tsinghua University, Shenzhen, China

<sup>2</sup>Department of Mechanical Engineering, Tsinghua University, Beijing, China

16:10 – 16:30

Aidar Kengesbekov<sup>1,2</sup>, Daryn Baizhan<sup>1</sup>, Yelaman Batanov<sup>1</sup>, Daur Kakimzhanov<sup>1</sup>, Limara Kairbaeva<sup>1,2</sup>

**Study of the Structure and Properties of Hap-TiO<sub>2</sub> Biocomposite Coatings Formed by Micro-Arc Oxidation Combined With Subsequent Thermal Spraying**

<sup>1</sup>D. Serikbayev East Kazakhstan technical university, Ust-Kamenogorsk, Kazakhstan,

<sup>2</sup>Institute of Composite Materials, Ust-Kamenogorsk, Kazakhstan

16:30 – 16:50

Nurtoleu Magazov<sup>1,2</sup>, Dastan Buitkenov<sup>3</sup>, Yermakhan Molbossynov<sup>1</sup>, Yernar Turarbekov<sup>2</sup>, Bauyrzhan Rakhadilov<sup>2</sup>, Auezhan Amanov<sup>4</sup>

**Effect of Surface Modification on the Structure and Properties of Thermal Spraying Coatings**

<sup>1</sup>D. Serikbayev East Kazakhstan Technical University, Ust-Kamenogorsk, Kazakhstan

<sup>2</sup>PlasmaScience LLP, Ust-Kamenogorsk, Kazakhstan

<sup>3</sup>S. Amanzholov East Kazakhstan University, Ust-Kamenogorsk, Kazakhstan

<sup>4</sup>Tampere University, Tampere, Finland

16:50 – 17:10	<u>Obid Abdullayev</u> , Zokir Khudoyberdiyev, Khursand Ismoilov <b>Application of Mixed Approximation to Solving Two Elasticity Problems Using the Finite Element Method</b> Samarkand State University, Samarkand city, Uzbekistan
17:10 – 17:30	Muradjon Khodjabekov and <u>Zarnigor Yuldoshova</u> <b>Transverse Vibrations of an Elastic Beam With a Moving Dynamic Absorber</b> Samarkand State Architectural and Civil Engineering University, Samarkand, Uzbekistan

## September 26

### Plenary lectures

Chair: K.S. Sultanov

9:00 - 9:30	Kuanyu Liu, Zhizhen Jiang, Xiru Zheng, Feodor M. Borodich, <u>Xiaoping Jin</u> <b>The Elementary Solution to a Three-Dimensional Inclusion and the Related Applications</b> College of Aerospace Engineering, Chongqing University, Chongqing, China.
9:30 – 10:00	Todor Zhelyazov <b>Analytical and Numerical Investigation of the Transient Dynamic Response of a Continuum With Discrete Inclusions</b> National Institute of Geophysics, Geodesy and Geography - Bulgarian Academy of Sciences, Sofia, Bulgaria
10:00 -10:30	Yulia Pronina <sup>1</sup> , Victoria Vialtseva <sup>1</sup> , and Mark Kachanov <sup>2</sup> <b>Estimating Crack Density Tensors and Change in the Effective Elastic and Conductive Properties of Materials from the Crack Traces in 2D Cross-Sections</b> <sup>1</sup> Saint Petersburg State University, 7/9 Universitetskaya nab., St. Petersburg, Russia <sup>2</sup> Department of Mechanical Engineering, Tufts University, Medford, USA
10:30 – 11:00	<b>Coffee break</b>

