

Contents

26th SOLID MECHANICS CONFERENCE

Biomechanics

Gdańsk, Poland

September 9–12, 2008

Scientific Committee

Biomechanics

- 2 R.O. Ritchie
On the Fracture Mechanics of Bone and its Biological Degradation
- 4 M. Kaczmarek
Bio-poromechanics. Problems of Modelling Tissues and Biomaterials
- 6 M. Itskov, A.E. Ehret
An Anisotropic Micromechanically Based Viscoelastic Model for Soft Collageneous Tissues
- 8 O.U. Colak, T. Hassan
Cyclic Behavior of Ultra High Molecular Weight Polyethylene (UHMWPE) and Modeling
- 10 A. John, P. Orantek
Selected Applications of Interval and Fuzzy Analysis in Biomechanics
- 12 E. Majchrzak, G. Katuża, J. Poteralska
Solution of the Cattaneo-Vernotte Bio-Heat Transfer Equation by Means of the Dual Reciprocity Method
- 14 K. Piechór
Travelling Waves in Two Mechanochemical Models of Tumor Angiogenesis
- 16 M. Cieszko, W. Kriese
Interaction of Ultrasonic Waves with Continuous Inhomogeneity of Porous Materials
- 18 A. John, P. Orantek, P. Wysota
The Numerical Modeling of Osteoporotic Changes in Selected Biomechanical Structures
- 20 P. Kowalczyk
Effect of Special Layers Shaping on Stress Distribution in Dental Restoration
- 22 M. Kopernik, J. Nowak
Numerical Modelling of the Opening Process of the Three-Coating Aortic Valve
- 24 W. Gamin, P. Kowalczyk
Analysis of Shrinkage Stresses in Light-Cured Dental Restorations
- 26 I. Maciejewski, S. Chamera, T. Krzyzynski
Application of Biomechanical Models in Design and Simulation of Active and Passive Vibration Damping
- 28 M. Cieszko, Z. Szczepański
Application of Micro Computer Tomography to Identification of Pore Structure Parameters of Porous Material

- 30 *P. Kowalczyk*
Orthotropic Model of Cancellous Bone. Application to Simulation of Adaptive Remodelling
- 32 *B. Nowak, M. Kaczmarek*
Modelling Bone-Implant Dynamics
- 34 *T. Lekszycki*
Modeling of Bone-Bioresorbable Graft Interaction
- 36 *U. Foryś*
Mutidimensional Lotka-Volterra Systems for Carcinogenesis Mutations
- 38 *M. Nowak*
On Some Properties of Bone Functional Adaptation Phenomenon Useful in Mechanical Design
- 40 *M. Gzik, D. Tejszerska*
Analysis of Influence of Human Head Movement on Cervical Spine Loading Conditions
- 42 *A. Dąbrowska-Tkaczyk*
Evaluation Method for Orthotropic Properties of Bone Tissue "in situ"
- 44 *B. Gamin, A. Gałka*
Rayleigh scattering of ultrasounds in cancellous bone
- 46 *B. Gamin, A. Gałka*
Fabric tensor and strength surface of bone-like materials
- ## Computational Aspects of Solid Mechanics and Applications
- 48 *J.V. Wittenbergh, P. De Baets, W. De Waele*
Analysis of a Preloaded Conical Threaded Pipe Connection
- 50 *J. Ptaszny, P. Fedeliński*
Fast Multipole Evaluation of Domain Terms in Integral Equations of Two-Dimensional Elasticity
- 52 *J. Chróscielewski, M. Rucka, K. Wilde, W. Witkowski*
Modelling of Wave Propagation in Spatial Frame Elements — Numerical Simulations and Experimental Works
- 54 *W. Beluch, T. Burczyński, P. Orantek*
Evolutionary Identification of Laminates' Stochastic Parameters
- 56 *P. Orantek, T. Burczyński*
The Local Gradient Method Supported By Artificial Neural Network in Granular Identification Problems
- 58 *G. Kokot, A. John, W. Kuś*
The Complex Welding Process Simulation Using FEM, Parallel Computing and Grid Based Evolutionary Optimization
- 60 *S. Fialko*
Aggregation Multilevel Iterative Solver Based on Sparse Matrices Technique
- 62 *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

