



**INSTITUTE OF POLYMER MECHANICS
UNIVERSITY OF LATVIA**

**EIGHTEENTH INTERNATIONAL CONFERENCE
MECHANICS OF COMPOSITE MATERIALS**

**Devoted to the 50 Anniversary of the Institute of Polymer Mechanics
University of Latvia**

**June 2 – 6, 2014
Riga, Latvia**

PROGRAMME

Riga, 2014

ORGANIZING INSTITUTION

- Institute of Polymer Mechanics

SUPPORTING INSTITUTIONS

- Latvian Academy of Sciences
- Latvian Council of Science
- Latvian National Committee for Mechanics
- University of Latvia
- Riga Technical University
- Journal *Mechanics of Composite Materials*
- Scientific Enterprise *Lakomp*
- Centre Composite (Latvia)



Chairman: V. Tamužs (Latvia)

Vice-chairmen: E. Plūme (Latvia)
J. Jansons (Latvia)

Scientific Secretary: K. Cīrule (Latvia)

INTERNATIONAL PROGRAMME COMMITTEE

L. A. Agalovyan (*Armenia*), S. D. Akbarov (*Turkey*), H. Altenbach (*Germany*),
A. N. Anoshkin (*Russia*), C. Bakis (*USA*), W. Hwang (*Republic of Korea*),
G. Kaklauskas (*Lithuania*), V. V. Kovriga (*Russia*), J. Lellep (*Estonia*),
N. Myshkin (*Belarus*), Yu. M. Pleskachevsky (*Belarus*), R. Talreja (*USA*),
R. Tepfers (*Sweden*), J. Vārna (*Sweden*), and A. D. Zamanov (*Azerbaijan*)

LOCAL ORGANIZING COMMITTEE

Chairman: E. Plūme

J. Andersons, K. Aniskevich, M. Auziņš, J. Brauns, A. Čate, K. Cīrule,
J. Jansons, M. Kalniņš, K. Klepatsky, I. Knēts, A. Krasņikovs, A. Lagzdiņš,
R. Maksimov, L. Pāže, K. Rocēns, V. Štrauss, V. Tamužs, and J. Vība

Dear Colleague,

On behalf of the Organizing Committee, it is our pleasure to invite you to participate in the 18th International conference **MECHANICS OF COMPOSITE MATERIALS** to be held from June 2 to June 6, 2014 in Riga (Jūrmala), Latvia.

THE CONFERENCE LOCATION is the SemaraH Hotel Lielupe in the resort town Jūrmala, a narrow strip of land between the Riga Gulf and the Lielupe River. The venue is located 20 km from the centre of Riga, 15 km from the central airport, as well as 500 m from the railway station Bulduri and 200 m from the sandy beach. You can proceed to Jūrmala from the Riga Main Railway Station by a local train.

The Riga International AIRPORT is serviced by many International airlines. Riga has also good RAILWAY connections and an excellent network of trams, buses, trolleys, and taxi service. A well-developed rail and bus network connects Riga with all major towns and points of interest within the country. Additional information can be obtained at the Conference web-site.

THE REGISTRATION will take place in the lobby of the SemaraH Hotel Lielupe on June 2 and 3.

REGISTRATION FEE is EUR 550 for participants (on the site – EUR 650), EUR 250 for students and accompanying persons. Registration fee for students on site 300 EUR. The registration fee includes the attendance at sessions, a book of abstracts (hard copy and CD), the welcome reception, refreshments during coffee breaks, lunches, and the conference dinner. The registration fee should be paid by bank transfer to:

BANK "SEB BANKA" OF LATVIA, Riga, Latvia
Bank Code SWIFT: UNLALV2X
Account No. LV02UNLA0050000846849 (EUR)
Account No. LV19UNLA0001201070371 (USD)
for the Institute of Polymer Mechanics
Reg. No. LV 40003111948
23 Aizkraukles St., Riga, LV-1006, Latvia

or by a credit card (VISA, EUROCARD/MASTERCARD) sending Card details to conference organizers in advance. Credit cards will not be accepted on the site.

ACCOMODATION. You can make Hotel reservation (with a discount for Conference participants) in the SemaraH Hotel Lielupe (reservations@semarahhotels.com; www.semarahhotels.com) at the Conference location in Jūrmala. This will also be possible in other Hotels of Jūrmala, as well as in the Radisson Blu Daugava Hotel, Konventa Seta, Hotel Grand Palace, Hotel De Rome, Radisson Blu Elizabete Hotel, Radisson Blu Ridzene Hotel of Riga, and many others.

MEALS will be arranged in the restaurant/cafe of the SemaraH Hotel Lielupe.

THE TECHNICAL PROGRAMME includes plenary papers and section and poster sessions. The time allowed is 40 min for plenary presentations and 20 min (with discussion included) for section papers. Power Point presentations, overhead projections, video films and 100cm high and 75cm wide stands for posters will be available. Speakers are kindly requested to download and check the demonstration materials prior to their presentation.

THE CONFERENCE LANGUAGE will be English.

A BOOK OF ABSTRACTS in English (a hard copy and a CD) will be available at the Conference meeting. Reviewed full papers (either in English or Russian) will be published in the bimonthly journal *Mechanics of Composite Materials* issued by the Institute of Polymer Mechanics.

VISA REQUIREMENTS. On December 21 2007, Latvia acceded to the Schengen Agreement. It is advisable that participants who need a visa apply for it at the closest Latvian Embassy or Consulate prior to the travel. For information please see the website of the Ministry of Foreign Affairs of Latvia. We can help by forming an Official Invitation needed to receive a visa. Please, check the expiration date of your passports.

