

USNCCM12 Session Times for Minisymposia		
MS #	Minisymposium Title	Technical Sessions
1.1	Isogeometric Methods: A Symposium Celebrating the 70th Birthday of Prof. T.J.R. Hughes	TS5 - TS10
1.2	Algorithms for Wave Propagation: A Symposium in Honor of the 60th Birthday of Professor Leszek Demkowicz	TS1-TS2, TS4
1.3	PSAAP Center: Predictive Science in Computational Mechanics	TS1, TS2
2.1	Biomechanics of Living Matter	TS8 - TS10
2.2	Computational Mechanics and Biology of Tissues	TS2, TS4
2.3	Cartilage Mechanics: Characterization and Computational Modeling	TS1
2.4	Computational modeling of native and engineered cardiovascular tissue	TS7
2.5	Computational Biomechanics of Trauma	TS1-TS2, TS4
2.6	Cardiovascular Biomechanics and Biomedical Engineering	TS5-TS6
2.7	Direct and Inverse Methods for Cardiovascular and Pulmonary Biomechanics	TS5-TS9
3.1	High-Order Methods for Computational Fluid Dynamics	TS5-TS10
3.2	Flow and Transport in Heterogeneous Porous Media	TS1-TS2
3.3	Recent Developments of Computational Fluid Mechanics for Free and Moving Boundaries	TS10
3.4	Computational Fluid Mechanics for Free and Moving Boundaries	TS4-TS8
3.5	Advances in nonlinear unsteady aerodynamic flows	TS1-TS2, TS4
3.6	Higher-Order Computational Methods for Modeling Transport in Porous Media	TS10
3.7	Finite Element Methods and High-Performance Computing for Environmental Fluid Mechanics	TS5-TS9
4.1	Continuum, Micro-scale and Nano-scale Material Modeling and Characterization	TS1=TS2; TS4-TS8
4.2	Advances in Constitutive Modelling of Metal Forming Processes across Different Lengthscales	TS1
4.3	Multiscale mechanics modeling of phase transitions	TS1-TS2
4.4	Multiscale Modeling and Simulations of Materials Phenomena	TS7-TS10
4.5	Multiscale computational homogenization for bridging scales in the mechanics and physics of complex materials	TS4-TS8
4.6	Multi-scale methods for heterogeneous materials	TS1-TS2, TS4
4.7	Computational methods for materials with intrinsic microstructure	TS7-TS10
4.8	Multi-scale and Multi-physics Computations in Fluids and Solids	TS9-TS10
4.9	Concurrent multi-length scale modeling: from finite elements to atoms and electrons	TS7-TS10
4.10	Multi-scale Modeling of Dynamic Behavior of Materials	TS8-TS9
4.11	Multiscale Methods and Nonlocal Theories for Complex Material Behavior	TS1TS2, TS4-TS6
4.12	Multiscale Thermo-Mechanical Response of Molecular Solids: Theory, Simulation, Modeling, and Experiments	TS1-TS2
4.13	Recent Developments in Nanoscale Modeling of Materials	TS1-TS2, TS4-TS5
4.14	Multiscale Modeling of Materials Behavior in Extreme Environments	TS4-TS6

5.1	Mathematical and numerical modeling of degradation of materials and structures	TS8-TS10
5.2	Computational Methods for Blast and Impact in Mechanics of Materials	TS9-TS10
5.3	Numerical Modeling and Engineering Design for Impact and Blast Problems	TS4-TS8
5.4	Recent Advances in Computational Fracture Mechanics	TS7-TS9
5.5	New challenges for the computational modeling of solids at failure	TS1-TS2, TS4-TS5
5.6	Advances in modeling and simulation of damage evolution, strain localization, and failure	TS4-TS9
5.9	Pavement Mechanics and Simulation	TS4-TS7
5.10	Cohesive Zone Models - Fundamentals and Multiscale Applications	TS1-TS2
5.11	Computational Stability Analysis	TS1-TS2
6.1	Computational Methods in Image Analysis	TS1
6.2	Multi-objective Evolutionary Computation Applied to Structural Engineering and Architecture	TS1-TS2
6.3	Inverse Problems: Theory, Algorithms, and Applications	TS4-TS9
6.4	New Trends in Topology Optimization	TS2, TS4-TS7
7.1	Enabling Technologies and their Application for Advancing Computational Mechanics	TS5-TS6
8.1	Emerging methods for large-scale quantum-mechanical materials calculations	TS1-TS2, TS4
8.2	Continuum Theories for Modeling Atomic Scale Physics: Novel Models and Methods	TS8-TS10
8.3	The atomistic basis of non-equilibrium thermal processes in materials	TS6
8.4	Computational Nanotribology and Interfacial Dynamics	TS1-TS2, TS4
9.1	Advances in Finite Element Methods for Tetrahedral Mesh Computations	TS8-TS10
9.2	Phase-field modeling and simulation in fluid mechanics, solid mechanics and life-sciences	TS7-TS10
9.3	General Polyhedral Discretizations: Meshing, Formulations, and Applications	TS7
9.4	Mini-Symposium on the Material Point Method and Other Similar Particle Methods	TS4-TS6
9.5	Meshfree Particle and Isogeometric Technologies	TS5-TS10
9.6	Advances and Applications of the Generalized/Extended Finite Element Method	TS1-TS2, TS4-TS7
9.7	Symposium on Trends in Unstructured Mesh Generation - MeshTrends IX	TS1-TS2, TS4-TS6
9.8	Geometric Methods in Computational Mechanics	TS1-TS2, TS4-TS6
9.9	Advances in BEM for Advanced Materials	TS5-TS7
9.10	Advances in Numerical Methods for Linear and Non-Linear Dynamics	TS7-TS9

9.11	Qualitative and quantitative comparison of numerical methods for solving partial differential equations	TS8-TS10
10.1	Fluid-Structure Interaction Algorithms & Applications	TS4-TS6
10.2	Recent Advances on Modeling Methods for Fluid-Structure Interaction Systems	TS8-TS10
10.3	Computational Modeling of Embedded and Contact Interfaces	TS4-TS9
10.4	Methods for cut and composite meshes: Theory, Algorithms, and Applications	TS1
11.1	Multiphysics Computations for Nuclear Energy Simulations	TS4
11.2	Computational Methods for Wind Engineering with Emphasis on Wind Energy	TS1
12.1	Randomness, Fractals, and Computational Mechanics	TS1
12.2	UQ Challenge Benchmarks	TS4-TS5
12.3	Methods and Applications for Experimental Design with Uncertainties	TS7-TS8
12.4	Goal-oriented error estimation and adaptivity	TS9-TS10
12.5	Computational Mechanics in the Big Data and Big Compute World	TS2
13.1	Predictive modeling of the co-evolution of microstructure and properties	TS1-TS2, TS4-TS8
13.2	Innovative forming processes and advanced material behavior	TS2
13.3	Mathematical Modeling, Constitutive Theories, and Computations	TS8
13.4	Computational Soft Active Materials	TS9-TS10