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click on page number or **bold** item ***** A message from the Managing

2nd InterPore conf & meeting

INTERPORE AWARDS



Karen Stoeverud receives one of the two best student presentation awards from the Interpore president Rainer Helmig, at the recent NUPUS conference - see page 4

The InterPore Council has recently approved setting up an Honors and Awards Committee and instituting two awards: an Honorary Membership Award and a Student Presentation Award.

The Honorary Membership Award is reserved for individuals who are world renown in the porous media community, have provided extra-ordinary services to the porous media science, and have made significant contributions towards the aims and ideals of InterPore. This award will be bestowed upon only one individual per year. It constitutes a certificate, lifetime InterPore membership, and a travel grant of 1000 Euro for participation in the InterPore Annual Meeting and Conference. The Student Presentation Award will be given to the best (poster) presentation by students during the InterPore Annual Meeting and Conference. There will be two poster awards per year. This award constitutes a certificate and prize money of 500 Euro.

The Honors and Awards Committee (p.16) will soon draw up guidelines and the procedure for nominating and electing recipients of these awards. This information will be reported in the next issue of the Newsletter. The first recipients of these awards will be made known during the upcoming InterPore Annual Meeting and Conference in College Station, Texas.

SECOND INTERPORE CONFERENCE and ANNUAL MEETING

March 14-17 2010, Donald L. Houston Center, Texas A&M University

See page 4 for details

Don't miss it !

Some word; from the Managing Director

Dear InterPore members,

More than a year has passed since the formation of InterPore. It all started with a small workshop on flow and transport in porous media, back in November 2007 in **Utrecht**. Most participants were meeting each other for the first time. They were working in seemingly totally different subject areas: fuel cells, filters, biological tissues (both natural and cultured),



diapers, soils, paper pulp drying, fabrics and textile, coal bed methane production, polymer composites, and CO2 sequestration. They were studying similar processes, solving similar governing equations, using similar numerical methods, and performing similar experiments and measurements. However, they would commonly attend different conferences and publish in very different journals. Although the situation described above had been known, nothing had been done to create a common platform for bringing all of these porous media disciplines together. I must say that the journals **Transport in Porous Media** and **Journal of Porous Media** had served, and still do, as a medium for (passive) sharing of porous media knowledge. Also, some areas of porous medium have been represented in recent years by **Biot conferences** and **Conferences on Porous Media and its Applications in Science, Engineering and Industry**. But, a society to actively promote porous media science, to establish links, to create small- and large-scale opportunities for close contacts, and more importantly to bring researchers from academia and industry together, has been missing. Hence, the creation of International Society for Porous Media.

When a new society is started, the first question is "**is it needed?**" and the second question is "**what are the benefits?**". I hope that the story above answers the first question. The second question is a more difficult one. Benefits are not created at once. It takes time. It takes time for a society to grow, to become mature, and to play an important role in the scientific life of its members. The problem is a society can become active if it has a considerable number of active members and it can attract members only if it is an active society!! Indeed, starting something new is always a difficult task and it always goes slower than desired. And InterPore, being born as a new society, is no different. Nevertheless, we can proudly say that InterPore is making great strides. The number of

members is approaching two hundred¹, the first annual meeting was held successfully in Kaiserslautern and the second one is coming up soon in College Station, Texas (page 1).

For comparison to InterPore, the EuroMech Society, which was established in 1964, has just recently welcomed the 800th member.

Now, back to the question of what the **benefits of InterPore** are. I can provide the following list:

- Reduction of registration fee for certain conferences (this year there were four conferences; the numbers are growing).
- Priority of participation at specialised workshops, summer schools, etc.;
- Access to a soon-to-be developed database with the list of experts on several subjects related to porous media
- An alliance with the journal Transport in Porous Media (published by Springer), giving considerable discount on personal subscription for the journal and purchase of books from Springer.
- Members-only pages on the website, soon to be set up, which will contain experts database, access to course material and video recordings from some summer schools and short courses, the possibility of putting technical questions to other members through an ASK ME facility, addresses of InterPore members.
- Recognition of top scientists (see elsewhere in this Newsletter) and students.
- Establishing virtual centers such as UNISCI (University-Industry Student Exchange Center -InterPore) – see page 9.
- This newsletter, keeping you updated about new developments, meetings, short courses, job opportunities (see p. 11), etc.