SOCIAL EVENTS. Excursion to Riga will be organized on June 4, after the Poster Session. The Conference dinner will take place on June 5.
A postconference tour will be organized at a special time and rate.
Tickets to theatres and concerts will be arranged.

LOCAL TIME:GMT+2h.

FOR ADDITIONAL INFORMATION PLEASE CONTACT:

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Scientific Secretary of MCM-2014
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GENERAL PROGRAMME SCHEDULE

	Monday, 02 June	Tuesday, 03 June		Wednesday, 04 June		Thursday, 05 June		Friday, 06 June	
9:00	Registration	Hall I	Hall III	Hall II	Hall III	Hall II	Hall III	Hall II	Hall III
		Opening and Plenary session		Section III	Section IV	Section V	Section I	Section VII	Section II
10:40		Coffee break		Coffee break		Coffee break		Coffee break	
11:00		Plenary session		Section III	Section IV	Section V	Section I	Section VII	Section II
12:40		Lunch		Lunch		Lunch		Lunch	
14:00		Plenary sess.		Hall II	Hall III	Hall II	Hall III		
		Hall II	Hall III						
		Section III	Section VI	Section III	Section IV	Section V	Section I		
15:40		Coffee break		Coffee break		Coffee break			
16:00		Section III	Section VI	Poster session		Section V	Section I		
18:00	Welcome reception			Excursion to Riga		Conference dinner			
22:00									

CONFERENCE SECTIONS

Section I. STRUCTURE AND PROPERTIES OF CONSTITUENTS

Section II. TIME- AND ENVIRONMENT-DEPENDENT PROPERTIES AND DURABILITY

Section III. STRENGTH, FRACTURE, DAMAGE AND FATIGUE

Section IV. STRUCTURES

Section V. APPLICATION OF COMPOSITE MATERIALS IN AERONAUTICS AND SPACE

Section VI. COMPOSITES IN CIVIL ENGINEERING AND INFRASTRUCTURE

Section VII. MECHANICAL ASPECTS OF TECHNOLOGY AND BIOMECHANICS

TUESDAY, JUNE 3

9:00 OPENING OF THE CONFERENCE

PLENARY SESSION

- 9:20 **H. Altenbach (Germany)**
Structural analysis of nanosized plates and shells
- 10:00 **W. Becker (Germany)**
Available settings for stress analysis and strength assessment of laminate structures
- 10:40 – 11:00 **CONFERENCE FOTO SESSION AND COFFEE BREAK**
- 11:00 **N. Vasiliev, A. Borodin, and A. Khaziev (Russia)**
A review of the Progresstech activity in the design and analysis of composite aircraft structures
- 11:40 **V. V. Kovriga (Russia)**
Modern problems and applications of reinforced and filled polyethylene
- 12:20 – 14:00 LUNCH
- 14:00 **J. Jansons, E. Plume, and V. Tamužs (Latvia)**
The 50-th anniversary of the Institute of Polymer Mechanics

TUESDAY, JUNE 3

SECTION III

STRENGTH, FRACTURE, DAMAGE, AND FATIGUE

CHAIRPERSONS: V. Tamužs, N. Yahnioglu, D. Laris

SECRETARY: J. Modniks

- 15:00 **A. K. Kvedaras, G. Šaučiuvėnas, E. Jarmolajeva, and T. Lenkimas (Lithuania)**
Behaviour of tempered and laminated glass plates with stress concentrators under different loads
- 15:20 **R. Talreja (USA, Sweden)**
A mechanisms based fatigue reliability model for composites
- 15:40 – 16:00 COFFEE BREAK
- 16:00 **H. Zrida and J. Varna (Sweden)**
Stiffness of non-crimp fabric composites with imperfect fiber bundle alignment
- 16:20 **A. Pupurs, M. Loukil, and J. Varna (Sweden)**
Bending stiffness reduction of composite laminates due to intralaminar cracks in surface layers
- 16:40 **L. Zhuang and A. Pupurs (Sweden, USA)**
Effect of the neighboring fibers on interface debond growth in unidirectional composites
- 17:00 **T. Nadabe and N. Takeda (Japan)**
Computational modeling of longitudinal compressive failure in fiber reinforced composites as shear banding due to strain localization

- 17:20 **D. Hühn and T. Pyttel (Germany)**
Employment of a scaled-up model in a combined experimental and numerical investigation of failure mechanism in filament-matrix-structure
- 17:40 **F. Bensadoun, J. Baets, D. Depuydt, A.W. Van Vuure, and I. Verpoest (Belgium)**
Impact properties characterization of flax fibre-reinforced composites
- 18:00 **F. Bensadoun, J. Baets, A.W. Van Vuure, and I. Verpoest (Belgium)**
The influence of textile architectures on the fatigue behaviour of flax/epoxy composites
- 18:20 **A. M. Ignatova and M. N. Ignatov (Russia)**
Research of deformation and fracture of inorganic oxide materials with polymeric structure under shock-wave effect by the example of synthetic mineral alloys
- 18:40 **F. Yalcin, A. Ozturk, and M. Gulgec (Turkey)**
A parametric study of plastic yielding of a two-layered composite cylinder

