36th Solid Mechanics Conference

Gdańsk, September 9–12, 2008

Program

List of Contributions

INSTITUTE OF FUNDAMENTAL TECHNOLOGICAL RESEARCH
Polish Academy of Sciences

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Organized by

INSTITUTE OF FUNDAMENTAL TECHNOLOGICAL RESEARCH
and

COMMITTEE OF MECHANICS

Polish Academy of Sciences

PLACE OF THE CONFERENCE

Dom Muzyka (Musician's House)
Łąkowa 1-2
Gdańsk, Poland

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GENERAL SCHEDULE

MONDAY 8 IX 2008

14:00-22:00	Registration
19:00-22:00	Welcome Party

TUESDAY 9 IX 2008

8:30- 9:10	Opening the Conference (Room A) Address by Prof. Piotr Perzyna in honour of Prof. Wojciech Nowacki Address by Prof. Zenon Mróz in honour of Prof. Bogdan Raniecki
9:10- 9:55	Opening Lecture – Prof. L. Anand (Room A)
9:55-10:40	General Lecture – Prof. D. Fischer (Room A)
10:40-11:00	Coffee Break
11:00-13:00	Sectional & Standard Lectures (Rooms A, B, C, D)
	Elastic-Plastic Continuum & Other Field Theories 1 (A)
	Biomechanics 1 (B)
	Mechanics of Structures and Optimization 1 (C)
	Computational Aspects of Solid Mechanics and Applications 1 (D)
13:00-15:00	Lunch
15:00-15:40	General Lecture- Prof. L. Gambarotta (Room A)
15:50-17:00	Sectional & Standard Lectures (Rooms A, B, C, D)

	Thermomechanics, Phase Transitions & Shape Memory Materials 1 (A)
	Micromechanics 1 (B)
	Fracture, Damage Mechanics & Fatigue 1 (C)
	Coupled Problems: Solid-Fluid, Thermo-Dynamics and Smart Structures 1 (D)
17.00-17.20	Coffee Break
17:20-18:40	Sectional & Standard Lectures (Rooms A, B, C, D)
	Thermomechanics, Phase Transitions & Shape Memory Materials 2 (A)
	Micromechanics 2 (B)
	Fracture, Damage Mechanics & Fatigue 2 (C)
	Coupled Problems: Solid-Fluid, Thermo-Dynamics and Smart Structures 2 (D)

WEDNESDAY 10 IX 2008

9:00- 9:45	Opening Lecture – Prof. P. Wriggers (Room A)
9:45-10:30	General Lecture – Prof. R. Ritchie (Room A)
10:30-10:50	Coffee Break
10:50-13:00	Sectional & Standard Lectures (Rooms A, B, C, D)
	Thermomechanics, Phase Transitions & Shape Memory Materials 3 (A)
	Biomechanics 2 (B)
	Fracture, Damage Mechanics & Fatigue 3 (C)
	Shells: Theory and Computations 1 (D)

13:00-15:00	Lunch
15:00-15:40	General Lecture- Prof. R. Kačianauskas (Room A)
15:50-17:00	Sectional & Standard Lectures (Rooms A, B, C, D)
	Elastic-Plastic Continuum & Other Field Theories 2 (A)
	Micromechanics 3 (B)
	Geomechanics 1 (C)
	Shells: Theory and Computations 2 (D)
17:00-17:20	Coffee Break
17:20-18:40	Sectional & Standard Lectures (Rooms A, B, C, D)
	Elastic-Plastic Continuum & Other Field Theories 3 (A)
	Micromechanics 4 (B)
	Geomechanics 2 (C)
	Shells: Theory and Computations 3 (D)

THURSDAY 11 IX 2008

9:00- 9:40	General Lecture – Prof. P. Dłużewski (Room A)
9:50-11:40	Sectional & Standard Lectures (Rooms A, B, C, D)
	Computational Aspects of Solid Mechanics and Applications 2 (A)
	Mechanics of Structures and Optimization 2 (B)
	Fracture, Damage Mechanics & Fatigue 4 (C)
	Shells: Theory and Computations 4 (D)

11:40-12:00	Coffee Break
12:00-13:00	POSTER SESSION
13:00-15:00	Lunch
15:00-17:00	Short sightseeing of old Town and surroundings
19:00-23:00	Conference Dinner at Dwór Artusa

FRIDAY 12 IX 2008

9:00- 9:40	General Lecture – Prof. M. Kaczmarek (Room A)
9:50-11:00	Sectional & Standard Lectures (Rooms A, B, C, D)
	Computational Aspects of Solid Mechanics and Applications 3 (A)
	Mechanics of Structures and Optimization 3 (B)
	Geomechanics 3 (C)
	Shells: Theory and Computations 5 (D)
11:00-11:20	Coffee Break
11:20-13:00	Sectional & Standard Lectures (Rooms A, B, C, D)
	Computational Aspects of Solid Mechanics and Applications 4 (A)
	Mechanics of Structures and Optimization 4 (B)
	Geomechanics 4 (C)
	Shells: Theory and Computations 6 (D)
13:00	Closing of the Conference
13.10	Lunch

DETAILED PROGRAM

Last minute changes in session schedules, not included in the printed brochure with the Conference program, are displayed in blue in this document

- *Monday 8 IX* -

14:00-22:00 **Registration**

19:00-22:00 **Welcome Party**

- *Tuesday 9 IX* -

Morning Plenary Session

Room A

Chairman - W. Sosnowski

8.30 - 9.10 **Opening of the Conference**

Address by Prof. Piotr Perzyna in honour of Prof. Wojciech Nowacki

Address by Prof. Zenon Mróz in honour of Prof. Bogdan Raniecki

9.10 - 9.55 **Opening Lecture**

L. Anand
Mechanical Behavior of Bulk Metallic Glasses

9.55 - 10.40 **General Lecture**

D. Fischer
Physics, Chemistry and Mechanics are Growing Together-the Role of NonequilibriumThermodynamics

10.40 - 11.00 **Coffee Break**

Morning Sectional Sessions

Room A

Elastic-Plastic Continuum & Other Field Theories 1

Chairmen – P. Perzyna, R. Pęcherski

Sectional Lecture

11.00 - 11.30 T. Żebro, K. Kowalczyk-Gajewska, J. Pamin
A Gradient-Enhanced Coupled Damage-Plasticity Model in Large Strain Format

Session Lectures

11.30 - 11.50 R.Souchet
On the Use of Gurson's Model in Continuum Damage Mechanics

11.50 - 12.10 A. Glema, T. Łodygowski P. Perzyna, W. Sumelka
Adiabatic Microdamage Anisotropy in Ductile Materials

12.10 - 12.30 Yu. Bayandin, O. Naimark
Mesodefect Induced Mechanisms of Plasticity and Failure in Shocked Solids

12.30 - 12.50 S.-Y. Leu
On the Limit Internal Pressure of Hollow Cylinders of Strain Hardening Viscoplastic Materials

Room B

Biomechanics 1

Chairmen – P. Kowalczyk, D. Tejszerska

Session Lectures

11.00 - 11.20 U. Foryś
Mutidimensional Lotka-Volterra Systems for Carcinogenesis Mutations

11.20 - 11.40 K. Piechór
Travelling Waves in Two Mechanochemical Models of Tumor Angiogenesis

