CFD 2024

15th International Conference on Industrial Applications of Computational Fluid Dynamics

Trondheim, June 11-13, 2024

SINTEF

Day 1 - June 11	
0800-0830	Registration
0830-0900	Opening
0900-0945	Keynote
0945-1015	**Break/Coffee**
1015-1145	Session 1 and 2
1145-1200	**Short break**
1200-1300	Session 1 and 2
1300-1400	**LUNCH**
1400-1445	Keynote
1445-1515	**Break/Coffee**
1515-1645	**Session 3 and 4**

Day 2 - June 12	
0800-0830	Registration
0830-0915	Keynote
0915-0930	**Short break**
0930-1100	Session 5 and 6
1100-1130	**Break/Coffee**
1130-1300	Session 7 and 8
1300-1400	**LUNCH**
1400-1445	Keynote
1445-1500	**Break / Coffee**
1500-1630	Session 9 and 10
1830-2130	**CONFERENCE DINNER**

Day 3 - June 13	
0830-0915	Keynote
0915-0930	**Short break**
0930-1100	Session 11 and 12
1100-1130	**Break / Coffee**
1130-1240	Session 13 and 14
1240-1330	**LUNCH**
1330-1415	Keynote
1415-1430	Closure

Monday June 10, 1830-2030: Social event
Drinks and light food will be served at "Den gode nabo", a local pub.
It is across the old town bridge in the basement under the restaurant named Rive Gauche.

Wednesday June 12, 1830-2130: Conference dinner
At conference venue

Information on Trondheim: https://visittrondheim.no/en/

Practical information:

Getting to/from airport:

The train leaves about 2 times each hour. A train ticket costs 46 NOK for adults. You can buy tickets from the vending machine at the airport. On board the train you can also buy tickets, but you pay will have to pay a surcharge of 40 NOK per ticket. The train station in Trondheim is close to the conference venue.

There is an airport bus which stops midtown and at the conference venue and leaves every 10 mins. It costs about 235-285 kr.

Taxis are also available.

Information to presenters:
You need to present from you own laptop.
Check if all works fine in a break before your talk.
There are 20 minutes set aside for each presentation.
Lead presenters (first presenter) in each session is given 30 mins.
Keynote presenters have 45 minutes (but some time for announcements and introduction)
The time slot includes connecting the computer, being introduced, and answering 1-2 questions.
We recommend preparing a talk for 15 minutes (25 minutes for lead presenters, 30-35 mins for keynotes).

Day 1 - June 11

Time		
0800-0830	Registration	
0830-0900	Opening	
0900-0945	Keynote: Fast and simplified models to solve complex problems	Thomas Lichtenegger, JKU
0945-1015	**Break/Coffee**	

Time	**Session 1** Auditorium: Olav Tgyggvason 2+3	**Metallurgical Applications** Chair: Quinn G.Reynolds	**Session 2** Auditorium: Munkholmen/Kristiansten	**Pragmatic modelling** Chair: Thomas Lichtenegger
1015-1045	Prediction of mass transfer regimes in a steelmaking ladle	Pascal Gardin, Alexey Matveichev	Multiphase CFD model of plugging in cohesive slurries	Boris Balakin, Pavel Struchalin
1045-1105	A practical computational model to estimate PAH emission from furnaces	Kurian J. Vachaparambil, Balram Panjwani	A novel practical approach to transient thermal analyses in the oil and gas field	Damian Dywan
1105-1125	Simulation of melt flow in steel continuous casting considering transient clogging of submerged entry nozzle	Hadi Barati	A practical approach to calculating inertial forces for non-trivial subsea structures using CFD simulation	Maciej Kryś
1125-1145	Interface-resolved large eddy simulations of primary breakup in metal melt gas atomization	Dennis Thuy, J.J.C. Remmers, N.G. Deen, G. Finotello		
1145-1200	**Short break**			
1200-1220	Direct numerical simulation of mass transfer at the oil water interface in a model metallurgical ladle	S. De Rosa, J. Maarek, N. Joubert, S. Zaleski	A pragmatism-based model of alumina distribution in industrial Hall-Heroult cells	Stein Tore Johansen et al.
1220-1240	Optimization of mesh coupling between nozzle and mould for modelling turbulent flow during continuous casting	Johanna Hjeltström, Pavel E. Ramirez Lopez, Anton Sundström, Gunnar Hellström	On the importance of numerical calibration in recurrence CFD simulations	Hannes Lumetzberger
1240-1300	Understanding the continuous casting process with CFD modelling: the impact of microscopic dynamics on macroscopic scales	Christine Gruber	A Model of Freezing a Sea-Water Droplet Moving in a Cold Air	Dmitri Eskin, Georgii Fisher, Mikhail Vulf
1300-1400	**LUNCH**			
1400-1445	Keynote: Mass transfer from bubbles: how to mo	Maike Baltussen, TU Eindhoven		
1445-1515	**Break/Coffee**			

