

European Structural Integrity Society (ESIS)
Karpenko Physico-Mechanical Institute
of the National Academy of Sciences of Ukraine
Ukrainian Society on Fracture Mechanics
Western Scientific Centre of the National Academy of
Sciences of Ukraine and the Ministry of Education and
Science of Ukraine

7th International Conference
**“Fracture Mechanics of Materials
and Structural Integrity”**



PROGRAMME

March 3–5, 2026
Lviv, Ukraine





This conference is dedicated to the 100th anniversary of the birth of the Academician of the National Academy of Sciences of Ukraine

Volodymyr Panasyuk (1926–2026)

Professor Volodymyr Panasyuk is a prominent figure in Ukrainian science, whose achievements are recognized and highly appreciated by the international scientific community in the field of fracture mechanics of materials and structural integrity.

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7th International Conference
 “Fracture Mechanics of Materials and Structural Integrity”
 March 3–5, 2026, Lviv, Ukraine

TUESDAY, MARCH 3

9:00–10:00	Registration
10:00–10:40	Opening Ceremony
10:40–11:40	PLENARY SESSION
11:40–12:00	Coffee Break
12:00–13:20	PLENARY SESSION
13:20–14:20	Lunch
14:20–16:00	SESSION: Environmentally Assisted Fracture
16:00–16:20	Coffee Break
16:20–17:50	SESSION: Mathematical Methods and Fracture Modelling
17:50–18:30	Round Table on Research within Projects Financed by the National Research Foundation of Ukraine (<i>onsite, room 67</i>)

WEDNESDAY, MARCH 4

10:00–11:30	SESSION: Non-Destructive Evaluation
11:30–11:50	Coffee Break
11:50–13:20	SESSION: Fracture and Strength of Materials
13:20–14:20	Lunch
14:20–15:50	SESSION: Fracture and Strength of Materials
15:50–16:10	Coffee Break
16:10–17:10	SESSION: Mathematical Methods and Fracture Modelling
17:10–18:20	FLASH POSTER SESSION

THURSDAY, MARCH 5

10:00–11:30	SESSION: Mathematical Methods and Fracture Modelling
11:30–11:50	Coffee Break
11:50–13:20	SESSION: Applied Aspects of Fracture Mechanics
13:20–14:10	FLASH POSTER SESSION
14:15	Closing Ceremony

Kyiv Time (GMT+2)

TUESDAY, MARCH 3

9:00–10:00	Registration
10:00–10:40	Opening Ceremony
10:00–10:10	<p>Welcome Address Z. Nazarchuk, Conference Chairman <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
10:10–10:40	<p>Academician of the National Academy of Sciences of Ukraine Volodymyr Panasyuk, and his contribution to the development of fracture mechanics and strength of materials I. Dmytrakh <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
10:40–13:20	PLENARY SESSION
10:40–11:00	<p>Structural integrity and life of hip implants A. Sedmak¹, K. Čolić², S. Sedmak² ¹ <i>University of Belgrade, Faculty of Mechanical Engineering, Serbia</i> ² <i>University of Belgrade, Innovation Center of Faculty of Mechanical Engineering, Serbia</i></p>
11:00–11:20	<p>Consideration of risks associated with hydrogen transport G. Pluinage <i>ENIM – Université de Lorraine, France</i></p>

**7th International Conference
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11:20–11:40	<p>What is the Mean Goal of the “Structural Integrity Assessment”?</p> <p>L. Tóth <i>Bay Zoltán Nonprofit Ltd. for Applied Research, Engineering Division, Hungary</i></p>
11:40–12:00	Coffee Break
12:00–12:20	<p>Applicability and Limitations of Polymeric Materials for Green Energy Production and Hydrogen Technology</p> <p>Z. Major <i>Johannes Kepler University Linz, Institute of Polymer Product Engineering, Austria</i></p>
12:20–12:40	<p>Utilization engineering version of local approach to fracture for RPV lifetime prediction</p> <p>S. Kotrechko¹, G. Zimina¹, O. Zatsarna¹, V. Revka² ¹ <i>G. V. Kurdyumov Institute for Metal Physics of the National Academy of Sciences of Ukraine, Ukraine</i> ² <i>Institute for Nuclear Research of the National Academy of Sciences of Ukraine, Ukraine</i></p>
12:40–13:00	<p>Local and global mechanical response and failure mode of compressed timber elements</p> <p>G. Bolzon¹, Sok Yee Yeo², Yu Liu¹, Panpan Liu³ ¹ <i>Politecnico di Milano, Department of Civil and Environmental Engineering, Italy</i> ² <i>Xi’an Jiaotong University, School of Human Settlement and Civil Engineering, China</i> ³ <i>The University of Kitakyushu, Faculty of Environmental Engineering, Japan</i></p>
13:00–13:20	<p>Analytical modeling of transient thermoelastic response of multilayer spherical pressure vessels</p> <p>Yu. Tokovyy, Yu. Kulchytskyi-Zhyhailo <i>Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of the National Academy of Sciences of Ukraine, Ukraine</i></p>
13:20–14:20	Lunch

