Session 7 from 9:30 AM – 11:30 AM

Room	Session
Stewart 214A	**Advances in Modeling, Simulation and Data Integration for Subsurface Reservoirs II** Session Chairs: Mary Wheeler, Pencheva, Tavakoli *Wang & Gildin*, Reservoir Model Calibration and Uncertainty Quantification Using a Self-adapted Evolutionary Strategy *Wheeler, Mikelicn & Wang*, Convergence of Iterative Coupling for Coupled Flow and Mechanics *Srinivasan & Barrera*, Data integration by simultaneous calibration of multiphase flow functions *Yotov, Ganis, Girault, Song & Vassilev*, Mortar multiscale methods for coupled groundwater and surface water flows in irregular domains
Stewart 214B	**Heat Transfer and Phase Change I** Session Chair: Nima Shokri *Nawel, Nour & Sassi*, Study of the evaporation of saline solution in porous media *Kharaghani, Kirsch, Metzger & Tsotsas*, Capillary Effects during Convective Drying of Highly Porous Materials: Simulation and Comparison with Experimental Measurements *Sullivan & Bennethum*, Comparison of Nonlinear Evaporation and Diffusion Models in a Capillary Tube Geometry
Stewart 214C	**Colloid Transport in Porous Media I** Session Chairs: Ahmadi, Bertim & Omari *Baumann, Huckele, Reitzel, & Nießner*, Nanoparticles in the Aquatic Environment *Boomsma & Pyrak-Nolte*, Particle Swarms in Fractures with Uniform, Converging or Diverging Apertures *Javadpour & Mohammadi*, Determining the Adsorption Coefficient of Nanoparticles in Porous Media using Atomic Force Microscopy (withdrawn) *Nelson & Ginn*, Evaluation of Collector Efficiency Equations for Colloid Filtration in Saturated Granular Porous Media
Stewart 214D	**Reservoir Modeling with Uncertainty IV** Session Chairs: Xiao-Hui Wu, Yuguang Chen, Yalchin Efendiev *Durlofsky*, Model order reduction for subsurface flow and geological parameter representation *Efendiev, Iliev & Kronsbein*, Multi-level Monte Carlo methods for multi-phase flow and transport simulations *Moulton, Lipnikov, Svyatskiy & Jiang*, Advances in Multilevel Model Reduction for Reservoir Simulation *Gildin, Efendiev, Galvis & Romanovskaya*, Local-Global Multiscale Model Reduction for History Matching and Optimization in Heterogeneous Porous Media Flow
Stewart 218A	**Transport in Food and Biomaterials II** Session Chair: Pawan Takhar *Campanella, Santos & Carcione*, Effective viscoelastic rheology for fluid-saturated porous media *Xue, Lu & Corvalan*, Direct numerical simulation of multiphase flow of complex fluids through capillary pores *Chamsri & Bennethum*, Modeling the Flow of PCL Fluid due to the Movement of Lung Cilia *Takhar, Maier, Chen & Campanella*, Stress-crack initiation during drying of corn kernels: a hybrid mixture theory based porous media approach
Stewart 218B	**Swelling Materials: from Molecular to Continuum Scale II** Session Chair: Jacques Huyghe

	Huyghe, Roos & Petterson, Shear modulus in a gel depends on osmolarity *Derome, Rafsanjani, Patera & Carmeliet*, Hygromorphic behaviour of cellular material: hysteretic swelling and shrinkage of wood probed by phase contrast X-ray tomography *Desai, Desa & Aswal*, Porosity and Hydration Studies of Bentonite Clays by SANS *Ahmed & Jesiek*, Assessing Isotropy of Shrinkage in Soils
Stewart 218C	**Fractional Calculus in Medical Imaging and Hydrology II** Session Chairs: Mark Meerschaert & Richard Magin *Meerschaert, McGough, Straka & Zhou*, Fractional calculus models for medical ultrasound *McGough*, An approximate on-axis impulse response for a circular piston in power law media *Woyczynski*, Nonlinear and Nonlocal Porous Medium Equation and Its Probabilistic Interpretation *Voller*, Direction and Non-linearity in Non-local Diffusion Transport Models

