

EFCE Spotlight Talks

Working Parties on Mixing and Multiphase Fluid Flow

1st December

9:00 • 11:30
CET

Multiscale Mixing in Multiphase Flows

Multiscale mixing processes play a dominant role in all multiphase flows. From molecular heat- and mass transfer within boundary layers at each particle (bubbles, droplets, solids) dispersed in a continuous liquid phase and effects on the micro- and mesoscale such as Marangoni convection, particle wake and turbulent mixing, up to mixing on the industrial scale. Limitations occur at all scales and affect the yield and selectivity of many processes in the chemical, biopharmaceutical, petrochemical and related industries. A particular challenge in the experimental investigation and modelling of such multiphase, multiscale mixing processes is the need for high temporal and scale resolution. A promising approach to bridge scales and to overcome such difficulties is the use of macroscale "compartments", which differ in certain properties of the flow, concentration and particle characteristics. However, the detection and characterization of such compartments is not trivial and needs high sophisticated experimental and numerical methods to obtain detailed information at smaller scales.

This highly interdisciplinary topic between the disciplines of "mixing" and "multiphase flows" will be addressed in this webinar. Participants from both academia and industry are very welcome.



PROGRAM

- 9:00 am **Welcome and introduction**
Joelle Aubin, Chair of Working Party Mixing
- 9:10 am **Interscale Multiphase Mixing - from Micro to Large Scale - an interdisciplinary approach**
Michael Schlüter, Chair of Working Party Multiphase Fluid Flow
- 9:30 am **Mixing and mass transfer in bubble columns for industrial applications**
Dale McClure, University of Sydney - Australia
- 10:00 am **Challenges in Scale-up of Cell Culture Processes - Gentle Mixing vs. Mass Transfer Performance**
Thomas Wucherpennig, Boehringer Ingelheim Pharma GmbH & Co. KG, Germany
- 10:30 am **Recent Advances and Challenges in the Multi-Scale Modeling of Multiphase Flows with Deformable Interfaces**
Hans Kuipers, TU Eindhoven - The Netherlands
- 11:00 am **Bubble Column Fluid Dynamics: a novel perspective for flow regimes**
Giorgio Besagni, Ricerca sul Sistema Energetico - Italy
- 11:30 am **Conclusion**
Joelle Aubin, Chair of Working Party Mixing

[registration](#)

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