14:20–16:00	SESSION: Environmentally Assisted Fracture
14:20–14:45	<p>Corrosion fatigue: The early stages of damage (Invited Lecture)</p> <p>R. Akid <i>University of Manchester, Department of Materials, United Kingdom</i></p>
14:45–15:00	<p>Evaluation of hydrogen influence on FeNiAl alloys by three-point bending tests</p> <p>N. Yadzhak^{1,2}, O. Zvirko³, H. Nykyforchyn³, U. Glatzel¹</p> <p>¹ <i>University of Bayreuth, Germany</i> ² <i>Ivan Franko National University of Lviv, Ukraine</i> ³ <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
15:00–15:15	<p>Evaluation of in-service degradation of sea port crane steel operated under cyclic loading</p> <p>H. Nykyforchyn¹, G. Gabetta², O. Nesterov³, K. Zhyltsov³, M. Hredil¹</p> <p>¹ <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i> ² <i>Independent researcher, Italy</i> ³ <i>Odesa National Maritime University, Ukraine</i></p>
15:15–15:30	<p>Application of high-frequency mechanical impact and mechanical alloying by ultra-fine nickel to enhance the corrosion fatigue resistance of butt-welded joints of 15khsnd steel</p> <p>V. Knysh¹, B. Mordyuk^{1,2}, S. Solovei^{1,3}, V. Miryanin¹, M. Malgin¹</p> <p>¹ <i>E. O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Ukraine</i> ² <i>G.V. Kurdyumov Institute for Metal Physics of the National Academy of Sciences of Ukraine, Ukraine</i> ³ <i>S. P. Timoshenko Institute of Mechanics of the National Academy of Sciences of Ukraine, Ukraine</i></p>

15:30–15:45	<p>Correlations of marine environmental casualties and ship structure damage under accidental conditions: Collision and grounding cases</p> <p>J. Ndarumukti^{1,2}, A. R. Prabowo^{1,2}, Qu. Th. Do³, Th. Ph. Nguyen⁴, D. D. D. P. Tjahjana¹, I. Istanto¹, T. Muttaqie⁵, M. Jurkovič⁶</p> <p>¹ <i>Universitas Sebelas Maret, Department of Mechanical Engineering, Indonesia</i></p> <p>² <i>Universitas Sebelas Maret, Laboratory of Design and Computational Mechanics, Faculty of Engineering, Indonesia</i></p> <p>³ <i>Nha Trang University, Department of Naval Architecture and Ocean Engineering, Vietnam</i></p> <p>⁴ <i>Nha Trang University, Department of Electronic – Electrical Engineering, Vietnam</i></p> <p>⁵ <i>National Research and Innovation Agency (BRIN), Research Center for Hydrodynamics Technology, Indonesia</i></p> <p>⁶ <i>University of Žilina, Faculty of Operation and Economics of Transport and Communication, Slovakia</i></p>
15:45–16:00	<p>Influence of hydrogen sulfide and carbon dioxide on the corrosion-mechanical properties of steels in chloride-containing environments</p> <p>M. Khoma, V. Vynar, M. Chuchman, Ch. Vasyliv, N. Ratska, O. Vasyliv</p> <p><i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
16:00–16:20	Coffee Break