11.40 - 12.00 O.U. Colak, T. Hassan
Cyclic Behavior of Ultra High Molecular Weight Polyethylene (UHMWPE) and Modeling

12.00 - 12.20 P. Kowalczyk
Orthotropic Model of Cancellous Bone. Application to Simulation of Adaptive Remodelling

12.20 -12.40 E. Majchrzak, G. Kałuża, J. Poteralska
Solution of the Cattaneo-Vernotte Bio-Heat Transfer Equation by Means of the Dual Reciprocity Method

12.40 - 13.00 M. Kopernik, J. Nowak
Numerical Modelling of the Opening Process of the Three-Coating Aortic Valve

Room C

Mechanics of Structures and Optimization 1

Chairmen – K. Dems, J. Rojek

Sectional Lecture

11.00 - 11.30 K. Dems, J. Wiśniewski
Optimal Fibers Arragement in Single- and Multilayered Composite Materials

Session Lectures

11.30 - 11.50 A. Ghods , A. Ghoddosian
Shape Optimization for 2D Contact Problem with Genetic Algorithm

11.50 - 12.10 B. Błachowski, W. Gutkowski
A Hybrid Continuous-Discrete Approach to Large Discrete Structural Optimization Problems

12.10 - 12.30 K. Szajek, W. Kąkol, T. Łodygowski, M. Wierszycki
Incorporating Two Optimization Algorithms into FEA Environment

12.30 - 12.50 W. Beluch, T. Burczyński, A. Długosz
Evolutionary Computing in Multi-Objective Optimization of Laminates

Room D

Computational Aspects of Solid Mechanics and Applications 1

Chairmen – T. Burczyński, M. Pietrzyk

Sectional Lecture

11.00 - 11.30 A. Garwolińska, M. Kaczmarek
Numerical Simulations of Laboratory and Field Tests of Permeability

Session Lectures

11.30 - 11.50 S. Fialko
Aggregation Multilevel Iterative Solver Based on Sparse Matrices Technique

11.50 - 12.10 T. Łukasiak
The Adaptive NEM-Delaunay Elements

12.10 - 12.30 J. Ptaszny, P. Fedeliński
Fast Multipole Evaluation of Domain Terms in Integral Equations of Two-Dimensional Elasticity

12.30 - 12.50 J. Chróścielewski, M. Rucka, K. Wilde, W. Witkowski
Modelling of Wave Propagation in Spatial Frame Elements-Numerical Simulations and Experimental Works

13.00 - 15.00 **Lunch**

Afternoon Plenary Session

Room A

Chairman – B. Raniecki

15.00 - 15.40 **General Lecture**

Luigi Gambarotta
Modelling of Deformation and Damage of Heterogeneous Engineering Structures: Masonry Mechanics

Afternoon Sectional Session

Room A

Thermomechanics, Phase Transitions & Shape Memory Materials 1

Chairman – S. Stupkiewicz

Sectional Lecture

15.50 - 16.20 T. Inoue
Transformation Plasticity. The Mechanism, Constitutive Equation and Applications

Session Lectures

16.20 - 16.40 G. Ziętek, Z. Mróz
Description of Cyclic Hardening of Material with Plasticity Induced Martensitic Transformation

16.40 - 17.00 J.A. Rodríguez-Martínez, A. Rusinek, D.A. Pedroche, A. Arias, J.R. Klepaczko
Mechanical Behaviour of TRIP Steels Subjected to Low Impact Velocity at Wide Range of Temperatures

Room B

Micromechanics 1

Chairman – H. Petryk

Sectional Lecture

15.50 - 16.20 R. Pyrz, B. Bochenek
Atomic-Continuum Equivalence: Atomic Strain Tensor

Session Lectures

16.20 - 16.40 V.A. Eremeyev, W. Pietraszkiewicz
On Natural Strain Measures of the Non-Linear Micropolar Continuum

16.40 - 17.00 N. Chiba, N. Ogasawara, C.R. Anghel, X. Chen
A Substrate Effect of Hardness in Film/Substrate Indentation: Finite Element Study on 'Overshoot' Phenomenon of Hardness

Room C

Fracture, Damage Mechanics & Fatigue 1

Chairman – M. Basista

Sectional Lecture

15.50 - 16.20 P. Fedeliński
Computations of Effective Elastic Properties of Solids with Microcracks Using the Boundary Element Method

Session Lectures

16.20 - 16.40 L. Stepanova
Eigenspectra and Orders of Stress Singularity at a Mode I Crack in a Power-Law Medium

16.40 - 17.00 G. Mejak
Direct Numerical Computation of the Effective Material Properties of the Material with Random Distribution of the Microcracks

17.00 - 17.20 J. Kozicki, J. Tejchman
Simulation of Fracture Process in Concrete Elements with Steel Fibres Using Discrete Lattice Model

Room D

Coupled Problems: Solid-Fluid, Thermo-Dynamics and Smart Structures 1

Chairmen – W. Ostachowicz, M. Cieszko

Session Lectures

15.50 - 16.10 K. Frischmuth, W. Kosiński
Hyperbolic Heat Conduction with Fuzzy Parameters

16.10 - 16.30 A. Szekeres, N. Petrov
Interdisciplinarity by Thermo-Hygro-Mechanics

16.30 - 16.50 T.J. Hoffmann, M. Chudzicka-Adamczak
Saint-Venant's Principle in Magnetoelasticity

16.50 - 17.10 S.A. Lychev
Coupled Dynamics Thermoviscoelastic Problem

17.00 – 17.20 **Coffee Break**

Room A

Thermomechanics, Phase Transitions & Shape Memory Materials 2

Chairmen – T. Inoue

Session Lectures

17.20 - 17.40 W. Oliferuk, M. Maj
Stress-Strain Curve and Stored Energy During Uniaxial Deformation of Polycrystals

17.40 - 18.00 S.J. Kowalski, A.Rybicki
Stress Reverse and Residual Stresses in Dried Materials

18.00 - 18.20 S.J. Kowalski, A. Rybicki
Estimation of Material Effort During Drying Processes

18.20 - 18.40 D.Y.Ju, X.D.Hu, Z.H.Zhao
Inelastic Behaviour and Numerical Analysis in Twin-roll Casting Process of AZ31 Alloy

Room B

Micromechanics 2

Chairman – A.V. Manzhirov

Session Lectures

17.20 - 17.40 R. Staroszczyk
A Migration Recrystallization Model for Polar Ice

17.40 - 18.00 K. Kowalczyk-Gajewska
Micromechanical Modelling of Metallic Materials of High Specific Strength Accounting for Slip-Twin Interactions

18.00 - 18.20 M. Janus-Michalska
Micromechanical Model of Hyperelastic Behaviour of Cellular Materials

18.20 - 18.40 Z. Poniżnik, V. Salit, M. Basista, D. Gross
Modelling of Effective Elastic Properties of Interpenetrating Metal-Ceramic Networks

Room C

Fracture, Damage Mechanics & Fatigue 2

Chairman – K. Doliński

Session Lectures

17.20 - 17.40 L. Nazarenko, L. Khoroshun, W.H. Müller, R. Wille
Long-Term Microdamaging of Composites with Transversally-Isotropic Components for Limited Function of Durability

17.40 - 18.00 O. Plekhov, N. Saintier, O. Naimark, T. Palin-Luc, R. Valiev, I. Semenova
Thermodynamics of Plastic Deformation of Nanocrystalline Titanium

