

5th International Conference on Porous Media and Their Applications in Science, Engineering and Industry 2014

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Monday, June 23, 2014

- 07:00 – 08:00 Breakfast
- 08:00 – 08:50 **Keynote – Nonlinear natural convection in porous media and the collapse of the wave function**
Peter Vadasz, Northern Arizona University, USA
- ORAL SESSION 1: Natural and forced convection in porous media (I)**
Session Chair: **Faruk Civan**
- 08:50 – 09:15 **The multi-commodity heat hump dryer**
Lorcelie B. Taclan, Adventist University of the Philippines, Philippines
- 09:15 – 09:40 **Sensitivity analysis of effective thermal conductivity of open-cell ceramic foams using a simplified model based on detailed structure**
Miguel Mendes, TU Bergakademie Freiberg, Germany
- 09:40 – 10:05 **Thermal properties of highly porous fibrous ceramics**
Jingjing Sun, Aerospace Research Institute of Materials and Processing Technology, Beijing, China
- 10:05 – 10:30 **Droplet impact and penetration on series of parallel tubes**
Nasser Ashgriz, University of Toronto, Canada
- 10:30 – 11:00 Coffee Break
- ORAL SESSION 2: Material processing applications**
Session Chair: **Peixue Jiang**
- 11:00 – 11:25 **Fabrication and microstructural characterization of silica aerogel by aging additional pressurization**
Xiaoyan Wang, Aerospace Research Institute of Material and Processing Technology, Beijing, China
- 11:25 – 11:50 **The preparation and properties of novel structural carbon foams derived from different mesophase pitches**
Liqiong Yu, Aerospace Research Institute of Materials and Processing Technology, Beijing, China
- 11:50 – 12:15 **Effect of helium-3 formation on the thermal decomposition of uranium tritide particle beds**
Ryan Keedy, Sandia National Laboratories, USA
- 12:15 – 12:40 **On the influences of the thermal boundary condition at porous-fluid interface upon the Nusselt number in a pipe partially filled by a porous material**
Nader Karimi, University of Glasgow, Scotland
- 12:40 – 14:10 Lunch

Monday, June 23, 2014 (continued)

ORAL SESSION 3: Industrial and environmental heat transfer and flow in porous media (I)

Session Chair: **Peter Vadasz**

- 14:10 – 14:35 **An investigation of porous inserts in electronic coolings**
Fatemeh Tavakkoli, University of California, Riverside, USA
- 14:35 – 15:00 **Improved permeability prediction for heterogeneous porous media by bundle-of-leaky-tubes with cross-flow model**
Faruk Civan, The University of Oklahoma, USA
- 15:00 – 15:25 **Fate and transport of nanohybrids in subsurface media for oil field applications**
Ben Shiau, The University of Oklahoma, USA
- 15:25 – 15:50 **Porous structures used as flameproof pressure relief elements a novel approach of flameless venting**
Julia Hornig, Physikalisch-Technische Bundesanstalt (PTB), Germany
- 15:50 – 16:15 **Effective solid-to-fluid heat transfer coefficient in EGS reservoirs**
Xiao-Long Ouyang, Tsinghua University, China
- 16:15– 16:40 **Particles migrating and plugging mechanism in loosen sandstone heavy oil reservoir and the strategy of production with moderate sanding**
Yiting Xie, State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation, China
- 16:40 – 19:30 *ad hoc* sessions / free time
- 19:30 – 21:00 Dinner
- 21:00 – 22:30 Poster Session (with beer and wine)

Tuesday, June 24, 2014

- 07:00 – 08:00 Breakfast
- 08:00 – 08:50 **Keynote Talk – Improvements on the local thermal non-equilibrium model in porous media**
Pei-Xue Jiang, Tsinghua University, China
- ORAL SESSION 4: Natural and forced convection in porous media (II)**
Session Chair: **Kevin Anderson**
- 08:50 – 09:15 **Mixed convection in horizontal channels heated below with external heat losses on upper plate and partially filled with aluminum foam**
Oronzio Manca, Dipartimento di Ingegneria Industriale e dell'Informazione, Seconda Università degli Studi di Napoli, Italy
- 09:15 – 09:40 **Mixed convection in a channel with an open cavity filled with porous media in local thermal non-equilibrium**
Oronzio Manca, Dipartimento di Ingegneria Industriale e dell'Informazione, Seconda Università degli Studi di Napoli, Italy
- 9:40 – 10:05 **On the velocity distribution in a microscopic porous medium**
Maciej Matyka, University of Wrocław, Poland
- 10:05 – 10:35 Coffee Break
- 10:35 – 11:00 **Miscible density driven convective mass transfer process analysis based on Entransy dissipation theory**
Rui-Na Xu, Tsinghua University, China
- ORAL SESSION 5: Experimental and measuring techniques**
Session Chair: **Robin Gerlach**
- 11:00 – 11:25 **Experimental analysis of air vortex impingement through porous screens**
Fatemeh Hassanipour, University of Texas at Dallas, USA
- 11:25 – 11:50 **Experimental evaluation of wellbore cement- formation shear bond strength in presence of drilling fluid contamination**
Mileva Radonjic, Louisiana State University, USA
- 11:50 – 12:15 **Effect of temperature dependent viscosity on natural convective boundary layer flow over a horizontal plate embedded in a nanofluid saturated porous medium**
Shobha Bagai, University of Delhi, India
- 12:15 – 12:40 **Thermohydraulics of Porous Heat Exchangers: Full or Partial Blockage?**
Kamel Hooman, University of Queensland, Australia
- 12:40 – 13:05 **Quantification of effect of convergence in porous media flow**
Srinivas Pasupuleti, Indian School of Mines, India
- 13:05 – 14:35 Lunch

