

Program

**6th International Conference on
Porous Media and Its Applications
in Science, Engineering and Industry**

An ECI Conference Series

**July 3-8, 2016
Hilton Waikoloa Village
Waikoloa, Hawaii, USA**

Conference Chair

Kambiz Vafai
University of California, Riverside, CA USA

Co-Chairs

Adrian Bejan
Duke University, Durham, NC USA

Oronzio Manca
Seconda Università degli Studi Napoli, Italy

Akira Nakayama
Shizuoka University, Japan



Engineering Conferences International
32 Broadway, Suite 314 - New York, NY 10004, USA
Phone: 1 - 212 - 514 - 6760
www.engconfintl.org – info@engconfintl.org

Hilton Waikoloa Village
69-425 Waikoloa Beach Drive
Waikoloa, Hawaii, 96738, USA
Tel: +1-808-886-1234

Engineering Conferences International (ECI) is a not-for-profit global engineering conferences program, originally established in 1962, that provides opportunities for the exploration of problems and issues of concern to engineers and scientists from many disciplines.

ECI BOARD MEMBERS

Barry C. Buckland, President
Mike Betenbaugh
Nick Clesceri
Peter Gray
Michael King
Raymond McCabe
David Robinson
Eugene Schaefer
P. Somasundaran

Chair of ECI Conferences Committee: Nick Clesceri

ECI Technical Liaisons for this conference: Lawrence Kabacoff

ECI Executive Director: Barbara K. Hickernell

ECI Associate Director: Kevin M. Korpics

Organizing Committee

- Prof. Faruk Civan (University of Oklahoma, USA)
- Dr. Abbas Firoozabadi (Yale School of Engineering and Applied Science, USA)
- Dr. J. Craig Fischenich (Waterways Experiment Station, USA)
- Prof. William G. Gray (University of North Carolina at Chapel Hill, USA)
- Prof. S. Majid Hassanizadeh (Utrecht University, The Netherlands)
- Dr. Charles E. Hickox (Sandia National Labs, USA)
- Dr. Clifford K. Ho (Sandia National Laboratories, USA)
- Prof. C.T. Hsu (Hong Kong, China)
- Dr. Arzhang Khalili (Max Planck Institute, Germany)
- Prof. Andrey V. Kuznetsov (North Carolina State University, USA)
- Prof. G. Lauriat (Universite de Marne-la-Valle, France)
- Dr. Marcelo J. S. de Lemos (ITA, Brazil)
- Prof. Oronzio Manca (Seconda Universita' Napoli, Italy)
- Prof. J. H. Masliyah (University of Alberta, Canada)
- Prof. Robert McKibbin (Massey University at Albany, New Zealand)
- Prof. V. E. Nakoryakov (Siberian Branch of the USSR Academy of Sciences, Russia)
- Prof. I. Pop (University of Clug, Romania)
- Prof. D. Poulikakos (ETH, Switzerland)
- Dr. D.A.S. Rees (University of Bath, England)
- Prof. A. Heitor Reis (University of Évora, Portugal)
- Prof. N. Rudraish (Gulbarga University, India)
- Prof. Dieter Vortmeyer (Technical University Munich, Germany)
- Dr. Stephen Webb (Sandia National Laboratories, USA)

Porous Media and Its Applications in Science, Engineering and Industry Conferences History

An ECI Conference Series

Porous Media I (1996)

Kambiz Vafai, Pappur Shivakumar

Kailua-Kona, Hawaii

Porous Media II (2007)

Kambiz Vafai, Adrian Bejan, Abdul-Khader Mojtabi, Akira Nakayama

Kauai, Hawaii

Porous Media III (2010)

Kambiz Vafai, Adrian Bejan, Oronzio Manca, Akira Nakayama

Montecatini Terme, Italy

Porous Media IV (2012)

Kambiz Vafai, Adrian Bejan, Akira Nakayama

Potsdam, Germany

Porous Media V (2014)