### Section A

Chair: Y. Pronina

11:00 – 11:20	Elena B. Sedakova, <u>Aleksei Yu. Kutin</u> , Victor M. Musalimov, Nadezhda.D. Krohaleva <b>Modeling of Polymer Mesostructures by Molecular Dynamics Methods in "Materials Studio"</b> Baltic State Technical University "VOENMEH", Saint Petersburg, Russia
11:20 – 11:40	Igor Beshpalov <sup>1</sup> , Rashid Shafigulin <sup>1</sup> , Alina Galyautdinova <sup>1</sup> , Pavel Bolshakov <sup>1</sup> , Ildar Akhtyamov <sup>1</sup> and <u>Oskar Sachenkov</u> <sup>1,2</sup> <b>Design Intramedullary Spacer Pin Based on Lattice Metamaterial</b> <sup>1</sup> Kazan Federal University, N.I. Lobachevsky Institute of Mathematics and Mechanics, department of Computer Mathematics and Informatics, Russia <sup>2</sup> Samarkand State University, Engineering Physics Institute, Department of Theoretical and Applied Mechanics, Uzbekistan
11:40 – 12:00	Hengxu Song <b>Overcoming Scale Limitations in Rough Surface Contact: A Deep Learning Approach</b> State key laboratory of nonlinear mechanics, Institute of mechanics, Chinese Academy of Science, China
12:00 – 12:20	<u>Narquess Nematj</u> , Li Ma, Ramin Aghababaei <b>Interface-Engineered Multilayers for Extreme Mechanical Applications: Bridging Atomic Mechanisms and Macroscale Performance</b> Department of Mechanical and Production Engineering, Aarhus University, Denmark
12:20 – 14:00	<b>Lunch</b>

Chair: M. Heß

14:00 - 14:20	Karim S. Sultanov, <u>Sadillakhon I. Umarchonov</u> , Farxadjan F. Adilov <b>Methods for Assessing Technical Conditions of Earth Dams Using Space Monitoring Data</b> Institute of Mechanics and Seismic Stability of Structures named after M.T. Urazbaev, Uzbekistan Academy of Sciences
14:20 - 14:40	<u>Vladimir A. Cheverda</u> , Denis S. Bratchikov, Kirill G. Gadylishin and Galina V. Reshetova <b>Recovering Seismic Parameters of Elastic Media by Full Waveform Inversion</b> Novosibirsk Sobolev Institute of Mathematics, Novosibirsk, Russia
14:40 – 15:00	<u>Galina Reshetova</u> , Vladimir Cheverda <b>Temperature-Sensitive Poroelastic Wave Propagation: Numerical Simulation of Seismic Responses in Fluid-Saturated Media</b> Novosibirsk Sobolev Institute of Mathematics, Novosibirsk, Russia
15:00 – 15:20	Zokir Khudoyberdiyev <sup>1</sup> , Sherzod Omonov <sup>2</sup> , <u>Zulfira Suyunova</u> <sup>3</sup> , Sherzod Yaxshiboyev <sup>3</sup> , Aziza Ulug'bekova <sup>2</sup> <b>Numerical Solution of The Bending Equation For a Three-Layered Plate With Two Opposite Sides Fixed and The Other Two Opposite Sides Simply Supported</b> <sup>1</sup> Samarkand State University, Samarkand, Uzbekistan <sup>2</sup> Samarkand State University Urgut Branch, Samarkand, Uzbekistan <sup>3</sup> Samarkand State Architectural and Civil Engineering University, Samarkand, Uzbekistan

15:20 – 15:50

Coffee break

## Section B

Chair: Q. Li

11:00 – 11:20

Karim S. Sultanov, Sadillakhon I. Umarkhonov

### **Stress-Strain State of Earth Dams Considering Soil Moisture**

*Institute of Mechanics and Seismic Stability of Structures named after M.T. Urazbaev, Uzbekistan Academy of Sciences*

11:20 – 11:40

Pavel Loginov<sup>1</sup>, Saidjon Khamidov<sup>2</sup> and Nodirbek Akbarov<sup>1</sup>

### **Determination of Parameters of Nonlinear Soil Strain**

<sup>1</sup>*Institute of Mechanics and Seismic Stability of Structures named after M.T. Urazbaev, Tashkent, Uzbekistan*

<sup>2</sup>*NRU "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", Tashkent, Uzbekistan*

11:40 – 12:00

Usmonali J. Saydullaev<sup>1</sup>, Diyora U. Juraeva<sup>2</sup> and Iroda Yo. Beknazarova<sup>2</sup>

### **A Problem of Relaxation Filtering of Suspensions With Forming a Cake Layer**

<sup>1</sup>*Samarkand State University named after Sharof Rashidov, Samarkand, Uzbekistan*