18.00 - 18.20 A. Kaczyński, B. Monastyrskyy
Thermal Stresses Around an Interface Rigid Circular Inclusion in a Bimaterial Periodically Layered Space

18.20 - 18.40 L. Sosnovskiy, S. Sherbakov
Model of Deformable Rigid Body with Dangerous Volume

Room D

Coupled Problems: Solid-Fluid, Thermo-Dynamics and Smart Structures 2

Chairman – W. Ostachowicz

Session Lectures

17.20 - 17.40 L. Nunziante, M. Fraldi
A Procedure for Defect Identification of Suspension Bridges Cables by means of Optical-Fibre Strain Measurements

17.40 - 18.00 M. Cieszko, J. Kubik
Propagation of Ultrasonic Waves in Inhomogeneous Materials

18.00 - 18.20 A.V. Radulescu, F. Petrescu, I. Radulescu
Tribological Aspects of the Solid-Fluid Interaction for Fresh and Used Lubricant

18.20 - 18.40 E. Gavrilova
Forced Gas-Structure Vibrations in a Rectangular Tank

18.40 - 19.00 W. Oliferuk, Z. Płochocki, O Wysocka
Pulsed IR Thermography for Detection of Material Defects

- Wednesday 10 IX -

Morning Plenary Session

Room A

Chairman – W. Nowacki

9.00 - 9.45 **Opening Lecture**

P. Wriggers
A Multi-Scale Approach to the Characterization of Heterogeneous Materials

9.45 - 10.30 **General Lecture**

R. Ritchie
On the Fracture Mechanics of Bone: Toughness and its Biological Degradation

10.30 - 10.50 **Coffee Break**

Morning Sectional Sessions

Room A

Thermomechanics, Phase Transitions & Shape Memory Materials 3

Chairman – W. Oliferuk

Sectional Lecture

10.50 - 11.20 H. Tobushi, E. A. Pieczyska, W. K. Nowacki, T. Sakuragi, Y. Sugimoto
Torsional Deformation and Rotary Driving Characteristics of SMA Thin Strip

Session Lectures

11.20 - 11.40 S. Stupkiewicz, H. Petryk
Micromechanical Modelling of Pseudoelastic SMA Polycrystals under Non-proportional Loading

11.40 - 12.00 C. Urbina, S. De la Flor, F. Ferrando
Thermal Cycling Effect on Different Two Way Shape Memory Training Methods in NiTi Shape Memory Alloys

12.00 - 12.20 E. A. Pieczyska, H. Tobushi, W. K. Nowacki, T. Sakuragi, Y. Sugimoto
Deformation Behavior of TiNi SMA Observed by Local Strain, Thermography and Transformation Band

12.20 - 12.40 E. Pieczyska
Stress-Induced Martensite Transformation in TiNi SMA - Experimental Estimation of Energy Balance

12.40 - 13.00 S. Starenchenko, I. Radchenko, V. Starenchenko
Influence of Plastic Deformation on Structural Characteristics and Long-Range Order in Ni3Al Alloy

Room B

Biomechanics 2

Chairmen – K. Piechór, B. Gambin

Sectional Lecture

10.50 - 11.20 W. Gambin, P. Kowalczyk
Analysis of Shrinkage Stresses in Light-Cured Dental Restorations

Session Lectures

11.20 - 11.40 B. Nowak, M. Kaczmarek
Modelling Bone - Implant Dynamics

11.40 - 12.00 A. John, P. Orantek, P. Wysota
The Numerical Modeling of Osteoporotic Changes in Selected Biomechanical Structures

12.00 - 12.20 M. Nowak
On Some Properties of Bone Functional Adaptation Phenomenon Useful in Mechanical Design

12.20 - 12.40 M. Itskov, A.E. Ehret
An Anisotropic Micromechanically Based Viscoelastic Model for Soft Collageneous Tissues

12.40 - 13.00 T. Lekszycki
Modeling of Bone - Bioresorbable Graft Interaction

Room C

Fracture, Damage Mechanics & Fatigue 3

Chairmen – M. Basista, K. Doliński

Session Lectures

10.50 - 11.10 B. Erzar, P. Forquin, J.R. Klepaczko
Study of High Strain Rate Behaviour of Micro-Concrete

11.10 - 11.30 M.H.B.M Shariff
Extension of Isotropic Mullins Models to Anisotropic Stress-Softening Models

11.30 - 11.50 T.Jankowiak, T.Łodygowski, P.Sielicki
Failure and fracture of concrete and brick walls imposed by explosion

11.50 - 12.10 J. Bobiński J. Tejchman
FE-Modelling of Concrete Behaviour under Mixed Mode Conditions with Non-Local and Cohesive Constitutive Models

12.10 - 12.30 A.V. Zaitsev
Nonlocal Conditions for the Transition Damage to a Localized Failure in Granular and Fibre-Reinforced Composites under Quasistatic Loading

12.30 - 12.50 W. Weglewski, M. Basista
Modelling of Chemo-Damage in Concrete Due to Sulfate Corrosion

Room D

Shells: Theory and Computations 1

Chairman – W. Pietraszkiewicz

Sectional Lecture

10.50 - 11.20 S. Klinkel, W. Wagner
A Piezoelectric Solid Shell Element Accounting for Material and Geometrical Nonlinearities

Session Lectures

11.20 - 11.40 I. Kreja
Large Elastic Deformations of Laminated Cylindrical Panels under Point Load

11.40 - 12.00 K. Wisniewski, E.Turska
On the Improved Membrane Part of Mixed Shell Elements

12.00 - 12.20 J. Chróścielewski, I. Kreja, A. Sabik, W. Witkowski
Composite Shells in 6-Field Nonlinear Shell Theory

12.20 - 12.40 P. Panasz, K. Wiśniewski
Nine-Node Assumed Strain Shell Element with Drilling Rotation

12.40 - 13.00 V. Kuznetsov, S. Levyakov
Formulation of the Initial Invariant-Based Shell Finite Element Model Using the Plane Curve Geometry

13.00 – 15.00 **Lunch**

Afternoon Plenary Session

Room A

Chairman – M. Cieszko

15.00 - 15.40 **General Lecture**

R. Kačianauskas
The Discrete Element Method with Applications to Simulations of Granular Flow and Dynamic Fracture of Solids

Afternoon Sectional Sessions

Room A

Elastic-Plastic Continuum & Other Field Theories 2

Chairmen – P. Perzyna, P. Pęcherski

Session Lectures

15.50 - 16.10 M. Danielewski
Mechano-chemistry at Different Length Scales

16.10 - 16.30 K. Bartosz
Hemivariational Inequalities Modelind Dynamic Contact Problems in Viscoelasticity

16.30 - 16.50 C. Vallée, L. Lerintiu, D. Fortuné, K. Atchonouglo, M. Ban
Recovering the Bipotential of an Implicit Standart Material by Fitzpatrick's Method

16.50 - 17.10 Yu.A. Chernyakov, A.S. Polishchuk
On Comparison of Theory of Microstrains with Theories, Based on the Conception of Sliding

Room B

Micromechanics 3

Chairman – D. Fischer

Sectional Lecture

15.50 - 16.20 H. Petryk
Modelling of Microstructure Formation by Minimization of Incremental Energy Supply

Session Lectures

16.20 - 16.40 K.C. Le, D. Kochmann, P. Sembiring
Bridging Length-Scale in Continuum Dislocation Theory

