

Session 1 from 9:30 AM – 11:30 AM

Room	Session
Stewart 214A	<p>CO2 Sequestration: experimentation, multi-scale modeling and simulation I <i>Session Chair: Mohammad Piri</i> <i>Xinqian & Zuleima</i>, Experimental Investigation of Carbon Dioxide Trapping due to Capillary Retention in Saline Aquifers <i>Saraji, Goual & Piri</i>, Interfacial Tension and Dynamic Contact Angle for sc-CO2/Water/Mineral systems relevant to geological storage of CO2 <i>Alizadeh, Ioannidis & Piri</i>, Recovery of Waterflood Residual Oil Using CO2- Saturated Brine Injection <i>Zhang, Oostrom, Wietsma & Grate</i>, A Micromodel Study of Supercritical CO2 Imbibition and Drainage</p>
Stewart 214B	<p>Nonlinear and Complex Processes in Porous Media I <i>Session Chairs: Dionissios Hristopoulos & Didier Lasseux</i> <i>Noetinger</i>, Coupling between flow and permeability : is it possible to up-scale such flows? <i>Habisreutinger & Lunati</i>, Complex interactions of fluids and granular media <i>Akkutlu & Yortsos</i>, Nonlinear Dynamics of Combustion Front Propagation in Porous Media <i>Hristopoulos</i>, Brittle fracture in porous media: ceramics, paper, and earthquakes</p>
Stewart 214C	<p>Numerical modeling for flow in fractured and other heterogeneous porous media I <i>Session Chair: Jean Roberts</i> <i>Berre, Sandve, Tambue & Nordbotten</i>, A MPFA approach for simulation of fluid flow and heat transfer in fractured reservoirs <i>Fumagalli & Scotti</i>, Reduced models for intersecting fractures in porous media with non-matching grids <i>Frih, Jaffre, Martin, Roberts & Saada</i>, Modeling flow in fractured porous media with fractures as interfaces <i>de Dreuzy</i>, Upscaling transport in complex geological domains</p>
Stewart 214D	<p>Mixing and reactive transport in natural and engineered porous media I <i>Session Chairs: Tim Ginn & Dave Benson</i> <i>Fernández-García, Sanchez-Vila & Henri</i>, Modeling multicomponent reactive transport with particle tracking and smoothing techniques <i>Kerry Huber</i>, Pore-scale simulation of incompressible flow in fibrous porous media using Smoothed Particle Hydrodynamics (SPH) <i>Redden, Fox, Guo, Gebrehiwet & Henriksen</i>, Control of the spatial and temporal distributions of mineral precipitates by the nature of reactant mixing in porous media</p>
Stewart 218A	<p>Biological Porous Media I <i>Session Chair: Dan Tartakovsky</i> <i>Cowin & Cardoso</i>, Mixture theory-based poroelasticity as a model of interstitial tissue growth <i>Haider & Hu</i>, Porous Mixture Models for Cartilage Regeneration in Cell-Seeded Scaffolds <i>Facchini, Bellin & Toro</i>, On modeling transport of solutes across the Blood Brain Barrier</p>
Stewart 218B	<p>Pore Scale Modeling</p>

	<p>Session Chair: Maciej Haranczyk <i>Arns & Adler</i>, A fast Laplace solver approach to pore scale permeability <i>Beyhaghi & Pillai</i>, Experimental and Theoretical Validation of permeability obtained using the closure formulation for sintered polymer wicks <i>de Prisco, Grader & Tolke</i>, Computation of relative permeability functions in 3D digital rocks <i>Ebigbo, Golfier & Quintard</i>, Pore-scale modelling of biofilm activity in the underground storage of hydrogen</p>
Stewart 218C	<p>Pore-scale visualization of processes in porous media I Session Chairs: Nikolaos Karadimitriou, S. M. Hassanizadeh, Laura Pyrak-Nolte <i>Bernard, Combaret & Plougonven</i>, Pore-scale visualization of processes in porous media <i>Thovert & Adler</i>, Grain reconstruction of porous media: Application to a Bentheim sandstone <i>Crandall, Ahmadi, Ferer, Smith & Bromhal</i>, Multiphase Flow in Fractured Porous Media <i>Ma, Jiang, Wu, Tian & Couples</i>, Representing characteristic attributes of pore structures of digital rocks for classification</p>