I hope that this list will grow with input and support from members of InterPore. Our Society is striving for noble goals. It is uniquely positioned to connect experts and practitioners from divers scientific and engineering fields. This enables faster and unexpected connections, resulting in enhanced creation of knowledge and accelerated innovation. So, I call upon all members to come up with new ideas and to volunteer to contribute to activities of InterPore. Let's help InterPore grow and mature. We owe it to the porous media community!

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SECOND INTERPORE CONFERENCE and ANNUAL MEETING March 14-17 2010, Donald L. Houston Center, Texas A&M University

The goal of the conference is to provide a forum for discussing the academic and industrial challenges of porous media, as well as to foster collaboration among theoreticians, modelers and experimentalists working in porous media research.

The conference will include keynote lectures, invited oral presentations, and poster sessions. No parallel sessions are planned, and oral presentations are by invitation only. The abstracts for poster session presentations are to be sent to: interpore2010@gmail.com.

Keynote Speakers: Tom Hughes (UT Austin); Tom Russell (NSF); K. Rajagopal (Texas A&M); J. Kuzan (ExxonMobil).

Organizing Committee: Yalchin Efendiev [yalchinrefendiev@gmail.com] (Texas A&M, co-chair); Majid Hassanzadeh (The Utrecht University); Rainer Helmig (University of Stuttgart); Oleg Iliev (Fraunhofer ITWM, Kaiserslautern); Mary Wheeler (UT Austin, co-chair).

Scientific Committee: Todd Arbogast (UT Austin); Goodarz Ahmadi (Clarkson University); Lynn Bennethum (University of Colorado, Denver); Louis Durlofsky (Stanford University); Magne Espedal (University of Bergen, Norway); Rudolf Hilfer (Stuttgart University, Germany); Jim Glimm (SUNY Stony Brook); Massoud Kaviany (University of Michigan); Seong Lee (Chevron); Knut-Andreas Lie (SINTEF); Brent Lingquist (SUNY Stony Brook); Binayak Mohanty (Texas A&M); Tinsley Oden (UT Austin); Dean Oliver (U. of Tulsa); Mattias Schmidt (Procter & Gamble Service GmbH); Kambiz Vafai (University of California, Riverside); X.H. Wu (ExxonMobil); Ivan Yotov (Pittsburgh); Junchao Xu (PennState).

Special Sessions: Pore-scale computational methods; Industrial porous materials; Experimental determination of porous media and fluid properties; Multiscale/multiphysics discretization, solvers, and coupling; Pore-scale visualization; Bio and manufactured porous materials; Uncertainty quantification and stochastic modeling.

Invited speakers: Dr. Ahmadi ,Todd Arbogast* ,Lynn Bennthum,Lou Durlofsky ,Majid Hassanizadeh, Monsoor Haider, Rainer Helmig, Rudolf Hilfer, Oleg Iliev, Seong Lee, Knut-Andreas Lie*, Brent Lingquist, Dan Marchesin , Eric Neumann, Laura Nolte , Paul-Eric Oeren , Dani Or, Felipe Pereira ,Masha Prodanovich, Dirk Rensink, Rodrigo Rosati*, Mattias Schmidt, Pawan S. Takhar, Dorthe Wildenschild*, Jinchao Xu , Ivan Yotov , Tim Widley,* to be confirmed.

Further details:

http://isc.tamu.edu/news-and-events/2010-interpore-conference-and-annual-meeting.html

#2, Nov 2009

Report on the International Conference on Non-linearities and Upscaling in Porous Media (NUPUS)

5th-7th October, 2009, Stuttgart, Germany

The first International NUPUS (Non-linearities and Upscaling in PoroUS media) conference took place at the University of Stuttgart, Germany, from 5th to 7th October 2009. NUPUS is an international research program which combines several research areas into one project with participants from different universities in Germany, the Netherlands and Norway. The aim of the NUPUS project is to develop and implement methods and models to describe complex multiphase flow processes in porous media.





The goal of this conference was to provide a forum for the exchange of experiences and discussions of new model concepts. More than 100 participants from all over the world attended the conference. The program consisted of four sessions: Numerical Methods, Fundamental Methods, Special Applications and Model Concepts. A large number of scientific talks were given followed by interesting questions and discussions. As a highlight of the conference four keynote speakers: M. Celia (Princeton University), R. Eymard

(Université de MarnelaVallée), J. Fuhrmann (Weierstrass Institute for Applied Analysis and Stochastics) and R. Juanes (Massachusetts Institute of Technology) were invited to give talks about their current research topics.

