

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

ISSUE 2

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

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 GL₂-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 Erkmen, A. Saleh, & A. Afanani</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
Afnani, A., 455
Anjana, 173
Ansari, R., 65
Bartlett, R.A., 415
Bishop, J.E., 349
Bradley, A.M., 415
Cai, G., 191
Chandra, R., 555
Chen, J., 215
Chen, Q., 415
Chung, E., 1, 535
Demeshko, I.P., 415
Duan, Z., 323
Efendiev, Y., 1, 535
Eghbalian, M., 367
Erkmen, R.E., 455
Faghih Shojaei, M., 65
Filonova, V., 439
Fish, J., 439
Fu, S., 55
Gao, X., 415
Gholami, R., 65
Givoli, D., 489
Graham-Brady, L., 273
Grigoriu, 237
Hackl, K., 95
Hansen, G.A., 415
He, Y., 55
Herrera-Revilla, I., 135
Herrmann, C., 25
Hui, N., 149
Jaworska, I., 113
Jensen, E.W., 323
Kevrekidis, I.G., 291
Khaddour, G., 389
Klinge, S., 95
Kong, F., 255
Kougioumtzoglou, I.A.,
255
Kumar, D., 587
Kumar, P., 555
Laing, C.R., 291
Leung, W.T., 1, 535
Li, G., 1
Li, S., 255
Lindgren, L-E., 81
Liu, J., 273
Mahadevan, S., 191
Martinez, M.J., 349
Milewski, S., 113
Mohammadi, V., 65
Mota, A., 415
Muller, R.P., 415
Mungkasi, 479
Na, S.H., 389
Nestler, B., 25
Newell, P., 349
Nielsen, E., 415
Ofir, Y., 489
Oskay, C., 515
Ostien, J.T., 415
Pawlowski, R.P., 415
Perego, M., 415
Phipps, E.T., 415
Qin, H., 81
Rabinovich, D., 489
Rajendran, K., 291
Regueiro, R.A., 323
Ren, X., 215, 303
Salager, S., 389
Saleh, A., 455
Salinger, A.G., 415
Schmid, S., 25
Schneider, D., 25
Selzer, M., 25
Sharma, S., 173, 555
Shengqi, Y., 149
Siettos, C.I., 291
Song, P., 215
Spanos, P.D., 255
Sparks, P., 515
Srivastava, A., 587
Sun, W.C., 389, 415
Supriyadi, 479
Suzuki, Y., 609
Sweetser, J.D., 323
Takahashi, M., 609
Tezaur, I.K., 415
Tsoumanis, A.C., 291
Vasilyeva, M., 535
Wan, R., 367
Wang, K., 389
Wang, W., 323
Wanji, C., 149
Yazdani Sarvestani, H.,
45
Zhang, Q., 55
Zhou, H., 303

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 damage model, 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