InterPore Foundation

KIMBERLY-CLARK DISTINGUISHED LECTURESHIP AWARD 2024

Lecturer: Prof. Ruben Juanes

Massachusetts Institute of Technology, USA

Secure your chance to host Prof. Ruben Juanes at your institute

In-Person
Online
Hybrid

Hosts may select one of two options detailed bellow:

Lecture 1—FLUIDS, FINGERS, FRACTURES AND FRANCTALS: PATTERNS IN POROUS MEDIA

The displacement of one fluid by another in a porous medium gives rise to a rich variety of hydrodynamic instabilities. Beyond their scientific value as fascinating models of pattern formation, unstable porous-media flows are essential to understanding many natural and man-made processes, including water infiltration in the vadose zone, carbon dioxide injection and storage in deep saline aquifers, methane venting from organic-rich sediments, and fracturing from fluid injection. Here, I review a handful of these hydromechanical instabilities, elucidate the key physics at play, and point to modeling frameworks at either the pore scale or the continuum (Darcy) scale that permit quantitative assessments of their impact at the geologic scale.

Lecture 2 - MAN-MADE EARTHQUAKES AND THE ENERGY TRANSITION

Earthquakes occur when faults slip. While the most devastating earthquakes are of tectonic origin, human activities have been associated with the triggering of earthquakes that have caused substantial economic damage and societal concern. The demonstration that fluid injection can cause earthquakes dates back to the 1970s, but critical gaps remain in our ability to understand and, more importantly, mitigate, the occurrence of induced earthquakes. Here I will discuss some of our recent work employing contrasting approaches to help fill these gaps: from minimal-ingredients spring-slider models that account for poroelasticity to sophisticated multiphysics computational models that integrate disparate datasets and have succeeded at setting management strategies that prevent earthquakes while allowing subsurface operations in a tectonically active field. I will discuss how the lessons learned from these analyses may inform subsurface climate-change mitigation technologies like geological carbon sequestration and hydrogen geostorage.

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BIO OF PROF. RUBEN JUANES

Prof. Juanes is a Professor at the Massachusetts Institute of Technology, both in the Department of Civil and Environmental Engineering and in the Department of Earth, Atmospheric and Planetary Sciences. He has an outstanding track record of achievements and contributions to the field of porous media research, by his commitment to excellence in education and mentoring and by his exceptional skills as lecturer and communicator.

Ruben Juanes is a world-renowned expert in the field of multiphase flow in porous media. His research aims at advancing fundamental understanding and predictive capabilities of the simultaneous flow of two or more fluids through rocks, soils, and other porous materials. It combines theory, simulation, and experiments, to elucidate fundamental aspects of multiphase flow.

His contributions provide fundamental understanding of natural phenomena and have the potential to radically advance the deployment of energy systems, which depend critically on multiphase flow processes.

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Among other awards, each year, InterPore will select a porous media researcher with a very high international recognition as the “InterPore Kimberly-Clark Distinguished Lecturer on Porous Media Science & Technology”. The award winner will share a topic relevant to the industrial porous media community through a series of lectures at various member and non-member organizations.

A word of gratitude:

This award has been made possible by a generous grant from Kimberly-Clark , home to some of the world’s most iconic and trusted brands, including: Huggies, Scott, Kleenex, Cottonelle and Kotex. For more than a century Kimberly-Clark has been transforming insights and technologies into innovative products and services that improve the lives of nearly a quarter of the world’s population.

INTERPORE FOUNDATION

InterPore Foundation for Porous Media Science and Technology is a non-profit, non-governmental, independent organization. It was founded by the International Society for Porous Media in 2016.

Find out more about the InterPore Foundation.

HOW TO APPLY

Are you interested in hosting Ruben Juanes at your institution? Please submit your application online. Non-members may also apply.

To request the presentation, please visit: https://www.interpore.org/awards/kimberly-clark-distinguished-lectureship/, download and fill out the application form and return it by e-mail to: *sandra.bartsch@interpore.org*

For further questions please contact: *executive-officer@interpore.org*

Please be aware that the lecturer availability will be limited and not all requests can be honored by the lecturer.

LECTURE OPTIONS

In-person appearances are preferable, but Prof. Juanes will also be offering online and hybrid lectures (some audience members attend in-person and others online).

Hosts may select from one of the two lectures detailed in this brochure.

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