During the poster session, 51 well-prepared posters with various topics were exhibited. At the end, two prizes were awarded to the best posters which were composed by a PhD and a master student, respectively. Each NUPUS PhD candidate presented their work in both the oral and the poster sessions.

The conference was successfully conducted to offer a platform for the knowledge exchange among the researchers and to show the frontier in the field of multiphase flow and multicomponent transport processes.



Steffen Dwenger receives the best student presentation award for PhD students



Fourth European Conference on Computational Mechanics	Palais de Congress, Paris	16 – 21 May 2010	See page 7
The XVIII Conference on Computational Methods in Water Resources (CMWR 2010)	Technical University of Cataluña, Barcelona, Spain	21 to 24 June 2010	See page 8
Third International Conference on Porous Media and its Applications in Science, Engineering and Industry	Tuscany, Italy	20-24 June, 2010	See page 9
Gordon Conference on Flow & Transport in Permeable Media	Bates College Lewiston, ME, USA	11-16 July, 2010	See page 7
12 th European Conference on the Mathematics of Oil Recovery	Oxford , U.K	6-9 September, 2010	See page 8
2nd International Interdisciplinary conference on Predictions for Hydrology, Ecology and Water Resources Management	Czech University of Life Sciences, Prague, Czech Republic	20-23 September, 2010	See page 10

ECCOMAS

European Community on Computational Methods in

Applied Sciences

IV European Conference on Computational Mechanics

Solids, Structures and Coupled Problems in Engineering Paris, France, May 16-21, 2010 Palais des Congrès



For more information, visit http://www.eccm2010.org

Gordon Conference on Flow & Transport in Permeable Media,

July 11-16, 2010, Bates College Lewiston, ME



The XVIII Conference on Computational Methods in Water Resources (CMWR 2010), June 21 to 24, 2010, Technical University of Cataluña, Barcelona, Spain



For more information, visit

http://congress.cimne.com/CMWR2010/frontal/default.asp

12th European Conference on the Mathematics of Oil Recovery

6-9 September 2010, Oxford, U.K.



ECMOR XII is supported by SPE. Without intending to change the character of the conference we trust this cooperation will further increase attendance, and strengthen ECMOR's role as the place to be for specialists in geological and reservoir modelling.



General Announcement and Call for Abstracts Oral Abstract Deadline: December 1, 2009 Poster Abstract Deadline: March 1, 2010

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

June 20-24, 2010 Tuscany, Italy



Further information at : http://www.engconfintl.org/10ap.html

2nd International Interdisciplinary conference on Predictions for Hydrology, Ecology and Water Resources Management Changes and Hazards caused by Direct Human Interventions and Climate Change

20-23 September 2010, Prague, Czech Republic

SCOPE AND OBJECTIVES

Over the last fifty years increasing damages from natural hazards are reported at the global scale. According to the 2003 United Nations World Water Development Report between 1991 and 2000 over 665,000 people died in 2,557 natural disasters – 90% of which were water-related and 97% of the victims were from developing countries. The recorded annual economic losses associated with these disasters have grown from US\$30 billion in 1990 to US\$70 billion in 1999.

The conference has three objectives:

(1) To present models for describing hazardous processes and their impacts with a high spatiotemporal resolution. This would provide the basis for predictive tools and early warning systems in different environmental settings.

(2) To describe methods to discriminate among impacts originating from climate change and impacts caused by direct human interventions, such as deforestation, overexploitation of groundwater resources, land development, water abstraction from rivers and urbanization.

(3) To bring together experts from different disciplines such as geomorphologists, meteorologists, hydrologists, hydraulic engineers, forest managers, water resources engineers, regional and landscape planners, as well as experts from governmental institutions and from the insurance sector, to exchange experiences about the adaptation and mitigation of adverse effects.

CONFERENCE THEMES

Theme A1 : How can we identify and quantify water-related changes due to direct human interventions (analysis of long-time past records, future developments)

Theme A2 : How can we identify and quantify water-related changes due to climate change (analysis of long-time past records, future developments)

Theme B : How can we discriminate among impacts of direct human interventions and impacts caused by climate change, and how can we quantify the impacts

Theme C : How can we quantify/ predict changes in water-related hazards

Theme D : How can we adapt to / mitigate water-related hazards; resilient and robust ways to adapt to water-related disasters

VENUE

The conference will be held in the conference centre of the Czech University of Life Sciences, Prague (Česká zemědělská univerzita v Praze, ČZU) in Prague.