Kambiz Vafai

Kailua-Kona, Hawaii

**The conference gratefully acknowledges
support from the
U.S. National Science Foundation**



Sunday, July 3, 2016

17:00 - 19:00	Conference Check-in (Grand Staircase)
18:00 - 20:30	Welcome Reception and Dinner (Grand Staircase)

NOTES

- Technical Sessions will be held Queens 4.
- Poster Session with a light lunch will be held in Kona 2.
- Breakfasts will be in the Grand Promenade South. Lunches are on your own with the exception of a light lunch being served during the Tuesday Poster Session. Dinners will be on the Grand Staircase.
- Audiotaping, videotaping and photography of presentations are prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- After the conference, ECI will send an updated participant list to all participants. Please check your listing now and if it needs updating, you may correct it at any time by logging into your ECI account.
- Please do not smoke at any conference functions.

Monday, July 4, 2016

07:00 – 9:00 Breakfast

09:00 - 09:05 Welcome Remarks
Chair: Kambiz Vafai, University of California, Riverside, USA

09:05 - 09:10 Introductory Remarks
ECI Technical Liaison: Lawrence Kabacoff, USA

Oral Session 1: Natural and forced convection in porous media

Chair: Boming Yu, Huazhong University of Science and Technology, China

09:10 – 09:35 **Stokes flow past a two-layers heterogeneous porous sphere with the effect of stress jump condition: An exact solution**
Kun Yang, School of Energy and Power Engineering, Huazhong University of Science and Technology, China

09:35 - 10:00 **Time fractional transport model for flow through tight porous media**
Nadeem A. Malik, King Fahd University of Petroleum and Minerals, Saudi Arabia

10:00 - 10:25 **Modelling the effect of the porous support on the flux through asymmetric oxygen gas separation membranes**
Robert Mücke, IEK-1, Forschungszentrum Jülich, Germany

10:25 – 10:50 **Exact solution for viscous fluid flow in porous medium with magnetic field**
Dinesh PA, M. S. Ramaiah Institute of Technology, India

10:50 – 11:15 Coffee break

Oral Session 2: Material processing applications

Chair: Nadeem A. Malik, King Fahd University of Petroleum and Minerals, Saudi Arabia

11:15 – 11:45 **The influence of cold rolling on the pore morphology and flow resistivity of porous aluminum**
Nicolas Lippitz, Institute for Materials – TU Braunschweig, Germany

11:45 – 12:10 **Experimental research on internal convection heat transfer of supercritical pressure CO₂ in porous media**
Le Zhang, Tsinghua University, China

12:10 – 12:35 **Micro-nano scales flowing simulation in shale gas**
Boming Yu, Huazhong University of Science and Technology, China

Oral Session 3: Experimental and measuring techniques

Chair: Robert Mücke, IEK-1, Forschungszentrum Jülich, Germany

12:35 – 13:00 **Experimental investigation of combined transpiration and jet cooling of sintered metal porous struts**
Gan Huang, Tsinghua University, China

13:00 – 19:30 Lunch on your own / *ad hoc* sessions / free time

Monday, July 4, 2016 (continued)

19:30 – 21:30

Dinner

21:30 – 22:30

Technical discussion and social hour

Tuesday, July 5, 2016

07:00 – 09:00

Breakfast

Oral Session 4: Combined heat and mass transfer in porous media

Chair: Markus Nordlund, Philip Morris Products S.A., Switzerland

09:00 – 09:25

Reservoir simulations of shale gas in tight rocks using a non-linear transport model with fully pressure dependent model parameters

Nadeem Malik, King Fahd University of Petroleum and Minerals, Saudi Arabia

09:25 – 09:50

Numerical simulation of thermal energy storage with phase change material and aluminum foam

Oronzio Manca, Seconda Universita' degli Studi di Napoli, Italy

09:50 – 10:15

Combined effects of internal heat generation and viscous dissipation for double diffusive with Forchheimer fluid model

Nalinakshi Girish, Atria Institute of Technology, India

10:15 – 10:40

Internal heat generation effect on mixed convection heat and mass transfer over a vertical heated plate with Soret and Dufour effects