16:20–17:50	SESSION: Mathematical Methods and Fracture Modelling
16:20–16:35	<p>Compression of a hyperelastic material with a thin coating along defects on the interface</p> <p>V. Bogdanov, V. Nazarenko, O. Kipnis</p> <p><i>S. P. Timoshenko Institute of Mechanics of the National Academy of Sciences of Ukraine, Ukraine</i></p>
16:35–16:50	<p>Mathematical models of 3D time-harmonic elasticity of anisotropic solids with thread-like elastic inhomogeneities</p> <p>R. Kushnir¹, Ia. Pasternak², H. Sulym¹, A. Korniiichuk²</p> <p>¹ <i>Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of the National Academy of Sciences of Ukraine, Ukraine</i></p> <p>² <i>Lesya Ukrainka Volyn National University, Ukraine</i></p>
16:50–17:05	<p>Multiple electrically charged conducting cracks at the interface of two quasicrystals</p> <p>O. Komarov¹, A. Sheveleva², Y. Lapusta³, V. Loboda¹</p> <p>¹ <i>Oles Honchar Dnipro National University, Department of Theoretical and Computational Mechanics, Ukraine</i></p> <p>² <i>Oles Honchar Dnipro National University, Department of Computational Mathematics and Mathematical Cybernetics, Ukraine</i></p> <p>³ <i>Université Clermont Auvergne, CNRS, Clermont Auvergne INP, Institut Pascal, France</i></p>
17:05–17:20	<p>Local and integral assessments of the limit equilibrium of a bent cylindrical shell with circumferential collinear cracks</p> <p>T. Dalyak, M. Makoviichuk, I. Shatskyi, A. Shsherbii</p> <p><i>Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of the National Academy of Sciences of Ukraine, Laboratory of modelling of damping systems, Ukraine</i></p>

17:20–17:35	<p>On the stress state of the poroelastic cylinder with a thin interface</p> <p>N. Vaysfeld¹, Z. Zhuravlova²</p> <p>¹ <i>King’s College London, United Kingdom</i></p> <p>² <i>Odesa I. I. Mechnikov National University, Faculty of Mathematics, Physics and Information Technologies, Odesa, Ukraine</i></p>
17:35–17:50	<p>Extended method of matched sections for mode I crack in elastic plane body</p> <p>I. Orynyak¹, K. Danylenko¹, A. Oryniak², S. Radchenko³</p> <p>¹ <i>National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Ukraine</i></p> <p>² <i>E. O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Department of new structural forms of welded structures and constructions, Ukraine</i></p> <p>³ <i>Separated Subdivision “Scientific and Technical Centre” of the State Enterprise “National Nuclear Energy Generating Company “Energoatom”, Technical Support Service for the Operation Extension, Ukraine</i></p>
17:50–18:30	<p>Round Table on Research within Projects Financed by the National Research Foundation of Ukraine (onsite, room 67)</p>

WEDNESDAY, MARCH 4

10:00–11:30	SESSION: Non-Destructive Evaluation
10:00–10:15	<p>Sub-Millimeter Defect Detection in Metallic and Composite Thin-Walled Structures Using Digital Shearography</p> <p>L. Lobanov, V. Savitsky, O. Shutkevych, K. Shyyan, I. Kyyanets, D. Stelmakh, I. Shkurat <i>E. O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
10:15–10:30	<p>Waveguide–Resonator Models of the Thin Defects in an Elastic Slab for their Diagnostics by SH-waves</p> <p>Z. Nazarchuk, D. Kuryliak, M. Voytko, Ya. Kulynych <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
10:30–10:45	<p>Low–frequency eddy current techniques for detection of internal fatigue cracks in multilayer aircraft structures in the vicinity of rivets</p> <p>V. Uchanin^{1,2}, G. Nardoni², M. Turconi³, M. Feroldi² ¹ <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i> ² <i>I&T Nardoni Institute, Italy</i> ³ <i>Leonardo Aircraft Division, Italy</i></p>
10:45–11:00	<p>Using thin plate theory to estimate the sizes of internal defects in orthotropic composites</p> <p>Z. Nazarchuk, L. Muravsky, O. Sharabura <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>