- 64 *J. Knabel, K. Kolanek, V.N. Hoang, R. Stocki, P. Tauzowski*
Structural Reliability Analysis Using Object Oriented Environment STAND
- 66 *S. Czarnecki*
An Elastic Cube Subjected to Anti-Symmetrical Pressure Loading. Exact 3d Analytical Formulae Versus Numerical Solutions Based on Meshfree Method
- 68 *Y.M. Abushawashi, S.H. Eshtewi, A.M. Othman*
Convergence Behaviour for KPT Finite Elements
- 70 *I.M. González, H. Miguélez, A. Muñoz*
ANN Approach for Modelling Orthogonal Cutting
- 72 *A. Zmitrowicz*
Contact Stresses — Models and Methods of Computations
- 74 *I. Páczelt, Z. Mróz*
Numerical Analysis of Some Steady State Wear Problems
- 76 *V. Pidvysotskyy, R. Kuziak, M. Pietrzyk*
Physical and Numerical Simulation of Forging of Cu-Cr Alloy
- 78 *B. Szybiński, A. Wróblewski*
Numerical Analysis of Residual Stresses in Welds of Thick-walled Pressure Vessels
- 80 *A. Garwolińska, M. Kaczmarek*
Numerical Simulations of Laboratory and Field Tests of Permeability
- 82 *T. Bednarek, W. Sosnowski*
Computer Aided Design of Vibrating Structures Accounting for Material Fatigue and Reliability
- 84 *G. Dziatkiewicz*
Indirect Trefftz Solutions for Plane Piezoelectricity by Stroh Formalism and Collocation Technique
- 86 *N.C. Marín, M.H. Miguélez, J.A. Canteli, J.L. Cantero*
Lagrangian and ALE Approach for Predicting Residual Stresses in Orthogonal Cutting
- 88 *T. Łukasiak*
The Adaptive NEM-Delaunay Elements
- 90 *P. Orantek, A. Długosz, T. Burczyński*
Stochastic Identification in Thermomechanical Structures Using Evolutionary Algorithms
- 92 *M. Wójcik, J. Tejchman*
FE-Simulations of Dynamic Shear Localization in Granular Bodies Using an Arbitrary Lagrangian-Eulerian Formulation
- 94 *K. Jach, R. Świeczański, M. Magier*
Numerical Analyzes of Armour Steel Plates Penetration Process by Subcalibre Projectiles with Monolith and Segmented Penetrators
- 96 *G. Jurczak, P. Dłużewski, S. Kret, P. Ruterana*
Indium Clusters Evolution in a InGaN/GaN QW
- 98 *S. Ilic, K. Hackl*
Application of the Multiscale FEM to the Modeling of Composite Materials