TUESDAY, JUNE 3

SECTION VI

COMPOSITES IN CIVIL ENGINEERING AND INFRASTRUCTURE

CHAIRMEN: V. Kovriga, A. Krasnikovs

SECRETARY: O. Kononova

- 15:00 **KEY NOTE**
G. Gorynin and Y. Nemirovskii (Russia)
Modeling of process of formation of elastic properties of concrete in the period of increase of strength
- 15:40 – 16:00 COFFEE BREAK
- 16:00 **V. V. Kovriga, A. A. Shmelev, V. R. Gumen, A. L. Kachalina, and B. A. Balabanova (Russia)**
Investigation of abrasion wear for pipe type polyethylene and calculation of workability resource scheme for polyethylene slime pipes
- 16:20 **V. V. Kovriga, N. V. Biserova, V. T. Biserov, and N. N. Sarafannikov (Russia)**
Methods of determination and calculation of durability of PE spiral pipes reinforced by glass fiber networks
- 16:40 **N. Petkune, T. Donchev, H. Hadavinia, and M. Limbachiya (United Kingdom)**
Investigation in connections between steel, composite and hybrid structural elements
- 17:00 **C. Scheffler, S. Zhandarov, W. Jenschke, and E. Mäder (Germany, Republic of Belarus)**
Fiber-reinforced concrete: investigation of strain rate dependent interphase behavior with single fiber pull-out test under quasi-static and high rate loading
- 17:20 **A. Macanovskis, V. Lulis, A. Krasnikovs, O. Kononova, and A. Vagele (Latvia)**
Friction mechanism investigation during straight steel fiber pull-out from concrete or epoxy matrix
- 17:40 **G. Şakar and H. M. Tanarlan (Turkey)**
Prestressed CFRP fabrics for flexural strengthening of concrete beams with an easy pre-stressing technique

- 18:00 **R. Alrousan (Jordan)**
Finite element modeling of RC beams strengthened with different CFRP schemes
- 18:20 **R. Haddad, R. Al-Rousan, L. Ghanma, and Z. Nimri (Jordan)**
Modifying CFRP-concrete bond characteristic from pullout tests
- 18:40 **A. N. Ababneh, I. M. N. Ghaith and R. Z. Al-Rousan (Jordan)**
Development of mechanical anchor system to enhance the efficiency of flexural strengthening of reinforced concrete beams using fiber reinforced polymers

WEDNESDAY, JUNE 4

SECTION III

CHAIRMEN: J. Vārna, R. Talreja

SECRETARY: S. Tarasovs

- 9:00 **M. Marchuk, V. Pakosh, V. Kharchenko, and D. Klymenko (Ukraine)**
Free vibrations of layered plates-strip with composite components pliable to transversal shear and compression in discrete consideration
- 9:20 **B. A. Kozhamkulov, A. I. Kupchishin, B. M. Doskempirov, and V. P. Tamuzs (Kazakhstan, Latvia)**
Physical and mechanical aspects of radiation damage of composites
- 9:40 **V. Petrova and S. Schmauder (Germany, Russia)**
Analytical modeling of fracture of functionally graded /homogeneous material structures under combination of a heat flux and shear loading
- 10:00 **J. Modniks, E. Spārniņš, J. Andersons, and W. Becker (Latvia, Germany)**
Modeling of a stress raiser influence on the strength of UD/Flax composite
- 10:20 **N. Yahnioglu (Turkey)**
The total electro-mechanical potential energy at the interface crack tips in a sandwich plate-strip with piezoelectric face and elastic core layers
- 10:40 – 11:00 COFFEE BREAK
- 11:00 **O. Kononova, G. Harjkova, and A. Krasnikovs (Latvia)**
Strength of composite material reinforced by 3D knitted fabric
- 11:20 **J. Sliseris, H. Andrā, M. Kabel, and G. Frolovs (Latvia, Germany)**
Multiscale simulation and experimental testing of mechanical properties of wood fiberboards
- 11:40 **E. Özer and M. Übeyli (Turkey)**
A study on the impact resistance of laminated composites containing silicon carbide and normalized steel layers
- 12:00 **R. Szlosarek, T. Karall, C. Hahne, A. Berger, N. Meyer, and N.ENZINGER (Austria, Germany)**
Fracture angle search within Puck's 3D matrix failure criteria by using the damped Newton's method

- 12:20 **T. Ferenc, T. Mikulski, and Ł. Pyrzowski (Poland)**
Determination and comparison of tensile properties of GFRP laminates based on different resin and different reinforcement
- 12:40 – 14:00 LUNCH
- 14:00 **N. P. Semenyuk, V. M. Trach, N. B. Zhukova, and D. S. Wlasuk (Ukraine)**
Application of the Timoshenko-Mindlin theory to the calculation of nonlinear deformation and stability of anisotropic shells
- 14:20 **N. I. Avdeev, V. Yu. Yevstignejev, V. A. Zaharevskis, and A. V. Leonov (Latvia)**
An analytical method for failure prediction of mechanically fastened joints in composite structures
- 14:40 **S. G. Ivanov, L. Gorbatikh, and S. V. Lomov (Latvia, Belgium)**
Compression after impact of textile composites with thermoplastic matrices
- 15:00 **V. I. Solodilov, R. A. Korokhin, Yu. A. Gorbatkina, A. M. Kuperman, and A. V. Shapagin (Russia)**
Crack resistance of modified epoxy matrices and reinforced plastics based on it
- 15:20 **S. Aldajah, Y. Haik, and A. Alomari (United Arab Emirates)**
Effect of carbon nanotubes on high and low speed impact characteristics of composite materials

WEDNESDAY, JUNE 4

SECTION IV STRUCTURES

CHAIRMEN: S. D. Akbarov, A. D. Zamanov

SECRETARY: V. Kulakov

- 9:00 **S. D. Akbarov, T. Kepceler, and T. Kocal (Turkey, Azerbaijan)**
Torsional wave propagation in a bi-layered hollow cylinder made of viscoelastic material
- 9:20 **M. Gude, W. Hufenbach, A. Freund, R. Kupfer, and C. Vogel (Germany)**
Simulation of a novel joining process for fiber reinforced thermoplastic composites and metallic components
- 9:40 **B. Grüber, W. Hufenbach, R. Gottwald, M. Lepper, M. Gude, N. Modler, and B. Zhou (Germany)**
Experimental stress-strain measurement for fibre-reinforced finite multilayered composites with cut-out under bending for validating an analytical calculation method
- 10:00 **R. Szlosarek, T. Karall, C. Hahne, A. Berger, N. Meyer, and N. Enzinger (Austria, Germany)**
Finite element analysis of flow drill screw joints between fibre-reinforced plastics and aluminium by using user-materials for solid elements
- 10:20 **S. Sapozhnikov and A. Shakirov (Russian Federation)**
Strength improvements of single lap joint
- 10:40 – 11:00 COFFEE BREAK