11:00–11:15	<p>Eddy current crack detection of through composite bonded repairs for aerial structures K. Dragan¹, V. Uchanin² <i>¹ Air Force Institute of Technology, Poland</i> <i>² Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
11:15–11:30	<p>Contactless geometric measurement of turbine blades based on image processing I. Ivasenko^{1,2}, O. Berehulyak¹, R. Vorobel¹, T. Voronyak¹, I. Stasyshyn^{1,2} <i>¹ Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i> <i>² Lviv Polytechnic National University, Ukraine</i></p>
11:30–11:50	Coffee Break
11:50–13:20	SESSION: Fracture and Strength of Materials
11:50–12:05	<p>Hydrogen damage of medium carbon steel as an effective factor for increasing its fragmentation under static explosion tests I. Dmytrakh¹, A. Syrotyuk¹, R. Leshchak¹, O. Tsyruhnyk¹, O. Student¹, I. Oborniev¹, V. Malyuk² <i>¹ Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i> <i>² Hetman Petro Sahaidachny National Army Academy, Ukraine</i></p>
12:05–12:20	<p>The Interplay of Geometry, Thermal Gradients, and Scanning Strategy in Residual Stress Distribution for Metal Additive Manufacturing I. T. Teke¹, A. H. Ertas² <i>¹ Haliç University, Department of Mechanical Engineering, Faculty of Engineering, Turkey</i> <i>² Bursa Technical University, Department of Mechanical Engineering, Faculty of Engineering and Natural Sciences, Turkey</i></p>

12:20–12:35	<p>Innovative Teaching of Fracture Mechanics in Engineering Education: 1. An Innovative Approach Combining Science and Art. 2. A Tribute to Professor Volodymyr Panasyuk</p> <p>J. Toribio <i>University of Salamanca, Fracture & Structural Integrity Research Group, Spain</i></p>
12:35–12:50	<p>ErNiCrMo-3 and its behaviour in three-point fatigue tests on a dissimilar joint of Inconel 600 in as-delivered and heat-treated conditions</p> <p>T. del Niño J. Sánchez Cruz¹, H. Granados Becerra², J. A. González Sánchez¹, V. H. López Morelos², O. Billy¹</p> <p>¹ <i>Universidad Autónoma de Campeche, Centro de Investigación en Corrosión, Mexico</i> ² <i>Universidad Michoacana de San Nicolás de Hidalgo, Instituto de Investigación en Metalurgia y Materiales, México</i></p>
12:50–13:05	<p>Data-Driven Modelling of Shape Memory Alloy Hysteresis Using Tree-Based Machine Learning Algorithms</p> <p>D. Tymoshchuk, O. Yasniy, I. Didych, N. Kryva, N. Gashchyn <i>Ternopil Ivan Puluj National Technical University, Ukraine</i></p>
13:05–13:20	<p>The role of residual stresses in assessing the strength of plates with functionally gradient oxide coatings</p> <p>L. Ropyak¹, O. Lazarieva², V. Petrashchuk³, I. Shatskyi³</p> <p>¹ <i>Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine</i> ² <i>National University Zaporizhzhia Polytechnic, Ukraine</i> ³ <i>Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of the National Academy of Sciences of Ukraine, Laboratory of modelling of damping systems, Ukraine</i></p>
13:20–14:20	Lunch

14:20–15:50	SESSION: Fracture and Strength of Materials
14:20–14:35	<p>Pulsed electromagnetic processes for optimizing residual stress-strain states of welded joints</p> <p>L. Lobanov¹, M. Pashchyn¹, O. Mikhodui¹, O. Berdnikova¹, Yu. Sydorenko², I. Kondratenko³</p> <p>¹ <i>E. O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p> <p>² <i>National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Ukraine</i></p> <p>³ <i>Institute of Electrodynamics of the National Academy of Sciences of Ukraine, Ukraine</i></p>
14:35–14:50	<p>Incremental Crack Propagation under Mixed-Mode Loading within a Potential-Based Cohesive Zone Framework</p> <p>V. Bogdanov, D. Selivanov</p> <p><i>S. P. Timoshenko Institute of Mechanics of the National Academy of Sciences of Ukraine, Ukraine</i></p>
14:50–15:05	<p>Experimental studies of the influence of rare-earth metals on cold strength and viscous-plastic properties of pipe steels</p> <p>V. Makarenko¹, S. Maksymov², V. Savenko¹, Yu. Makarenko³, Yu. Vinnikov⁴</p> <p>¹ <i>Kyiv National University of Civil Engineering and Architecture, Ukraine</i></p> <p>² <i>E. O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p> <p>³ <i>University of Manitoba, Canada</i></p> <p>⁴ <i>Yuriy Kondratyuk Poltava Polytechnic National University, Ukraine</i></p>

