Technische Universiteit Eindhoven University of Technology

UNIVERSITY OF TWENTE.

Plaatje met logo erboven: CIR, 3TU

Research Team name: 3TU-Center of Interface Research

Presenter name: *Cees van der Geld*/Hans Kuerten/Bernard Geurts

Team Presentation – Annual Workshop, COST Action MP1106

Dublin, September, 2012

Team's general info

3TU-Center of Interface Research

- 1 Mechanical Engineer
- 2 Numerical Engineers
- 2 technicians
- 11 Ph.D. students
- 7 M.S. students annually
- (Twente and Delft start participating)

Expertise:

- Measuring techniques for phase-transitional flows
- Direct Numerical and Large-Eddy Simulations
- Physical modeling

Relevance to MP1106

- Evaporation and absorption of microscale droplets on a (porous) substrate
- Separation of drops from a gas flow with centrifugal forces
- Evaporating and condensing drops in turbulent gas flow
- Concentration profiles of particles and drops in turbulent pipe flow
- Boiling bubble detachment and steam injection
- Drop geneneration
- Motion of aerosols in a porous medium
- Separation of oil-water by sedimentation
- Spray drying
- Dropwise condensation and drop drainage

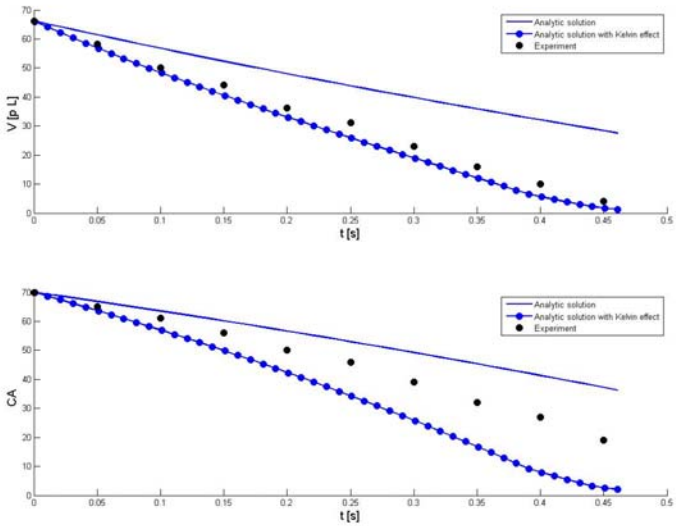
Lab description

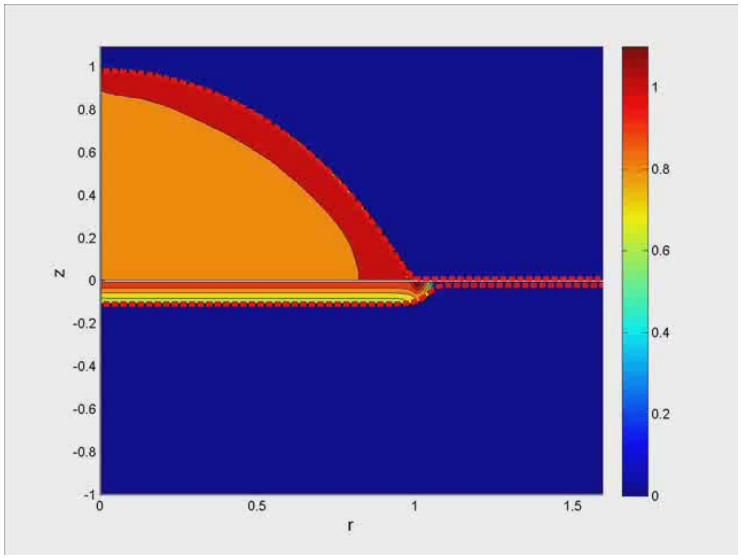
- 3D Particle Tracking Velocimetry
- LDA and Particle Image Velocimetry
- Phosphoric Laser Induced Fluorescence for temperature field
- Ultrasonic humidity sensor
- Phase Doppler drop size and velocity
- Malvern Mastersizer
- Tomoflow™ void fraction profiles
- Codes for DNS and LES in general geometries