<sup>2</sup>*Samarkand State Institute of Foreign Languages, Samarkand, Uzbekistan*

12:00 – 12:20

Abdusamat Abdusattarov<sup>1</sup>, Asqarali Daminov<sup>2</sup>, Nizomboy Sabirov<sup>2</sup>, Yusufjon Matnazarov<sup>2</sup>

### **Modeling the Deformation Properties and Damagability of Textile Threads and Tissues**

<sup>1</sup>*Tashkent State Transport University, Faculty of Construction Engineering, Department of Applied Mechanics*

<sup>2</sup>*Tashkent Institute of Textile and Light Industry, Faculty of Textile Industry Technology, Department of Textile Fabric Technology, Uzbekistan*

12:20 – 14:00

Lunch

Chair: A. Abdusattarov

14:00 - 14:20

Olimjon M. Dusmatov<sup>1</sup>, Murodjon U. Khodjabekov<sup>2</sup>, Firuza U. Kasimova<sup>1</sup>

### **Analysis of Dynamic Absorber Efficiency in Random Vibrations of a Beam**

<sup>1</sup>*Samarkand State University, Samarkand, Uzbekistan*

<sup>2</sup>*Samarkand State Architecture and Civil Engineering University, Samarkand, Uzbekistan*

14:20 - 14:40

Israil M. Karimov<sup>1</sup>, Ismail I. Safarov<sup>1</sup>, Muhsin Kh. Teshayev<sup>2</sup>, Nurillo R. Kulmurotov<sup>3</sup>, Akhtam M. Rustamov<sup>4</sup>

### **Introduction of the Plane Into the Semi-Plane and Movement of the Indentor in a Suppogy Plastic Medium**

<sup>1</sup>*Tashkent Chemical-Technological Institute, Uzbekistan*

<sup>2</sup>*Bukhara Branch of the Institute of Mathematics named after V.I. Romanovsky of the Academy of Sciences of the Republic of Uzbekistan, Uzbekistan*

<sup>3</sup>*Navoi State Mining and Technology University, Uzbekistan*

<sup>4</sup>*Navoi State Pedagogical University, Uzbekistan*

14:40 – 15:00

Mirziyod Mirsaidov<sup>1,2</sup>, Kazokboy Mamasoliev<sup>3</sup>, Jamshid Sindarov<sup>3</sup>

### **Estimation of Internal Forces of Three-Layer Plates Under Generally Symmetrical Loading**

<sup>1</sup>*National Research University-Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, Tashkent, Uzbekistan*

<sup>2</sup>*M. T. Urazbaev Institute of Mechanics and Seismic Stability of Structures, Uzbekistan Academy of Sciences. Tashkent, Uzbekistan*

<sup>3</sup>*Samarkand State Architectural and Civil Engineering Institute, Samarkand, Uzbekistan*

15:00 – 15:20

Dilshod Kholikov<sup>1,2</sup>, Kamola Khaydarova<sup>1</sup>, Khudaynazar Akhatov<sup>2</sup>, Abror Egamkulov<sup>1</sup>

### **Experimental Analysis of the Bending of a Beam Laying on an Elastic Base**

<sup>1</sup>*Samarkand State University, Samarkand city, Uzbekistan*

<sup>2</sup>*Urgut branch Samarkand State University, Uzbekistan*

15:20 – 15:50

Coffee break

## Plenary lectures

Chair: V.A. Cheverda

15:50 - 16:10

Yulia Pronina

### **Estimating Lifetime of Pressure Vessels Subjected to Mechanochemical Corrosion**

*Saint Petersburg State University, St. Petersburg, Russia*

16:10 – 16:30

Karim S. Sultanov, Nodirbek A. Akbarov

### **Computational Features of Numerical Solution to Non-Stationary Wave Problems for an Underground Pipeline Under Seismic Impacts**

*Institute of Mechanics and Seismic Stability of Structures named after M.T. Urazbaev, Uzbekistan Academy of Sciences*

16:30 - 16:50

Qingwen Dai, Wei Huang, Xiaolei Wang

### **The Stick-Slip Behavior of Sliding Components and the Effect of Surface Texture**

*College of Mechanical and Electrical Engineering, Nanjing University of Aeronautics & Astronautics, Nanjing, China*