SCIENTIFIC ADVISORY COMMITTEE

András Bárdossy (*Germany*), Marco Borga (*Italy*), Axel Bronstert (*Germany*), Jacques Ganoulis (*Greece*), Steven Gorelick (*USA*), Pavel Kovar (*Czech Republic*), Wolfgang Kron (*Germany*), Zbygniew Kundzewicz (*Poland*), Hans-Peter Nachtnebel (*Austria*), Norio Okada (*Japan*), Edmund Penning-Rowsel (*UK*), Jens Christian Refsgaard (*Denmark*), Dan Rosbjerg (*Denmark*), Peijun Shi (*China*), Andreas Schumann (*Germany*), W. James Shuttleworth (*USA*), Slobodan Simonovic (*Canada*), Ramesh S. Teegavarapu (*USA*), LeHuu Ti (*Thailand*), Stefan Uhlenbrook (*The Netherlands*), Han Vrijling (*The Netherlands*), Honglang Xiao (*China*), Chunmiao Zheng (*USA*)

The deadline for abstract submission is 1 February 2010

Further information at http://www.natur.cuni.cz/hydropredict2010/



Science Directories

An number of science network directories have been compiled and maintained by **Professor Alex Cheng**, Dean of Engineering at University of Mississippi. Subscribers to these networks receive regular e-mail alerts about new conferences, academic jobs, PhD positions, new books, etc. This is an excellent service. For information on signing up, one should visit the webpage of the corresponding network. Currently there are the following five active networks: **PoroNet** (Poromechanics Internet Resources Network), **SaltNet** (Saltwater Intrusion and Coastal Aquifers Internet Resources Network) **BENet** (Boundary Element and Meshless Method Internet Resources Network), **TrefftzNet** (An Internet Resources for Trefftz Method) and **MindlinNet** (Great Man of Mechanics, Raymond D. Mindlin 1906-1987).

UNISCI (University-Industry Student Exchange Center - InterPore)

InterPore is very happy to introduce the new UNISCI (University-Industry Student Exchange Center - InterPore)

UNISCI helps graduate students from InterPore's universities and academic partners with InterPore's industrial partners. UNISCI aims at promoting training, education and industrial experience for students, collaboration between academia and university and contributing to the scientific discussion on porous media systems. Industries and universities will soon be able to advertise open vacancies for graduate students on the InterPore website. Students will be able to apply to vacancies through the website also.

For more information you can contact the UNISCI Coordination Group:

Rodrigo Rosati (Procter & Gamble) (rosati.ro@pg.com) Azita Amhadi-Senichault (University of Bordeaux) Rudolf Hilfer (University of Stuttgart)

SIAM activity group on Geosciences

The Activity Group on Geosciences of the Society of Industrial and Applied Mathematics (SIAM) provides an interactive environment wherein modelers concerned with problems of the geosciences can share their problems with algorithm developers, applied mathematicians, numerical analysts, and other scientists. Topics of interest include flow in porous media, multiphase flows, phase separation, wave propagation, combustion, channel flows, global and regional climate modeling, reactive flows, sedimentation and diagenesis, and rock fracturing. If you are a SIAM member interested in any of these application areas, please join us. SIAG GS is growing. We currently have over 320 members, up from 250 in 2005.

The highlight of our activities is our biennial conference. The last conference was very recently held in Leipzig and was a very well attended conference with many stimulating presentations and discussions. The next SIAG GS conference will be held in March 2011 in the US.

For more information about the SIAG GS or its conference, please contact the SIAG GS chair Margot Gerritsen at

margot.gerritsen@stanford.edu

See job opportunites at: wiki.siam.org/wiki/siag-gs

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Research at IFP, Rueil-Malmaison, France

The Petrophysics Department at IFP possesses experimental and numerical resources adapted to the study of petrophysical properties of porous media. One of the Department's main activities is predicting the detailed behaviour of multiphase flow in porous media and calculating multiphase transport properties. Pore network models for multiphase flow (PNM) incorporate displacement mechanisms observed at the

microscopic level using 2D glass micromodels. However detailed experimental data on the 3D flow behaviour at the microscale level are still missing. For this purpose a Hassler type flow cell was designed in which in-situ X-Ray microtomography measurements can be performed during multiphase flow experiments. This new equipment allows us to investigate multiphase displacements in 3D complex structures and to evaluate their dependence on flow conditions and fluid properties. The set of 3D images which follow the drainage/imbibition cycle step-by-step in a real rock constitutes a precious database. This database that can be employed to validate hypotheses on physical mechanisms used in the PNM codes to simulate petrophysical properties. Many other pore level mechanisms are also studied like chemical EOR, CO2 injection and rock structure alteration.