Projects

#1 project :

Title: Evaporation and absorption of microscale droplets on a (porous) substrate
Duration: 5 years
Funding organization: STW/Océ/Philips
People involved and their function: 2PhD, 1 MSc, 4 staff members
Facilities/equipment : micro-array drop printer
Most interesting results: figuur vergelijk berek met exp

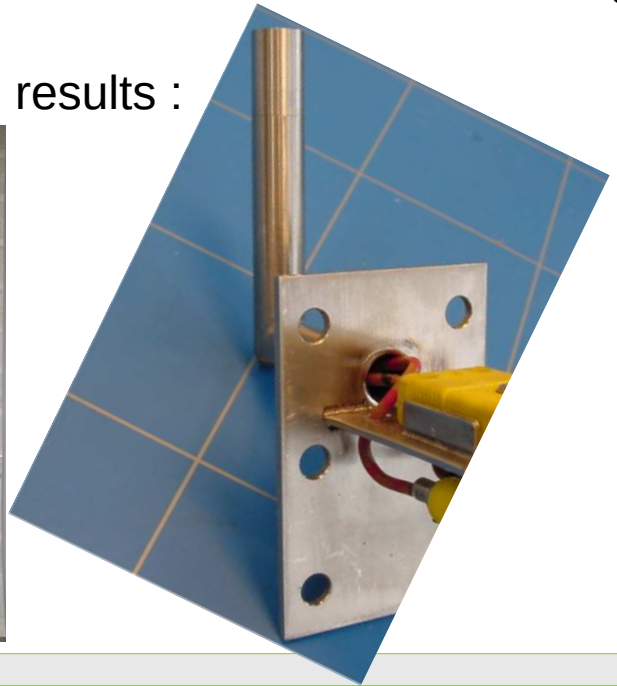


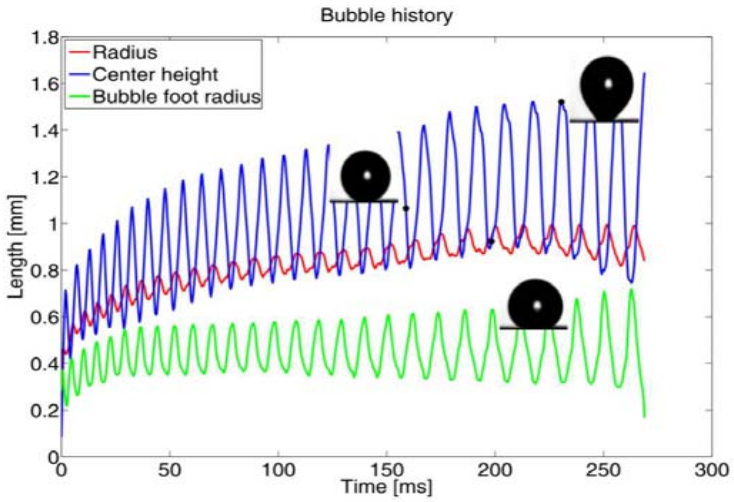


Projects

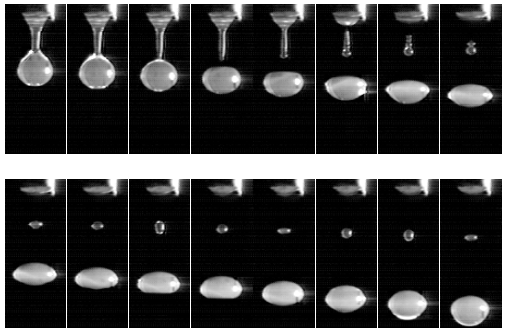
#2 project :

Title: Boiling bubble detachment and flow regime transitions
Duration: 10 years
Funding organization: STW/EC/Stork/ESA/Shell/DAF
People involved and their function: 5 PhD, 9 MSc, 2 staff + technicians
Facilities/equipment : PIV, dedicated bubble generators, phosphoric thermometry and DIM
Most interesting results :



