Second International Symposium on Computational Particle Technology

and

Thirteenth International Conference on CFD in the Minerals and Process Industries

4-8 December 2018, Melbourne, Australia

PREFACE

Much of our environment and the benefits that we derive from our surroundings are strongly influenced by the interactions of the three primary phases of matter - solids, liquids, and gases. These interactions often occur at surfaces, with the individual phases being discrete in form. Particles and powders, which can be either wet or dry, and range in size from nanometers to centimeters, are one very important example of such a multiphase system. They have properties that are characteristic of each of the three primary phases. For example, under certain conditions they can withstand deformation like solids, flow like a liquid and exhibit compressibility like a gas. These features give rise to another state of matter – particulate/granular matter - that is poorly understood, posing a challenge to the scientific and engineering community for years.

Understanding the fundamentals governing particle and particle-fluid flows is of paramount importance to the design, control and optimisation of particulate and multiphase processes widely used in many industries. In the past, different measurement techniques have been developed, but there have been problems in probing the underlying physics and solving practical problems generally and reliably. Alternatively, a promising technique that can overcome these problems is computer simulation. This often involves a multiscale approach to understand phenomena at different length and time scales which, for particles, includes: (i) at the molecular/sub-particle scale to determine the interaction forces between particles, fluid and wall, and the transport behaviour between particles and/or pores; (ii) at the micro/particle scale to understand particle flow and force structures in relation to different flow conditions; (iii) at the meso/macro scale to formulate governing equations, constitutive relations and boundary conditions for continuum-based process modelling and simulation; and (iv) at the process equipment scale to quantify flow and process performance for control and optimisation. This consideration also applies to soft particles such as bubbles and droplets. There is also a need to consider the presence of fluid(s) and the coupling between fluid flow, heat and mass transfer. In the past two decades or so, with the rapid development of computer technology, many advanced computational technologies, either discrete- or continuum-based, have been developed and applied to tackle problems of various types.

The Second International Symposium on Computational Particle Technology, successive to the first one in Suzhou China in March 2016, aims to provide a forum to discuss the frontier and challenging problems in the modelling and simulation of complex particulate and multiphase processes, covering a wide spectrum from fundamental research to industrial application.

The Thirteenth International Conference on Computational Fluid Dynamics in the Minerals and Process Industries (CFD2018) is the eighth conference in this series to be held in Melbourne with SINTEF in Trondheim, Norway hosting the other five. Processing, be it in the Mineral, Metallurgical, Chemical, Oil & Gas or other related industries, often involves challenging fluid dynamics involving more than one phase and frequently other complex phenomena such as combustion, heat transfer, chemical reactions, non-Newtonian behaviour and phase change. Recognising the special challenges of these industries and that CFD was capable of tackling such problems, this conference series was established more than twenty years to provide a forum for discussing, promoting and advancing the application of CFD to the process industries.

The above two symposia or conferences are held together in Melbourne this time, representing a joint effort of two teams. As before, the joint conference is composed of plenary, keynote, oral and poster presentations. To be a high-level forum, world-leading scientists or experts from different countries are invited to deliver the plenary and keynote presentations at the event. There are also student sessions that offer an outstanding opportunity for PhD candidates to share their research and experience, important to the future developments in this exciting field.

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Liejin Guo, Xi'an Jiaotong University, China
Peter Witt, CSIRO, Australia

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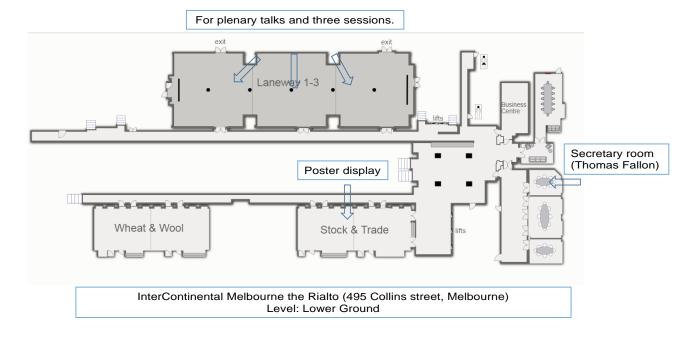Computer Transition Systems, http://www.cts.com.au/newspage.html

Maps for the Conference and Dinner Venues

Conference Venue: InterContinental Melbourne the Rialto (495 Collins street, Melbourne CBD)

For plenary talks and three sessions.