16.40 - 17.00 M. Kursa, H. Petryk
The Energy Approach to Determining Plastic Deformation of Metal Crystals

Room C

Geomechanics 1

Chairmen – Z. Mróz, J. Pamin

Sectional Lecture

15.50 - 16.20 J. Rojek
Simulation of Rock Cutting with Evaluation of Tool Wear

Session Lectures

16.20 - 16.40 J. Kozicki, J. Tejchman, B. Chareyre
Comparative Modeling of Shear Localization in Granular Bodies Using a Discrete and Continuum Approach

16.40 - 17.00 M. Pinheiro, R. Wan
Incremental Plastic Response and Flow Rule Postulate under General Three-Dimensional Conditions

Room D

Shells: Theory and Computations 2

Chairman – K. Wiśniewski

Sectional Lecture

15.50 - 16.20 W. Pietraszkiewicz, M.L. Szwabowicz, C. Vallée
On Determining the Deformed Shell Midsurface From Prescribed Surface Strains and Bendings

Session Lectures

16.20 - 16.40 C. Mardare
Recovery of Displacement Fields From Stress Tensor Fields in Shell Theory

16.40 - 17.00 M. Bîrsan
Some Problems Concerning the Deformation of Anisotropic Cosserat Elastic Shells

17.00 - 17.20 **Coffee Break**

Room A

Elastic-Plastic Continuum & Other Field Theories 3

Chairmen – P. Perzyna, P. Pęcherski

Session Lectures

17.20 - 17.40 Z. Nowak, W.K. Nowacki, P. Perzyna, R.B. Pęcherski
Numerical Investigation of Localized Fracture in Polycrystalline Material (DH 36 Steel) During Dynamic Double Shear Loading Under Adiabatic Conditions

17.40 - 18.00 S. Sherbakov
Three-dimensional Stress-Strain State of Roller-Shaft System in Conditions of Contact Interaction and Non-contact Bending of Shaft

18.00 - 18.20 M. H. Pol M. A. Akbari G.H. Liaghat A.V. Hosseini
Analysis of Oblique Perforation of Conical and Ogive Projectiles into Thin Metallic Targets

18.20 - 18.40 Z. Banach, W. Larecki
Wave and Diffusive Phonon Heat Transport in Dielectrics and Semiconductors under High Thermal Loads

18.40 – 19.00 H.M. Shodja, H. Haftbaradaran
Size Effect of an Elliptic Inclusion in Anti-Plane Strain Couple Stress Elasticity

Room B

Micromechanics 4

Chairman – R. Pyrz

Session Lectures

17.20 - 17.40 A.V. Manzhirov, K.E. Kazakov
Conformal Contact Between a Punch and a Layer with Thin Coating

17.40 - 18.00 M. Hammoud, D. Duhame, K. Sab
A Coupled Discrete-Homogenized Approach to Study the Behavior of Ballast under Railways

18.00 - 18.20 R. Oleśkiewicz, M. Neubauer, T. Krzyzynski
Piezoelectric Switching Technique for Vibration Damping

18.20 - 18.40 M. Svanadze
Boundary Value Problems in the Two-Temperature Theory of Thermoelasticity of Binary Mixtures

Room C

Geomechanics 2

Chairmen – A. Sawicki, J. Tejchman

Session Lectures

17.20 - 17.40 X.T. Wang, W. Wu, J. Tejchman
Update a Simple Hypoplastic Constitutive Model

17.40 - 18.00 E. Bauer, S.F. Tantono
Shear Band Analysis of Weathered Broken Rock in Dry and Wet States

18.00 - 18.20 C. Slominski, R. Cudmani
The Influence of Soil Plugging on the Driving Resistance and Bearing Capacity of Open-Ended Steel Piles

18.20 - 18.40 J. Górski, J.Bobiński, J. Tejchman
FE-Simulations of Size Effects in Granular and Quasi-Brittle Materials

Room D

Shells: Theory and Computations 3

Chairman – S. Shimizu

Session Lectures

17.20 - 17.40 H. Altenbach, V.A. Eremeyev
On the Mechanics of Functionally Graded Plates

17.40 - 18.00 G. Geymonat, A. Münch
Controllability for Thin Linearly Elastic Shells

18.00 - 18.20 A.L. Bessoud, F. Krasucki, M. Serpilli
Multimaterials with Shell-Like Reinforcement

18.20 - 18.40 J. Górski, T. Mikulski
Identification and Simulation of Shells Geometric Initial Imperfections

- Thursday 11 IX -

Morning Plenary Session

Room A

Chairman – Z. Kotulski

9.00 - 9.40 **General Lecture**

P. Dłużewski
Dislocations in Atomistic/Continuum Modelling of Semiconductor Structures

Morning Sectional Sessions

Room A

Computational Aspects of Solid Mechanics and Applications 2

Chairman – Cz. Bajer

Sectional Lecture

9.50 - 10.20 G. Dziatkiewicz
Indirect Trefftz Solutions for Plane Piezoelectricity by Stroh Formalism and Collocation Technique

Session Lectures

10.20 - 10.40 S. Czarnecki
An Elastic Cube Subjected to Anti-Symmetrical Pressure Loading. Exact 3d Analytical Formulae Versus Numerical Solutions Based on Meshfree Method

10.40 - 11.00 V. Pidvysotskyy, R. Kuziak. M. Pietrzyk
Physical and Numerical Simulation of Forging of Cu-Cr Alloy

11.00 - 11.20 I. Páczelt, Z. Mróz
Numerical Analysis of Some Steady State Wear Problems

11.20 - 11.40 K. Jach, R. Świerczyński, M. Magier
Numerical Analyzes of Armour Steel Plates Penetration Process by Subcalibre Projectiles with Monolith and Segmented Penetrators

Room B

Mechanics of Structures and Optimization 2

Chairmen – K. Dems, D. Bojczuk

Sectional Lecture

9.50 - 10.20 Q. Zhang, Ł. Jankowski
Off-Line Reconstruction of Dynamic Loads

Session Lectures

10.20 - 10.40 A. Garstecki, Z. Pozorski, R. Studziński
Multi-Objective Optimal Design of Multi-Span Sandwich Panels with Soft Core, Allowing for Variable Support Conditions

10.40 - 11.00 K. Lisowski
Sparse Grid and Evolution-Type Algorithm in Shape Optimization for Beck's Column

11.00 - 11.20 D. Bojczuk, M. Jabłoński
Geometric Sensitivity Analysis of Truss and Frame Structures

11.20 - 11.40 A. Gorjipoor, A. Abedian
Genetic Algorithm Optimization of Helicopter Blades Vibration Transition

Room C

Fracture, Damage Mechanics & Fatigue 4

Chairmen – M. Basista, K. Doliński

Session Lectures

9.50 - 10.10 N. Pindra, V. Lazarus, J.B. Leblond
Slight In-Plane Perturbation of a System of Two Coplanar Parallel Tensile Slit-Cracks

10.10 - 10.30 L. Jański, M. Kuna, M. Scherzer
Simulations of Crack Growth in Piezoelectric Structures with Modern, Automatic and Efficient Finite Element Software

10.30 - 10.50 S.Shukayev, M.Gladskyi, K. Panasovskyi, A. Movaggar
Damage Accumulation Model for Low Cycle Fatigue under Multiaxial Sequential Loading