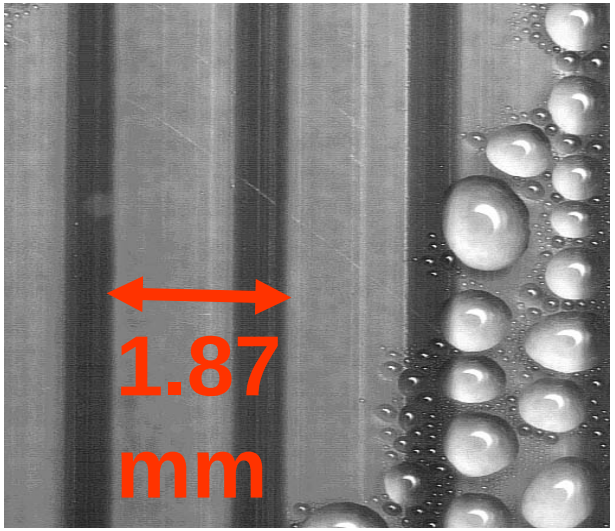


Projects



#3 project :

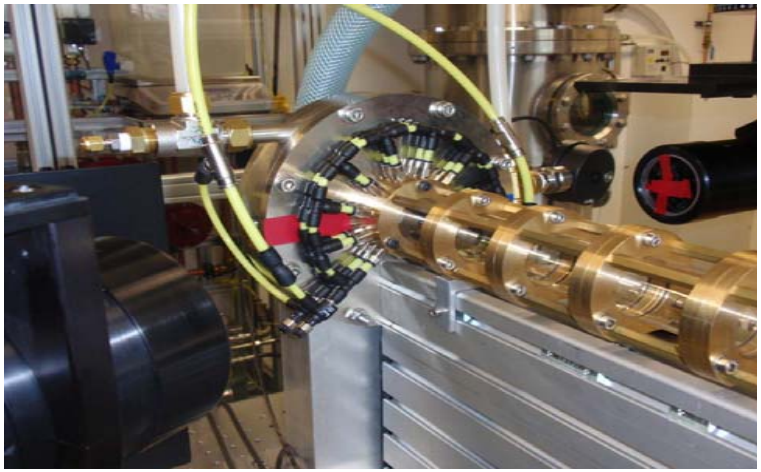
Title: Dropwise condensation and drop drainage
Duration: 17 years
Funding organization: TU/e/Shell/Akzo
People involved and their function : 4 + 0 PhD, 1 postdoc, 1 Technician, 2 staff
Facilities/equipment : infrared camera; ultrasonic humidity sensor; 3D PTV
Most interesting results :

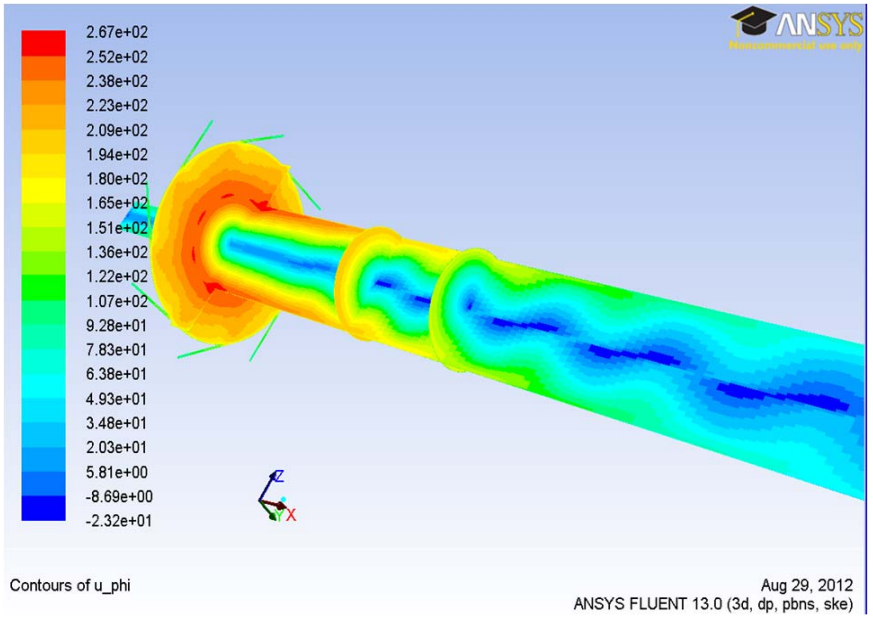


Projects

#4 project :