Laneway 1-3

Poster display

Secretary room (Thomas Fallon)

Business Centre

Wheat & Wool

Stock & Trade

InterContinental Melbourne the Rialto (495 Collins street, Melbourne)
Level: Lower Ground

Dinner Venue: CQ Function Melbourne (123 Queen Street, Melbourne CBD)

123 Queen Street — Dinner Venue

InterContinental Melbourne — Conference Venue

CONFERENCE PROGRAM

Outline

Day 0 - Tuesday, 4 December 2018	
15:00 – 20:00	Registration/Cocktail Reception (Intercontinental Hotel: 495 Collins Street, Melbourne CBD)
Day 1 - Wednesday, 5 December 2018	
08:30 – 09:00	Conference Opening
09:00 – 10:30	Plenary Session
10:30 – 11:00	Poster Session/Morning Tea
11:00 – 12:30	Parallel Sessions
12:30 – 13:30	Lunch
13:30 – 15:30	Parallel Sessions
15:30 – 16:00	Poster Session/Afternoon Tea
16:00 – 18:00	Parallel Student Sessions
18:00 – 19:00	Poster Session And Happy Hour
Day 2 - Thursday, 6 December 2018	
08:30 – 10:00	Plenary Sessions
10:00 – 10:30	Poster Session/Morning Tea
10:30 – 12:30	Parallel Sessions
12:30 – 13:30	Lunch
13:30 – 15:30	Parallel Sessions
15:30 – 16:00	Poster Session/Afternoon Tea
16:00 – 18:00	Parallel Student Sessions
18:00 – 22:00	Conference Dinner (CQ Functions - 123 Queen Street, Melbourne CBD)
Day 3- Friday, 7 December 2018	
08:30 – 10:30	Parallel Sessions
10:30 - 11:00	Morning Tea
11:00 – 12:30	Parallel Sessions
12:30 – 13:30	Lunch
13:30 – 15:00	Parallel Student Sessions
15:00 – 15:30	Poster Session/Afternoon Tea
15:30 – 17:00	Plenary Session
17:00 – 17:30	Award Presentation, Wrap-Up And Conclusion
17:30 – 18:30	Happy Hour And Farewell
Day 4- Saturday, 8 December 2018	
Post Conference Activities Are Cancelled Due To Lack Of Responses	

NB: (1) Time Allocated For Plenary - 45 Minutes, Keynote – 30 Minutes, Regular – 15 Minutes, And Students – 10 Minutes.
     (2) Special Issues in Powder Technology for CPT /Applied Mathematical Modelling for CFD (may be limited to the presentations at the conference)