Session 2 from 2:10 PM – 4:10 PM

Room	Session
Stewart 214A	<p>CO2 Sequestration: experimentation, multi-scale modeling and simulation II Session Chair: Mohammad Piri <i>Akbarabadi & Piri</i>, Relative permeability hysteresis and permanent capillary trapping characteristics of supercritical CO2/brine fluid systems: an experimental study at reservoir conditions <i>Akbarabadi, Furtado, Marchesin, Pereira, Piri & Rahunanthan</i>, Permeability Hysteresis Effects in Geologic CO2Sequestration <i>Marchesin, Rodriguez & Bruining</i>, Vertical flow of supercritical CO2, water and oil in deep reservoirs <i>Häberle & Ehlers</i>, Carbon-dioxide storage: regarding phase transition processes and crack development in the cap-rock layer</p>
Stewart 214B	<p>Nonlinear and Complex Processes in Porous Media II Session Chairs: Dionissios Hristopoulos & Didier Lasseux <i>Hilpert, Glantz, Hsu & Pellichero</i>, Effects of Dynamic Capillary Pressure on Two-phase Flow in Porous Media <i>Di Federico</i>, Analytical solutions and parametric uncertainty of non-Newtonian fluid flow in porous media <i>Doster, Joekar-Niasar, Nordbotten & Celia</i>, Trapping in two-phase flow in porous media <i>Golfier & Kone</i>, Experimental and numerical investigation of groundwater contaminant transport in the presence of biofilm</p>
Stewart 214C	<p>Numerical modeling for flow in fractured and other heterogeneous porous media II Session Chair: Jean Roberts</p>

	<p><i>Maier, Schmid & Geiger</i>, General dual-porosity modeling using the exact analytical solution for spontaneous imbibition <i>Tyagi, Gimmi & Churakov</i>, Multi-Scale Method for Up-Scaling Transport in Hierarchical Porous Media <i>Mukhopadhyay & Liu</i>, Transient Transport of Isotopic Tracers in Reactive Fluid-Rock Systems <i>Wang & Yao</i>, Pore-scale study of the fracture influence on fluid flow properties in heterogeneous carbonate media</p>
Stewart 214D	<p>Mixing and reactive transport in natural and engineered porous media II Session Chairs: Tim Ginn & Dave Benson <i>Bolster, Dentz & Le Borgne</i>, Hyper-Mixing in Pure Shear Flows <i>Benson, Ding, Paster & Bolster</i>, On the Influence of Dimensions and Boundaries on the Governing Equation of Bimolecular Chemical Reactions <i>Engdahl, Henriksen & Huang</i>, Multi-scale analysis of reactive transport and mixing measures in porous media <i>Willmann, Carrera, Sanchez-Villa & Dentz</i>, Upscaling Reactive Transport using Multi-Rate Mass Transfer</p>
Stewart 218A	<p>Biological Porous Media II Session Chair: Dan Tartakovsky <i>Battiato, Intaglietta & Tartakovsky</i>, Effects of Glycocalyx on Attenuation of Shear Stress on Endothelial Cells <i>O'Malley & Cushman</i>, Adaptive renormalization of stochastic dynamics with application to data assimilation and numerical modeling</p>
Stewart 218B	<p>Pore Scale Modeling Session Chair: Maciej Haranczyk <i>Kumar, Hugo, Topin & Tadrif</i>, Impact of geometrical parameters on thermo-hydraulic properties of casted open cell metal foam <i>First, Gounaris, Wei & Floudas</i>, Three-dimensional Characterization of Microporous Networks <i>Haranczyk & Martin</i>, Tools and Approaches for Discovery of Carbon Capture Materials <i>Rahmani, Prodanovi, Bryant & Huh</i>, Quasi-static analysis of a ferrofluid blob in a capillary tube</p>
Stewart 218C	<p>Pore-scale visualization of processes in porous media II Session Chairs: Nikolaos Karadimitriou, S. M. Hassanizadeh, Laura Pyrak-Nolte <i>Chmielewski, Dufresne, Maltbie & Westrick</i>, 3d Multimodality Imaging for Visualization of Fluid Flow in Consumer Products <i>Werth, Boyd, Valocchi, Zhang, Hess, Oostrom & Yoon</i>, Precipitation of carbonate minerals along a transverse mixing zone in a microfluidic pore network <i>Timp, Nelson, Kurz & Timp</i>, The Prospects for a Single Cell Secretome: Using a Nanopore for Both Analyte Detection and Cell Transfection</p>
Stewart 218D	<p>Thin Porous Media Session Chairs: Ken Comer <i>Schunk & Roberts</i>, Coupled Thin-Film Reynolds Equation and Poroelastic Media: Theoretical and Computational Approach using Finite Element Shells <i>Bucher, Emami & Tafreshi</i>, Modeling Superhydrophobic Surfaces Comprised of Randomly Deposited Fibers or Particles <i>Tafreshi & Bucher</i>, Modeling Transport Phenomena in Anisotropic Fibrous Media <i>Riasi, Huang, Montemagno & Yeghiazarian</i>, Pore Network Modeling of Drainage in Highly Porous, Nonwoven Fiber</p>

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Session 3 from 4:35 PM – 6:35 PM