10.50 - 11.10 C.H. Wang
Interfacial Thermal Stress Analysis of an Elliptical Inclusion with an Imperfect Interface in Anisotropic Plane

11.10 - 11.30 K .P. Mróz, K. Doliński
The New Fracture Criterion for Mixed-Mode Crack. The MK Criterion

11.30 - 11.50 Z. Marciniak, D. Rozumek, C.T. Lachowicz
The Energy Approach in the Calculation of Lives for High Cycle Fatigue

Room D

Shells: Theory and Computations 4

Chairman – P. Kłosowski

Sectional Lecture

9.50 - 10.20 J. Pontow, D. Dinkler
Evaluation of the Perturbation Sensitivity and the Limit Loads of Shells by the Perturbation Energy Concept

Session Lectures

10.20 - 10.40 V.A. Eremeyev, W. Pietraszkiewicz
On Phase Transitions in Thermoelastic and Thermoviscoelastic Shells

10.40 - 11.00 J. Krużelecki, D. Trybuła
Optimal Stabilization of Postbuckling Path for Conical Shells under External Pressure

11.00 - 11.20 M.R. Khedmati, P. Edalat, M. Rastani
A Numerical Investigation Into the Effects of Parabolic Curvature on the Buckling Strength of Deck Stiffened Plates

11.20 - 11.40 H. Abramovich, V. Zarutsky
Exact Solutions of Problems of Statics, Dynamics and Stability of Non-Closed Circular Cylindrical Shells Strengthened in One Direction by "Almost Regularly Placed" Ribs

11.40 - 12.00 **Coffee Break**

12.00 - 13.00 **POSTER SESSION**

Chairpersons – K. Kowalczyk-Gajewska, J. Rojek

A. John, P. Orantek
Selected Applications of Interval and Fuzzy Analysis in Biomechanics

M. Cieszko, W. Kriese
Interaction of Ultrasonic Waves with Continuous Inhomogeneity of Porous Materials

P. Kowalczyk
Effect of Special Layers Shaping on Stress Distribution in Dental Restoration

I. Maciejewski, S. Chamera, T. Krzyzynski
Application of Biomechanical Models in Design and Simulation of Active and Passive Vibration Damping

M. Cieszko, Z. Szczepański
Application of Micro Computer Tomography to Identyfication of Pore Structure Parameters of Porous Material

M. Gzik, D.Tejszerska
Analysis of Influence of Human Head Movement on Cervical Spine Loading Conditions

B. Wrana
Identification of Damping in Soil by means of Morlet Wavelets

R. Balevičius, R. Kačianauskas, Z. Mróz, I. Sielamowicz
Comparison of Wall Pressures Measured in the Model Silo with DEM Simulation

H.J. Luckner, S.P. Gadaj, W.K. Nowacki
Mechanical Behaviour of TiAl Alloys During Static and Dynamic Deformations

Yu.Chernyakov, V.Shneider, D. Teslenko
The Influence of History of Precritical Loading on Bifurcation of Process of Deformation of Elastic-Plastic Bodies

S. Sherbakov, L. Sosnovskiy
Influence of Stress-Strain State Caused by Non-Contact Forces on Formation of Contact Boundary Conditions

Á. Kovács, Z. Vízváry, A. Kovács
Strength Analysis of a Square-Form Perforated Microfilter

A. Rusinek, J.A. Rodríguez-Martinez, J.R. Klepaczko
Advanced Constitutive Relation for Numerical Applications: Modeling of Steels in a Wide Range of Strain Rates and Temperatures

I. Marzec, J. Tejchman
FE-Analysis of the Beaviour of Concrete Elements with Coupled Elasto-Plastic-Damage Models with Non-Local Softening

P. Kłosowski, Ł. Pyrzowski
Identification and Validation of Material Parameters for Isotropic Damage Model in Viscoplastic Flow Conditions

W.P.Jia, J.G.Wang, D.Y.Ju
Effect of Strain Path Change on Microstructure and Properties of Hot-rolled Q235 Steel

E.A. Pieczyska, W.K. Nowacki, S.P. Gadaj, H. Tobushi
TiNi SMA - Investigation of Stress-Induced Martensite Reverse Transformation, Independent of Thermal Influences of the Forward One

S.V. Starenchenko
Features of the Temperature-Induced and Deformation-Induced Order-Disorder Phase Transition

K.T. Han, Y. Jin
Development of Forming Process of the Muffler Tube for Heavy Equiments

A.V. Manzhirov, D.A. Parshin
Raising of a Semi-Circular Vault

M. Chalecki, W. Nagórko
A Nonasymptotic Modelling of Heat Conduction in Solids Reinforced by Short Fibres with Functional Gradation of Features

R. Górski, P. Fedeliński
Free Vibration Analysis of Stiffened Plates by the Boundary Element Method

A. Myśliński
Level Set Method in Structural Optimization

R. Attarnejad, M. Eslaminia, A. Shahba
A Novel Method for Static Analysis of Thin Curved Shells with Variable Thickness

Ya. Grigorenko, S. Yaremchenko
Stress State of Nonthin Noncircular Orthotropic Cylindrical Shells with Variable Thickness under Different Types of Boundary Conditions.

K. Myślecki, J. Oleńkiewicz
Vibrations of Thick Plate by Boundary Element Method

E. Harutyunyan
Investigation of Oscillation Process of the Shell Element by Method of Finite Elements

A. Loktev, D. Loktev
Dynamic Contact of the Elastic Impactor and Spherical Shell

S.H. Sargsyan
Theory of Micropolar Thin Elastic Cylindrical Shells

G.D. Gavrylenko, V.I. Matsner
Free Vibrations of Smooth Cylindrical Shells

M. B. Rahaei
Comparison Lubricity Behaviour of Ti3SiC2 and MoS2 Solid Lubricant

I. Radulescu
Numerical Methods Involved in Lubricant Life Cycle Determination

M.B. Rahaei
Evaluation of the Wear Behavior of the Combustion Synthesized TiC-NiAl Composite as Mechanical Seal Rings

M. Cieszko, M. Kempiński
Description of Capillary Potential Curves of Porous Materials

P. Orantek, T. Burczyński
The Local Gradient Method Supported By Artificial Neural Network in Granular Identification Problems

I.M. González, H. Miguélez, A. Muñoz
ANN Approach for Modelling Orthogonal Cutting

A. Zmitrowicz
Contact Stresses Models and Methods of Computations

N.C. Marín, M.H. Miguélez, J.A. Canteli, J.L. Cantero
Lagrangian and ALE Approach for Predicting Residual Stresses in Orthogonal Cutting

T. Bednarek, W. Sosnowski
Computer Aided Design of Vibrating Structures Accounting for Material Fatigue and Reliability

B. Szybiński, A. Wróblewski
Numerical Analysis of Residual Stresses in Welds of Thick-walled Pressure Vessels

G. Musielak, B. Świt
Determination of Moisture Dependance of Material Coefficients for Macaroni Dough

M.B. Rahaei
Self-propagating High Temperature Combustion Synthesis

M.B. Rahaei
Comparison Mechanical Properties of Combustion Synthesized

B. Gambin, A. Gałka
Rayleigh scattering of ultrasounds in cancellous bone

B. Gambin, A. Gałka
Fabric tensor and strength surface of bone-like materials

I. Dunajewski, Z. Kotulski
Optimal Wireless Sensors Location for Widespread Structures Monitoring

R. Wojnar
The Stokes Flow in Nonhomogenous Porous Medium

Y.M. Abushawashi, S.H. Eshtewi, A.M. Othman
Convergence Behaviour for KPT Finite Elements