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

- 00 *M. Danielewski*
Mechano-Chemistry at Different Length Scales
- 02 *K. Frischmuth, W. Kosiński*
Hyperbolic Heat Conduction with Fuzzy Parameters
- 04 *W. Oliferuk, Z. Płochocki, O. Wysocka*
Pulsed IR Thermography for Detection of Material Defects
- 06 *M.B. Rahaei*
Comparison Lubricity Behaviour of Nanolaminated Ti₃SiC₂ and Solid Lubricants
- 08 *I. Radulescu*
Numerical Methods Involved in Lubricant Life Cycle Determination
- 10 *T.J. Hoffmann, M. Chudzicka-Adamczak*
Saint-Venant's Principle in Magnetoelasticity
- 12 *M. Cieszko, J. Kubik*
Propagation of Ultrasonic Waves in Inhomogeneous Materials
- 14 *A.V. Radulescu, F. Petrescu, I. Radulescu*
Tribological Aspects of the Solid–Fluid Interaction for Fresh and Used Lubricants
- 16 *E. Gavrilova*
Forced Gas–Structure Vibrations in a Rectangular Tank
- 18 *S.A. Lychev*
Coupled Dynamics Thermoviscoelastic Problem
- 20 *M.B. Rahaei*
Primary Evaluation of the Wear Behavior of the Combustion Synthesized TiC-NiAl Composite as Mechanical Seal Rings
- 22 *M. Cieszko, M. Kempinski*
Description of Capillary Potential Curves of Porous Materials
- 24 *R. Wojnar*
Viscous Incompressible Flow in Porous Media
- 26 *S. Tokarzewski, J. Gilewicz*
Matrix Padé Bounds on Effective Transport Coefficients of Anisotropic Two-Phase Media
- 28 *G. Musielak, B. Świt*
Determination of Moisture Dependence of Material Coefficients for Macaroni Dough
- 30 *I. Dunajewski, Z. Kotulski*
Optimal Wireless Sensors Location for Widespread Structures Monitoring
- 32 *M.B. Rahaei, M. Kholghi, A. Shafiee, M. Rahaei, M. Naghavi*
Self-Propagating High Temperature Synthesis of Bulk TiC-NiAl Composite
- 34 *M.B. Rahaei*
Comparison Mechanical Properties of Combustion Synthesized TiC-NiAl with Sintering Mechanical Seal Rings and Cutting Tools

Fracture, Damage Mechanics and Fatigue

- 136 *R. Kačianauskas*
The Discrete Element Method with Applications to Simulations of Granular Flow and Dynamic Fracture of Solids
- 138 *A. Bacigalupo, L. Gambarotta*
Modelling of Deformation and Damage of Heterogeneous Engineering Structures: Masonry Mechanics
- 140 *L. Nazarenko, L. Khoroshun, W.H. Müller, R. Wille*
Long-Term Microdamaging of Composites with Transversally Isotropic Components for Limited Function of Durability
- 142 *L. Stepanova*
Eigenspectra and Orders of Stress Singularity at a Mode I Crack in a Power-Law Medium
- 144 *O. Plekhov, N. Saintier, O. Naimark, T. Palin-Luc, R. Valiev, I. Semenova*
Thermodynamics of Plastic Deformation of Nanocrystalline Titanium
- 146 *B. Erzar, P. Forquin, J.R. Klepaczko*
Study of High Strain Rate Behaviour of Micro-Concrete
- 148 *G. Mejak*
Direct Numerical Computation of the Effective Material Properties of the Material with Random Distribution of the Microcracks
- 150 *K.P. Mróz, K. Doliński*
The New Fracture Criterion for Mixed-Mode Crack. The MK Criterion
- 152 *Z. Marciniak, D. Rozumek, C.T. Lachowicz*
The Energy Approach in the Calculation of Lives for High Cycle Fatigue
- 154 *L. Sosnovskiy, S. Sherbakov*
Model of Deformable Rigid Body with Dangerous Volume
- 156 *C.H. Wang*
Interfacial Thermal Stress Analysis of an Elliptical Inclusion with an Imperfect Interface in Anisotropic Plane
- 158 *J. Kozicki, J. Tejchman*
Simulation of Fracture Process in Concrete Elements with Steel Fibres Using Discrete Lattice Model
- 160 *W. Weglewski, M. Basista*
Modelling of Chemo-Damage in Concrete Due to Sulfate Corrosion
- 162 *J. Bobiński, J. Tejchman*
FE-Modelling of Concrete Behaviour under Mixed Mode Conditions with Non-Local and Cohesive Constitutive Models
- 164 *N. Pindra, V. Lazarus, J.B. Leblond*
Slight In-Plane Perturbation of a System of Two Coplanar Parallel Tensile Slit-Cracks
- 166 *Á. Kovács, Z. Vízváry, A. Kovács*
Strength Analysis of a Square-Form Perforated Microfilter
- 168 *A. Rusinek, J.A. Rodríguez-Martínez, J.R. Klepaczko*
Advanced Constitutive Relation for Numerical Applications: Modeling of Steels in a Wide Range of Strain Rates and Temperatures