- 11:00 **C. Ipek (Turkey)**
The influence of the imperfection of the interface contact on the dispersion of the flexural waves in a compound cylinder
- 11:20 **M. Negin and C. Ipek (Turkey)**
Effect of imperfect contact on the generalized Rayleigh wave dispersion in a system consisting of a pre-stressed layer and a pre-stressed half-plane
- 11:40 **A. D. Zamanov and I. A. Akhundova (Azerbaijan)**
Oscillations of corroded rod
- 12:00 **C. B. York (United Kingdom)**
Feasible design space investigation for variable angle tow composite laminates
- 12:20 **G. Frolovs, K. Rocēns, and J. Šliseris (Latvia)**
The influence of the geometrical parameters of waved ribs on the specific stiffness of a plywood plate
- 12:40 – 14:00 LUNCH
- 14:00 **I. R. Sadigov (Azerbaijan)**
Nonlinear elastic deformation of mesh-type rectangular plates of variable thickness
- 14:20 **F. Coban and R. Kosker (Turkey)**
On the stress distribution in an elastic body with a locally curved double-walled carbon nanotube
- 14:40 **S. Vidinejevs and A. Aniskevich (Latvia)**
Shear strength recovery of GFRP laminate using carbon-fiber tubes as self-healing vasculature
- 15:00 **M. Makaracı and S. Demir (Turkey)**
Design of a mid-size wind turbine hub-rotor-blade bearing system under severe loading conditions
- 15:20 **M. Makaracı and S. Demir (Turkey)**
Contact analysis of slewing bearing of a mid-size wind turbine by analytical and finite element approach
- 15:40 – 16:00 COFFEE BREAK
16:00 – 18:00 POSTER SESSION

WEDNESDAY, JUNE 4

16:00 – 18:00 POSTER SESSION

SECTION I

STRUCTURE AND PROPERTIES OF CONSTITUENTS

- P.1.1. **B. Abu-Jdayil, A.-H. Ismail Mourad, and A. Hussain (United Arab Emirates)**
Date pits-based heat insulator composites
- P.1.2. **B. E. Akitay, A. Baimahanuly, B. A. Kozhamkulov, A. A. Kyrykbaeva, and J. M. Bitibaeva (Kazakhstan)**
Radiation defects in the plastically deformed optical composite
- P.1.3. **J. Andrzejewski, T. Sterzynski, and D. Czarnecka-Komorowska (Poland)**
Properties of wood-polymer composites after multiprocessing
- P.1.4. **J. Bang, K. C. Bae, Y. J. Cho, J. J. Oak, Y. J. Kim, and Y. H. Park (Republic of Korea)**
Fabrication and analysis of wear behavior of Al-Si/SiCp + Alumix231 MMC by powder metallurgy
- P.1.5. **R. Barczewski, D. Chmielewska, and M. Barczewski (Poland)**
Non-linear determination of epoxy resin composites cured with silsesquioxanes
- P.1.6. **O. Bikovens, A. Arnautov, J. Ponomarenko, and A. Arshanitsa (Latvia)**
Effect of rubber filler on the fracture toughness and adhesion strength of epoxy resin
- P.1.7. **O. Bikovens, A. Arshanitsa, J. Ponomarenko, and A. Nasibullins (Latvia)**
The influence of curing conditions on structure, tensile and thermal characteristics of epoxy resin
- P.1.8. **I. Bochkov, T. Ivanova, R. Meri Merijs, J. Zicāns, M. Kalnins, and R. Maksimov (Latvia)**
Structure and mechanical behaviour of binary polypropylene/thermoplastic polyolefine elastomer blends
- P.1.9. **V. Z. Gabdrakipov, A. I. Kupchishin, and K. B. Tlebaev (Kazakhstan)**
Computer simulation and experimental studies of the IR spectrum in polyimide
- P.1.10. **G. Harjkova and O. Kononova (Latvia)**
Analysis of knitted composite reinforcement with variable cross-section shape
- P.1.11. **V. Kalkis, I. Reinholds, R. D. Maksimov, J. Zicans, and R. Merijs Meri (Latvia)**
The effect of radiation-chemical modification on the thermomechanical properties of polypropylene compositions with chlorinated polyethylene and radiation sensitizers
- P.1.12. **A. Kiyantsa, S. Gaidukovs, I. Juhnevica, E. Danenberga, M. Masonkina, and E. Zukulis (Latvia)**
Polyethylene oxide hybrids: preparation, testing, and properties
- P.1.13. **M. Knitter and M. Dobrzyńska-Mizera (Poland)**
Mechanical properties of isotactic polypropylene modified with thermoplastic potato starch
- P.1.14. **A. Kovalovs, A. Chate, N. Jelinska, and M. Kalnins (Latvia)**
Analysis of poly(vinyl alcohol)/poly (vinyl acetate) blends films by the response surface method