15:05–15:20	<p>Stress intensity calculation in the vicinity of corner points and cracks initiated by them by the Mushelishvili method</p> <p>V. Knysh¹, Ju. Maksymovych¹, A. Mazurak²</p> <p>¹ <i>E. O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p> <p>² <i>Lviv National University of Veterinary Medicine and Biotechnology named after S.Z. Gzhytsky, Ukraine</i></p>
15:20–15:35	<p>Surface effects in three-dimensional small-scale mechanics of cracked solids</p> <p>V. Mykhas'kiv¹, B. Stasjuk^{1,2}, I. Butrak^{1,2}</p> <p>¹ <i>Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of the National Academy of Sciences of Ukraine, Ukraine</i></p> <p>² <i>Lviv Polytechnic National University, Ukraine</i></p>
15:35–15:50	<p>The effect of electric fields and poling direction on the fracture behavior of piezoelectric bimetals with an electrically conductive interfacial crack</p> <p>O. Onopriienko¹, V. Govorukha¹, T. Kagadiy²</p> <p>¹ <i>Dnipro State Agrarian and Economic University, Faculty of Engineering Technology, Ukraine</i></p> <p>² <i>Dnipro University of Technology, Faculty of Informatization Technology, Ukraine</i></p>
15:50–16:10	Coffee Break
16:10–17:10	SESSION: Mathematical Methods and Fracture Modelling
16:10–16:25	<p>Time-Dependent Propagation of a Coin-Shaped Crack in a Viscoelastic Solid within a Cohesive-Zone Framework</p> <p>Yu. Nazarchuk, M. Selivanov</p> <p><i>S. P. Timoshenko Institute of Mechanics of the National Academy of Sciences of Ukraine, Ukraine</i></p>

16:25–16:40	<p>Closure of crack in semi-infinite transversely inhomogeneous plate under bending</p> <p>V. Petrashchuk, T. Dalyak, I. Shatskyi, V. Perepichka</p> <p><i>Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of the National Academy of Sciences of Ukraine, Laboratory of modelling of damping systems, Ukraine</i></p>
16:40–16:55	<p>Hot Crack Prediction in Laser Welding Based on Strain Field Analysis Using Digital Image Correlation</p> <p>V. Savitsky¹, A. Gumenyuk², L. Schmies², A. Gumenyuk², M. Rehtmeier²</p> <p>¹ <i>E. O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Ukraine</i> ² <i>Bundesanstalt für Materialforschung und Prüfung, Germany</i></p>
16:55–17:10	<p>Energy approach in fracture mechanics and life of structural elements</p> <p>O. Andreikiv, I. Dolinska, T. Skalskyi</p> <p><i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
17:10–18:20	FLASH POSTER SESSION
17:10–17:15	<p>The ESIS TC10 Committee on Environmentally Assisted Cracking and Hydrogen Embrittlement</p> <p>J. Toribio</p> <p><i>University of Salamanca, Fracture and Structural Integrity Research Group, Spain</i></p>
17:15–17:20	<p>New method of magneto-optical image acquisition and processing for material damage testing</p> <p>O. Maksymenko¹, I. Ivasenko^{1,2}, I. Stasyshyn^{1,2}, O. Berehulyak¹, Ya. Kulynych¹, T. Voronyak¹</p> <p>¹ <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i> ² <i>Lviv Polytechnic National University, Ukraine</i></p>

17:20–17:25	<p>Non-Destructive Testing of the Large-Scale Threaded Connections</p> <p>O. Karpash¹, I. Rybitskyi¹, V. Uchanin², M. Karpash³, S. Voitenko¹</p> <p>¹ <i>Ivan Kozhedub Kharkiv National Air Force University, Ukraine</i></p> <p>² <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p> <p>³ <i>King Danylo University, Ukraine</i></p>
17:25–17:30	<p>Effect of Hydrogen Damage on the Fracture Behaviour of Ferrite-Pearlite Steels</p> <p>O. Zvirko, D. Demianchuk, O. Venhryniuk</p> <p><i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
17:30–17:35	<p>Finite Element Analysis of Residual Stresses and Plastic Deformation in Surface-Modified Layers of Low-Alloy Steels for Hydrogen Penetration Barriers</p> <p>A. Syrotyuk, I. Dmytrakh, O. Chepil, R. Leshchak, Ya. Sapuzhak, N. Hembara</p> <p><i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
17:35–17:40	<p>Eddy current in-service detection of delaminations in two-layer aircraft structures composed of carbon fiber reinforced plastic and aluminum alloy substrate</p> <p>V. Uchanin¹, O. Aleschenko¹, K. Ivashchenko², V. Derecha²</p> <p>¹ <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p> <p>² <i>State Enterprise “ANTONOV”, Ukraine</i></p>