- 170 S. Shukayev, M. Gladskyi, K. Panasovskyi, A. Movaggar
Damage Accumulation Model for Low Cycle Fatigue under Multiaxial Sequential Loading 905
- 172 L. Jański, M. Kuna, M. Scherzer
Simulations of Crack Growth in Piezoelectric Structures with Modern, Automatic and Efficient Finite Element Software 905
- 174 A. Kaczyński, B. Monastyrskyy
Thermal Stresses Around an Interface Rigid Circular Inclusion in a Bimaterial Periodically Layered Space 905
- 176 I. Marzec, J. Tejchman
FE-Analysis of the Behaviour of Concrete Elements with Coupled Elasto-Plastic-Damage Models with Non-Local Softening 905
- 178 P. Kłosowski, L. Pyrzowski
Identification and Validation of Material Parameters for Isotropic Damage Model in Viscoplastic Flow Conditions 915
- 180 M.H.B.M. Sheriff
Extension of Isotropic Mullins Models to Anisotropic Stress-Softening Models 915
- 182 P. Fedeliński
Computations of Effective Elastic Properties of Solids with Microcracks Using the Boundary Element Method 915
- 184 A.V. Zaitsev
Nonlocal Conditions for the Transition Damage to a Localized Failure in Granular and Fibre-Reinforced Composites under Quasistatic Loading 915
- 186 T. Jankowiak, T. Łodygowski, P. Sielicki
Failure and fracture of concrete and brick walls imposed by explosion 925
- 188 W.P. Jia, J.G. Wang, D.Y. Ju
Effect of Strain Path Change on Microstructure and Properties of Hot-rolled Q235 Steel 925
- Geomechanics**
- 190 H.O. Ghaffari
Contact State Analysis by RST&NFIS Analysis 925
- 192 E. Bauer, S.F. Tantono
Shear Band Analysis of Weathered Broken Rock in Dry and Wet States 925
- 194 C. Slominski, R. Cudmani
The Influence of Soil Plugging on the Driving Resistance and Bearing Capacity of Open-Ended Steel Piles 925
- 195 L.W. Morland
Age-Depth correlation, grain growth and dislocation energy evolution, for three ice cores 925
- 196 K. Wilde, M. Rucka, J. Tejchman
Experimental and Theoretical Investigations of Silo Music During Granular Flow 925
- 198 J. Tejchman, W. Wu
FE-Calculations of Stress Distribution under Prismatic and Conical Sandpiles Within Hypoplasticity 925