- P.1.15. **A. I. Kupchishin, B. G. Taipova, A. A. Kupchishin, and B.A. Kozhamkulov (Kazakhstan)**
Study of physical and mechanical properties of the composites based on polyimide and polycarbonate
- P.1.16. **M. Zh. Kussainova, V. Lakevics, R. M. Chernyakova, and U. Zh. Dzhusipbekov (Kazakhstan, Latvia)**
Study of the sorption properties of zeolite model system $H_3PO_4 - Cd^{2+} - Pb^{2+}$
- P.1.17. **M. Laka, S. Chernyavskaya, A. Treimanis, I. Birskā, and L. Vikele (Latvia)**
Effect of nanoparticles obtained from different wood barks on paper properties
- P.1.18. **A. D. Muradov, A. I. Kupchishin, and K. B. Tlebaev (Kazakhstan)**
The features of the change of the mechanical properties of the polyimide-YBA₂Cu₃O_{6+x} systems
- P.1.19. **O. Nestore and J. Kajaks (Latvia)**
Interfacial modifiers influence on physical and mechanical properties of composites based on linear low-density polyethylene (LLDPE) and natural fibre waste
- P.1.20. **J. J. Oak, K. C. Bae, Y. J. Cho, J. I. Bang, H. H. Chun, and Y. H. Park (Korea)**
Theoretical design of titanium-based glassy alloy
- P.1.21. **V. Shakels, G. Shulga, S. Livča, and M. Dzenis (Latvia)**
Formation and characterisation of Langmuir surface films formed with water-soluble alkali lignin/chitosan polyelectrolyte complex nanoparticles
- P.1.22. **V. A. Shelestova, P. N. Grakovich, L. F. Ivanov, and S. F. Zhandarov (Belarus)**
Improving carbon fiber adhesion to PTFE by plasma treatment
- P.1.23. **G. Shulga, B. Neiberte, A. Verovkins, S. Vitolina, and S. Livcha (Latvia)**
Obtaining functionalized hardwood microparticles for making recycled polymer-based composites
- P.1.24. **E. E. Starchak, T. M. Ushakova, V. G. Grinev, V. G. Krashennnikov, and L. A. Novokshonova (Russia)**
Physical and mechanical properties of reactor blends UHMWPE with ethylene/1-hexene copolymers
- P.1.25. **A. Sutka, S. Kukle, J. Gravitis, and A. Veveris (Latvia)**
Mechanical properties of three-polymer nano-mat composites
- P. 1.26. **T. M. Ulyanova, A. A. Shevchonok, L. V. Titova, and L. V. Kulbitskaja (Belarus)**
Influence of nanostructured alumina modifier on corundum ceramic composite
- P.1.27. **A. Verovkins, B. Neiberte, G. Shulga, S. Livcha, and G. Zakis (Latvia)**
Bark and sawdust modification by ammooxydation method

SECTION II

TIME- AND ENVIRONMENT-DEPENDENT PROPERTIES AND DURABILITY

- P.2.1. **R. Chatys and Ł. J. Orman (Poland)**
Thermal and strength characteristics of composite heat exchangers
- P.2.2. **Y. J. Cho, K. C. Bae, J. I. Bang, Y. K. Son, J. J. Oak, and Y. H. Park (Korea)**
Investigation of steady-state creep behavior of $Al_2O_3 \cdot SiO_{2sf} + SiCp/Mg$ hybrid composite using finite element method

- P.2.3. **A. Grigaloviča, R. Meri Merijs, J. Zicāns, M. Kalnins, R. Maksimov, and J. Jansons (Latvia)**
Mechanical properties of modified polyoxymethylene composites
- P.2.4. **N. Jelinska, M. Kalnins, E. Auzins, and A. Kovalovs (Latvia)**
Mechanical properties of filled poly(vinyl alcohol) and poly(vinyl acetate) blends depending on moisture content
- P.2.5. **A. Martone, A. Petricione, A. Borisova, A. Aniskevich, and M. Zarrelli (Italy, Latvia)**
Impact on polymer nanocomposite thermo-mechanical properties of filler shape and content

SECTION III

STRENGTH, FRACTURE, DAMAGE, AND FATIGUE

- P.3.1. **U. Babuscu Yesil (Turkey)**
The effect of own weight on the stress concentration analysis of composite plates including a circular hole under bending
- P.3.2. **E. Findik and Ş. Şahin (Turkey)**
The effect of particle size of talc on the fracture toughness of polypropylene block copolymer
- P.3.3. **M. Gintalas, K. Kalninš, E. Leite, P. Šadreika, and A. Žiliukas (Lithuania, Latvia)**
Determination of mixed mode crack propagation in brittle and ductile materials
- P.3.4. **S. Gluhih, I. Pavelko, and N. Sidenko (Latvia)**
A method of reducing the damaging consequences of low-speed impact for PCM structures
- P.3.5. **V. A. Kolupaev, W. Becker, H. Massow, and E. M. Kiegelmann (Germany)**
2D tension loading on hard foams and ceramics
- P.3.6. **E. Leite, E. Skukis, K. Kalnins, J. Auzins, and M. A. Arbelo (Latvia, Germany)**
Identification of mechanical properties for Panex UD composite
- P.3.7. **E. Yu. Makarova and Yu. V. Sokolkin (Russia)**
To the theory of the effective elastic properties of highly porous composites
- P.3.8. **M. Marchuk, T. Goriachko, V. Pakosh, and F. Yakimov (Ukraine)**
Method for determination the finite number of natural frequencies and amplitudes of geometrically nonlinear vibrations of elongated thin-walled composite panels
- P.3.9. **M. Marchuk, V. Kharchenko, D. Klymenko and M. Khomyak (Ukraine)**
Mathematical model and method for calculating of layered composite shells of rotation with the delamination
- P.3.10. **M. Ordyan and V. Petrova (Russia)**
Thermal fracture of a bimaterial with a system of partially insulated cracks subjected to a heat source
- P.3.11. **A. Turan Dincel (Turkey)**
On the energy release rate in a composite thick plate with a band crack

