

INTERNATIONAL JOURNAL FOR MULTISCALE COMPUTATIONAL ENGINEERING

CONTENTS, VOLUME 14, 2016

Page Range of Issues – Issue 1: 1–94; Issue 2: 95–190; Issue 3: 191–321; Issue 4: 323–438;
Issue 5: 439–534; Issue 6: 535–636

ISSUE 1

- Sparse Generalized Multiscale Finite Element Methods and Their Applications** 1
E. Chung, Y. Efendiev, W.T. Leung, & G. Li
- A Multiscale Approach for Thermo-Mechanical Simulations of Loading Courses in Cast Iron Brake Discs** 25
S. Schmid, D. Schneider, C. Herrmann, M. Selzer, & B. Nestler
- Buckling Analysis of Curved Nanotube Structures Based on the Nonlocal Shell Theory** 45
H. Yazdani Sarvestani
- Simulation of Dynamic Strain Aging Process at the Microscopic Scale by Monte Carlo Dynamic Model** 55
Y. He, S. Fu, & Q. Zhang
- Size-Dependent Postbuckling of Annular Nanoplates with Different Boundary Conditions Subjected to the Axisymmetric Radial Loading Incorporating Surface Stress Effects** 65
R. Ansari, V. Mohammadi, M. Faghih Shojaei, & R. Gholami
- Comparison of Multiresolution Continuum Theory and Nonlocal Damage Model for Use in Simulation of Manufacturing Processes** 81
O. Abiri, H. Qin, & L-E. Lindgren

ISSUE 2

- Application of the Multiscale FEM to the Determination of Macroscopic Deformations Caused by Dissolution-Precipitation Creep** 95
S. Klinge & K. Hackl
- On Two-Scale Analysis of Heterogeneous Materials by Means of the Meshless Finite Difference Method** 113
I. Jaworska & S. Milewski
- A Systematic Formulation of Multiphysics Systems and its Applications to Boundary Layers and Shock Profiles** 135
I. Herrera-Revilla
- Buckling Analysis of Laminated Composite Mindlin Plate Model Based on New Modified Couple-Stress Theory and Finite Element Method** 149
C. Wanji, N. Hui, & Y. Shengqi

Carbon Nanotube Reinforced Polyethylene Composites: A Molecular Dynamics Approach	173
<i>R. Anjana & S. Sharma</i>	

ISSUE 3

SPECIAL ISSUE: UNCERTAINTY MODELING AND PROPAGATION TECHNIQUES IN ENGINEERING MECHANICS: A MULTISCALE PERSPECTIVE

GUEST EDITORS: GEORGE DEODATIS, IOANNIS A. KOUGIOUMTZOGLOU, & POL D. SPANOS

Preface: Uncertainty Modeling and Propagation Techniques in Engineering Mechanics: A Multiscale Perspective	v
<i>G. Deodatis, I.A. Kougioumtzoglou, & P.D. Spanos</i>	
Uncertainty Quantification of Manufacturing Process Effects on Macroscale Material Properties	191
<i>G. Cai & S. Mahadevan</i>	
Stochastic Dynamic Response Analysis of Nonlinear Structures with General Nonuniform Random Parameters by Minimizing GL_2-discrepancy	215
<i>J. Chen, P. Song, & X. Ren</i>	
Material Response at Micro-, Multi-, and Macroscales	237
<i>M. Grigoriu</i>	
Nonlinear System Response Evolutionary Power Spectral Density Determination via a Harmonic Wavelets Based Galerkin Technique	255
<i>F. Kong, I.A. Kougioumtzoglou, P.D. Spanos, & S. Li</i>	
Perturbation-Based Surrogate Models for Dynamic Failure of Brittle Materials in a Multiscale and Probabilistic Context	273
<i>J. Liu & L. Graham-Brady</i>	
Modeling Heterogeneity in Networks using Polynomial Chaos	291
<i>K. Rajendran, A.C. Tsoumanis, C.I. Siettos, C.R. Laing, & I.G. Kevrekidis</i>	
Multiscale Stochastic Structural Analysis toward Reliability Assessment for Large Complex Reinforced Concrete Structures	303
<i>H. Zhou, J. Li, & X. Ren</i>	

ISSUE 4

SPECIAL ISSUE: COMPUTATIONAL POROMECHANICS GUEST EDITOR: WAI CHING SUN

Preface: Foreword to Special Issue on Computational Poromechanics	v
<i>W.C. Sun</i>	
General Formulation of a Poromechanical Cohesive Surface Element with Elasto-Plasticity for Modeling Interfaces in Fluid-Saturated Geomaterials	323
<i>R.A. Regueiro, Z. Duan, W. Wang, J.D. Sweetser, & E.W. Jensen</i>	