Title: Separation of drops from a gas flow with centrifugal forces
Duration: 5 years
Funding organization: STW/Shell/Kema/RWE/Twister
People involved and their function : 2 PhD, 2 MSc, 3 staff, 2 technicians
Facilities/equipment :
Most interesting results :

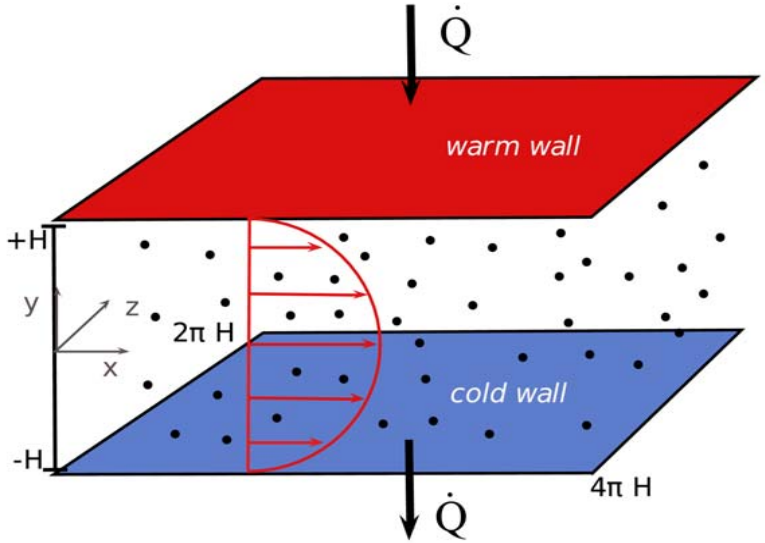


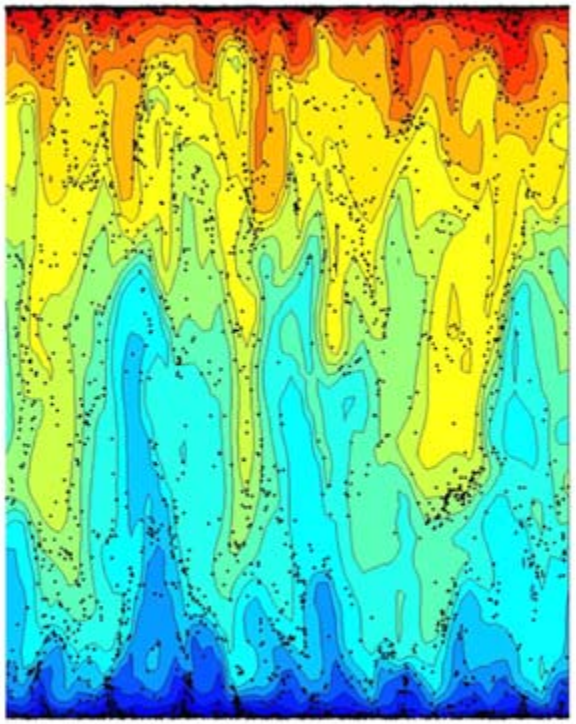


Projects

#5 project :

Title: Evaporating and condensing drops in turbulent gas flow
Duration: 6 years
Funding organization: FOM/STW/Kema
People involved and their function : 2 PhD, 3 staff
Facilities/equipment :
Most interesting results:





Topics for Research Proposal

#1 Topic

Title: Drop coalescence and drop break-up

Promotion images & text: Flow regime transitions and spray creation

Duration : 4 years

Expertise required: 1 Ph.D.

Facilities/equipment required: second ultra-fast video-camera

Topics for Research Proposal

#2 Topic (*use a single slide*)

Title: ____

Promotion images & text (*if required*): ____

Duration (*if estimated*): ____

Expertise required: ____

Facilities/equipment required: _____

Thank you for your attention