SECTION IV

STRUCTURES

- P.4.1. **M. B. Akhundov, A. D. Zamanov, and S. A. Piriyeu (Azerbaijan)**
Interaction of the non-homogeneous compound media limited by cylindrical surfaces
- P.4.2. **V. M. Akhundov (Ukraine)**
Form change in toroidal bodies under the impact of torsion at various fiber reinforcement systems
- P.4.3. **V. M. Akhundov and T. A. Skrypochka (Ukraine)**
Tension and loss of tightness in reinforced round cylinder periphery shaft seals under the impact of centrifugal forces
- P.4.4. **A. Arnautov, V. Gribniak, I. Blumbergs, M. Hauka, and A. Nasibullins (Latvia)**
Optimization of hybrid joints for improving their reliability
- P.4.5. **M. A. Baghchesara and H. Abdizadeh (Iran)**
Microstructural study of discontinuously reinforced aluminum matrix composite
- P.4.6. **K. Baynal, M. Makaracı, and İ. Gencil (Turkey)**
Optimization parameters of cold drawing process for surface roughness by Taguchi method: A case study
- P.4.7. **R. Chatys, Yu. Paramonov, V. Cimanis, and S. Varickis (Poland, Latvia)**
Connection of tensile strength and fatigue durability of glass-fiber reinforced composite and Daniel's sequence
- P.4.8. **A. V. Dolgodvorov and A. A. Chekalkin (Russia)**
Experimental research of structural properties of carbon-carbon composite material by X-ray computer tomography
- P.4.9. **V. Gribniak, A. K. Arnautov, G. Kaklauskas, R. Jakstaite, V. Tamulenas, and E. Gudonis (Latvia, Lithuania)**
Deformation analysis of RC ties externally strengthened with FRP sheets
- P.4.10. **M. Hauka, A. Nasibullins, I. Blumbergs, V. Gribniak, O. Bikovens, and J. Ponomarenko (Latvia)**
Design of adhesive joints with different elastic properties
- P.4.11. **K. Kalnins, M. A. Arbelo, S. G. P. Castro, O. Ozoliņš, R. Khakimova, and R. Degenhardt (Latvia, Germany)**
Experimental characterization of buckling load on imperfect cylindrical shells using the multiple perturbation load approach
- P.4.12. **E. Labans and K. Kalnins (Latvia)**
Topology optimisation for re-design of GF/PP composite part
- P.4.13. **V. Ostrovskis, K. Kalnins, and A. Chate (Latvia)**
Residual strength of GF/Epoxy honeycomb sandwich panels in compression
- P.4.14. **O. Strekalova, S. Vidinejevs, and A. Aniskevich (Latvia)**
GFRP composite with integrated damage indication layer

- P.4.15. **R. Tekercioglu (Turkey)**
Stress distribution in layered half-space caused by spatially local curving of the near-surface reinforcing layer
- P.4.16. **R. Vitols, O. Kononova, and A. Krasnikovs (Latvia)**
Measuring and modeling actuation response of circular dielectric elastomer actuator

SECTION V

APPLICATION OF COMPOSITE MATERIALS IN AERONAUTICS AND SPACE

- P.5.1. **M. V. Belubekyan, V. P. Baljyan, and A. S. Harutyunyan (Armenia, Russia)**
Optimization of piecewise nonhomogeneous (composite construction) cantilever beam, loaded by own weight by stiffness criteria
- P.5.2. **A. Chernetsov (Russia)**
Local buckling of sandwich panels with non-thin facesheets
- P.5.3. **V. A. Efimik and A. A. Chekalkin (Russia)**
Analysis of dynamic behaviour of sound-absorbing designs method of final elements and technique in the assessment of efficiency of noise absorption
- P.5.4. **V. Konstantinov, A. Kovalovs, and S. Gluhih (Latvia)**
Weight-optimal design of composite wing's upper cover
- P.5.5. **A. Kovalovs, E. Barkanov, and S. Rucevskis (Latvia)**
Modeling and analysis of composite rotor blade with embedded piezo-composite actuators
- P.5.6. **A. P. Kren, V. A. Rudnitsky, and T. A. Pratasenia (Belarus, Latvia)**
Hardware-software system for determination of physical and mechanical properties of carbon materials of rocket and space equipment by impact indentation method
- P.5.7. **O. Mitrofanov, P. Serebryakov, and E. Ognyanova (Russia, Latvia)**
Small aircraft wing composite stiffened panels design providing strength and stability taking into account possible damage (defects) effect
- P.5.8. **Y. Şahin (Turkey)**
Recent studies on heat-treated Co and Ni based alloys
- P.5.9. **V. Strizhius (Russia)**
Fatigue analysis method for bolted joints of aviation composite structural elements
- P.5.10. **A. S. Yankin, R. V. Bul'bovich, S. V. Slovikov, and V. E. Vil'deman (Russia)**
Dependences of the dynamic mechanical properties of viscoelastic composites on the various parameters of the biharmonic (two-frequency) deformation

SECTION VI

COMPOSITES IN CIVIL ENGINEERING AND INFRASTRUCTURE

- P.6.1. **Yu Jia Huan, Han Jian Bo, Yu Jin, Liu Ming, and Jia Lian Guang (P. R. China)**
Application of interfacial propagation and kinking crack concept to ECC/concrete overlay repair system
- P.6.2. **Yu Jia Huan, Jiang Li Jun, Yu Jin, Jia Lian Guang, and Liu Ming (P. R. China)**
Mixed-mode cohesive-zone models for delamination and deflection of interfacial crack in engineered cementitious composites
- P.6.3. **Yu Jia Huan, Liu Yang, Yu Jin, Jia Lian Guang, and Liu Ming (P. R. China)**
The micromechanic solution of elastic moduli of fiber reinforced concrete
- P.6.4. **V. Lulis, A. Macanovskis, O. Kononova, and A. Krasnikovs (Latvia)**
Layered fiberconcrete element strength
- P.6.5. **M. Novotná, M. Maršálková, and O.Louda (Czech Republic)**
The influence of inorganic reinforcement on the mechanical behaviour of composites