E. Majchrzak, B. Mochnacki, J.S. Suchy
Identification of Boundary Heat Flux on the External Surface of Casting

P.H. Piotrowski, R. Jankowski
Prefabricated Structures under Earthquake Excitation: Damage and Failure of Connection Joints

B. Dyniewicz, C. Bajer
Inertial Moving Loads

A. Dąbrowska-Tkaczyk
The Method of Evaluation of Orthotropic Properties of Bone Tissue "in situ"

S. Ilic, K. Hackl
Application of the Multiscale FEM to the Modeling of Composite Materials

S. Tokarzewski, J. Gilewicz
Matrix Padé Bounds on Effective Transport Coefficients of Anisotropic Two-Phase Media

13.00 - 15.00 **Lunch**

15.00 - 17.00 **Sightseeing around the Old Town**

19.00 - 23.00 **Conference Dinner at Dwór Artusa**

- Friday 12 IX -

Morning Plenary Session

Room A

Chairman – W. Kosiński

9.00 - 9.40 **General Lecture**

M. Kaczmarek
Bio-Poromechanics. Problems of Modelling Tissues and Biomaterials

Morning Sectional Sessions

Room A

Computational Aspects of Solid Mechanics and Applications 3

Chairmen – T. Burczyński, M. Pietrzyk

Sectional Lecture

9.50 - 10.20 W. Beluch, T. Burczyński, P. Orantek
Evolutionary Identification of Laminates' Stochastic Parameters

Session Lectures

10.20 - 10.40 P. Orantek, A. Długosz, T. Burczyński
Stochastic Identification in Thermomechanical Structures Using Evolutionary Algorithms

10.40 - 11.00 G. Kokot, A. John, W. Kuś
The Complex Welding Process Simulation Using FEM, Parallel Computing and Grid Based Evolutionary Optimization

Room B

Mechanics of Structures and Optimization 3

Chairmen – K. Dems, D. Bojczuk

Sectional Lecture

9.50 - 10.20 A. Le van, T.T.H. Nguyen
A Weak Formulation for the Large Deformation Contact Problem with Coulomb Friction

Session Lectures

10.20 - 10.40 P. Iwicki
Comparison of Non-Linear Statical Analysis of Truss with Linear and Rotational Side Supports and 3D Roof Model

10.40 - 11.00 T. Sokół
Generalized Formulation of Eigenvalue Problem for Nonlinear Stability Analysis

Room C

Geomechanics 3

Chairmen – L. Nunziante, J. Tejchman

Sectional Lecture

9.50 - 10.20 Q.H. Jiang, C.B. Zhou, M.R. Yeung
Three-Dimensional Discontinuous Deformation Analysis (3-d DDA) Coupled with Finite Element Method

Session Lectures

10.20 - 10.40 A. Sawicki, W. Świdziński
Pre-Failure Behaviour of Granular Soils

10.40 - 11.00 A. Stankiewicz, J. Pamin
Parametric Study of Gradient-Enhanced Cam-Clay Model

Room D

Shells: Theory and Computations 5

Chairman – G. Geymonat

Sectional Lecture

9.50 - 10.20 P. Kłosowski
Membrane Shell Finite Element for Textile Fabric Modelling Numerical and Experimental Aspects

Session Lectures

10.20 - 10.40 V. Kovalev
An Asymptotic Approach to Problems of Scattering Acoustic Waves by Elastic Shells

10.40 - 11.00 L. Kurpa, K. Lyubitsky
R-Functions Method Applying to Large Deflection Analysis of Orthotropic Shallow Shells on Elastic Foundation

11.00 - 11.20 **Coffee Break**

Room A

Computational Aspects of Solid Mechanics and Applications 4

Chairmen – T. Łodygowski, M. Pietrzyk

Session Lectures

11.20 - 11.40 J.V. Wittenberghe, P. De Baets, W. De Waele
Analysis of a Preloaded Conical Threaded Pipe Connection

11.40- 12.00 M. Wójcik, J. Tejchman
FE-simulations of Dynamic Shear Localization in Granular Bodies Using an Arbitrary Lagrangian-Eulerian Formulation

12.00 - 12.20 T. Rec, A. Milenin
Numerical Modeling of Macro Segregation Evolution and Change of Stress-Strain State in Billet during Continuous Casting with Mechanical Soft Reduction

12.20 - 12.40 G. Jurczak, P. Dłużewski, S. Kret, P. Ruterana
Indium Clusters Evolution in a InGaN/GaN QW

12.40 - 13.00 J. Knabel, K. Kolanek, V. Nguyen Hoang, R. Stocki, P. Tauzowski
Structural Reliability Analysis Using Object Oriented Environment STAND

Room B

Mechanics of Structures and Optimization 4

Chairmen – K. Dems, A. Garstecki

Session Lectures

11.20 - 11.40 R. Jankowski
Shaking Table Experimental Study on Structural Pounding during Earthquakes

11.40- 12.00 C. Iancu, A. Nioata
Static FEA of Mechanical Complex Structures

12.00 - 12.20 Sz. Imiełowski
Energetic Approach to Stability of Beam-Columns Subjected to Deformation Dependent Loading

12.20 - 12.40 A. Khurana, S.K. Tomar
Longitudinal Wave Response of a Chiral Slab Interposed Between Micropolar Solid Half-Spaces

12.40 - 13.00 A. Bobylov, A. Zubko
Application of the Stabilization Method for Analysis of Geometrically Non-Linear Forced Vibrations of Elastic Beams on Unilateral Winkler Foundation

Room C

Geomechanics 4

Chairmen – Z. Mróz, L. Gambarotta

Session Lectures

11.20 - 11.40 K. Wilde, M. Rucka, J. Tejchman
Experimental and Theoretical Investiagtions of Silo Music During Granular Flow

11.40- 12.00 I. Panteleev, O. Plekhov, I. Pankov, A. Evseev, O. Naimark, V. Asanov

Scaling Laws of Damage-Failure Transition in Rocks: from Laboratory Tests to Earthquakes

12.00 - 12.20 H.O. Ghaffari
Contact State Analysis by RST & NFIS Analysis

12.20 - 12.40 L. W. Morland
Age-depth correlation, grain growth and dislocation energy evolution, for three ice cores

12.40 - 13.00 J. Tejchman, W. Wu
FE-Calculations of Stress Distribution under Prismatica Nd Conical Sandpiles Within Hypoplasticity

Room D

Shells: Theory and Computations 6

Chairman – M. Szwabowicz

Session Lectures

11.20 - 11.40 S. Shimizu, K. Hara
Shear Behaviour of Hybrid Steel Girders

11.40- 12.00 R. Schlebusch, B. Zastrau
On a Surface-Related Shell Formulation for the Numerical Simulation of Textile Reinforced Concrete Layers

12.00 - 12.20 M.R. Khedmati, P. Edalat, M. Rastani
Buckling/Collapse Behaviour of Cylindrical Shells in Bilge Region of Ship Hull Girders under Inplane Compression

12.20 - 12.40 V.D. Budak, A.Ya. Grigorenko, S.V. Puzyrev
Free Vibrations of Orthotropic Shallow Shells of Variable Thickness on Basis of Spline-Approximation Method

