



DISPERSED TWO PHASE FLOWS 2021

 **100% DIGITAL CONFERENCE**

 **October 12th-14th, 2021**

ORGANISED BY :


Société Hydrotechnique de France &

- Mickaël Bourgoïn (ENS de Lyon)
- Mathieu Guingo (EDF-MFEE, Paris- Chatou)
- Guillaume Laibe (CRAL, Lyon)
- Jean-Philippe Matas (Université Lyon 1)
- Aurore Naso (Ecole Centrale Lyon)
- Véronique Roig (IMFT, Toulouse)
- Valérie Vidal (ENS de Lyon)
- Romain Volk (ENS de Lyon)

IN ASSOCIATION WITH :



ONLINE EDITION



DISPERSED TWO-PHASE FLOWS 2021



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Meeting organized by Société Hydrotechnique de France
232nd Scientific & Technical session of SHF
October 12th-14th, 2021

DAY 1 - Tuesday, October 12th

8h50-9h00 OPENING - ENS de Lyon, SHF

9h00-10h00 Plenary conference: DEVAUCHELLE Olivier, Institut de Physique du Globe de Paris
THE MECHANICS OF ALLUVIAL RIVERS

10h00-11h00

SESSION 1 High-volume fraction- part 1

Session Chair: R.Volk

10h00-10h20 CHASSAGNE Rémi, Maurin R, Frey P and Chauchat J,

A FRICTIONAL-COLLISIONAL TWO-PHASE FLOW MODEL FOR SEDIMENT TRANSPORT

10h20-10h40 HENRY Christophe, Banari A, Henrique R, Eidt F, Lorenz P, Zimmer K, Hampel U and
Lécrivain G,

EVIDENCE OF COLLISION-INDUCED EFFECTS IN PARTICLE RESUSPENSION

10h40-11h00 FINTZI Nicolas, Pierson J.L. and Gamet L,

TOWARDS A GENERALIZED HYDRODYNAMIC DRAG LAW FOR CYLINDRICAL PARTICLES, EITHER ISOLATED OR IN
PACKED BEDS

11h00-11h30 Coffee Break

11h30-12h30

SESSION 1 High-Volume fraction - part II

Session Chair: P.Y. LAGREE

11h30-11h45 Le Roy de Bonneville Florian, Pierson J.L. and Simonin O,

DIRECT NUMERICAL SIMULATIONS OF SEDIMENTING CYLINDRICAL PARTICLES

11h45-12h00 FALKINHOFF Florencia, Ponomarenko A, Pierson J.L, Gamet L, Bourgoïn M and Volk R,

PORE-SCALE HYDRODYNAMICS IN FIXED BEDS OF SPHERICAL PARTICLES

12h00 -12h15 ROMANO Francis, Izard E and FEDE P

Toward CFD-DEM SIMULATIONS OF THE BLAST FURNACE RACEWAY

12h15-14h00 LUNCH BREAK

14h00-15h00

SESSION 2 Mixing, transfer, phase-change - part I

Session Chair : M. BOURGOIN

14h00-14h20 MULLER Jean, Ruyer P, Rulliere R and CLAUSSE,

VAPORIZATION AT HIGH REDUCED PRESSURE INDUCED BY VERY RAPID POWER INPUT

14h20-14h40 SCHLÜTER Michael, Kexel F, Von Kameke A and Hoffmann M, INVESTIGATION ON