15:00-20:00	**Day 0 (Tuesday, 4 December)** Registration & Cocktail Reception (18:00-19:00) (Intercontinental Hotel)		
	Day 1 (Wednesday, 5 December)		
08:30-09:00	Conference Opening Prof Aibing Yu (Monash University) Prof Robin Batterham (University Of Melbourne)		
	Plenary Session Chair: Peter Witt And Liejin Guo		
09:00-09:45	Discrete Simulation Of Granular And Particle-Fluid Systems (page:2) Professor Wei Ge Chinese Academy Of Sciences		
09:45-10:30	Modelling Subsea Gas Blowouts (page:5) Jan Erik Olsen SINTEF Industry		
10:30-11:00	Poster Session/Morning Tea		
	Laneway Room 1	**Laneway Room 2**	**Laneway Room 3**
	Simulation Methods Chair: Mikio Sakai, Qiang Zhou	Granular Dynamics Chair: Alain De Ryck, Paul Cleary	Fluid Bed Operations Chair: Peter Witt, Anthony B. Murphy
11:00-11:30	Keynote Using Failure Dynamics At The Mesoscale For Early Prediction Of Slope Failure From Data (page:7) Antoinette Tordesillas University Of Melbourne	Keynote Use Of 3D Printing For DEM Model Validation (page:45) Karen Hapgood Deakin University, Geelong Australia	Keynote Multi-Scale Modeling Of Reactive Dense Flows (page:190) Kun Luo Zhejiang University
11:30-11:45	12-Velocity Multiple-Relaxation-Time Lattice Boltzmann Model For Three Dimensional Incompressible Flows (page:9) Jiayi Hua, Wenhuan Zhang, Shibo Kuang, Aibing Yu, Baochang Shi, Yihang Wang (Ningbo University)	Segregation In Sheared Granular Matter (page:47) Gerald G Pereira And Paul W Cleary (CSIRO)	CFD-DEM Study of Mixing/Segregation of Particles in Fluidized Beds under Influence of Size, Density, and Shape (page:191) Esmaeil Abbaszadeh Molaei, Aibing Yu, Zongyan Zhou, Michael Small, Phillip Fawell (CSIRO)
11:45-12:00	A Solid-Stresses-Based Multiphase Particle-In-Cell Model For Gas-Particle Flow In Fluidized Beds (page:10) Vikrant Verma And Johan T. Padding (Delft University Of Technology)	Effect Of Vibrational And Geometrical Parameters On Granular Capillarity Induced By A Vibrating Tube (page:48) Fengxian Fan, Huateng Zhang, Eric J R Parteli, Thorsten Pöschel And Mingxu Su (University Of Shanghai For Science And Technology)	A Numerical Study Of The Solid Dispersion Behavior And Residence Time Distribution In A Circulating Fluidized Bed Methanation Reactor (page:196) Yuli Zhang, Rui Xiao, Mao Ye (Hohai University)
12:00-12:15	MP-PIC Simulation Of Blood Flow Across A LAD With High Stenosis (page:12) Jian Liu, Fan Yu, Yu Zhang (Tsinghua University)	Particle Based Modelling Of Metal Powder Flow In Additive Manufacturing Systems (page:49) G.W. Delaney, S. Gulizia, V. Lemiale, C. Doblin, A.B. Murphy (CSIRO)	System Design Of A Dual Fluidized Bed Pyrolysis Reactor (page:200) Reinhard Seiser And Robert Cattolica (University Of California San Diego)
12:15-12:30	Orientation Discretization In Discrete Modelling Of Non-Spherical Particles (page:14) Kejun Dong, Kamyar Kildashti, Bijan Samali And Aibing Yu (Western Sydney University)	Modeling Of Deformation Of Granular Pellet In Small-Scale "Unit Cell" DEM Simulations (page:50) Intan Soraya Shamsudin, Li Ge Wang And Rachel M. Smith (The University Of Sheffield)	EMMS Application In Rectangular Circulating Fluidized Beds (page:193) Qiuya Tu, Haigang Wang (Chinese Academy Of Sciences)
	12:30-13:30 Lunch		
	Simulation Methods (Continued) Chair: Karen Hapgood, Alex Heath	Granular Dynamics (Continued) Chair: Jin Ooi, Fengxian Fan	Fluid Bed Operations (Continued) Chair: Vikrant Verma, Yansong Shen
13:30-14:00	Keynote Key Sub-Grid Quantities Affecting The Filtered Drag Force And The Derivation And Analysis Of Their Transport Equations (page:15) Qiang Zhou Xi'an Jiaotong University	Keynote DEM-FEM Coupled Modelling On The Compaction And Sintering Of Elemental And Composite Powders (page:51) Xizhong An Northeastern University	Keynote Application Of CFD For Operating Of Industrial Equipment: Take Ultra-Supercritical Coal Fired Power Plant Boiler For Example (page:197) Wenqi Zhong Southeast University
14:00-14:15	Simulation of particle dissolution in RANS simulations of turbulent (page:44) M. Philip Schwarz (CSIRO Mineral Resources)	Keynote Wall Effects In Powder Flow In Continuum Mechanics Modeling (page:53) Alain De Ryck IMT Mines Albi, France	Keynote CFD Study Of Ironmaking Blast Furnace: Recent Model Development And Application (page:199) Shibo Kuang Monash University
14:15-14:30	Impact Energy Dissipation Analysis During Ship Loading Of Iron Ore By Large-Scale MPI-GPU-DEM Simulation (page:17) Jieqing Gan, Tim Evans And Aibing Yu (Monash University)		
14:30-14:45	Designer Granular Materials - A Combined Discrete Element Method And Evolutionary Algorithm Approach (page:18) Gary Delaney And David Howard (CSIRO)	Modelling Of Particle Breakage In Grinding (page:54), Ebrahim Ghasemi Ardi, Cheng Lyu, Aibing Yu And Runyu Yang (University Of New South Wales)	The Phase Separation In Multi-Stage Fluidized Bed Reactors (page:131) Chenxi Zhang, Yao Wang, Weizhong Qian And Fei Wei (Tsinghua University)
14:45-15:00	Local Contact Point Treatment In Sphere Packings (page:20)	The Forces On Cylinders In The Free Molecule Regime (page:55) Jun Wang, Song Yu, And Guodong Xia (Beijing University Of Technology, China)	On Pragmatism In Industrial Modelling Part VI: Management, Retrieval And Analysis Of CFD Cases (page:202)

