ERCOFTAC Best Practice Guidance Course
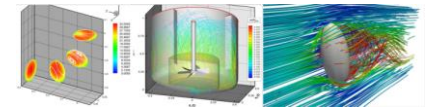
CFD for Dispersed Multi-Phase Flows, VII

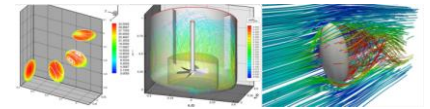**KTH, Stockholm, Sweden**

Monday, 10 October 2016

8:30	**Registration and Coffee**	
8:45	**Introduction to the course;** **Characterisation of multiphase flows**	**Martin Sommerfeld**
9:15	**Numerical methods for multi-phase flow**	**Berend van Wachem**
10:00	**Industrial challenges and needs for the application of CFD to industrial dispersed multiphase flows**	**Ruud Henkes**
10:45	**Refreshments**	
11:15	**Numerical methods for multi-phase flow (Lattice-Boltzmann Method)**	**Martin Sommerfeld**
11:45	**Forces on particles, droplets and bubbles**	**Martin Sommerfeld**
12:30	**Lunch**	
13:30	**Forces on particles, droplets and bubbles**	**Martin Sommerfeld**
14:30	**Modelling elementary processes in dispersed multi-phase flows (particle-wall collisions; inter-particle collisions)**	**Martin Sommerfeld**
15:30	**Refreshments**	
16:00	**Modelling elementary processes in dispersed multiphase flows (non-spherical particles)**	**Berend van Wachem**
16:30	**Modelling elementary processes in dispersed multi-phase flows (bubble and droplet collisions)**	**Martin Sommerfeld**
17:30	**Q & A**	
18:00	**Close**	

# Tuesday 11, October 2016

Time	Session	Speaker
8:30	Euler/Euler approach with applications	Berend van Wachem
9:30	Recent developments of Multiphase CFD	TBD
10:15	Refreshments	
10:45	Euler/Lagrange method, implementation and coupling	Martin Sommerfeld
11:45	Euler/Lagrange method Coupled CFD/DEM Simulations	Berend van Wachem
12:15	Lunch	
1315	Euler/Lagrange method applications: pneumatic conveying and erosion, agglomeration in spray drying, bubble dynamics in bubble column	Martin Sommerfeld
13:45	Test case calculations and examples of application Summary of available test cases, channels, jets, sprays, fluidised beds	Martin Sommerfeld
14:15	Test case calculations and examples of application	Berend van Wachem
14:45	Test case calculations and examples of application	Berend van Wachem
15:30	Refreshments	
15:45	Problem shooting session, presentations from participants (Registration required, please submit your proposal, we will try our best to help solving your problem)	ALL
16:45	Q&A	
17:15	Close	
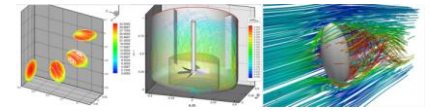
Rationale

The simultaneous presence of several different phases in external or internal flows such as gas, liquid and solid is found in daily life, environment and numerous industrial processes. These types of flows are termed multiphase flows, which may exist in different forms depending on the phase distribution. Examples are gas-liquid transportation, crude oil recovery, circulating fluidized beds, sediment transport in rivers, pollutant transport in the atmosphere, cloud formation, fuel injection in engines, bubble column reactors and spray for food processing, to name only a few. As a result of the interaction between the different phases such flows are rather complicated and very difficult to describe theoretically. For the design and optimisation of such multiphase systems a detailed understanding of the interfacial transport phenomena is essential.

This course is rather unique as it is one of few in the community that is specifically designed to deliver, a) a best practice guidance and b) the latest trends, in CFD for dispersed multi-phase flows.

The course appeals to researchers and engineers involved in projects requiring CFD for (wall-bounded) turbulent dispersed multi-phase flows with bubbles, drops or particles.

Moreover, delegates are offered the opportunity to present their work via 10 minute presentations , thereafter, the lecturers can offer prospective solution.. Registration is required

Lecturers

- **Prof. Martin Sommerfeld, University Halle-Wittenberg, Germany**
- **Prof. Berend van Wachem, Imperial College, London, UK**
- **Prof. Ruud Henkes, Shell Global,/TU Delft, Netherlands**

Fees: Members €595, Non-Members €895
PhD Students: Members €440, Non-Members €595

Registration of interest: richard.seoud-ieo@ercoftac.org