17:40–17:45	<p>Thermal processes in laser-based surface strengthening of the precision assemblies of fuel pumps</p> <p>F. Huseynli <i>Azerbaijan Technical University, Azerbaijan</i></p>
17:45–17:50	<p>Stress Concentration Near Soft Elliptic and Ellipsoidal Elasto-Plastic Inclusions</p> <p>V. Maksymovych¹, O. Prykhodko², O. Hnatyuk¹, O. Dumanskyi³</p> <p>¹ <i>Stepan Gzhytskyi National University of Veterinary Medicine and Biotechnologies, Ukraine</i> ² <i>Lutsk National Technical University, Ukraine</i> ³ <i>Ukrainian National Forestry University, Ukraine</i></p>
17:50–17:55	<p>Energy-Based Conditions for Fracture Initiation in Functionally Graded Oxide PEO Coatings on Titanium Alloys</p> <p>V. Yuzevych¹, I. Ohirko², O. Ohirko³</p> <p>¹ <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i> ² <i>Lviv Polytechnic National University, Ukraine</i> ³ <i>Lviv State University of Internal Affairs, Lviv, Ukraine</i></p>
17:55–18:00	<p>The influence of diffusion saturation in controlled gas media on the fatigue life of titanium</p> <p>V. Trush, I. Pohrelyuk, A. Luk’yanenko, M. Student</p> <p><i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
18:00–18:05	<p>Fracture Analysis of Functionally Graded Titanium Materials for Dental Implants: Recommendations for Enhanced Strength and Reliability</p> <p>V. Yuzevych¹, M. Holeyko², B. Koman³</p> <p>¹ <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i> ² <i>Lviv National Medical University, Lviv, Ukraine</i> ³ <i>Ivan Franko National University of Lviv, Lviv, Ukraine</i></p>

18:05–18:10	<p>Corrosion Inhibition of Aluminium Alloy by Sodium Alginate–Zinc Acetate Composition under Mechanical Surface Activation in Chloride Environment</p> <p>O. Khlopyk, S. Korniy, I. Zin, N. Sobodosh, N. Ratska, B. Datsko</p> <p><i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
18:10–18:15	<p>Corrosion and Tribocorrosion Inhibition of Aluminum Alloy in Chloride-Containing Environment by a Synergistic Maltodextrin-Based Composition</p> <p>M. Tymus, I. Zin, S. Korniy, N. Ratska, B. Datsko</p> <p><i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
18:15–18:20	<p>Magnetocyclic method for non-destructive testing of pipe metal under coating</p> <p>R. Dzhala, B. Verbenets, V. Dzhala, M. Melnyk</p> <p><i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>

THURSDAY, MARCH 5

10:00–11:30	SESSION: Mathematical Methods and Fracture Modelling
10:00–10:15	<p>3D thermoelastic modeling of quasicrystalline solids containing thin shell-like compliant inhomogeneities</p> <p>H. Sulym¹, V. Pasternak², V. Kozelko²</p> <p>¹ <i>Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of the National Academy of Sciences of Ukraine, Ukraine</i></p> <p>² <i>Lesya Ukrainka Volyn National University, Ukraine</i></p>
10:15–10:30	<p>Critical Hydrogen Accumulation and Failure in Bimetallic Joints during Thermal Cycling</p> <p>O. Hembara^{1,2}, M. Hvozdiuk^{1,2}, O. Chepil^{2,3}, Ya. Sapuzhak²</p> <p>¹ <i>Lviv Polytechnic National University, Ukraine</i></p> <p>² <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p> <p>³ <i>Bydgoszcz University of Science and Technology, Poland</i></p>
10:30–10:45	<p>Stress state and limit equilibrium of a two-layer coating under local loading near the edge</p> <p>L. Ropyak¹, I. Lazariev², M. Makoviichuk³, I. Shatskyi³</p> <p>¹ <i>Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine</i></p> <p>² <i>National University Zaporizhzhia Polytechnic, Ukraine</i></p> <p>³ <i>Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of the National Academy of Sciences of Ukraine, Laboratory of modelling of damping systems, Ukraine</i></p>