Session 8 from 2:10 PM – 4:10 PM

Room	Session
Stewart 214A	**Advances in Modeling, Simulation and Data Integration for Subsurface Reservoirs III** Session Chairs: Mary Wheeler, Pencheva, Tavakoli *Darcis, Flemisch & Class*, Multi-physics Approaches for Hydro-Geomechanical Coupling in CO2 Storage *Wolff, Flemisch & Helming*, Adaptive multi-scale modeling of two-phase flow including capillary pressure *Polívka & Mikyuka*, Combined Method for Computation of Multicomponent Compressible Flow in Porous Media
Stewart 214B	**Heat Transfer and Phase Change II** Session Chair: Krishna M. Pillai *Geback, Heintz, Marucci, Arnehed & Boissier*, Mass transport simulations in EC/HPC films using the Lattice Boltzmann method *van der Sman, Voda & van Duynhoven*, Multiscale simulation of the rehydration of freeze-dried vegetables *Yang, Lemarchand & Fen-chong*, A Micromechanics model of Freezing in porous media *Shaeri, Pillai & Beyhaghi*, Drying Simulation of a Porous Medium Using a Pore-Network Model with Multiple Open Sides
Stewart 214C	**Colloid Transport in Porous Media II** Session Chairs: Flemisch & Lie *Bradford, Torkzaban, Kim & Simunek*, Modeling Colloid and Microorganism Transport and Release With Transients in Solution Chemistry *You, Badalyan, Aji, Bruining & Bedrikovetsky*, Size exclusion deep bed filtration: micro- and macro- models & laboratory tests *Zeinijahromi & Bedrikovetsky*, Maximum retention concentration function as a model for particles detachment in porous media: mathematical and laboratory modelling

	Sefrioui Chaibainou, Ahmadi, Bertin & Omari, Direct numerical simulation of colloid transport at the microscopic scale: influence of ionic strength in the presence of a rough surface
Stewart 214D	**Measuring Mixing, Spreading and Dispersion in Complex Media I** Session Chairs: Domelle, Bolster & Moroni *Bolster, Le Borgne, de Anna, Tartakovsky & Dentz*, Effective pore-scale dispersion---asymptotic and transient behaviour *Park*, The complexity of Brownian processes run with nonlinear clocks *Borges & Correa*, Uncertainty Quantification for the Tracer Flow Problem in Self-Similar Permeability Fields *Villarreal & Bolster*, Multi-Method Study of a Sharp, Macroscopic Interface Separating Homogeneous Media
Stewart 218A	**Engineered Porous Media** Session Chair: Oleg Iliev *Mikelic*, P&G Award Lecture: A Derivation and Justification of the Biot-Kirchoff-Love Poroelastic Plate Model-Part 1 *Mikelic*, P&G Award Lecture: A Derivation and Justification of the Biot-Kirchoff-Love Poroelastic Plate Model-Part 2 *Wiegmann*, GeoDict---concepts for an interactive framework for virtual porous *Iliev*, On modeling and simulation of porous electrodes of Li-ion batterie
Stewart 218B	**Swelling Materials: from Molecular to Continuum Scale III** Session Chair: Jacques Huyghe *Brochard, Vandamme, Pellenq & Fen-Chong,* Modeling the differential swelling of coal during ECBM recovery: Poromechanics and CO2-CH4 mixture adsorption *Nikoosokhan, Brochard, Vandamme, Dangla & Pellenq*, Combining Poromechanics with Molecular and Reservoir Simulations to Model Coal Bed Methane Production *Sansalone, Kaiser, Naili, Komarova & Lemaire*, Effects of calcium fluxes within bone canaliculi on osteocyte's mechanosensitivity *Tomar & Goyal*, Elastic wave propagation in swelling porous medium
Stewart 218C	**Fractional Calculus in Medical Imaging and Hydrology III** Session Chairs: Mark Meerschaert & Richard Magin *Benson*, Conditional Simulation of Operator-Scaling Random Fractals *Hoffman, Scheffler & Anders*, Operator Scaling Stable Random Sheets with application to binary mixtures *Nane*, Continuous Time Random Walk Limits in Bounded Domains *Nolan*, Computing the Greens functions for fractional Laplacians