VELOCITY AND CONCENTRATION FIELDS AT TAYLOR BUBBLES IN A REACTIVE BUBBLY FLOW

14h40-15h00 QAISAR RAZA M.D., Colin C and Sebilleau J,

LIFE SPAN OF A BUBBLE GROWING IN SHEAR FLOW IN MICROGRAVITY

15h00-15h30 Coffee break

15h30 - 17h00

SESSION 2 Mixing, transfer, phase-change - part II

Session Chair: P. RUYER

15h30-15h45 TORRES Loric, Tanguy S, Colin C and Urbano A.F,

DIRECT NUMERICAL SIMULATION OF NUCLEATE BOILING IN MICROGRAVITY CONDITIONS

15h45-16h00 NGU Vincent, Morchain J and Cockx A,

REACTIVE BUBBLY FLOW SIMULATION USING TWO-WAY COUPLED 1D MODEL

16h00-16h15 FAVRE Luc, Pujet S, Mimouni S and Colin C,

NEPTUNE_CFD SIMULATIONS OF DEBORA-PROMOTEUR EXPERIMENTS : BOILING FREON IN A VERTICAL PIPE WITH MIXING VANES

16h15-16h30 AYGEBBA Paul, Colin C and Sebilleau J,

DISPERSED BUBBLES CHARACTERISTICS AND THE EFFECT OF NUCLEATED BUBBLES ON UPWARD AND DOWNWARD BOILING FLOWS

16h30-16h45 FERHAT Jacques, Archer A, Mimouni S and Fortes-Patella R,

NUMERICAL SIMULATION OF UNSTEADY CLOUD CAVITATION ON A HYDROFOIL WITH NEPTUNE_CFD

16h45-17h00 FITSCHEN Jürgen, Von Kameke A, Hoffmann M, Wucherpennig T and Schlut M,

EXPERIMENTAL INVESTIGATION OF COMPARTMENT FORMATION IN AERATED STIRRED TANK REACTORS

17h00-18h00 Discussions and posters (Session 1)

Session Chair: V. ROIG

DAY 2 - Wednesday, October 13th

9h20-10h20 Plenary conference, LEBREUILLY Ugo - AIM, CEA, Université Paris-Saclay,
DUST AND GAS AS ONE FLUID, FORMALISM AND ASTROPHYSICAL APPLICATIONS

10h20-11h00

Session Chair: A. NASO

SESSION 3 Numerical methods - part I

10h20-10h40 REGNAULT Paul and Vincent S,

FRONT-TRACKING APPROACHES FOR THE MODELLING OF INTERFACIAL DYNAMICS

10h40-11h00 MATHIEU Antoine, Chauchat J, Bonamy C, Balarac G and Hsu T.J.,

ACCOUNT FOR FINITE-SIZE EFFECTS IN TURBULENCE-RESOLVING TWO-FLUID SIMULATION OF SEDIMENT TRANSPORT

11h00-11h30 Coffee break

11h30-12h30

SESSION 3 Numerical methods - part II

Session Chair: J.L. PIERSON

11h30-11h45 BUTAYE Edouard, Ploquin M, Mer S, Toutant A and Bataille F,

EULER-EULER MULTI-SCALE SIMULATIONS OF INTERNAL TURBULENT BOILING FLOW WITH CONJUGATED HEAT TRANSFER

11h45-12h00 LOMBART Maxime and Laibe G,

HIGH-ORDER DISCONTINUOUS GALERKIN SCHEME FOR THE SMOLUCHOWSKI COAGULATION EQUATION

12h00-12h15 BALVET Guilhem, Ferrand M, Roustan Y, Henry C and Minier J.P.,

WALL FUNCTION BOUNDARY CONDITIONS FOR CONSISTENT HYBRID MOMENTS

12h15-12h30 Heulhard de Montigny Eric and Llor A,

ROBUSTNESS AND CONSISTENCY OF POTENTIALLY-STIFF MULTI-WAY PRESSURE COUPLINGS IN COMPRESSIBLE MULTI-FLUID MODELS

12h30- 14h00 LUNCH BREAK

14h00:15h00

SESSION 4 Particles, drops & bubbles - part I

Session chair: R. VOLK

14h00-14h20 **BOTHE Dieter**, Brenn G and Niethammer M,

THE VELOCITY JUMP DISCONTINUITY FOR SINGLE BUBBLES RISING IN A VISCOELASTIC FLUID - INSIGHTS FROM DIRECT NUMERICAL SIMULATIONS

14h20-14h40 **PIERSON Jean-Lou**, Kharrouba M and Magnaudet J,

HYDRODYNAMIC TORQUE ON A ROTATING FINITE-LENGTH CYLINDRICAL PARTICLE

14h40-15h00 **KEWALRAMANI Gagan**, Bowen Ji, Gradeck M, Dossmann Y, Meignen R and Rimbart N,