- 200 *J. Kozicki, J. Tejchman*
Comparative Modeling of Shear Localization in Granular Bodies Using a Discrete and Continuum Approach
- 202 *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
- 204 *A. Stankiewicz, J. Pamin*
Parametric Study of Gradient-Enhanced Cam-Clay Model
- 206 *X.T. Wang, W. Wu, J. Tejchman*
Update a Simple Hypoplastic Constitutive Model
- 208 *M. Pinheiro, R. Wan*
Incremental Plastic Response and Flow Rule Postulate under General Three-Dimensional Conditions
- 210 *Q.H. Jiang, C.B. Zhou, M.R. Yeung*
Three-Dimensional Discontinuous Deformation Analysis (3-d DDA) Coupled with Finite Element Method
- 212 *A. Sawicki, W. Świdziński*
Pre-Failure Behaviour of Granular Soils
- 214 *J. Rojek*
Simulation of Rock Cutting with Evaluation of Tool Wear
- 216 *J. Górski, J. Bobiński, J. Tejchman*
FE-Simulations of Size Effects in Granular and Quasi-Brittle Materials
- 218 *B. Wrana*
Identification of Damping in Soil by means of Morlet Wavelets
- 220 *R. Balevičius, R. Kačianauskas, Z. Mróz, I. Sielamowicz*
Comparison of Wall Pressures Measured in the Model Silo with DEM Simulation
- 222 **Micromechanics**
- 222 *H.L. Duan, J. Wang, B.L. Karihaloo*
Theory of Elasticity at the Nano-Scale
- 224 *P. Dłuzewski*
Dislocations in Atomistic/Continuum Modelling of Semiconductor Structures
- 226 *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
- 228 *R. Pyrz, B. Bochenek*
Atomic-Continuum Equivalence: Atomic Strain Tensor
- 230 *K.C. Le, D. Kochmann, P. Sembiring*
Bridging Length-Scale in Continuum Dislocation Theory
- 232 *R. Staroszczyk*
A Migration Recrystallization Model for Polar Ice
- 234 *M. Kursa, H. Petryk*
The Energy Approach to Determining Plastic Deformation of Metal Crystals

236	<i>K. Kowalczyk-Gajewska</i>	Micromechanical Modelling of Metallic Materials of High Specific Strength Accounting for Slip-Twin Interactions
238	<i>Z. Poniznik, V. Salit, M. Basista, D. Gross</i>	Modelling of Effective Elastic Properties of Interpenetrating Metal-Ceramic Networks
240	<i>H. Petryk</i>	Modelling of Microstructure Formation by Minimization of Incremental Energy Supply
242	<i>V.A. Eremeyev, W. Pietraszkiewicz</i>	On Natural Strain Measures of the Non-Linear Micropolar Continuum
244	<i>M. Svanadze</i>	Boundary Value Problems in the Two-Temperature Theory of Thermoelasticity of Binary Mixtures
246	<i>R. Oleśkiewicz, M. Neubauer, T. Krzyszynski</i>	Piezoelectric Switching Technique for Vibration Damping
248	<i>A.V. Manzhirov, K.E. Kazakov</i>	Conformal Contact Between a Punch and a Layer with Thin Coating
250	<i>M. Hammoud, D. Duhamel, K. Sab</i>	A Coupled Discrete-Homogenized Approach to Study the Behavior of Ballast under Railways
252	<i>M. Janus-Michalska</i>	Micromechanical Model of Hyperelastic Behaviour of Cellular Materials
Elastic-Plastic Continuum and Other Field Theories		
254	<i>L. Anand</i>	Mechanical Behavior of Bulk Metallic Glasses
256	<i>H.J. Luckner, S.P. Gadaj, W.K. Nowacki</i>	Mechanical Behaviour of TiAl Alloys During Static and Dynamic Deformations
258	<i>Z. Banach, W. Larecki</i>	Wave and Diffusive Phonon Heat Transport in Dielectrics and Semiconductors under High Thermal Loads
260	<i>K. Bartosz</i>	Hemivariational Inequalities Modelind Dynamic Contact Problems in Viscoelasticity
262	<i>A. Glema, T. Łodygowski, P. Perzyna, W. Sumelka</i>	Adiabatic Microdamage Anisotropy in Ductile Materials
264	<i>H.M. Shodja, H. Haftbaradaran</i>	Size Effect of an Elliptic Inclusion in Anti-Plane Strain Couple Stress Elasticity
266	<i>M.H. Pol, M.A. Akbari, G.H. Liaghat, A.V. Hosseini</i>	Analysis of Oblique Perforation of Conical and Ogive Projectiles into Thin Metallic Targets
268	<i>S.-Y. Leu</i>	On the Limit Internal Pressure of Hollow Cylinders of Strain Hardening Viscoplastic Materials