Session 9 from 4:35 PM – 6:35 PM

Room	Session
Stewart 214A	**Advances in Modeling, Simulation and Data Integration for Subsurface Reservoirs IV** Session Chairs: Mary Wheeler, Pencheva, Tavakoli

	Ganis, Juntunen, Pencheva & Wheeler, Efficient Parallel Algorithms for Nonlinear Mortar Interface Problems *Balhoff, Mehmani & Sun*, Multiscale Simulation and Upscaling Multi-Species Reactive Transport from the Pore to Macro Scale *Faigle, Helmig, Flemisch & Aavatsmark*, Modeling of multiphase flow with a multiphysics framework on adaptive grids
Stewart 214B	**Heat Transfer and Phase Change III** Session Chair: Krishna M. Pillai *Abdolhosseini Qomi, Pellenq & Ulm*, Multi-scale modeling of heat Transfer in concrete *Leroy, Goyeau & Taine*, Macroscopic model for convection/radiation heat transfer in porous media *Shokri & Or*, Drying of heterogeneous porous media with sharp wettability contrasts *d'Hueppe, Chandesris, Jamet & Goyeau*, Turbulent heat transfer modeling at a fluid-porous interface for a Poiseuille flow (withdrawn)
Stewart 214C	***Open Source Software for Porous Media*** Session Chair: Flemisch & Lie *Moulton, Steefel, Gorton, Freedman & Dixon*, Amanzi: a Parallel Open-Source Flow and Reactive-Transport Simulator for Environmental Applications *Carlson, Islam, Dumkwu & Bertalan*, nSpyres, An Open-Source, Python-based Framework for Simulation of Flow though Porous Media *Flemisch, Flornes, Lie & Rasmussen*, The Open Porous Media Initiative *Delgado, Romero & Kumar*, A Parallel Framework for solving coupled network & continuum scale models in a porous media
Stewart 214D	**Measuring Mixing, Spreading and Dispersion in Complex Media II** Session Chairs: Domelle, Bolster & Moroni *Paster, Bolster & Benson*, Incomplete Mixing and Reaction in Heterogeneous Porous Media: A Particle Based Numerical Study *McInnis, Seders-Dietrich, Bolster & Maurice*, MODELING OF NON-FICKIAN TRANSPORT IN LABORATORY SAND COLUMNS: THE ROLE OF SOLUTE HETEROGENEITY *Kleinfelter Domelle, Moroni & Cushman*, The Generalized Dispersion Tensor Revisited: Theory and Calculation for Homogeneous and Heterogenous Porous Media *Domelle*, The finite size Lyapunov exponent and other measures of spread
Stewart 218A	**Simulation of Filter Elements as Porous Media at Various Scales** Session Chair: Martin Lehmann *Lakdawala, Iliev & Kirsch*, Mathematical modelling and Numerical Simulation of Industrial Filter Elements *Hettkamp, Meyer & Kasper*, Dust-loading of pleated surface filters---simulation and validation *Weber & Lehmann*, Numerical Investigation of Filter Cake Buildup with a 3D Model on microscopic Scales *Lehmann, Werchner & Nissler*, Challenging the macroscopic porous media boundary condition of ANSYS CFD by detailed simulations on fibrous structures
Stewart 218B	**Swelling Materials: from Molecular to Continuum Scale IV** Session Chair: Jacques Huyghes

	Svanadze, Boundary Integral Method in the Theory of Double-Porosity Materials MOYNE, DUNG, Murad & Lima, TWO-SCALE COMPUTATIONAL MODELS FOR THE DISJOINING PRESSURE BASED ON A NON-LOCAL ANISOTROPIC HYPERNETTED CHAIN CLOSURE INCLUDING ION FLUCTUATION AND CORRELATION EFFECTS
Stewart 218C	**Fractional Calculus in Medical Imaging and Hydrology IV** Session Chairs: Mark Meerschaert & Richard Magin *Bolster, Benson, de Anna, Le Borgne, Tartakovsky & Dentz*, Fractional Dispersion, Mixing and Chemical Reactions *O'Malley & Cushman*, Anomalous relaxation in diffusive processes with non-linear clocks