P.A. Dinesh, Ramaiah Institute of Technology, India

10:40 – 11:10

Coffee break

Oral Session 5: Industrial and environmental heat transfer and flow in porous media

Chair: Oronzio Manca, Seconda Universita' degli Studi di Napoli, Italy

11:10 - 11:35

Proposal of utilizing uni-directional porous copper for extremely high heat flux removal

Kazuhisa Yuki, Tokyo University of Science, Japan

11:35 - 12:00

Generation of simple extended porous surface expression from results of pore-level conjugate heat transfer in spherical-void-phase porous blocks

Anthony Gerald Straatman, Western University, Canada

12:00 - 12:25

Effects on the pore structure and permeability change by coke deposition during crude oil in-situ combustion

Qlanghai Xu, Tsinghua University, China

12:25 – 12:50

Effect of the variable porosity on the heat transfer process in solar air receiver

Pei Wang, Hohai University, China

Tuesday, July 5, 2016 (continued)

12:50 – 14:45

Poster session with light lunch

1. **Gas hydrate inhibition and its unique thermodynamic behaviors within the Porous clay sediment**
Yun-Ho Ahn, KAIST, South Korea

2. **Boiling heat transfer enhancement by nano-particles-assembled bi-porous layers**
Kazuhiya Yuki, Tokyo University of Science-Yamaguchi, Japan

3. **Experiments of water's effect on mechanical properties of shale rocks**
Fuquan Song, Zhejiang Ocean University, China

4. **An experimental investigation on effect of pores per inch in compact heat exchanger with aluminum foam**
Oronzio Manca, Dipartimento di Ingegneria Industriale e dell'Informazione
Seconda Università di Napoli – DIII, Italy

13:30 – 19:30

ad hoc sessions / free time

19:30

Dinner on your own

Wednesday, July 6, 2016

07:00 – 09:00

Breakfast

Oral Session 6: Bio transport in porous media

Chair: Kun Yang, School of Energy and Power Engineering, Huazhong University of Science and Technology, China

09:00 – 09:25

Effective transport properties of drug delivery systems: Porous granules and tablets

Frantisek Stepanek, University of Chemistry and Technology, Prague, Czech Republic

09:25 – 09:50

Modeling flow, heat and mass transfer in a porous biomass plug - when used in an electrically heated tobacco system

Markus Nordlund, Philip Morris Products S.A., Switzerland

09:50 – 10:15

An innovative culture technique for microalgae using hollow fiber membranes

Yoshihiko Sano, Shizuoka University, Japan

10:15 – 10:40

Effect of Newtonian heating on bioconvection of nanofluid over stretching sheet with gyrotactic microorganisms

Aminreza Noghrehabadi, Shohadaye Hoveizeh University of Technology, Iran

10:40 - 11:10

Coffee break

Oral Session 7: Advances in numerical techniques

Chair: P.A. Dinesh, Ramaiah Institute of Technology, India

11:10 – 11:35

Direct numerical simulation of reactive flow through a fixed bed of catalyst particles

Abdelkader Hammouti, IFP Energies Nouvelles, France

11:35 – 12:00

Numerical investigation of the phase change in transpiration cooling with the VOF method

Xiao-Long Ouyang, Tsinghua University, China

12:00 – 12:25

A mini-review on the Fractal-Monte Carlo method and its applications in porous media

Boming Yu, Huazhong University of Science and Technology, China

12:25 – 19:00

Lunch on your own / *ad hoc* sessions/ free time

19:00 - 21:30

Reception and Conference Banquet

Thursday, July 7, 2016

07:00 - 09:00	Breakfast
09:00 – 11:00	Technical Discussions
11:00 - 19:30	Excursion / lunch – Both on your own
19:30 - 21:30	Dinner
21:30 - 22:30	Technical discussion and social hour

Friday, July 8, 2016

08:00 - 09:00

Breakfast on your own

Departures