Room	Session
Stewart 214A	<p>CO2 Sequestration: experimentation, multi-scale modeling and simulation III Session Chair: Felipe Pereira <i>Pereira, Furtado & Mendes</i>, Numerical Simulation of the Injection of Carbon Dioxide into Saline Aquifers <i>Talebian, Al-Khoury & Sluys</i>, XFEM-Level set model for CO2 sequestration <i>Ovaysi & Piri</i>, Direct pore-scale modeling of multi-component dispersion and ion transport in natural porous media <i>Botan, Rotenberg, Marry, Turq & Noetinger</i>, Carbon dioxide in clay hydrates from classical molecular simulations</p>
Stewart 214B	<p>Nonlinear and Complex Processes in Porous Media III Session Chairs: Dionissios Hristopoulos & Didier Lasseux <i>Axelsson</i>, A reformulation of the time-dependent Navier-Stokes equation for variable density and the numerical solution of coupled fluid flow porous media problems <i>Savatorova, Talonov, Vlasov & Volkov-Bogorodsky</i>, Upscaling of Filtration in Rigid Porous Media: Investigation of Effective Permeability of Periodic Granular Medium <i>Correa & Borges</i>, Computational Model for Buoyancy-Driven Flow Within Highly Heterogeneous Porous Media <i>Petrakis & Hristopoulos</i>, Statistics of burst avalanches in fiber bundle models and connections with earthquake dynamics</p>
Stewart 214C	<p>Numerical modeling for flow in fractured and other heterogeneous porous media III Session Chair: Jean Roberts <i>Thovert, Mourzenko & Adler</i>, Permeability of isotropic and anisotropic fracture networks, from the percolation threshold to very large densities <i>Petrovitch, Pyrak-Nolte & Nolte</i>, Hydromechanical Scaling of Field and Laboratory Single Fractures</p>
Stewart 214D	<p>Mixing and reactive transport in natural and engineered porous media III Session Chairs: Tim Ginn & Dave Benson <i>Neupauer & Mays</i>, Hackl, Yap, Chaotic Advection, Spreading, and Contaminant Degradation Reactions in Porous Media <i>Trefry, Metcalfe, Lester & Regenauer-Lieb</i>, Engineering scalar transport in porous media via chaotic advection <i>Oostrom, Zhang, Wietsma & Hess</i>, Development of experimental pore-scale transverse mixing data sets for testing and verification of numerical models <i>Sanchez-Vila, Barahona-Palomo & Fernandez-Garcia</i>, Facies reconstruction through the exploitation of a locally adaptive kernel regression: implications in risk evaluations</p>

Stewart 218A	<p>Modeling Complexity: Targeted Tissue Drug Delivery Session Chairs: Richard Magin & Bies <i>Dokoumetzidis & Macheras</i>, The Changing Face of the Rate Concept in Biopharmaceutical Sciences: From Classical to Fractal and Finally to Fractional <i>Wojciechowski</i>, Numerical Solution of a Nonlinear Volterra Partial Differential Equation Modeling a Controlled-Release Drug Delivery Device <i>Wagner & Ehlers</i>, Modelling of Drug Delivery via Infusion into Multiphasic Brain Tissue <i>Wittum</i>, Penetration of Xenobiotics through Human Skin</p>
Stewart 218B	<p>Pore Scale Modeling Session Chair: Maciej Haranczyk <i>Sun, Mueller, Metzger & Tsotsas</i>, Investigation of lotion distribution in wet wipes by pore network model and X-ray micro tomography <i>Tartakovsky, Kordilla & Geyer</i>, SPH Model For Droplet Flow in a Fracture <i>Yiotis, Salin, Tajer & Yortsos</i>, Analytical solutions and Pore Network modeling of isothermal drying in porous media based on experimental studies <i>Shaeri, Beyhaghi & Pillai</i>, A Modified Hoshen-Kopelman Method for Cluster Labeling in Drying of Pore-Network Models</p>
Stewart 218C	<p>Pore-scale visualization of processes in porous media III Session Chairs: Nikolaos Karadimitriou, S. M. Hassanizadeh, Laura Pyrak-Nolte <i>Sheppard, Latham, Myers, Kingston, Varslot, Knackstedt, Wildenschild & Andersson</i>, Imaging of in-situ and ex-situ drainage and imbibition experiments <i>Karadimitriou, Hassanizadeh & Kleingeld</i>, Two-phase flow experiments with PDMS micro-models; the quasi-static case <i>Armstrong, Porter & Wildenschild</i>, Measuring fluid-fluid interfacial curvatures using x-ray microtomography <i>Sedighi-Gilani</i>, Neutron imaging of hygroscopic moisture transport in wood exposed to high temperature</p>
Stewart 218D	<p>Multiscale Non-Darcy Flow Session Chair: Yucel Akkutlu <i>Valdés-Parada, Aguilar-Madera, Goyeau & Ochoa-Tapia</i>, Jump conditions and location of the dividing surface for Momentum transport between a fluid and a porous media <i>Huang & Yao</i>, Coupling Two-Phase Free Flow with Porous Flow: Theoretical Development for The Fluid-Porous Interface Conditions and Numerical Analysis <i>Dukhan & Musa</i>, Pressure Drop for Airflow through Disks of 20-ppi Metal Foam <i>Akkutlu</i>, Multi-scale Discussions on Gas Storage and Transport in Organic-rich Shale</p>