

Session 4 from 10:00 AM – 12:00 PM

Room	Session
Stewart 214A	CO2 Sequestration: experimentation, multi-scale modeling and simulation IV <i>Session Chair: Felipe Pereira</i> <i>Ginting, Pereira & Rahunanthan</i> , A Multiscale Mixed Method for Porous Media Flows <i>Ginting, Pereira & Rahunanthan</i> , Quantification of Uncertainty in Permeability and Porosity for Predictive Simulation of Subsurface Flows <i>Ginting, Pereira & Rahunanthan</i> , Parallel Markov Chain Monte Carlo Methods in Predictive Simulations for Porous Media Flows <i>Zhang</i> , Upscaling & Complexity in Modeling Hierarchical Subsurface Reservoirs
Stewart 214B	Multiphase Flow <i>Session Chair: Martin Lehmann</i> <i>Latrille & Neel</i> , Influence of water content on pore velocity in unsaturated sand column <i>Kissling, Helmig & Rohde</i> , A Multi-Scale Approach for Infiltration Processes in Porous Media <i>Schmid & Geiger</i> , Universal Scaling of Spontaneous Imbibition for Arbitrary Petrophysical Properties <i>Skogestad, Keilegavlen & Nordbotten</i> , Multiscale simulations with efficient multiphase coarse solvers
Stewart 214C	Material Properties and Deformation of Multiphase Media I <i>Session Chair: Eriwin Desa</i> <i>Pabst & Gregorová</i> , Correlating Microstructure and Thermal Conductivity of Porous Ceramics---What is Known, What is Needed? <i>Liu & Freij-Ayoub</i> , Yield strength of rocks from microtomography and the upscaling using percolation theory <i>Franca, Mello, Sesini & Rodrigues</i> , Incompressibility in Geomechanics <i>Yi</i> , A Locking-free Numerical Method for Poroelasticity
Stewart 214D	Reservoir Modeling with Uncertainty I <i>Session Chairs: Xiao-Hui Wu, Yuguang Chen, Yalchin Efendiev</i> <i>Vaughan</i> , Reservoir Modeling Needs & Challenges: A Business Perspective <i>Strebelle & Cavelius</i> , Integrating Geological Concepts in Facies Modeling using Multiple-Point Statistics <i>Geiger, Al-Dhahli, van Dijke, Dentz & Neuweiler</i> , How do sub-grid uncertainties propagate into reservoir-scale flow predictions for carbonate reservoirs? <i>Vink, Alpak, Gao & Mo</i> , Reservoir flow simulation under uncertainty: how to optimize the In-situ Upgrading Process
Stewart 218A	Challenges and solutions in microbially induced calcite precipitation: theory, experiment, and simulation I <i>Session Chairs: Tim Ginn, Rainer Helmig, Ebigbo</i> <i>Smith, Fujita, Ginn, Weatheres, Gebrehiwet & Taylor</i> , Approaches for Modeling Ureolytic Calcite Precipitation in Geomedia, <i>Fujita, Henriksen, Taylor & Smith</i> , Characterizing and quantifying ureolytic activity in porous media, <i>van Noorden</i> , Modeling and upscaling precipitation-dissolution processes in porous media (<i>withdrawn</i>) <i>Gerlach, Phillips, Lauchor, Ebigbo, Connolly, Zhang, Mitchell, Klapper, Helmig, Cunningham & Spangler</i> , Improving Control of Microbial Activity and Microbially-Induced Mineral Precipitation in Flow Systems---Experiments and

	Modelling
Stewart 218B	Magnetic Resonance in Porous Media: From structure to transport and beyond I <i>Session Chair: Joe Seymour</i> <i>Sederman, Holland, Mitchell & Gladden</i> , Bayesian Magnetic Resonance Techniques in Multi-Phase Systems <i>Song</i> , Magnetic Resonance of Porous Media <i>Bytchenkoff & Rodts</i> , Structure of the two-dimensional NMR-relaxation spectra of porous systems <i>Nordin, Jacobi & Nydén</i> , A mixed basis perturbation method for fast calculations of obstructed
Stewart 218C	Pore-scale visualization of processes in porous media IV <i>Session Chairs: Nikolaos Karadimitriou, S. M. Hassanizadeh, Laura Pyrak-Nolte</i> <i>Pyrak-Nolte, Boomsma & Teasdale</i> , Imaging Particle Swarms in Fractures with Miscible and Immiscible Fluids <i>Baumann, Ivleva, Metz & Nießner</i> , Visualization of Biogeochemical Interfaces Using Micromodels <i>Hassanizadeh</i> , Visualization of colloid transport in an innovative PDMS micro-model, with the use of confocal microscopy <i>Jobic, Hugo, Occelli & Topin</i> , Numerical approach of dispersion in open cell foams: Influence of cell shape