- 270 *Yu. Chernyakov, V. Shneider, D. Teslenko*
The Influence of History of Precritical Loading on Bifurcation of Process of Deformation of Elastic-Plastic Bodies
- 272 *Z. Nowak, W.K. Nowacki, P. Perzyna, R.B. Pečcherski*
Numerical Investigation of Localized Fracture in Polycrystalline Material (DH 36 Steel) During Dynamic Double Shear Loading Under Adiabatic Conditions
- 274 *Yu. Bayandin, O. Naimark*
Mesodefect Induced Mechanisms of Plasticity and Failure in Shocked Solids
- 276 *T. Żebro, K. Kowalczyk-Gajewska, J. Pamin*
A Gradient-Enhanced Coupled Damage-Plasticity Model in Large Strain Format
- 278 *R. Souček*
On the Use of Gurson's Model in Continuum Damage Mechanics
- 280 *S. Sherbakov*
Three-dimensional Stress–Strain State of Roller-Shaft System in Conditions of Contact Interaction and Non-contact Bending of Shaft
- 282 *Yu.A. Chernyakov, A.S. Polishchuk*
On Comparison of Theory of Microstrains with Theories, Based on the Conception of Sliding
- 284 *S. Sherbakov, L. Sosnovskiy*
Influence of Stress–Strain State Caused by Non-Contact Forces on Formation of Contact Boundary Conditions
- 286 *C. Vallée, C. Lerintiu, D. Fortune, K. Atchonouglo, M. Ban*
Recovering the Bipotential of an Implicit Standard Material by Fitzpatrick's Method

Shells: Theory and Computations

- 288 *S. Shimizu, K. Hara*
Shear Behaviour of Hybrid Steel Girders
- 290 *V.A. Eremeyev, W. Pietraszkiewicz*
On Phase Transitions in Thermoelastic and Thermoviscoelastic Shells
- 292 *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
- 294 *J. Pontow, D. Dinkler*
Evaluation of the Perturbation Sensitivity and the Limit Loads of Shells by the Perturbation Energy Concept
- 296 *R. Attarnejad, M. Eslamnia, A. Shahba*
A Novel Method for Static Analysis of Thin Curved Shells with Variable Thickness
- 298 *V. Kovalev*
An Asymptotic Approach to Problems of Scattering Acoustic Waves by Elastic Shells
- 300 *M.R. Khedmati, P. Edalat, M. Rastani*
Buckling/Collapse Behaviour of Cylindrical Shells in Bilge Region of Ship Hull Girders under Inplane Compression

02	G. Geymonat, A. Münch	Controllability for Thin Linearly Elastic Shells	861
04	Ya. Grigorenko, S. Yaremchenko	Stress State of Nonthin Noncircular Orthotropic Cylindrical Shells with Variable Thickness under Different Types of Boundary Conditions.	869
06	K. Wiśniewski, E. Turska	On the Improved Membrane Part of Mixed Shell Elements	877
08	S. Klinkel, W. Wagner	A Piezoelectric Solid Shell Element Accounting for Material and Geometrical Nonlinearities	885
10	V.D. Budak, A.Ya. Grigorenko, S.V. Puzyrev	Free Vibrations of Orthotropic Shallow Shells of Variable Thickness on Basis of Spline-Approximation Method	893
12	J. Górski, T. Mikulski	Identification and Simulation of Shells Geometric Initial Imperfections	901
14	W. Pietraszkiewicz, M.L. Szwabowicz, C. Vallée	On Determining the Deformed Shell Midsurface From Prescribed Surface Strains and Bending	909
16	P. Kłosowski	Membrane Shell Finite Element for Textile Fabric Modelling Numerical and Experimental Aspects	917
18	J. Chróstielewski, I. Kreja, A. Sabik, W. Witkowski	Composite Shells in 6-Field Nonlinear Shell Theory	925
20	K. Myślecki, J. Oleńkiewicz	Vibrations of Thick Plate by Boundary Element Method	933
22	L. Kurpa, K. Lyubitsky	R-Functions Method Applying to Large Deflection Analysis of Orthotropic Shallow Shells on Elastic Foundation	941
24	R. Schlebusch, B. Zastrau	On a Surface-Related Shell Formulation for the Numerical Simulation of Textile Reinforced Concrete Layers	949
26	M.R. Khedmati, P. Edalat, M. Rastani	A Numerical Investigation Into the Effects of Parabolic Curvature on the Buckling Strength of Deck Stiffened Plates	957
28	C. Mardare	Recovery of Displacement Fields From Stress Tensor Fields in Shell Theory	965
30	J. Kruzelecki, D. Trybuta	Optimal Stabilization of Postbuckling Path for Conical Shells under External Pressure	973
32	A.L. Bessoud, F. Krasucki, M. Serpilli	Multimaterials with Shell-like Reinforcement	981
34	I. Kreja	Large Elastic Deformations of Laminated Cylindrical Panels under Point Load	989
36	E. Harutyunyan	Investigation of Oscillation Process of the Shell Element by Method of Finite Elements	997