12.40 - 13.00 C. González-Montellano, E. Gallego, J. Morán, F. Ayuga
The Effect of Patch Load on Corrugated Silo Walls

13.00 Closing of the Conference

13.10 Lunch

LIST OF CONTRIBUTIONS

Plenary Lectures

1. L. Anand Mechanical Behavior of Bulk Metallic Glasses

2. R. Kacianauskas The Discrete Element Method with Applications to Simulations of Granular Flow and Dynamic Fracture of Solids

3. M. Kaczmarek Bio-poromechanics. Problems of Modelling Tissues and Biomaterials

4. A. Bacigalupo, L. Gambarotta Modelling of Deformation and Damage of Heterogeneous-engineering Structures: Masonry Mechanics

5. R.O. Ritchie On the Fracture Mechanics of Bone: Toughness and its Biological Degradation

6. P. Wriggers A Multi-scale Approach to the Characterization of Heterogeneous Materials

7. F.D. Fischer, J. Svoboda Physics, Chemistry and Mechanics are Growing Together - the Role of Nonequilibrium Thermodynamics

8. P. Dłużewski Dislocations in Atomistic/Continuum Modelling of Semiconductor Structures

Sectional Sessions

Biomechanics

1) ***M. Itskov, A.E. Ehret*** An Anisotropic Micromechanically Based Viscoelastic Model for Soft Collageneous Tissues
2) ***O.U. Colak, T. Hassan*** Cyclic Behavior of Ultra High Molecular Weight Polyethylene (UHMWPE) and Modeling
3) ***E. Majchrzak, G. Kałuża, J. Poteralska*** Solution of the Cattaneo-Vernotte Bio-Heat Transfer Equation by Means of the Dual Reciprocity Method
4) ***K. Piechór*** Travelling Waves in Two Mechanochemical Models of Tumor Angiogenesis

5) ***A. John, P. Orantek, P. Wysota*** The Numerical Modeling of Osteoporotic Changes in Selected Biomechanical Structures
6) ***M. Kopernik, J. Nowak*** Numerical Modelling of the Opening Process of the Three-Coating Aortic Valve
7) ***W. Gambin, P. Kowalczyk*** Analysis of Shrinkage Stresses in Light-Cured Dental Restorations
8) ***P. Kowalczyk*** Orthotropic Model of Cancellous Bone. Application to Simulation of Adaptive Remodelling
9) ***B. Nowak, M. Kaczmarek*** Modelling Bone - Implant Dynamics
10) ***T. Lekszycki*** Modeling of Bone - Bioresorbable Graft Interaction
11) ***U. Foryś*** Mutidimensional Lotka-Volterra Systems for Carcinogenesis Mutations
12) ***M. Nowak*** On Some Properties of Bone Functional Adaptation Phenomenon Useful in Mechanical Design

Geomechanics

13) ***H.O. Ghaffari*** Contact State Analysis by RST & NFIS Analysis
14) ***E. Bauer, S.F. Tantono*** Shear Band Analysis of Weathered Broken Rock in Dry and Wet States
15) ***C. Slominski, R. Cudmani*** The Influence of Soil Plugging on the Driving Resistance and Bearing Capacity of Open-Ended Steel Piles
16) ***K. Wilde, M. Rucka, J. Tejchman*** Experimental and Theoretical Investiagtions of Silo Music During Granular Flow
17) ***J. Tejchman, W. Wu*** FE-Calculations of Stress Distribution under Prismatica Nd Conical Sandpiles Within Hypoplasticity
18) ***J. Kozicki, J. Tejchman, B. Chareyre*** Comparative Modeling of Shear Localization in Granular Bodies Using a Discrete and Continuum Approach
19) ***I. Panteleev, O. Plekhov, I. Pankov, A. Evseev, O. Naimark, V. Asanov*** Scaling Laws of Damage-Failure Transition in Rocks: from Laboratory Tests to Earthquakes
20) ***A. Stankiewicz, J. Pamin*** Parametric Study of Gradient-Enhanced Cam-Clay Model
21) ***X.T. Wang, W. Wu, J. Tejchman*** Update a Simple Hypoplastic Constitutive Model
22) ***M. Pinheiro, R. Wan*** Incremental Plastic Response and Flow Rule Postulate under General Three-Dimensional Conditions
23) ***Q.H. Jiang, C.B. Zhou, M.R. Yeung*** Three-Dimensional Discontinuous Deformation Analysis (3-d DDA) Coupled with Finite Element Method

24) ***A. Sawicki, W. Świdziński*** Pre-Failure Behaviour of Granular Soils
25) ***J. Rojek*** Simulation of Rock Cutting with Evaluation of Tool Wear
26) ***J. Górski, J.Bobiński, J. Tejchman*** FE-Simulations of Size Effects in Granular and Quasi-Brittle Materials
27) ***L.W. Morland*** Age-depth correlation, grain growth and dislocation energy evolution, for three ice cores

Elastic-Plastic Continuum & Other Field Theories

28) ***Z. Banach, W. Larecki*** Wave and Diffusive Phonon Heat Transport in Dielectrics and Semiconductors under High Thermal Loads
29) ***K. Bartosz,*** Hemivariational Inequalities Modelind Dynamic Contact Problems in Viscoelasticity
30) ***A. Glema, T. Łodygowski, P. Perzyna, W. Sumelka*** Adiabatic Microdamage Anisotropy in Ductile Materials
31) ***M.H. Pol, M. A. Akbari, G.H. Liaghat, A.V. Hosseini*** Analysis of Oblique Perforation of Conical and Ogive Projectiles into Thin Metallic Targets
32) ***S.-Y. Leu*** On the Limit Internal Pressure of Hollow Cylinders of Strain Hardening Viscoplastic Materials
33) ***C. Vallée, L. Lerintiu, D. Fortuné, K. Atchonouglo, M. Ban*** Recovering the Bipotential of an Implicit Standart Material by Fitzpatrick's Method
34) ***Z. Nowak, W.K. Nowacki, P. Perzyna, R.B. Pęcherski*** Numerical Investigation of Localized Fracture in Polycrystalline Material (DH 36 Steel) During Dynamic Double Shear Loading Under Adiabatic Conditions
35) ***Yu. Bayandin, O. Naimark*** Mesodefect Induced Mechanisms of Plasticity and Failure in Shocked Solids
36) ***T. Żebro, K. Kowalczyk-Gajewska, J. Pamin*** A Gradient-Enhanced Coupled Damage-Plasticity Model in Large Strain Format
37) ***R.Souchet*** On the Use of Gurson's Model in Continuum Damage Mechanics
38) ***S. Sherbakov*** Three-dimensional Stress-Strain State of Roller-Shaft System in Conditions of Contact Interaction and Non-contact Bending of Shaft
39) ***Yu.A. Chernyakov, A.S. Polishchuk*** On Comparison of Theory of Microstrains with Theories, Based on the Conception of Sliding
40) ***H.M. Shodja, H. Haftbaradaran*** Size Effect of an Elliptic Inclusion in Anti-Plane Strain Couple Stress Elasticity
41) ***M. Danielewski*** Mechano-chemistry at Different Length Scales

