Harold Auradou, Ph.D. DoB: May 14 1972
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I have been a CNRS researcher since 2001 and I obtained my habilitation in physics at the University of Paris Sud in 2007. My field of expertise is flow in porous media. In the past years, I have developed different techniques enabling the visualization and the study of different flow processes. I also have a strong expertise in fracture mechanics. Currently, my key points of interest are flow of bacteria. I headed an International Franco-Argentinian Lab in Fluid Mechanic from 2012-2017 and was head of the porous media team of the FAST laboratory. I have taken the head of the laboratory since January 2020.

Current Position

Senior Researcher at CNRS, France Oct. 2012 – present

Education/ Academic Experience

Centre National Recherche Scientifique, France
Researcher, in Fluid Mechanics at Fluides, Automatique et Systèmes Thermiques (Orsay) Oct. 2001 – Oct. 2011

Commissariat à l'Energie Atomique, France (Atomic Research Center)
Postdoctoral Associate, in Chemical Engineering at Service de Physique et Chimie des Surfaces et Interfaces Sept. 1999 – Sept. 2001

Rennes University, France
Ph.D., Physics at Groupe Matiére Condensé et Matériaux Sept. 1995 – Sept. 1999

Villetaneuse University, France
Researcher in the Army, Physics Sept. 1997 – Sept. 1998

Awards

Since 2018 Massachusetts Institute of Technology, Boston, USA, research affiliate at the Ruben Juanes Group

2015 American Physical Society, Featured in Physics and Editors' Suggestion of the publication: "Turning Bacteria Suspensions into Superfluids".

2010 - 2015 CNRS Recipient of Ph.D. and Research Supervising Bonus.

Research Highlights

Flow of complex fluids in porous media:
- Built experimental techniques to visualize flow in porous and fractured media
- Applied the technique to the characterizition of flow of polymers, fibers, active fluids and reactive flows.

Fracture mechanics:
- Developed experimental method to create material of controlled micro structure
- Study of the influence of the microstructure on fracture surface roughness

Publications

66 Papers in International Review and 7 Proceedings with peers review

Conferences

$\approx$ 5 presentations in international conferences per year

8 invitations in international conferences

Synergistic Activities

Organization of scientific events
- Member of the organizing committee of summer schools (Cargse France 2005 - 2010 & 2015) and colloquium on transport in porous medium (Paris Sud 2009)
- Participation in national research activities on various aspects of flow in fracture and fracture mechanic: CO_2 sequestration, hydrology

International collaborations
- Schlumberger Cambridge: *particles transport in fracture*
- Facultad de Ingenieria, Buenos Aires, Argentina: *flow of active fluid, polymer flow, fluid-structure interaction*
- Pr. Ruben Juanes, Massachusetts Institute of Technology, USA: *flow of active fluid in porous media*

- Pr. Marco Dentz, Institute of Environmental Assessment and Water Research, Barcelona, Spain: *Modeling of bacteria in porous media*

Activities for research

- Member of the CNES (French spatial agency) scientific council
- Participation of recruitment boards
- Member of habilitation examining boards
- Member of examining boards of doctoral thesis (in France and abroad)
- Rapport of PhD manuscripts
- Referee for international reviews: *Nature, Physical Review Letters, Water Resource Research...*
- Referee for funding agencies: *ANR (National Research Agency), NWO (New Holland Research Agency)*

Teaching Experience

University Paris South, Orsay, France

- Manager of the teaching module "Transport and transfert of pollutants" (25 hours) 2006-2014
- Teacher for transport of contaminants (15 hours/year) 2012-2019
- Teacher for transport in porous media (10 hours/year) 2012-2020

Research Mentor

- 16 PhD students, 4 PostDoc and 1 Engineer

Professional & Leadership experience

- Head of the FAST laboratory 2020 –
- Head of the International Franco-Argentinian Lab. in Physic and Fluid Mechanics 2012 – 2017
- Deputy head of the International Franco-Argentinian Lab. in Physic and Fluid Mechanics 2008 – 2012
- Head of the team Flow in Porous and Fractured Media 2008 – 2019

Valorisation & Contractual activity

- "dispositif de mesure de la viscosité d'un fluide en particulier pour les fluides actifs", *patent application* 2020
  ACTIFS
- Separation of bacteria by a flow, *CNRS pathfinder projects* 2015
- Measurements of the rheology of active fluids, *Bpifrance - National bank for investisment* 2014
- Device and method for measuring the viscosity of a fluid, H. Auradou, JP. Hulin and B. Semin, *United States Patent 8,844,339* 2014