EXPERIMENT ANALYSIS OF LAGRANGIAN STATISTICS FOR DROPS IN A TWO-PHASE JET

15h00-15h30 Coffee Break

15h30-17h00

SESSION 4 Particles, drops & bubbles - part II

Session Chair: G. LAIBE

15h30-15h45 **ESTEPA-CANTERO C**, Bolaños-Jiménez Rocío, Foronda-Trillo F.J. and Martínez-Bazán C

DYNAMICS OF A BUBBLE RISING CLOSE TO A VERTICAL WALL

15h45-16h00 **MITROU Stamatina**, Mazzei L and Angeli P,

RHEOLOGY OF DILUTE POLYDISPERSE BUBBLE SUSPENSIONS

16h00-16h15 **FUSTER Daniel**,

BUBBLE-BUBBLE INTERACTIONS IN ACOUSTICALLY EXCITED BUBBLE CLUSTERS

16h15-16h30 **PAVLOV Lucas**, M. Verónica D'Angelo, Cachile M, Roig V and Ern P,

MOTION OF AN INERTIAL BUBBLE RISING IN A THIN-GAP CELL WITH IN-PLANE CONFINEMENT

16h30-16h45 **KENTHESWARAN Kalyani**, Dietrich N and Lalanne B,

DIRECT NUMERICAL SIMULATION OF GAS-LIQUID MASS TRANSFER AROUND A CONTAMINATED BUBBLE

16h45-17h00 **RODGAR M**, Marié J.-L., Socolan H, Doppler D and Matas J.P.,

BUBBLE BEHAVIOR IN A HORIZONTAL HIGH-SPEED SOLID-BODY ROTATING FLOW

17h00 -18h00 Discussion & POSTERS - Session 2

Session Chair: R. VOLK

DAY 3 - Thursday, October 14th

9h00-10h00 Plenary Conference: AUGIER Frédéric, IFPEN
MODELLING OF BUBBLY FLOWS IN BIOREACTORS: A FOCUS ON THE DIFFUSION OF SCALARS & MIXING PHENOMENA

10h00-11h00

Session Chair: V. VIDAL

SESSION 5 Interfacial dynamics - part I

10h00-10h20 MURAI Yuichi, Oishi Y, Tanaka T, Jin Park H and Tasaka Y,

LOCAL BUBBLE CLUSTERS AMPLIFIED TO VOID WAVES IN HORIZONTAL BUBBLY TWO-PHASE TURBULENT BOUNDARY LAYERS

10h20-10h40 RUIZ-RUS Javier, Ern P, Roig V and MARTÍNEZ-BAZÁN C,

EXPLORATION OF COALESCENCE MECHANISMS IN CONFINED BUBBLE SWARMS

10h40-11h00 MARCHIOLI Christian, Hajisharifi A and Soldati A,

TURBULENCE-CONTROLLED EVOLUTION OF PARTICLE PATTERNS ON THE INTERFACE OF DEFORMABLE DROPS

11h00-11h30 Coffee Break

11h30-12h30

Session 5 Interfacial dynamics - part II

Session Chair: N. RIMBERT

11h30-11h45 ANGELI Panagiota, Evripidou N, Anastasiou C,

MECHANISTIC MODELLING FOR THE SEPARATION OF DISPERSED LIQUID-LIQUID PIPE FLOWS

11h45-12h00 SAHOO S, Massiera G, El Itawi H, Lalanne B, Masbernat O and Le Sauze N,