Simulating Fragmentation and Fluid-Induced Fracture in Disordered Media Using Random Finite-Element Meshes	349
<i>J.E. Bishop, M.J. Martinez, & P. Newell</i>	
Multiscale Model for Damage-Fluid Flow in Fractured Porous Media	367
<i>R. Wan & M. Eghbalian</i>	
Identifying Material Parameters for a Micro-Polar Plasticity Model via X-Ray Micro-Computed Tomographic (CT) Images: Lessons Learned from the Curve-Fitting Exercises	389
<i>K. Wang, W.C. Sun, S. Salager, S.H. Na, & G. Khaddour</i>	
Albany: Using Component-Based Design to Develop a Flexible, Generic Multiphysics Analysis Code	415
<i>A.G. Salinger, R.A. Bartlett, A.M. Bradley, Q. Chen, I.P. Demeshko, X. Gao, G.A. Hansen, A. Mota, R.P. Muller, E. Nielsen, J.T. Ostien, R.P. Pawlowski, M. Perego, E.T. Phipps, W.C. Sun, & I.K. Tezaur</i>	
ISSUE 5	
Computational Continua for Thick Elastic Layered Structures	439
<i>V. Filonova & J. Fish</i>	
Incorporating Local Effects in the Predictor Step of the Iterative Global-Local Analysis of Beams	455
<i>R. Emre Erkmén, A. Saleh, & A. Afnani</i>	
Finite Volume Numerical Solvers for Non-Linear Elasticity in Heterogeneous Media	479
<i>B. Supriyadi & S. Mungkasi</i>	
Mixed-Dimensional Coupling via an Extended Dirichlet-to-Neumann Method	489
<i>Y. Ofir, D. Rabinovich, & D. Givoli</i>	
The Method of Failure Paths for Reduced-Order Computational Homogenization	515
<i>P. Sparks & C. Oskay</i>	
ISSUE 6	
Reiterated Multiscale Model Reduction using the Generalized Multiscale Finite Element Method	535
<i>E.T. Chung, Y. Efendiev, W.T. Leung, & M. Vasilyeva</i>	
Graphene/Carbon Nanotube Reinforced Metallic Glass Composites: A Molecular Dynamics Study	555
<i>S. Sharma, P. Kumar, & R. Chandra</i>	
Postbuckling of Nanocomposite Plate Reinforced with Randomly Oriented and Dispersed CNTs Modeled through RSA Technique	585
<i>A. Srivastava & D. Kumar</i>	
Multiscale Seamless-Domain Method based on Dependent Variable and Dependent-Variable Gradients	607
<i>Y. Suzuki & M. Takahashi</i>	
Index, Volume 14, 2016	631

INTERNATIONAL JOURNAL FOR MULTISCALE COMPUTATIONAL ENGINEERING

AUTHOR INDEX, VOLUME 14, 2016

Page Range of Issues – Issue 1: 1–94; Issue 2: 95–190; Issue 3: 191–321; Issue 4: 323–438;
Issue 5: 439–534; Issue 6: 535–636

Abiri, O., 81	Jensen, E.W., 323	Rabinovich, D., 489
Afnani, A., 455	Kevrekidis, I.G., 291	Rajendran, K., 291
Anjana, 173	Khaddour, G., 389	Regueiro, R.A., 323
Ansari, R., 65	Klinge, S., 95	Ren, X., 215, 303
Bartlett, R.A., 415	Kong, F., 255	Salager, S., 389
Bishop, J.E., 349	Kougioumtzoglou, I.A., 255	Saleh, A., 455
Bradley, A.M., 415	Kumar, D., 587	Salinger, A.G., 415
Cai, G., 191	Kumar, P., 555	Schmid, S., 25
Chandra, R., 555	Laing, C.R., 291	Schneider, D., 25
Chen, J., 215	Leung, W.T., 1, 535	Selzer, M., 25
Chen, Q., 415	Li, G., 1	Sharma, S., 173, 555
Chung, E., 1, 535	Li, S., 255	Shengqi, Y., 149
Demeshko, I.P., 415	Lindgren, L-E., 81	Siettos, C.I., 291
Duan, Z., 323	Liu, J., 273	Song, P., 215
Efendiev, Y., 1, 535	Mahadevan, S., 191	Spanos, P.D., 255
Eghbalian, M., 367	Martinez, M.J., 349	Sparks, P., 515
Erkmen, R.E., 455	Milewski, S., 113	Srivastava, A., 587
Faghih Shojaei, M., 65	Mohammadi, V., 65	Sun, W.C., 389, 415
Filonova, V., 439	Mota, A., 415	Supriyadi, 479
Fish, J., 439	Muller, R.P., 415	Suzuki, Y., 609
Fu, S., 55	Mungkasi, 479	Sweetser, J.D., 323
Gao, X., 415	Na, S.H., 389	Takahashi, M., 609
Gholami, R., 65	Nestler, B., 25	Tezaur, I.K., 415
Givoli, D., 489	Newell, P., 349	Tsoumanis, A.C., 291
Graham-Brady, L., 273	Nielsen, E., 415	Vasilyeva, M., 535
Grigoriu, 237	Ofir, Y., 489	Wan, R., 367
Hackl, K., 95	Oskay, C., 515	Wang, K., 389
Hansen, G.A., 415	Ostien, J.T., 415	Wang, W., 323
He, Y., 55	Pawlowski, R.P., 415	Wanji, C., 149
Herrera-Revilla, I., 135	Perego, M., 415	Yazdani Sarvestani, H., 45
Herrmann, C., 25	Phipps, E.T., 415	Zhang, Q., 55
Hui, N., 149	Qin, H., 81	Zhou, H., 303
Jaworska, I., 113		