16:50 - 17:10

Valentin L. Popov  
**Is Griffith' energetic criterion applicable to adhesive viscoelastic contacts?**  
*Technische Universität Berlin, Germany*

17:10 – 17:15

*Closing*

## September 22.-26. **Poster Session**

Nikola Poljak, Mirjana Bijelić  
**On the Forced Vibrations of a Two-Particle System**  
*Physics department Faculty of Science, University of Zagreb, Croatia*

Jie Xu, Pingfa Feng, Feng Feng,\*  
**Enhancing Tool Toughness for Improved Wear Resistance in Ultrasonic Vibration Machining of Nomex Honeycomb Composites**  
*Lab for Intelligent Manufacturing Equipment and Systems, Shenzhen International Graduate School, Tsinghua University, Shenzhen, China*

Olimjon M. Dusmatov, Jakhongir A. Khasanov  
**Stability of Random Vibrations of an Imperfectly Elastic Circular Plate**  
*Samarkand State University, Samarkand city, Uzbekistan*

Sergey A. Zelepugin<sup>1,2</sup>, Oksana V. Ivanova<sup>1</sup>, Roman O. Cherepanov<sup>1</sup>  
**Shock Wave Loading of AL/PTFE Reactive Mixtures: Numerical Simulation**  
<sup>1</sup>*Tomsk Scientific Center of the Siberian Branch of the Russian Academy of Sciences, Tomsk, Russia*  
<sup>2</sup>*National Research Tomsk State University, Tomsk, Russia*

Deniz Aktas, Haci Abdullah Tasdemir  
**Tribological and Mechanical Evaluation of Polycarbonate Nanocomposites Reinforced With Halloysite Nanotubes and Precipitated Calcium Carbonate under Dry Sliding Conditions**  
*Department of Mechanical Engineering, Istanbul Technical University, Istanbul, Turkiye*

Kamola Khaydarova<sup>1</sup>, Batirjan Mardonov<sup>2</sup>, Dilshod Kholikov<sup>1</sup>, Rustambek Usmonov<sup>1</sup>  
**Dynamics of a System of Two Rigid Beams on an Elastic Single-Layer Foundation With Mechanical Characteristics Varying With Depth**  
<sup>1</sup>*Samarkand State University*  
<sup>2</sup>*Samarkand, Uzbekistan Institute of Mechanics and Seismic Stability of Structures named after M.T. Urazbayev, Tashkent, Uzbekistan*

Utkir A. Nishonov<sup>1</sup>, Dilshod Sh. Khalikov<sup>1</sup> and Shokhsanam M. Khudayberdiyeva<sup>2</sup>  
**Nonlinear Thermoelastic Deformation of a Circular Plate with Ribs**  
<sup>1</sup>*Samarkand State University named after Sharof Rashidov, Samarkand, Uzbekistan.*  
<sup>2</sup>*Samarkand State University of Architecture and Construction, Samarkand, Uzbekistan.*

Qizhong Yue<sup>1</sup>, Yutian Wang<sup>1</sup>, Pingfa Feng<sup>1,2</sup>, Feng Feng<sup>1</sup>  
**Contact Analysis in Ultrasonic Vibration - Laser Assisted Cutting Technology on Resin-based Prepreg Laminates**  
<sup>1</sup>*Tsinghua University Shenzhen International Graduate School, Shenzhen, China*  
<sup>2</sup>*Department of Mechanical Engineering, Tsinghua University, Beijing, China*

Vladimir V. Skripnyak, Natalia V. Skripnyak, Maxim O. Chirkov, and Vladimir A. Skripnyak  
**Inelastic Deformation and Damage Evolution of Light Alloys Under Dynamic Punching**  
*National Research Tomsk State University, Tomsk, Russia*

Ammar Mosbah  
**Controlled Synthesis of Transparent Doped ZnO Films by Magnetron Sputtering**  
*Laboratory of Studies of Surfaces and Interfaces of Solid Materials, Faculty of Sciences, Setif, Algeria*