Tuesday, June 24, 2014 (continued)

ORAL SESSION 6: Bio transport in porous media

Session Chair: **Kamel Hooman**

- 14:35 – 15:00 **Pore scale modeling of the microbially induced CaCO₃ precipitation process**
Robin Gerlach, Montana State University, USA
- 15:00 – 15:25 **Concentration of bioethanol and dehydration of organic solvents by porous membranes**
Tadashi Uragami, Kansai University, Japan
- 15:25 – 15:50 **A model for magnetic drug targeting in a permeable microvessel with spherical porous carrier particles**
Precious Sibanda, University of KwaZulu-Natal, South Africa
- 15:50 – 16:15 **Multilayer minichannel heat sinks: The effect of porosity scaling on pressure drop**
Fatemeh Hassanipour, University of Texas at Dallas, USA
- 16:15 – 16:40 **Numerical simulation of pressure pulse decay experiment on crushed low permeability rocks considering Klinkenberg effect and gas absorption/desorption**
Bo Zhou, Tsinghua University, China
- 16:40 – 17:05 **Fluid flows through unsaturated porous media: An alternative simulation procedure**
Maria Martins-Costa, Universidade Federal Fluminense, Brazil
- 17:05 – 17:30 **Experimental study of water retention properties of a high performance concrete with small sliced samples**
Qier Wu, Université Lille Nord de France, France
- 17:30– 19:30 *ad hoc* sessions / free time
- 19:30 – 21:00 Dinner
- 21:00 – 22:30 Poster session and social hour

Wednesday, June 25, 2014

- 07:00 – 08:00 Breakfast
- 08:00 – 08:50 **Keynote Talk – Biofilm-mediated mineral precipitation technology – from the microscale to the field-scale**
Robin Gerlach, Montana State University, USA
- ORAL SESSION 7: Combined heat and mass transfer in porous media (I)**
Session Chair: **Fatemeh Hassanipour**
- 08:50 – 09:15 **Theoretical investigation of the influences of thermal boundary conditions upon the heat transfer characteristics in a channel partially filled by a porous material**
Nader Karimi, University of Glasgow, Scotland
- 09:15 – 09:40 **HYDRA: Macroscopic modeling of hybrid ablative thermal protection system**
Gregory Pinaud, Airbus Defense and Space, France
- 09:40 – 10:05 **Phase change with local thermal non-equilibrium in a two-phase mixture model**
Franz Lindner, Universität der Bundeswehr München, Germany
- 10:05 – 10:35 Coffee Break
- 10:35 – 11:00 **Effect of variable porosity on composite heat transfer in a boundary layer flow**
Puttabasavsetty Nagaraju, Vijaya College, India
- 11:00 – 11:25 **The use of expandable casing technology as a new remediation tool for micro-annular gas migration**
Mileva Radonjic, Louisiana State University, USA
- ORAL SESSION 8: Particle transport and deformable porous bodies**
Session Chair: **Mileva Radonjic**
- 11:25– 11:50 **Studies on permeability properties and particle capture efficiencies of porous SiC ceramics processed by oxide bonding technique**
Atanu Dey, Central Glass & Ceramic Research Institute, India
- 11:50 – 12:15 **MRI evidence of nanoparticles migration in drying porous media**
Emmanuel Keita, Université Paris-Est, Laboratoire Navier, France
- 12:15 – 12:40 **Fractional diffusion model for transport through porous media**
Nadeem Malik, King Fahd University of Petroleum and Minerals, Saudi Arabia
- 12:40 – 14:10 Lunch

Wednesday, June 25, 2014 (continued)

ORAL SESSION 9: Advances in numerical techniques (I)

Session Chair: **Akira Nakayama**

- 14:10 – 14:35 **Performance comparison of the finite-difference, practical-finite-analytic, differential-quadrature, and differential-cubature methods for solving porous media immiscible fluids transport**
Faruk Civan, University of Oklahoma, USA
- 14:35 – 15:00 **Effects of non-Darcy flow and pore proximity on gas condensate production from nanopore unconventional resources**
Jeffrey Callard, University of Oklahoma, USA
- 15:00 – 15:25 **Transport in groundwater aquifers: Simplifying models using natural stratigraphy**
Robert McKibbin, Massey University, New Zealand
- 15:25 – 15:50 **Modeling and analysis of transport in the resting mammary glands**
Ana Quezada, University of California, Riverside, USA
- 15:50 – 16:15 **CO₂ migration in the geological formation**
Shujuan Wang, University of California, Riverside, USA
- 16:15 – 19:30 *ad hoc* sessions / free time
- 19:30 Dinner on own

