

Contents

Shells and Plates with Surface Effects	1
Holm Altenbach and Victor A. Eremeyev	
Geometrical Picture of Third-Order Tensors	17
Nicolas Auffray	
Continuum Modelling of Shear-Coupled Grain Boundary Migration	41
Stéphane Berbenni, Bhasker Paliwal and Mohammed Cherkaoui	
Buckling of Nonlinearly Elastic Plates with Microstructure	65
Svyatoslav Derezin	
Material Symmetry Group and Consistently Reduced Constitutive Equations of the Elastic Cosserat Continuum	77
Victor A. Eremeyev and Wojciech Pietraszkiewicz	
Nonlinear Localized Strain Waves in a 2D Medium with Microstructure	91
Vladimir I. Erofeev, Vladimir V. Kazhaev and Igor S. Pavlov	
Cosserat Anisotropic Models of Trabecular Bone from the Homogenization of the Trabecular Structure: 2D and 3D Frameworks.	111
Ibrahim Goda, Mohamed Assidi and Jean-Francois Ganghoffer	
Electro-Thermo-Elastic Simulation of Graphite Tools Used in SPS Processes	143
Stefan Hartmann, Steffen Rothe and Nachum Frage	
The Use of Moment Theory to Describe the Piezoelectric Effect in Polar and Non-Polar Materials	163
Elena A. Ivanova and Yaroslav E. Kolpakov	

**Description of Thermal and Micro-Structural Processes
in Generalized Continua: Zhilin’s Method
and its Modifications** 179
Elena Ivanova and Elena Vilchevskaya

**Hierarchical Architecture and Modeling of Bio-Inspired
Mechanically Adaptive Polymer Nanocomposites** 199
Rasa Kazakevičiūtė-Makovska and Holger Steeb

**Justification of the Bending-Gradient Theory Through
Asymptotic Expansions** 217
Arthur Lebéé and Karam Sab

**Macroscopic Modeling of Size Effects in Foams Using
an Order-Parameter Approach** 237
Bernd Lenhof, Alexander Geringer and Stefan Diebels

**Measuring Material Coefficients of Higher Gradient Elasticity
by Using AFM Techniques and Raman-Spectroscopy** 255
Christian Liebold and Wolfgang H. Müller

**On the Electrostatic Fields in Dielectric Continua
with Self-Similar Properties.** 273
Thomas M. Michelitsch and Gérard A. Maugin

**Nonlinear Generalizations of the Born-Huang Model
and Their Continuum Limits** 283
Alexey V. Porubov, Eron L. Aero and Boris R. Andrievsky

Buckling of Inhomogeneous Circular Plate of Micropolar Material. . . 291
Denis N. Sheydakov

**A Theory of Disclination and Dislocation Fields
for Grain Boundary Plasticity** 303
V. Taupin, L. Capolungo, C. Fressengeas, A. Das and M. Upadhyay

Material Strain Tensor 321
Pavel A. Zhilin, Holm Altenbach, Elena A. Ivanova
and Anton Krivtsov