Xiaoyi Wu, Mengyu Li; Guoxin Xie  
**Self-Assembled Nanosheets on Carbon Fiber Surface Endow Self-Lubricating Composites With Ultralow Friction and Wear Properties**  
*State Key Laboratory of Tribology in Advanced Equipment, Tsinghua University, Beijing, China*

Arthur Manko, Ekaterina Muraveva  
**Verification of the Physical Model of Deformable Solid Body from Equivalent Materials**  
*Moscow State University of Civil Engineering (National Research University), Moscow, Russia*

Peili Gao, Guoxin Xie, Yunze Li, Yi Zhang, Kai Gao, Hao Chen, Lin Zhang  
**High-Temperature Superlubricity Microcapsules**  
*State Key Laboratory of Tribology in Advanced Equipment, Tsinghua University, Beijing, China*

Askar Khasanov, Zokir Khudayberdiyev, Khursand Ismoilov  
**Stress State During Torsional Vibrations of a Truncated Circular Conical Shell in an Elastic Medium**  
*Samarkand State University, Samarkand, Uzbekistan*

Zokir Khudoyberdiyev<sup>1</sup>, Elbek Ismailov<sup>1</sup>, Amirbek Begjanov<sup>2</sup>, Sherzod Yaxshiboyev<sup>3</sup>  
**Solving the Bending Equation of a Rectangular Plate Using the Finite Difference Method**  
<sup>1</sup>*Samarkand State University, Samarkand, Uzbekistan*  
<sup>2</sup>*Urgench State University, Urgench, Uzbekistan*  
<sup>3</sup>*Samarkand State Architectural and Civil Engineering University, Samarkand, Uzbekistan*

Kazokboy Mamasoliyev<sup>1</sup>, Elbek Ismoilov<sup>2</sup>, Zokir Khudoyberdiyev<sup>2</sup>

**Longitudinal-Radial Vibrations of a Cylindrical Shell Interaction With a Viscous Fluid**

<sup>1</sup>*Samarkand State University of Architecture and Construction, Samarkand, Uzbekistan*

<sup>2</sup>*Samarkand State University, Samarkand, Uzbekistan*

Nadjet Aklouche<sup>1,2</sup>

**Phase Formaton in Calcium Oxide-Aluminosilicate Clay Systems**

<sup>1</sup>*Laboratoire d'Elaboration de nouveaux matériaux et leurs caractérisations*

<sup>2</sup>*Faculty of Technology Université Ferhat Abbas Sétif 1, Sétif, Algeria*

Batirjan Mardonov<sup>1</sup>, Utkir Nishonov<sup>2</sup>, Dilshod Kholikov<sup>2</sup>, Kamola Khaydarova<sup>2</sup>

**Longitudinal Vibrations of Cylindrical Bodies of Complex Composite Shape in an Elastic Medium**

<sup>1</sup>*Samarkand, Uzbekistan Institute of Mechanics and Seismic Stability of Structures named after M.T. Urazbayev, Tashkent, Uzbekistan*

<sup>2</sup>*Samarkand State University, Samarkand city, Uzbekistan*

Khudaynazar Akhatov<sup>1</sup>, Dilshod Kholikov<sup>2</sup>, Kamola Khaydarova<sup>2</sup>, Elbek Ismoilov<sup>2</sup>

**Numerical Calculation of Torsional Vibrations During the Interaction of a Circular Cylindrical Shell With a Viscous Liquid**

<sup>1</sup>*Urgut branch Samarkand State University, Uzbekistan*

<sup>2</sup>*Samarkand State University, Samarkand city, Uzbekistan*

Artem G. Polyanskiy, Sergei V. Ryzhkov

**Physical Models of Neutron Sources under the Radiation Influence**

*Bauman Moscow State Technical University (BMSTU), Russia*

Abdul Khaliq Rasheed and Thachnatharen Nagarajan

**Effect of Boron nitride nanotubes on dielectric, anti-oxidation and tribological properties of naphthenic and ester oils**

*Department of New Energy Science and Engineering, School of Energy and Chemical Engineering, Xiamen University Malaysia. Bandar Sunsuria, 43900 Sepang, Selangor, Malaysia.*