Fracture, Damage Mechanics& Fatigue

42) ***L. Nazarenko, L. Khoroshun, W.H. Müller, R. Wille*** Long-Term Microdamaging of Composites with Transversally-Isotropic Components for Limited Function of Durability
43) ***L. Stepanova*** Eigenspectra and Orders of Stress Singularity at a Mode I Crack in a Power-Law Medium
44) ***O. Plekhov, N. Saintier, O. Naimark, T. Palin-Luc, R. Valiev, I. Semenova*** Thermodynamics of Plastic Deformation of Nanocrystalline Titanium
45) ***B. Erzar, P. Forquin, J.R. Klepaczko*** Study of High Strain Rate Behaviour of Micro-Concrete
46) ***G. Mejak*** Direct Numerical Computation of the Effective Material Properties of the Material with Random Distribution of the Microcracks
47) ***K .P. Mróz, K. Doliński*** The New Fracture Criterion for Mixed-Mode Crack. The MK Criterion
48) ***Z. Marciniak, D. Rozumek, C.T. Lachowicz*** The Energy Approach in the Calculation of Lives for High Cycle Fatigue
49) ***L. Sosnovskiy, S. Sherbakov*** Model of Deformable Rigid Body with Dangerous Volume
50) ***C.H. Wang*** Interfacial Thermal Stress Analysis of an Elliptical Inclusion with an Imperfect Interface in Anisotropic Plane
51) ***J. Kozicki, J. Tejchman*** Simulation of Fracture Process in Concrete Elements with Steel Fibres Using Discrete Lattice Model
52) ***W. Weglewski, M. Basista*** Modelling of Chemo-Damage in Concrete Due to Sulfate Corrosion
53) ***J. Bobiński, J. Tejchman*** FE-Modelling of Concrete Behaviour under Mixed Mode Conditions with Non-Local and Cohesive Constitutive Models
54) ***N. Pindra, V. Lazarus, J.B. Leblond*** Slight In-Plane Perturbation of a System of Two Coplanar Parallel Tensile Slit-Cracks
55) ***S. Shukayev, M.Gladskyi, K. Panasovskyi, A. Movaggar*** Damage Accumulation Model for Low Cycle Fatigue under Multiaxial Sequential Loading
56) ***L. Jański, M. Kuna, M. Scherzer*** Simulations of Crack Growth in Piezoelectric Structures with Modern, Automatic and Efficient Finite Element Software
57) ***A. Kaczyński, B. Monastyrskyy*** Thermal Stresses Around an Interface Rigid Circular Inclusion in a Bimaterial Periodically Layered Space

58) ***M.H.B.M. Shariff*** Extension of Isotropic Mullins Models to Anisotropic Stress-Softening Models
59) ***P. Fedeliński*** Computations of Effective Elastic Properties of Solids with Microcracks Using the Boundary Element Method
60) ***A.V. Zaitsev*** Nonlocal Conditions for the Transition Damage to a Localized Failure in Granular and Fibre-Reinforced Composites under Quasistatic Loading
61) ***T. Jankowiak, T. Łodygowski, P. Sielicki*** Failure and fracture of concrete and brick walls imposed by explosion

Micromechanics

62) ***N. Chiba, N. Ogasawara, C.R. Anghel, X. Chen*** A Substrate Effect of Hardness in Film/Substrate Indentation: Finite Element Study on ‘Overshoot’ Phenomenon of Hardness
63) ***R. Pyrz, B. Bochenek*** Atomic-Continuum Equivalence: Atomic Strain Tensor
64) ***K.C. Le, D. Kochmann, P. Sembiring*** Bridging Length-Scale in Continuum Dislocation Theory
65) ***R. Staroszczyk*** A Migration Recrystallization Model for Polar Ice
66) ***M. Kursa, H. Petryk*** The Energy Approach to Determining Plastic Deformation of Metal Crystals
67) ***K. Kowalczyk-Gajewska*** Micromechanical Modelling of Metallic Materials of High Specific Strength Accounting for Slip-Twin Interactions
68) ***Z. Poniżnik, V. Salit, M. Basista, D. Gross*** Modelling of Effective Elastic Properties of Interpenetrating Metal-Ceramic Networks
69) ***H. Petryk*** Modelling of Microstructure Formation by Minimization of Incremental Energy Supply
70) ***V.A. Eremeyev, W. Pietraszkiewicz*** On Natural Strain Measures of the Non-Linear Micropolar Continuum
71) ***M. Hammoud, D. Duhame, K. Sab*** A Coupled Discrete-Homogenized Approach to Study the Behavior of Ballast under Railways
72) ***R. Oleśkiewicz, M. Neubauer, T. Krzyzynski*** Piezoelectric Switching Technique for Vibration Damping
73) ***A.V. Manzhirov, K.E. Kazakov*** Conformal Contact Between a Punch and a Layer with Thin Coating
74) ***M. Janus-Michalska*** Micromechanical Model of Hyperelastic Behaviour of Cellular Materials
75) ***M. Svanadze*** Boundary Value Problems in the Two-Temperature Theory of Thermoelasticity of Binary Mixtures

Thermomechanics, Phase Transitions & Shape Memory Materials

76) ***S. Stupkiewicz, H. Petryk*** Micromechanical Modelling of Pseudoelastic SMA Polycrystals under Non-proportional Loading
77) ***H. Tobushi, E.A. Pieczyska, W.K. Nowacki, T. Sakuragi, Y. Sugimoto*** Torsional Deformation and Rotary Driving Characteristics of SMA Thin Strip
78) ***E. Pieczyska*** Stress-Induced Martensite Transformation in TiNi SMA - Experimental Estimation of Energy Balance
79) ***J.A. Rodríguez-Martínez, A. Rusinek, D.A. Pedroche, A. Arias, J.R. Klepaczko*** Mechanical Behaviour of TRIP Steels Subjected to Low Impact Velocity at Wide Range of Temperatures
80) ***S. Starenchenko, I. Radchenko, V. Starenchenko*** Influence of Plastic Deformation on Structural Characteristics and Long-Range Order in Ni3Al Alloy
81) ***S.J. Kowalski, A. Rybicki*** Estimation of Material Effort During Drying Processes
82) ***W. Oliferuk, M. Maj*** Stress-Strain Curve and Stored Energy During Uniaxial Deformation of Polycrystals
83) ***E.A. Pieczyska, H. Tobushi, W.K. Nowacki, T. Sakuragi, Y. Sugimoto*** Deformation Behavior of TiNi SMA Observed by Local Strain, Thermography and Transformation Band
84) ***T. Inoue*** Transformation Plasticity. The Mechanism, Constitutive Equation and Applications
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177) ***S.V. Starenchenko*** Features of the Temperature-Induced and Deformation-Induced Order-Disorder Phase Transition
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180) ***M. Chalecki, W. Nagórko*** A Nonasymptotic Modelling of Heat Conduction in Solids Reinforced by Short Fibres with Functional Gradation of Features
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183) ***R. Attarnejad, M. Eslaminia, A. Shahba*** A Novel Method for Static Analysis of Thin Curved Shells with Variable Thickness
184) ***Ya. Grigorenko, S. Yaremchenko*** Stress State of Nonthin Noncircular Orthotropic Cylindrical Shells with Variable Thickness under Different Types of Boundary Conditions.
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205) ***I. Dunajewski, Z. Kotulski*** Optimal Wireless Sensors Location for Widespread Structures Monitoring
206) ***R. Wojnar*** The Stokes Flow in Nonhomogenous Porous Medium
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