- 338 *C. González-Montellano, E. Gallego, J. Morán, F. Ayuga*
The Effect of Patch Load on Corrugated Silo Walls
- 340 *A. Loktev, D. Loktev*
Dynamic Contact of the Elastic Impactor and Spherical Shell
- 342 *S.H. Sargsyan*
Theory of Micropolar Thin Elastic Cylindrical Shells
- 344 *P. Panasz, K. Wiśniewski*
Nine-Node Assumed Strain Shell Element with Drilling Rotation
- 346 *G.D. Gavrylenko, V.I. Matsner*
Free Vibrations of Smooth Cylindrical Shells
- 348 *H. Altenbach, V.A. Eremeyev*
On the Mechanics of Functionally Graded Plates
- 350 *V. Kuznetsov, S. Levyakov*
Formulation of the Initial Invariant-Based Shell Finite Element Model Using the Plane Curve Geometry
- 352 *M. Bîrsan*
Some Problems Concerning the Deformation of Anisotropic Cosserat Elastic Shells

Mechanics of Structures and Optimization

- Boundary Conditions
- 354 *K.T. Han, Y. Jin*
Development of Forming Process of the Muffler Tube for Heavy Equipments
- 356 *P. Iwicki*
Comparison of Non-Linear Statical Analysis of Truss with Linear and Rotational Side Supports and 3D Roof Model
- 358 *A.V. Manzhirov, D.A. Parshin*
Raising of a Semi-Circular Vault
- 360 *T. Sokół*
Generalized Formulation of Eigenvalue Problem for Nonlinear Stability Analysis
- 362 *J. Melcer*
Shaking Experimental Investigation of Components for Fastening the Rails
- 364 *R. Jankowski*
Shaking Table Experimental Study on Structural Pounding during Earthquakes
- 366 *P.H. Piotrowski, R. Jankowski*
Prefabricated Structures under Earthquake Excitation: Damage and Failure of Connection Joints
- 368 *B. Błachowski, W. Gutkowski*
A Hybrid Continuous-Discrete Approach to Large Discrete Structural Optimization Problems
- 370 *K. Dems, J. Wiśniewski*
Optimal Fibers Arrangement in Single- and Multilayered Composite Materials
- 372 *K. Szajek, W. Kąkol, T. Łodygowski, M. Wierszycki*
Incorporating Two Optimization Algorithms into FEA Environment