**7th International Conference
“Fracture Mechanics of Materials and Structural Integrity”
March 3–5, 2026, Lviv, Ukraine**

10:45–11:00	<p>Analysis of natural vibrations of a shell with a crack A. Koliadiuk, I. Podilchuk <i>S. P. Timoshenko Institute of Mechanics of the National Academy of Sciences of Ukraine, Ukraine</i></p>
11:00–11:15	<p>Tree-Based Machine Learning for Fatigue Crack Growth Prediction of Titanium Alloy Structural Elements O. Yasniy¹, I. Didych¹, D. Tymoshchuk¹, O. Holotenko¹, H. Shymchuk¹ <i>Ternopil Ivan Puluj National Technical University, Ukraine</i></p>
11:15–11:30	<p>Residual bearing capacity of layered shells and plates with damages at the interface of components M. Marchuk^{1,2}, M. Khomyak¹, V. Pakosh^{1,2} ¹ <i>Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of the National Academy of Sciences of Ukraine, Ukraine</i> ² <i>Lviv Polytechnic National University, Ukraine</i></p>
11:30–11:50	Coffee Break
11:50–13:20	SESSION: Applied Aspects of Fracture Mechanics
11:50–12:05	<p>Development of welding technology for medium-carbon alloyed heat-treated high-hardness steels V. Pozniakov, A. Korenev, A. Klapatyuk, A. Zavdoveev <i>E. O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
12:05–12:20	<p>Fracture mechanics approaches for advanced repair technologies of damaged hydrogen-cooled turbogenerator rotors A. Balitskii^{1,2} ¹ <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i> ² <i>West Pomeranian University of Technology in Szczecin, Poland</i></p>

12:20–12:35	<p>Failure mechanisms and critical structural components of OWC systems: Milestone assessment based on methodological types</p> <p>A. F. Muzaqih¹, R. Adiputra², A. R. Prabowo¹, G. G. Kombe³, B. H. Shame⁴, B. Ganendra⁵</p> <p>¹ <i>Universitas Sebelas Maret, Department of Mechanical Engineering, Indonesia</i></p> <p>² <i>National Research and Innovation Agency (BRIN), Research Center for Hydrodynamics Technology, Indonesia</i></p> <p>³ <i>The University of Dodoma, Department of Petroleum and Energy Engineering, Tanzania</i></p> <p>⁴ <i>The Ministry of Infrastructure, Communication, and Transportation, Tanzania</i></p> <p>⁵ <i>Ghent University, Department of Civil Engineering, Belgium</i></p>
12:35–12:50	<p>Safety - risk of CCUS technology: Industrial regulation and policy assessment against structural failure and damaged components</p> <p>A. Ju. P. Wijaya^{1,2}, I. Yaningsih¹, G. G. Kombe³, B. H. Shame⁴, A. R. Prabowo^{1,2}, E. P. Budiana¹, R. Wijaya¹, R. Adiputra⁵, H. Nubli⁶</p> <p>¹ <i>Universitas Sebelas Maret, Department of Mechanical Engineering, Indonesia</i></p> <p>² <i>Universitas Sebelas Maret, Laboratory of Design and Computational Mechanics, Faculty of Engineering, Indonesia</i></p> <p>³ <i>The University of Dodoma, Department of Petroleum and Energy Engineering, Tanzania</i></p> <p>⁴ <i>The Ministry of Infrastructure, Communication, and Transportation, Tanzania</i></p> <p>⁵ <i>National Research and Innovation Agency (BRIN), Research Center for Hydrodynamics Technology, Indonesia</i></p> <p>⁶ <i>University of Surrey, School of Engineering, United Kingdom</i></p>