INTERNATIONAL JOURNAL FOR MULTISCALE COMPUTATIONAL ENGINEERING

SUBJECT INDEX, VOLUME 14, 2016

Page Range of Issues – Issue 1: 1–94; Issue 2: 95–190; Issue 3: 191–321; Issue 4: 323–438;
Issue 5: 439–534; Issue 6: 535–636

- 1D-2D, 489
2D-1D, 489
Abaqus continuum shell
 element, 439
absorbing boundary
 condition, 303
acoustics equations, 479
adaptive, 535
annular nanoplate, 65
asymptotic, 135
boundary layers, 135
boundary recovery, 489
brake disc, 25
buckling behavior, 45
buckling, 149
carbon nanotubes, 173,
 555, 587
cast iron, 25
coarse-graining, 291
cohesive surface element
 (CSE), 323
composite materials, 609
compressive fracture, 273
computational continua,
 439
computational
 homogenization, 439
concurrent approaches,
 135
continuum mechanics,
 237
convergence acceleration,
 455
coupling, 489
critical state, 389
curved nanotube structures,
 45
damage mechanics, 515
damage, 367
dependent-variable
 gradient, 609
diffusion, 55
Dirichlet to Neumann, 489
discrete fracture networks,
 349
dislocation motion, 55
displacement-based
 governing equations, 45
dissolution-precipitation
 creep, 95
dynamic brittle failure,
 273
dynamic strain aging, 55
elastic wave equations,
 479
elastoplasticity, 323
equation-free approach,
 291
finite element analysis,
 303, 415
finite element method, 81,
 149, 587
finite volume, 479
finite-thickness laminate,
 439
flow, 535
fluid-saturated, 323
flux recovery, 489
fracture, 349
fragmentation, 349
G2-discrepancy, 215
Galerkin technique, 255
geomaterials, 323
global-local analysis, 455
graphene, 555
Gurtin–Murdoch elasticity
 continuum, 65
harmonic wavelet, 255
heat conduction, 609
Helmholtz, 489
heterogeneous structure,
 25
heterogenous materials,
 515
heterogenous media, 479
high dimension, 489
high-dimensional integral,
 215
higher-order continuum,
 389
homogenization, 25, 367
Hostun Sand, 389
hybrid model, 489
hydromechanical coupling,
 367
in-situ adaptive tabulation,
 273
interfaces, 323
kinetic model, 55
Koksa-Hlawka inequality,
 215
l1 minimization, 1
laminated composite
 Mindlin plate, 149
Lax-Friedrichs method,
 479
LeVeque method, 479
local effects, 455
low dimension, 489
manufacturing process,
 191
manufacturing, 81
material modeling, 25,
 95
material properties, 173,
 555
mean-field theory, 367

meshless methods, 113
 meshless, 609
 metallic glass, 555
 microcrack growth, 367
 micro-CT imaging, 389
 micromechanics, 237
 micro-polar plasticity, 389
 microstructure simulation, 191
 mixed dimension, 489
 model calibration, 237
 molecular dynamics, 555
 Mori-Tanaka, 367
 multilayered structure, 439
 multiphysics, 135
 multiresolution continuum theory, 81
 multiscale finite element method, 95, 535
 multiscale finite element, 1
 multiscale model reduction, 1
 multiscale modeling, 25, 135, 191, 367, 515, 587
 multiscale models, 237
 multiscale, 535, 609
 MWLS approximation, 113
 nanocomposite plate, 587
 new modified couple-stress theory, 149
 nonlinear finite element, 323
 nonlinear structures, 215
 nonlinear, 303
 nonlocal damage, 81
 nonlocal shell theory, 45
 nonuniform distribution, 215
 numerical homogenization, 113
 numerical solution, 65
 partial differential equations, 415
 plasticity, 81
 polycrystalline, 191
 polynomial chaos, 291
 poromechanics, 323
 Portevin–Le Chatelier effect, 55
 postbuckling, 65, 587
 power spectral density, 255
 probability density evolution method, 215, 303
 random field microscale models, 237
 random field, 191
 random heterogenous materials, 273
 random sequential adsorption, 587
 randomness propagation, 303
 reduced order homogenization, 515
 reiterated, 535
 representative volume element, 587
 scale effect, 149
 social networks, 291
 sparsity, 1
 statistical linearization, 255
 stochastic damagemodel, 303
 stochastic equations, 237
 stochastic processes, 255
 stress recovery, 489
 surface stress, 65
 surrogate model, 191
 surrogate models, 273
 template-based generic programming, 415
 time-harmonic, 489
 uncertainty quantification, 191, 291
 variational principles, 95
 Voronoi, 349