Thursday June 26, 2014

- 07:00 – 08:00 Breakfast
- 08:00 – 08:50 **Keynote Talk – Novel convective heat transfer enhancement in channels and tubes filled with nanofluid-saturated metal foams**
Akira Nakayama, Shizuoka University, Japan
- ORAL SESSION 10: Combined heat and mass transfer in porous media (II)**
Session Chair: **Shirley Abelman**
- 08:50 – 09:15 **Three dimensional heat and mass transfer in capillary evaporator**
Laetitia Mottet, Institut de Mécanique des Fluides de Toulouse, France
- 09:15 – 09:40 **Influence of thermal radiation from solid phase upon the local thermal non-equilibrium condition in a porous medium**
Nader Karimi, University of Glasgow, Scotland
- 09:40 – 10:05 **Heat flow from a buried cylindrical tank partially submerged in groundwater**
Robert McKibbin, Massey University, New Zealand
- 10:05 – 10:35 Coffee Break
- 10:35 – 11:00 **Investigation of transpiration cooling with local thermal non-equilibrium model: Effects of different thermal boundary conditions at the porous-fluid interface**
Zheng Huang, Tsinghua University, China
- ORAL SESSION 11: Advanced mathematical approaches to the modeling of porous media**
Session Chair: **Nasser Ashgriz**
- 11:00 – 11:25 **Effective permeability upscaling from heterogenous to homogenous porous media**
Mehmet Cicek, University of Oklahoma, USA
- 11:25 – 11:50 **Research of particles migrating mechanism in loosen sandstone reservoir and the strategy of moderate sanding**
Zhaohui Chen, SWPU
- 11:50 – 12:15 **Pressure transient characteristics of multi-stage fractured horizontal wells in shale gas reservoirs with consideration of multiple mechanisms**
Jingjing Guo, Southwest Petroleum University, China
- 12:15 – 13:45 Lunch

Thursday, June 26, 2014 (continued)

ORAL SESSION 12: Advances in numerical techniques (II)

Session Chair: **Robert McKibbin**

- | | |
|---------------|--|
| 14:10 – 14:35 | Modified Rhie-Chow / PISO algorithm for collocated variable finite porous media flow solvers
Markus Nordlund, Philip Morris Products SA, Switzerland |
| 14:35 – 15:00 | Turbulence in porous media: Some fundamental questions addressed by DNS solutions
Marc-Florian Uth, Hamburg University of Technology, Germany |
| 15:00 – 15:25 | Wall thickness optimization of a transpiration-cooled sharp leading edge at atmospheric re-entry
Christian Dittert, German Aerospace Center, Germany |
| 15:25 – 15:50 | Numerical solutions of non-linear fractional transport models in unconventional hydrocarbon reservoirs using variational iteration method
Nadeem Malik, King Fahd University of Petroleum and Minerals, Saudi Arabia |
| 15:50 – 16:15 | Comparison of volume-average simulation and pore-scale simulation of thermal radiation and natural convection in high temperature packed beds
Rui-Na Xu, Tsinghua University, China |
| 16:15 – 16:40 | Onset of double diffusive reaction-convection in an anisotropic porous layer with internal heat source
Sravan Nayeka Gaikwad, Gulbarga University, India |
| 16:40– 19:30 | <i>ad hoc</i> sessions / free time |
| 19:30 – 21:30 | Banquet |

Friday June 27, 2014

07:00 – 08:00	Breakfast
08:00 – 08:50	Keynote Talk –From Unsaturated to Saturated Flows through Porous Media via Mixtures Theory M.L. MARTINS-COSTA , Univerdidade Federal Fluminense
	<u>ORAL SESSION 13: Industrial and environmental heat transfer and flow in porous media (II)</u> Session Chair: Oronzio Manca
08:50 – 09:15	Use of liquid pressure-pulse decay permeameter in experimental evaluation of permeability in wellbore cement under geopressured geothermal conditions Mileva Radonjic, Louisiana State University, USA
09:15 – 09:40	Numerical Solution of Burgers' equation arising in Longitudinal Dispersion Phenomena in Fluid Flow through Porous Media by Crank-Nicolson Scheme Ravindara Borana, Bhavan's R.A. College of Science, India
09:40 – 10:05	Evaporation from a capillary tube: Experiment and modelization Emmanuel Keita, Université Paris-Est,Laboratoire Navier, China
	Coffee Break
10:35 – 11:00	Steady MHD flow of a Sisko fluid past a porous plate Shirley Abelman, University of the Witwatersrand, Johannesburg. South Africa
11:00 – 11:25	Experimental study for air cooling using membrane covered tray Mohamed Ali, King Saud University, Saudi Arabia
11:25 – 12:00	Closing Remarks
12:00 – 13:30	Lunch
13:30	Departures

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