- 74 A. Garstecki, Z. Pozorski, R. Studziński
Multi-Objective Optimal Design of Multi-Span Sandwich Panels with Soft Core, Allowing
for Variable Support Conditions
- 76 C. Iancu, A. Nioata
Static FEA of Mechanical Complex Structures
- 78 M. Chalecki, W. Nagórko
A Nonasymptotic Modelling of Heat Conduction in Solids Reinforced by Short Fibres with
Functional Gradation of Features
- 80 L. Nunziante, M. Fraldi
A Procedure for Defect Identification of Suspension Bridges Cables by means of
Optical-Fibre Strain Measurements
- 82 R. Górska, P. Fedeliński
Free Vibration Analysis of Stiffened Plates by the Boundary Element Method
- 84 W. Beluch, T. Burczyński, A. Długosz
Evolutionary Computing in Multi-Objective Optimization of Laminates
- 86 Sz. Imielowski
Energetic Approach to Stability of Beam-Columns Subjected to Deformation Dependent
Loading
- 87 A. Gorjipoor, A. Abedian
Genetic Algorithm Optimization of Helicopter Blades Vibration Transition
- 88 A. Khurana, S.K. Tomar
Longitudinal Wave Response of a Chiral Slab Interposed Between Micropolar Solid
Half-Spaces
- 89 A. Le van, T.T.H. Nguyen
A Weak Formulation for the Large Deformation Contact Problem with Coulomb Friction
- 92 Q. Zhang, Ł. Jankowski
Off-line Reconstruction of Dynamic Loads
- 94 K. Lisowski
Sparse Grid and Evolution-Type Algorithm in Shape Optimization for Beck's Column
- 96 D. Bojczuk, M. Jabłoński
Geometric Sensitivity Analysis of Truss and Frame Structures
- 98 A. Bobylov, A. Zubko
Application of the Stabilization Method for Analysis of Geometrically Non-Linear Forced
Vibrations of Elastic Beams on Unilateral Winkler Foundation
- 100 A. Myśliński
Level Set Method in Structural Optimization
- 102 B. Dyniewicz, C. Bajer
Inertial Moving Loads
- Thermomechanics, Phase Transitions and Shape Memory Materials**
- 104 F.D. Fischer, J. Svoboda
Physics, Chemistry and Mechanics are Growing Together — the Role of Nonequilibrium
Thermodynamics

- 406 *S. Stupkiewicz, H. Petryk*
Micromechanical Modelling of Pseudoelastic SMA Polycrystals under Non-proportional Loading
- 408 *H. Tobushi, E.A. Pieczyska, W.K. Nowacki, T. Sakuragi, Y. Sugimoto*
Torsional Deformation and Rotary Driving Characteristics of SMA Thin Strip
- 410 *E.A. Pieczyska*
Stress-Induced Martensite Transformation in TiNi SMA — Experimental Estimation of Energy Balance
- 412 *S. Starenchenko, I. Radchenko, V. Starenchenko*
Influence of Plastic Deformation on Structural Characteristics and Long-Range Order in Ni₃Al Alloy
- 414 *S.J. Kowalski, A. Rybicki*
Estimation of Material Effort During Drying Processes
- 416 *W. Oliferuk, M. Maj*
Stress–Strain Curve and Stored Energy During Uniaxial Deformation of Polycrystals
- 418 *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
- 420 *T. Inoue*
Transformation Plasticity. The Mechanism, Constitutive Equation and Applications
- 422 *E. Majchrzak, B. Mochnacki, J.S. Suchy*
Identification of Boundary Heat Flux on the External Surface of Casting
- 424 *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
- 426 *S.V. Starenchenko*
Features of the Temperature-Induced and Deformation-Induced Order–Disorder Phase Transition
- 428 *S.J. Kowalski, A. Rybicki*
Stress Reverse and Residual Stresses in Dried Materials
- 430 *G. Ziętek, Z. Mróz*
Description of Cyclic Hardening of Material with Plasticity Induced Martensitic Transformation
- 432 *C. Urbina, S. De la Flor, F. Ferrando*
Thermal Cycling Effect on Different Two Way Shape Memory Training Methods in NiTi Shape Memory Alloys
- 434 *D.Y. Ju, X.D. Hu, Z.H. Zhao*
Inelastic Behaviour and Numerical Analysis in Twin-roll Casting Process of AZ31 Alloy
- 436 *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
- 440 **Index of Authors**