For more detail visit our website www.ifp.fr and/or contact souhail.youssef@ifp.fr



distribution in the same subvolume at identical saturations (red= imbibition, yellow=drainage)



Residual oil saturation and trapping configurations for two interfacial tension values after imbibition on the same rock sample (purple γ_{ow} =40 mN/m, red γ_{ow} : 16 mN/m).

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Research at University of Stuttgart, Germany:

Hydromechanics and Modeling of Hydrosystems

The Hydromechanics and Modeling of Hydrosystems group at the Institute of Hydraulic Engineering, University of Stuttgart, Germany, deals with the modeling of complex multi-phase flow and transport processes in porous media. Relevant applications of interest to our group comprise the development of mathematical and numerical models for flow and transport in geological, technical, and biological systems with a special focus on model coupling. In geological systems, we study the movement of contaminants in the subsurface and their remediation, methane migration, migration of radioactive gases due to storage of atomic waste, or the fate of carbon dioxide. Fuel cells are of main interest as technical systems, and treatment of brain or lung tumors are highly relevant biological flow and transport processes to us.

For all these different systems, we develop numerical models within the framework of our in-house simulator DuMuX which allows us to make predictions and develop a profound process understanding for flow and transport processes in various complex porous media.



For more information, please visit: http://www.hydrosys-uni-stuttgart.de

Drawing 1: Evolution of a plume of a CO2 storage site



In the paper characterisation laboratories of **Omya AG**, Oftringen, Switzerland, is this device by **Emtec** which sends an ultrasonic signal through a porous material bathed in water or other liquid, as shown schematically bottom left. The change in attenuation of the signal with time, shown bottom right, depends mainly on the rapidity with which air is displaced from the porous sample – so can give an indirect measure of the water resistance or permeability of a paper coating or sizing treatment.





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Springer and InterPore are proud to announce a strategic affiliation

http://www.springer.com/earth+sciences/journal/11242

For more information and on possible new special issue proposals for the journal Transport in Porous Media, please contact:

> The Journal Editor: Prof. J. Bear, Technion - Israel Institute of Technology Dept. of Civil Engineering Haifa 32000 Israel cvrbear@techunix.technion.ac.il

For more information and on possible new book publications proposals, please contact:

The Publisher: Petra van Steenbergen, Publishing Editor Earth Sciences, Springer, Dordrecht, The Netherlands

petra.vansteenbergen@springer.com



The *International Society for Porous Media* (InterPore) is a non-profit-making independent scientific organization established in 2008.

The general aim of the Society is to advance and disseminate knowledge for the understanding, description, and modeling of natural and industrial porous media systems.

Key Aim; of the Society

- facilitate connections and collaboration among industrial and academic researchers;
- connect porous media theoreticians, modellers, and experimentalists;
- provide a forum for exchanging ideas and expertise for the improvement of porous media models;
- identify research questions that will lead to major improvements in the theories and models of complex porous media and to define modelling challenges;
- facilitate training and education.

Examples of Industrial & Natural Applications of Porous Media

Fuel cells, paper-pulp drying, food production and safety, filtration, concrete, ceramics, moisture absorbents, textiles, paint drying, polymer composites, and detergent tablets. The most wellknown natural porous media involving multiphase flow and transport are soils, aquifers, and reservoirs. But such processes also occur in biological tissues and plants. Recently, there has been growing interest in the biomechanics of porous tissues, engineered tissues, and in-tissue drug delivery.

Why should you join InterPore?

InterPore is uniquely positioned to connect experts and practitioners from a diverse field of both



scientific and engineering know how as well as industrial applications. This enables faster and unexpected connections resulting in quicker learning and accelerated innovation.

You can become a member by registering online or contacting InterPore.

Honor; and award; committee

Chairperson: Mike Celia (Princeton University). Jacob Bear (Technion, Haifa), Mary Wheeler (U. Texas, Austin), Rodrigo Rosati (Procter & Gamble, Germany), and Jan Nortbotten (Bergen University, Norway).

INTERPORE: "Similar solutions to diverse applications."

Website: www.interpore.org

Contact: info

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