SECTION VII

MECHANICAL ASPECTS OF TECHNOLOGY

- P.7.1. **A. N. Anoshkin, T. G. Zavyalova, A. B. Pospelov, and N. A. Trufanov (Russia)**
Evaluation of technological stresses in biplastic pipes during the polyethylene extrusion phase
- P.7.2. **D. Czarnecka-Komorowska (Poland)**
Brittle-ductile transition (BDT) in recycled plastics

SECTION VIII

BIOMECHANICS

- P.8.1. **A. B. Ismailova and E. O. Batyrbekov (Kazakhstan)**
Polymer composite materials for ophtalmic applications
- P.8.2. **N. Phongam, R. Dangtungee, and S. Siengchin (Thailand)**
Comparative studies of mechanical properties between nonwoven and woven flax fiber-reinforced poly(butylene adipate-co-terephthalate)-based composites laminates

THURSDAY, JUNE 5

SECTION V

APPLICATION OF COMPOSITE MATERIALS IN AERONAUTICS AND SPACE

CHAIRMEN: A. N. Anoshkin, S. Tarasovs

SECRETARY: J. Modniks

- 9:00 **KEY NOTE**
S. Dadunashvili, S. Kravchenko, A. Panayi, and K. Zhidyaev (Russia)
Development of reliable and affordable composite aircraft structures
- 9:40 **A. N. Anoshkin, V. Yu. Zuiko, and V. V. Artemev (Russia)**
Design and manufacture of aircraft engine frame from polymer composites depending on technological features
- 10:00 **A. V. Bezmelnitsyn and S. B. Sapozhnikov (Russia)**
Residual stress estimation of a wound thick-walled GFRP ring
- 10:20 **A. V. Leonov (Latvia)**
Challenges in design and analysis of repairs for advanced composite primary Structures
- 10:40 – 11:00 COFFEE BREAK
- 11:00 **E. Eglitis (Austria)**
Typical challenges in analysis of composite aircraft components
- 11:20 **I. Pavelko, V. Pavelko, and M. Smolyaninov (Latvia)**
A simplified model of low-velocity impact damage of layered composite
- 11:40 **L. Li (P.R.China)**
Modeling stress-strain behavior of 2D and 2.5D woven ceramic matrix composites
- 12:00 **E. A. Hazar (Aliyev) and K. A. Dilbazov (Turkey, Azerbaijan)**
Self-balanced stress distribution of local near-surface buckling of a system consisting of an elastic bond layer and an elastic covering layer
- 12:20 **O. Mitrofanov, A.Sorokin, and T. Ognyanova (Russia, Latvia)**
Anisotropic and orthotropic thin-gauge ribs and spars post-buckling state optimal design of light aeroplane wing taking into account strength and fatigue limits
- 12:40 – 14:00 LUNCH
- 14:00 **V. Pavelko (Latvia)**
Post-buckling behavior of a layered composite beam with delamination
- 14:20 **V. Pavelko, K. Lapsa, and S. Kuznetsov (Latvia)**
Fracture toughness of adhesive bond of composite
- 14:40 **Y. Şahin, N. Gemalmayan, and Y. F. Sahin (Turkey)**
Microstructure, wear and friction behavior of titanium-nickel shape memory alloys
- 15:00 **Y. Şahin and H. Mirzayev (Turkey, Azerbaijan)**
Wear behaviour of polymeric materials by Taguchi's method

- 15:20 **O. A. Kudryavtsev and S. B. Sapozhnikov (Russia)**
Ballistic properties of multilayer composites with a thermoplastic matrix
- 15:40 – 16:00 COFFEE BREAK
- 16:00 **Yu. Paramonov, V. Cimanis, S. Varickis, and M. Kleinhofs (Latvia)**
Modelling of strength and fatigue life of unidirectional fibre composite using Daniel's sequence and Markov chains
- 16:20 **J. Modniks and S. Tarasovs (Latvia)**
Assessment of the threat posed by interlaminar delamination in carbon-fiber composite panels

THURSDAY, JUNE 5

SECTION I

STRUCTURE AND PROPERTIES OF CONSTITUENTS

CHAIRPERSON: I. Beverte, R. Chatis

SECRETARY: K. Aniskevich

- 9:00 **L. Sobczak, M. Steiner, A. Haider, and H. Braun (Austria)**
PP-based carbon composites - fiber property exploitation as a function of coupling
- 9:20 **S. D. Akbarov, I. Kurt, and S. Sezer (Turkey, Azerbaijan)**
Dispersion of the near-surface waves in a system consisting of a pre-stressed piezoelectric covering layer and a pre-stressed metallic half-plane
- 9:40 **R. A. Korokhin, V. I. Solodilov, A. V. Shapagin, and Yu. A. Gorbatkina (Russia)**
Rheological and physico-mechanical properties of epoxy-polyetherimide compositions
- 10:00 **Z. Boufaïda, L. Farge, S. André, and Y. Meshaka (France)**
Analysis of the damping properties of a thermoplastic matrix composite: highlightment of the key role of the interphase region
- 10:20 **U. Meekum and A. Khongrit (Thailand)**
Toughening of X-PP wood composite
- 10:40 – 11:00 COFFEE BREAK
- 11:00 **M. Eglit and T. Yakubenko (Russia)**
Elasticity of porous media
- 11:20 **A. Hajlane, H. Kaddami, and R. Joffe (Sweden, Morocco)**
Surface treatment of regenerated cellulose fibers to improve interfacial adhesion in composites
- 11:40 **W. V. Teraud (Russia)**
Mechanical behaviour of specimens made by a 3D printer
- 12:00 **C. Unterweger, O. Brüggemann, and C. Fürst (Austria)**
Comparison of glass, basalt and carbon fiber PP-composites: Effects of compounding and a coupling agent on the mechanical properties
- 12:20 **M. A. Baghchesara and H. Abdizadeh (Iran)**
Production and microstructural investigation of Al-nanoTiB₂ composite produced by powder metallurgy technique
- 12:40 – 14:00 LUNCH