Session 5 from 1:30 PM – 3:30 PM

Room	Session
Stewart 214A	Inertial Flow in Porous Media <i>Session Chairs: Azita Ahmadi, Didier Lasseux, Wood</i> <i>Balhoff</i> , Pore-Scale Modeling of Non-Darcy Flow Regimes in Porous Media <i>Peszyńska & Trykozko</i> , Flow with inertia and coupled reactive transport across the scales <i>Patil & Liburdy</i> , Flow Structure Characteristics in Transition from Steady to Turbulent Flow in Porous Media <i>Lasseux, Ahmadi & Abbasian Arani</i> , One-phase flow in porous media: is the Forchheimer correction relevant?
Stewart 214B	Non-Darcian Multiphase Transport Phenomena in Porous Media I <i>Session Chairs: Didier Lasseux & Michel Quintard</i> <i>Schreyer-Bennethum & Giorgi</i> , Forchheimer Equation for Two-Phase Flow Based on Hybrid Mixture Theory <i>Soulaine & Quintard</i> , Derivation of an anisotropic Darcy-Forchheimer equation including turbulence effects and its application to structured packings <i>Lasseux & Ahmadi</i> , A stability analysis for inertial two-phase flow in homogeneous porous media <i>Shalbaf & Noghrehabadi</i> , Linear stability of Darcy-Brinkman convection in a multilayer system of fluid and porous layers with internal heat sources
Stewart 214C	Material Properties and Deformation of Multiphase Media II <i>Session Chair: Leo Franca</i>

	<p><i>Zou, Tarasov, Dyskin, Adhikary, Pasternak & Xu</i>, The impact of stress on permeability of Helidon Sandstone</p> <p><i>Charpin & Ehrlacher</i>, Determination of elastic and diffusive properties of a Calcium-Silica-Alkali hydrogel through macroscopic indentation</p> <p><i>Vaz, Desa, Krishna & Shinde</i>, Structures of Porous Compacts of Coated Glass Microspheres</p>
Stewart 214D	<p>Reservoir Modeling with Uncertainty II</p> <p>Session Chairs: <i>Xiao-Hui Wu, Yuguang Chen, Yalchin Efendiev</i></p> <p><i>Ghayour, Wu & Sun</i>, Computer Simulations of Flow Baffles and Barriers</p> <p><i>Honarkhah, Chen & Gross</i>, Distance-Based Model Representation and Uncertainty Quantification: Application to an Offshore Gas-Condensate Reservoir</p> <p><i>Efendiev</i>, Bayesian Uncertainty Quantification for Channelized Subsurface Characterization</p> <p><i>Wu, Cheng, Gai, Ghayour & Higdon</i>, Multiscale Parameterization of Reservoir Geometry</p>
Stewart 218A	<p>Challenges and solutions in microbially induced calcite precipitation: theory, experiment, and simulation II</p> <p>Session Chairs: <i>Tim Ginn, Rainer Helmig, Ebigo</i></p> <p><i>DeJong, Martinez, Ginn & Nelson</i>, Optimization of Microbial Induced Calcite Precipitation Treatments in 1-D Columns & Scaled Repeated Five-Spot Treatment Models: Numerical & Experimental Results</p> <p><i>Zhang & Klapper</i>, Mathematical Model of Biofilm Induced Calcite Precipitation</p> <p><i>Muynck, De Belie & Verstraete</i>, Urea based biodeposition: state of the art and future perspectives</p>
Stewart 218B	<p>Magnetic Resonance in Porous Media: From structure to transport and beyond II</p> <p>Session Chair: <i>Joe Seymour</i></p> <p><i>Codd, Seymour, Sanderlin & Vogt</i>, Impact of Biofouling on Porous Media Transport Dynamics Measured by Magnetic Resonance Displacement Relaxation Correlation</p> <p><i>Bernin & Topgaard</i>, Microstructure of locally anisotropic materials from magnetic resonance mapping of water rotation and diffusion</p> <p><i>Sakhanenko</i>, Estimation of integral curves from noisy diffusion tensor data</p> <p><i>Seymour, Codd, Brosten & Maier</i>, PGSE NMR Measurement of Hydrodynamic Dispersion: Nonequilibrium statistical mechanics, structure and permeability</p>