Time	**Session 3** Auditorium: Olav Tgyggvason 2+3	**Bubbly flow** Chair: Maike Baltussen	**Session 4** Auditorium: Munkholmen/Kristiansten	**Reactive flows** Chair: Are Simonsen
1515-1545	Mass transfer in bubbly flows at Different configurations and varying bubble composition	Roland Rzehak, Haris Khan	Comparison of dimethyl ether and natural gas combustion in a swirl-stabilized industrial burner using CFD simulations	Nico Schmitz, Moritz Diewald
1545-1605	Single bubble dynamics under the influence of Marangoni force	Mahdi Saeedipour, Sadra Mahmoudi	CFD Simulation of Natural Gas and Hydrogen Oxyfuel Combustion: Comparison of kinetic mechanisms, combustion mechanisms and WSGG radiation models	Franziska Ott, Nico Schmitz
1605-1625	Multiphase flow dynamics in mini-channels used in water electrolysis	Paul Roger Leinan, Paal Skjetne, Loic Duffo	Development of a CFD model for a gas-lift chemical reactor	Oleg Russkin, Petr Kulchakovskiy, Ziyang Fan, Ming Jia
1625-1645	On a dissolving bubble plume from subsea release of CO_2	Jan Erik Olsen, Paal Skjetne		

Day 2 - June 12

0800-0830	Registration	
0830-0915	Keynote: Challenges and solutions of CFD simulations for the steel and non-ferrous	Hans-Jürgen Odenthal, SMS group
0915-0930	**Short break**	

	Session 5	**Metallurgy**	**Session 6**	**Numerics and methods**
	Auditorium: Olav Tgyggvason 2+3	Chair: Eirik Manger	Auditorium: Munkholmen/Kristiansten	Chair: Peter Witt
0930-1000	Computational modelling of electric arc behaviour in direct-current smelting furnaces using hydrogen as a reductant	Quinn G. Reynolds, Isabel J. Geldenhuys, Håkon V. Haraldsson, Sverre G. Johnsen, Rodney T. Jones,	Numerical prediction of flow morphologies in horizontal feed pipes	Thomas Höhne
1000-1020	Numerical modeling of the submerged arc furnace	Moritz Eickhoff, Suhas Surya Narayana Murthy, Thomas	CFD analysis of ultrasonic vibrations in enhancing recycled polymer extrusion efficiency	Jakob Buist, Tijmen Mateboer
1020-1040	Modeling a pilot furnace for manganese alloys	Manuel Sparta, Vetle Kjær Risinggård	MultiMorph - A Morphology-Adaptive Multifield Two-Fluid Model	Fabian Schlegel, Matej Tekavčič, Richard Meller
1040-1100	Investigating Thermal Dynamics in Submerged Arc Furnaces through Numerical and Water Modeling	Umair Jamil Ur Rahman, Vinod Dhiman	Development of a CFD model for supersonic gas flow in a close-coupled atomizer	Angelica Lantto, Pavel Ramirez Lopez, Mikael Risberg & Hyunjin Yang
1100-1130	**Break/Coffee**			

	Session 7	**Metallurgy and furnaces**	**Session 8**	**Lagrangian methods 1**
	Auditorium: Olav Tgyggvason 2+3	Chair: Stein Tore Johansen	Auditorium: Munkholmen/Kristiansten	Chair: Paal Skjetne
1130-1200	On Model Assisted Measurements and Applications	Eirik Manger	A particle scale model of charge and slurry behaviour in SAG mills including coarse particle breakage, attrition and slurry phase grinding and transport	Paul W. Cleary, Matt D. Sinnott, Gary Delaney and Rob D. Morrison
1200-1220	Investigation of submerged massive gas injection into liquid: numerical simulations and experimental observations	Mahdi Saeedipour	CFD-DEM simulation of chemical looping gasification of biogenic residues at 1 MWth scale	Christoph Graf, Falah Alobaid, Jochen Ströhle, Bernd Epple
1220-1240	Modelling Effects of Lancing into Process Material Through Furnace Tap-Holes	Markus Erwee, Quinn Reynolds Johan Zietsman	Blockage prediction in multiphase flow with cohesive particles using machine learning	Nazerke Saparbayeva, Boris V. Balakin, Pavel G. Struchalin and
1240-1300	CFD Simulation of Melt Flow in a Pilot Container Glass Furnace: Investigation of the Influence of the Ratio of Electrical Power to Burner Power on the Melt Flow	Kathrina Theisen, Moritz Eickhoff, Herbert Pfeifer	CFD simulation of organic dust deflagration in a vertical channel	Simon Schneiderbauer, Georg Meyer
1300-1400	**LUNCH**			
1400-1445	Keynote: Multiphysics aspects of the gas bubble evolution during water electrolysis	Gerd Mutschke, HZDR		
1445-1500	**Break / Coffee**			

