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A Polytechnic UNIVERSITY / Engineering Conferences Foundation Partnership

General Announcement/
Call for Abstracts

Second International Conference on Porous Media and its Applications in Science, Engineering and Industry

June 17-22, 2007
Kauai, Hawaii

This conference is supported by the National Science Foundation

Conference Program Committee

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Synopsis

A very successful first Conference on **Porous Media and its Applications in Science, Engineering and Industry was held** in 1996 in Kona, Hawaii, which was attended by various researchers in porous media worldwide. The proposed conference is to build on this conference so that it reflects the research done internationally in the currently active areas of the topic. The presence of the highly successful Journal of Porous Media and both editions of the very well received Handbook of Porous Media will act as an additional impetus to further galvanize this conference.

The pioneering works in the area of fluid transport as well as some aspects of heat transport in porous media go back to the beginning of this century. Convective heat transfer in fluid-saturated porous media has gained considerable attention in recent decades due to its relevance in a wide range of applications such as thermal insulation engineering, water movements in geothermal reservoirs, heat pipes, underground spreading of chemical waste, nuclear waste repository, geothermal engineering, grain storage and enhanced recovery of petroleum reservoirs. Radiative heat transfer and multiphase transport processes in porous media, both with and without phase change, have gained extensive attention in recent years. This is due to the wide range of applicability of these research areas in contemporary technology. These applications include, but are not restricted to, areas such as geothermal engineering, building thermal insulation, chemical catalytic reactors, packed cryogenic microsphere insulation, petroleum reservoirs, direct contact heat exchangers, coal combustors, nuclear waste repositories, and heat pipe technology.

Several applications related to porous media require a detailed analysis of convective heat transfer in different geometrical shapes, orientations and configurations. Based on the specific applications, the flow in the porous medium may be internal or external. Most of the studies in porous media carried out until the past two decades are based on the Darcy flow model, which in turn is based on the assumption of creeping flow through an infinitely extended uniform medium. However, it is now generally recognized that non-Darcian effects are quite important for certain applications. Different models have been introduced for studying and accounting for such non-Darcian effects as the inertial, boundary, and variable porosity effects. The ultimate goal of studies in convective heat transfer in porous media is to determine the dimensionless heat transfer coefficient, the Nusselt number. A considerable amount of research has been carried out to accomplish this, and empirical correlations for the Nusselt number for a variety of configurations and boundary conditions have been established, with certain limitation, of a wide variety of current technological applications. Many industrial operations in the areas of chemical and metallurgical engineering involve the passage of a fluid stream through a packed bed of particulate solids to obtain extended solid fluid interfacial areas or good fluid mixing. Typical examples of applications involving such systems include catalytic and chromatographic reactions, packed absorption and distillation towers, ion exchange columns, packed filters, pebble-type heat exchanger, petroleum reservoirs, geothermal operations and many others. The design of these systems is decided by mechanisms of pressure drop, fluid flow and heat and mass transfer governing the process in the packed bed arrangement. Considerable attention has been paid to the aforementioned aspects because of their direct influence on the optimization and stability of the design of these systems.

Developments in modeling transport phenomena in porous media have advanced several pertinent areas, such as biology. As such the conference will also entertain papers related to bio transport in porous media as well as research related to turbulent modeling in porous media.

Preliminary Conference Outline

1. Natural and Forced Convection in Porous Media
2. Evaporation, Condensation, Capillary Effects and Reactive Flow In Porous Media
3. Radiation Heat Transfer in Porous Media
4. Conduction in Porous Media
5. Combined Heat and Mass Transfer in Porous Media
6. Particle Transport and Deformable Porous Bodies

7 Advanced Mathematical Approaches to the Modeling of Porous Media

8. Industrial and Environmental Heat Transfer and Flow in Porous Media

8.1. Process Heat Transfer

9. Advances in Numerical Techniques
10. Experimental and Measuring Techniques
11. Turbulence in Porous Media
12. Particle Migration and Deposition in Porous Media
13. Bio Transport in Porous Media
14. Material Processing Applications

International Organizing Committee

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Prof. Manolis Tomadakis (Florida Institute of Technology, USA)
Prof. Peter Vadasz (Northern Arizona University, USA)
Prof. Yannis C. Yortsos (University of Southern California, USA)

Call for Abstracts

Abstracts (maximum one page) are solicited from participants to allow better placement in the discussion sessions. Poster presentations are welcome. Oral presentations are limited to plenary lectures only. The deadline for submission of abstracts is as follows:

Abstracts for Oral Presentations	**January 1, 2007**
Abstracts for Poster Presentations	**March 1, 2007**

Participants are expected to follow directions on the ECI website (**www.engconfintl.org/7ap.html**) and submit their abstracts electronically. If any problems with electronic submission arise, please contact ECI (info@eci.poly.edu).

Conference Publication

A program book including abstracts of all presentations will be distributed to attendees at the conference.
The Program Committee will recommend selected papers to be considered for publication in the *Journal of Porous Media* after the conference. Further details will be posted on the conference web site when available.

Engineering Conferences International

Engineering Conferences International (ECI) is a 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 is a not-for-profit partnership between the Engineering Conferences Foundation and Polytechnic University.

The format of the conference provides morning and late afternoon or evening sessions in which major presentations are made. Poster sessions will be scheduled for evening discussion as well. Available time is included during the afternoons for *ad hoc* meetings, informal discussions, and/or recreation. This format is designed to enhance rapport among participants and promote dialogue on the development of the meeting. We believe the conferences have been instrumental in generating ideas and disseminating information to a greater extent than is possible through more conventional forums.

All participants are expected both to attend the entire conference and to contribute actively to the discussions. The recording of lectures and presentations is forbidden. As ECI conferences take place in an informal atmosphere, casual clothing is the usual attire.

Kauai

Kauai is the westernmost part of the United States and the oldest island in the Hawaiian chain. Home to a population of only about 56,000 people, Kauai is known as the Garden Island and is a wonderland of outdoor activity and adventure.

Its lush green forest is home to what is considered to be the wettest spot on earth, Mount Waialeale. Kauai has a variety of wonders to offer, from the Grand Canyon of the Pacific, to the seemingly endless white sand beaches on its western shores. Kauai has been the backdrop for some very popular movies including *Jurassic Park*, *South Pacific*, *Raiders of the Lost Ark*, and *Blue Hawaii*.

Conference Fees

The conference fees are inclusive. They include registration, accommodations and meals, taxes and gratuities from dinner on Sunday through lunch on Friday. (Incidental fees are telephone calls, faxes, etc. and are billed to your personal account by the hotel.) Conference prices will be posted on the web site in January 2007.

To receive the next mailing, please complete and return the attached form or complete an online request at www.engconfintl.org/7ap.html.

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Job Title: _____

Organization: _____

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_____ **I wish to contribute a**

POSTER PRESENTATION _____

ORAL PRESENTATION _____

Deadlines and more conference information will be available in the future at www.engconfintl.org/7ap.html.