- 14:00 **S. Sleptsova, Iu. Kirillina, E. Afanas'eva, and A. A. Okhlopkova (Russia)**
The polymer-silicate nanocomposites development
- 14:20 **A. V. Ignatova (Russia)**
Multiscale modelling of mechanical behavior of composite foam
- 14:40 **R. R. Abdrakhimov and V. V. Sinitsin (Russia)**
Pressure and temperature sensors based on an oriented CNT-composite
- 15:00 **A. Javadi, A. Pakseresht, and S. Shakhesi (Iran)**
Investigation of mechanical properties of functionally graded TBCs including nanostructured composite layers
- 15:20 **L. Sözen and Ş. Şahin (Turkey)**
Effects of calcium carbonate filler content on the hoop stress of high density polyethylene pipes
- 15:40 – 16:00 COFFEE BREAK
- 16:00 **R. Hazimeh, G. Challita, K. Khalil, and R. Othman (France, Lebanon, Saudi Arabia)**
Influence of adherend dissimilarity on the stress distribution of adhesively bonded composite joints subjected to impact loading
- 16:20 **I. Beverte and A. Zilaucs (Latvia)**
Mechanical properties of cellular PUR plastics determined in different zones of a shear sample
- 16:40 **V. Polyakov (Latvia)**
Sound suppression of a blanket consisting of composite membranes with foam plastic

FRIDAY, JUNE 6

SECTION VII

MECHANICAL ASPECTS OF TECHNOLOGY AND BIOMECHANICS

CHAIRMAN: V. Shtrauss

SECRETARY: A. Kalpiņš

- 9:00 **D. Chmielewska, M. Barczewski, and T. Sterzyński (Poland)**
Epoxy composites highly filled with waste bulky mould compounds (BMC).
Thermomechanical properties
- 9:20 **N. İlhan and N. Koç (Turkey)**
Time-harmonic Lamb's problem for a system consisting of pre-stressed piezoelectric covering layer and half-plane
- 9:40 **R. Plesuma and L. Malers (Latvia)**
The significance of technological parameters on selected mechanical properties of a composite material based on scrap tires
- 10:00 **K. E. Öksüz and T. Gün (Turkey)**
Mechanical properties and microstructure of Distaloy DC with addition silicon carbide powder
- 10:20 **A. Muc (Poland)**
Choice of design variables in stacking sequence optimization of laminated structures
- 10:40 – 11:00 COFFEE BREAK

- 11:00 **M. Ghassemi Kakroudi (Iran)**
Investigation the effect of sintering temperature on Young's modulus evaluation and thermal shock behavior of a cordierite–mullite based composite
- 11:20 **P. N. Grakovich, N. P. Glazyrin, and D. N. Bontsevich (Republic of Belarus)**
Effect of poly-p-xylylene coatings on mechanical properties of surgical threads
- 11:40 **K. E. Öksüz and M. Şimşir (Turkey)**
A study on the fabrication of TiNi/SiCp shape memory alloys by PM method
- 12:00 **R. Dangtungee and S. Siengchin (Thailand)**
Silver nanopolymer composites: production and efficiency
- 13:00 – 14:00 LUNCH

FRIDAY, JUNE 6

SECTION II

TIME- AND ENVIRONMENT-DEPENDENT PROPERTIES AND DURABILITY

CHAIRMEN: R. Joffe, J. Andersons

SECRETARY: L. Pupure

- 9:00 **A. Lokoshchenko and L. Fomin (Russian Federation)**
Modeling of creep rupture of the tensile rods in an aggressive medium with account of variable diffusion coefficient
- 9:20 **L. Pupure and R. Joffe (Sweden)**
Evaluation of different methods for prediction of non-linear behaviour of polymeric materials
- 9:40 **S. Sfarra, M. Regi, C. Santulli, F. Sarasini, J. Tirillò, A. Paoletti, and D. Paoletti (Italy)**
Studying the effect of environmental ageing on impacted composite materials: an innovative perspective through the use of non-destructive testing (NDT) techniques
- 10:00 **S. D. Akbarov, N. Ilhan, and N. S. Sahin (Turkey, Azerbaijan)**
Dynamic response to a time-harmonic moving load of a system comprising a viscoelastic layer covering a viscoelastic half space
- 10:20 **B. B. Pajarito and M. Kubouchi (Philippines, Japan)**
Moisture sorption of epoxy composites reinforced with aligned and notched triangular bars
- 10:40 – 11:00 COFFEE BREAK
- 11:00 **K. Żerdzicki, P. Kłosowski, and K. Woźnica (Poland)**
Artificially aged architectural fabrics described by nonlinear mechanical models
- 11:20 **M. Secer and M. E. Kural (Turkey)**
Early creep behaviour of pultruded GFRP profiles
- 11:40 **B. B. Badmaev, T. S. Dembelova, D. N. Makarova, and A. B. Tsyrenzhapova (Russia)**
Elasticity and strength of fluids structure
- 13:00 – 14:00 LUNCH