	Session 9	**Electrochemical systems**	**Session 10**	**Fluidized beds**
	Auditorium: Olav Tgyggvason 2+3	Chair: Gerd Mutschke	Auditorium: Munkholmen/Kristiansten	Chair: Niels Deen
1500-1530	Modelling of Flow through Multi-Phase Porous Media for Fuel Cells	Kshitij Neroorkar, Mohit Tandon, Jeremy HIRA	Three Phase Modelling of a Coarse Particle Flotation Machine	Peter Witt, Yuqing Feng and Krishna Mohanarangam,
1530-1550	A CFD parametric study for the optimized catalyst layers thickness and porosity based on the performance of a zero-gap alkaline water electrolyzer (AWE) cell	Muhammad Asim Sarwar	A Comparative Study of Different CFD-codes for Fluidized Beds	Parindra Kusriantoko, Per Fredrik Daun, Kristian Etienne Einarsrud
1550-1610	Solutal Marangoni flow around a growing hydrogen bubble: An immersed boundary simulation study	Faeze Khalighi	Gas-Solid Injection in Fluidized Beds for Biomass Wastes Valorization	Lucas Massaro Sousa, Benjamin AMBLARD, Sina TEBIANIAN
1610-1630	Computational modelling of a plasma jet	Sai Likitha Siddanathi, Lars-Göran Westerberg, et al	Experimental Study on Sticking Behavior during Iron Oxide Reduction for the Metal Fuel Cycle	Nicole Stevens

1830-2130 CONFERENCE DINNER

Day 3 - June 13

| 0830-0915 | Keynote: Towards manufacturing digital twins using GPU based physics simulations: a particles perspective | Nicolin Govender, University of Joburg and Blaze Computing |

0915-0930 **Short break**

	Session 11	**Lagrangian methods 2**		**Session 12**	**Applied CFD**
	Auditorium: Olav Tgyggvason 2+3	Chair: Paul Cleary		Auditorium: Munkholmen/Kristiansten	Chair:Roland Rzehak
0930-1000	Unprecedented Insight into the Thermal Processing of a Blast Furnace	Bernhard Peters		CFD simulation of the filling of a high-pressure hydrogen tank	Marcer Richard
1000-1020	A CFD-CPM model for the simulation of the fluidization of fine-grained ores	Simon Schneiderbauer		Surfactant-Polymer Interactions in a Combined Enhanced Oil Recovery Flooding	Pablo Druetta
1020-1040	Towards predicting cavitation collapse effects in Eulerian CFD model	Suat Canberk Ozan, Pascal Müller, Jan Hendrik Cloete		CFD of a Flow Conditioning Unit	Pablo Matias Dupuy, Netaji Ravi Kiran Kesana
1040-1100	Numerical Study on Transport of Respiratory Droplets in Ventilated Indoor Environments	Yi Feng, Dongyue Li, Daniele Marchisio(a), Marco Vanni, Antonio		LES study and comparison with experiments of an axial-radial difuser configuration	Are J. Simonsen

1100-1130 **Break / Coffee**

	Session 13	**Non-Newtonian flows and polymers**		**Session 14**	**AI/ML applications and pelletizing**
	Auditorium: Olav Tgyggvason 2+3	Chair: Paal Skjetne		Auditorium: Munkholmen/Kristiansten	Chair: Thomas Höhne
1130-1200	Enhancing Extrusion Performance: Macroscopic Analysis of Dispersive Mixing Sections	Jakob Buist		Integration of Deep Learning and 3D CFD-PBM Model for Characterizing Mg(OH)2 Precipitation	Antonello Raponi, Daniele Marchisio
1200-1220	Towards the understanding of the effect of non-Newtonian liquids in binary droplet collisions	Arie H.Huijgen MSc		3D Bubble Shape Reconstruction from 2D Imagery Using CNNs	Douwe Orij
1220-1240	Improving Flow Balancing: Employing GNF-X(M) for Predicting Flow Profile	Jakob Buist, Jordin van 't Veld		Hydrodynamics Improvement of a Pelletizer Chamber Using Computational Fluid Dynamics	Thiago Roberto Almeida

1240-1330 **LUNCH**

| 1330-1415 | Keynote: Learnings from 40 year of working with CFD | Stein Tore Johansen, SINTEF |

1415-1430 Closure