Session 6 from 4:30 PM – 6:30 PM

Room	Session
Stewart 214A	<p>Advances in Modeling, Simulation and Data Integration for Subsurface Reservoirs I</p> <p>Session Chairs: <i>Mary Wheeler, Pencheva, Tavakoli</i></p> <p><i>Arbogast</i>, An Eulerian-Lagrangian WENO Finite Volume Scheme for Advection Problems</p> <p><i>Pencheva, Wheeler & Vohralik</i>, A Posteriori Error Estimates, Stopping Criteria, and Adaptivity for Flow in Porous Media</p> <p><i>Gharbia, Jaffre & Roberts</i>, A posteriori estimates for hexahedral mixed finite elements</p>

	<i>Saad & Saad, Upwind Finite Volume Scheme for Compressible and Immiscible Two-Phase Flows in Porous Media</i>
Stewart 214B	Non-Darcian multiphase transport phenomena in porous media II Session Chairs: Didier Lasseux & Michel Quintard <i>Sinha & Hansen, Two-phase Flow in Porous Media: Power-law Scaling in Steady-state Properties</i> <i>Horgue, Augier, Prat & Quintard, Pore-Network Approach for Two-Phase Trickle Flows in Porous Media</i> <i>Wood, Liburdy, Apte, Finn & Patil, An LES method for flow in porous media</i> <i>Hassanizadeh, A truly extended Darcy's law for Two-phase Flow in Porous Media</i>
Stewart 214C	Material Properties and Deformation of Multiphase Media III Session Chair: Jean Roberts <i>Schenke & Ehlers, On the Dynamic Behaviour of Soils within the Framework of Elasto-Plasticity</i> <i>Xu, Wang, Wang & Wang, Coupled permeability variation and accelerated creep deformation modeling for brittle rocks</i> <i>Kissi & Parron, Two-Dimensional Modeling Approach of the Fluid/Soil Interface in the Hole Erosion Test (HET)</i> <i>Reddy Perati, Bandari & Gurijala, FLEXURAL VIBRATIONS OF FINITE COMPOSITE POROELASTIC CYLINDERS</i>
Stewart 214D	Reservoir Modeling with Uncertainty III Session Chairs: Xiao-Hui Wu, Yuguang Chen, Yalchin Efendiev <i>Jafarpour, Sparse Priors for Regularization of Ill-posed Subsurface Model Calibration Inverse Problems</i> <i>Hu, Zhao, Liu, Scheepens & Bouchard, Parameterizing and Updating Geostatistical Reservoir Models</i> <i>Wei, Lin & Efendiev, Adaptive ANOVA-based Mixed MsFEM and Its Applications in Randomly Heterogeneous Two-phase Flows</i>
Stewart 218A	Transport in Food and Biomaterials I Session Chair: Pawan Takhar <i>Datta, Multiphase, Multiscale, Deformable Porous Media as a General Framework for Modeling of Food Processes</i> <i>Takhar, Temporally non-local unsaturated fluid transport theory for poroviscoelastic biomaterials</i> <i>Huber, Characteristics of Starch Granule Pores and Channels Impacting Chemical Modification</i> <i>Eichenlaub, Ganjyal & Koh, Oil Absorption in Fried Foods: A Case Study</i>
Stewart 218B	Swelling Materials: from Molecular to Continuum Scale I Session Chair: Jacques Huyghe <i>Ehlers, Swelling phenomena in chemically active materials</i> <i>Bartle & Cushman, Numerical solution of balance laws for a swelling porous media</i> <i>Kaiser, Pivonka & Smith, A multiscale cell population-fluid flow model of bone remodeling</i> <i>Rafsanjani Abbasi & Ahmad, Effective poroelastic properties of softwood in relation to moisture induced swelling</i>
Stewart 218C	Fractional Calculus in Medical Imaging and Hydrology I Session Chair: Marj Meerschaert & Richard Magin <i>Magin, Gadelkarin & Leow, Fractional Calculus Models for Diffusion Tensor Imaging</i> <i>Barrick, Anomalous Diffusion Tensor Imaging</i> <i>Reiter, Magin, Li, Cebrian, Trujillo & Spencer, Fractional-order Analysis of the Magnetic Resonance Transverse Relaxation Signal in Normal and Degraded Cartilage</i> <i>Royston, Dai, Peng & Mansy, Fractional Poroviscoelastic Modeling of Sound and Vibration in the Lungs</i>