12:50–13:05	<p>Effect of Stiffener Geometry on the Structural Response of Stiffened Plates Subjected to Underwater Explosion Loads</p> <p>H. M. Rohman^{1,2}, A. A. Pratama^{1,2}, T. Muttaqie³, A. R. Prabowo^{1,2}, Q. Th. Do⁴, Th. Ph. Nguyen⁵, H. Carvalho^{6,7}</p> <p>¹ <i>Universitas Sebelas Maret, Department of Mechanical Engineering, Indonesia</i></p> <p>² <i>Universitas Sebelas Maret, Laboratory of Design and Computational Mechanics, Faculty of Engineering, Indonesia</i></p> <p>³ <i>National Research and Innovation Agency (BRIN), Research Center for Hydrodynamics Technology, Indonesia</i></p> <p>⁴ <i>Nha Trang University, Department of Naval Architecture and Ocean Engineering, Vietnam</i></p> <p>⁵ <i>Nha Trang University, Department of Electronic – Electrical Engineering, Vietnam</i></p> <p>⁶ <i>Federal University of Minas Gerais, Department of Structural Engineering, Brazil</i></p> <p>⁷ <i>University of São Paulo, Department of Structural Engineering and Geotechnical, Brazil</i></p>
13:05–13:20	<p>Issues of physicochemical mechanics of materials in the education of specialists in the field of port, fleet, and offshore facility operation management</p> <p>Ja. Chmiel</p> <p><i>Maritime University of Szczecin, Faculty of Economics and Transport Engineering, Poland</i></p>
13:20–14:10	FLASH POSTER SESSION
13:20–13:25	<p>Teaching Fracture Mechanics and Structural Integrity in Spain: A Tribute to Eduardo Torroja</p> <p>J. Toribio</p> <p><i>University of Salamanca, Fracture and Structural Integrity Research Group, Spain</i></p>

13:25–13:30	<p>Ductility-dip and brittle temperature range phenomena in arc-based additive manufactured Inconel 625 superalloy influenced by nitrogen and iron content</p> <p>S. Motrunich¹, O. Yarovitsyn¹, M. Chervyakov¹, V. Knysh¹, I. Volosatov¹, G. Zvyagintseva¹, I. Klochkov¹, O. Katok¹, O. Tsysar¹, A. Zavdoveev¹, V. Pestov¹, G. Khrushchov¹, Yu. Oliynyk¹, D. Tomko²</p> <p>¹ <i>E. O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p> <p>² <i>National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Ukraine</i></p>
13:30–13:35	<p>Mechanical and Fatigue Performance of Two-Phase Titanium Alloy After Combined Surface Treatments</p> <p>S. Lavrys, I. Pohrelyuk, A. Luk’yanenko</p> <p><i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
13:35–13:40	<p>Analysis of the impact of cyclic thermal loading in critical zones of welded joints on the structural integrity of a metal shell deployable structure</p> <p>V. Onishchenko, V. Volkov</p> <p><i>E. O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
13:40–13:45	<p>Strength of an anisotropic elastic-plastic body with a filled crack under transverse shear</p> <p>V. Melnyk</p> <p><i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
13:45–13:50	<p>Experimental determination of detection sensitivity limits for eddy current systems in multilayer structure inspection</p> <p>Iu. Lysenko¹, Yu. Kuts¹, V. Uchanin², R. Halahan¹</p> <p>¹ <i>National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Ukraine</i></p> <p>² <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>

13:50–13:55	<p>Healing of a penny-shaped crack in a continuously non-homogeneous material under tension</p> <p>A. Didukh</p> <p><i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
13:55–14:00	<p>Analysis of High-Frequency Oscillations in an Elastic Quarter-Space</p> <p>A. Fesenko</p> <p><i>Odesa I. I. Mechnikov National University, Faculty of Mathematics, Physics and Information Technologies, Ukraine</i></p>
14:00–14:05	<p>Determination of residual and operation stresses in welded structures by the magneto-anisotropy method</p> <p>S. Minakov¹, V. Uchanin², Ye. Chvertko¹, A. Minakov¹</p> <p>¹ <i>National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Ukraine</i> ² <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>
14:05–14:10	<p>Towards assessment of the risk of development of cracks of different shapes in structural elements with holes</p> <p>O. Bilyy, J.A. González Sánchez, J.G. Rosado Carrasco</p> <p><i>Autonomous University of Campeche, Centre for Corrosion Research, Mexico</i></p>
14:10–14:15	<p>Investigating of Stress Distributions in Anisotropic Plate Containing Smooth Orthotropic Inclusions</p> <p>A. Kazberuk¹, V. Kravets², A. Chornenkyi^{1,2}</p> <p>¹ <i>Bialystok University of Technology, Faculty of Mechanical Engineering, Poland</i> ² <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i></p>

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14:15	Closing Ceremony
	Z. Nazarchuk, Conference Chairman <i>Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine, Ukraine</i>