





Written on 19 February 2024 2 minutes of reading
Events

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18 - 19 March 2024

The Toulouse Institute of Fluid Mechanics (IMFT), the Chemical Engineering Laboratory (LGC), and IFP Energies nouvelles are pleased to invite you to the final MUSCATS workshop, which will be held at the IFP Energies Nouvelles – Lyon on 18-19 March 2024

Even if little studied, unlike gas-solid fluidized beds with spherical particles, liquid-solid fluidized beds are nevertheless widely used in a variety of industrial processes dedicated to oil and biomass exploitation as well as water treatment. Thanks to a better understanding, they can be optimized for the benefit of energy transition.

The ANR funded project MUSCATS (MULTi-Scale modeling of fluidized/ebullated bed reaCtors involving Anisotropic parTicleS) aims at modeling liquid-solid fluidized beds of anisotropic particles thanks to a multi-scale approach.

During this event, the most important results of the project will be shared in the presence of researchers from the

industrial and academic worlds working on fluid-solid fixed and fluidized beds, anisotropic particle dynamics, turbulent flows with complex particles, and dense particulate flows.

Program

Monday March 18th - Fixed and fluidized beds

- 08:30-09:45 Registration and Welcome coffee break
- 09:30-09h45 Hélène Olivier-Bourbigou (IFPEN) : Introduction
- 09:45-10:00 Rim Brahem (IFPEN) and Véronique Roig (IMFT) : Introduction of applications and MUSCATS project
- 10:00-10:45 Plenary 1. Julien Chauchat (LEGI) : Modeling particle-laden geophysical flows using multiphase flow approaches: from fine-scale processes to practical sand transport formula for waves
- 10:45-11:30 Plenary 2. Fabien Candelier (IUSTI) : Inertial effects on spherical or anisotropic particle dynamics
- 11:30-11:50 Jean-Lou Pierson (IFPEN) : Settling of inertial rods: from dilute to dense regimes
- 11:50-12:10 Jelena Macak (IFPEN) : DNS of flows through assemblies of cylindrical particles
- 12:10-12:30 Valérie Vidal (ENS Lyon): Liquid-solid fluidized beds as a model for fluid migration in sedimentary basins
- 12:30-14:00 Lunch break
- 14:00-14:50 Plenary 3. Aurore Naso (ECL): Anisotropic particles and turbulence
- 14:50-15:10 Pascal Fede (IMFT) : Collisions of ellipsoidal particles in a vertical turbulent channel flow
- 15:10-15:30 Christopher Windows-Yule (U. Birmingham) : Using positron imaging and machine learning to create highly accurate numerical models of fluidised and spouted beds
- 15:30-16:00 Coffee break
- 16:00-16:20 Dylan Letessier (IMFT) : Dynamics and interactions of free falling cylinders in a Hele-Shaw cell
- 16:20-16:40 Sylvain Joubaud (ENS Lyon): Bubble rise in dense liquid-particle suspension
- 16:40-17:00 Laurence Bergougnoux (IUSTI) : Influence of inertia on the orientation of bodies of revolution in shear flows
- 17:00-18:30 Open discussion

18:30 End of day 1

20:00 Banquet at Brasserie Georges Restaurant

Tuesday March 19th - Anisotropic particulate flows, Environmental flows

09:00-09:50 Plenary 4. Olivier Simonin (IMFT) : Challenges of modeling L/S fluidized beds of anisotropic particles

09:50-10:10 Kamel Landal-Otmani (IFPEN) : Results on the mesoscale MUSCATS experiments at IFPEN

10:10-10:30 Renaud Ansart (LGC) : Models for large scale turbulent Liquid-Solid fluidized beds in Neptune CFD

10:30-11:00 Coffee break

11:00-11:50 Plenary 5. Julian Talbot (Sorbonne Univ.): Statistical modelization of granular flows of ellipsoidal particles

11:50-12:10 Adrien Toutant: Simulations of anisothermal fluidized beds resolved to a scale smaller than the particle diameter

12:10-12:30 Lucas Massaro Sousa (IFPEN) : Gas-Solid Jet Penetration of Biomass in Fluidized Beds

12:30-14:00 Lunch break

14:00-14:20 Nicolas Fintzi (IFPEN) : Averaged equations for disperse two-phase flow with non-spherical fluid inclusions

14:20-14:40 Federico Baraglia (EDF) : Numerical simulation of gas-liquid-particles flows using a transport equation for the interfacial area between the fluids

14:40-15:00 Conference epilogue

[Learn more](#)

[Registration](#)

Fluid-solid flows with anisotropic particles : final MUSCATS workshop
19 February 2024

Link to the web page :