CROSSING OF A LIQUID-LIQUID INTERFACE BY A DROPLET AT HIGH INERTIA

12h00-12h15 VETTORELLO Cyril, Praud O and Roig V,

AIR-WATER GRAVITY-DRIVEN EXCHANGE FLOW

12h15-12h30 CHAGOT Loïc, Kalli M and Angeli P,

EXPERIMENTAL STUDY OF SURFACE ACTIVE AGENTS ON DROPLETS FORMED IN A MICROFLUIDIC CHANNEL



DISPERSED TWO-PHASE FLOWS 2021

12h30 - 14h00 LUNCH BREAK

14h00-15h00

Session 6 Particles in Turbulence - part I

Session Chair: C. MARCHIOLI

14h00-14h20 **BASSET Thomas**, Viggiano B, Barois T, Gibert M, Mordant N, Volk R, Bourgoïn M, Cal Raúl Bayoán

CHARACTERISATION OF ENTRAINMENT THROUGH TURBULENT DIFFUSION AND TWO-FLOW MODEL IN A JET

14h20-14h40 **POLANCO Juan Ignacio**, Krstulovic G,

PREFERENTIAL CONCENTRATION OF PARTICLES IN SUPERFLUID TURBULENCE

14h40-15h00 **GUYOT Grégory**, MATAS J.P. and Cartellier A,

PENETRATION DEPTH OF A PLUNGING JET: FROM MICROJETS TO CASCADES

15h00-15h30 Coffee Break

15h30-17h00

Session 6 Particles in Turbulence - part II

Session Chair: J.P. MATAS

15h30-15h45 **CHAN Timothy T.K.**, Chong Shen Ng and Krug D,

BUBBLE-PARTICLE COLLISIONS IN HOMOGENEOUS ISOTROPIC TURBULENCE

15h45-16h00 **LAPLACE Benjamin**, Pedurand R, Bourgoïn M and Volk R,

DOUBLE PHASE MEASUREMENT IN A RANDOM-JET-STIRRED TURBULENCE TANK

16h00-16h15 **MEES Loic**, Grandoni L, Salizzoni P, Pelliccioni A, Leuzzi G, Pini A, and Monti P,

INTERFEROMETRIC LASER IMAGING DROPLET SIZING FOR RESPIRATORY PARTICLES CHARACTERIZATION

16h15-16h30 **LEFEBVRE Anthony**, Mezui Y, Obligado M, Gluck S and Cartellier A,

A NEW DOPPLER OPTICAL PROBE FOR THE INVESTIGATION OF COMPLEX BEHAVIORS IN BUBBLE COLUMNS

16h30-16h45 **SACCONE Domenico**, Marchioli C and De Marchis M,

EFFECT OF ROUGHNESS ON RIGID FIBERS

16h45-17h15 CONCLUSION by V. VIDAL

End of the conference

POSTERS

(SESSION 1)

BOUCHER Alexandre, Belt R, Le Men C and Liné A,

ON THE HYDRODYNAMICS OF ELONGATED GAS BUBBLES IN SLIGHTLY INCLINED PIPES AND VISCOUS LIQUIDS

MANACH-PERENNOU Bastien, Chauvin R and Guisset S,

DIFFUSE INTERFACE STRATEGY FOR MULTIMATERIAL RADIATION HYDRODYNAMICS

YANG Dapeng, Sergis A and Hardalupas Y,

BUBBLE FORMATION FROM AN ARTIFICIAL CAVITY AND ITS TEMPORAL EVOLUTION DURING FLOW BOILING

(SESSION 2)

LLOR Antoine, Heulhard de Montigny E and Vazquez-Gonzalez T,

PLAYING (ALMOST) SAFE ON ROBUSTNESS & ENTROPY IN COMPRESSIBLE MULTI-FLUID DYNAMICS WITH GEOMETRY, ENERGY (GEEC)

Heulhard de Montigny Eric and Llor A,

PRESERVING ISENTROPIC CONSISTENCY IN MULTI-FLUID SYSTEMS: BASIC ENERGY CLOSURES AND VARIATIONAL EVOLUTION EQUATIONS

EL OUAFA Mohamed, Vincenu-Pem S and Lechenadec V (V.L.C.),

BLOCK PRECONDITIONING OF MONOLITHIC SOLVERS FOR INCOMPRESSIBLE TWO-PHASE FLOWS AT LARGE D AND VISCOSITY RATIOS

PARTNERS