Time	Simulation Methods	Granular Dynamics	Fluid Bed Operations
	Michael Harasek, Mario Pichler, Bahram Haddadi Sisakht, Hamid Reza Norouzi And Christian Jordan (TU Wien, Austria)		Josip Zoric, Stig Urheim And Kristian E. Einarsrud (SINTEF)
15:00-15:15	Just-In-Time Training (JITT) Paradigm For Granular Processes (page:22) Daniel N. Wilke, Nicolin Govender, Patrick Pizette (University Of Pretoria, South Africa)	Study Of Rheological Behaviour Of Granular Non-spherical Particle Suspensions Via CFD-DEM (page:93) Vinay V. Mahajan, Junaid Mehmood, Yousef M. F. El Hasadi and Johan T. Padding (Delft University of Technology)	Numerical Investigation On The Wake Of NACA0015 Hydrofoil (page:228) Sara Vahaji, Jiang Han, Sherman C.P. Cheung, Guan H. Yeoh And Jiyuan Tu (Deakin University)
15:15-15:30	Experimentally Validated Computational Models To Predict The Impact Of Humidity On The Flow Of Granular Mixtures (page:24) Koyel Sen, Raj Mukherjee, Mao Chen, Bodhisattwa Chaudhuri (University Of Connecticut, USA)	Grain-Based Discrete Element Method Modelling of Multi-scale Fracturing in Geomaterials under Dynamic Loading (page:58) Qianbing Zhang, Xiaofeng Li, Kai Liu And Wanrui Hu (Monash University)	Coupling Of CFD-DEM And Reaction Model For 3D Fluidized Beds (page:194) Jun Xie And Wenqi Zhong (Southeast University)
15:30-16:00	Poster Session/Afternoon Tea		
	Simulation Methods (Continued) (Student Session) Chair: Yijiao Jiang, Shibo Kuang	Granular Dynamics (Continued) (Student Session) Chair: Roberto Moreno-Atanasio, Baojun Zhao	Fluid Bed Operations (Continued) (Student Session) Chair: Sutthichai Boonprasop, Reinhard Seiser
16:00-16:10	Liquid Redistribution Upon The Liquid-Bridge Rupture Between Two Unequal Particles With A Minimal Energy Method (page:25) Dongling Wu, Ping Zhou, Baojun Zhao, Tony Howes, Geoff Wang (Central South University)	DEM Simulation Of Powder Packing Process In 3D Printing (page:69) Lin Wang, Aibing Yu, Zongyan Zhou (Monash University)	Predicting Minimum Fluidization Velocity For Vacuum Fluidized Beds (page:206) Lanka Weerasiri, Vishwanath Kumar, Subrat Das And Daniel Fabijanic (Deakin University)
16:10-16:20	Multi-Level Coarse-Grain Model In DEM And CFD-DEM Simulations (page:26) Daniel Queteschiner, Thomas Lichtenegger, Stefan Pirker, Simon Schneiderbauer (Johannes Kepler University Linz)	DEM Study of the Effects of Particle Shape and DRI-flap Shape on Burden Distribution in COREX Melter Gasifier (page:355) Yang You, Zhiguo Luo, Haifeng Li, Zongshu Zou, Runyu Yang (University of New South Wales)	A CFD-DEM Model For The Simulation Of Direct Reduction Of Iron Ore In Fluidized Beds (page:207) Mustafa Efe Kinaci, Thomas Lichtenegger, Simon Schneiderbauer (Johannes Kepler University)
16:20-16:30	A Numerical Study On The Reduction, Softening, And Melting Of Iron Ore Pellets And Dripping Of Molten Iron And Slag Using CFD-DEM (page:28) Mehdi Baniasadi, Maryam Baniasadi, Bernhard Peters (University Of Luxembourg)	Finite Element Investigation Of Briquetting Of Iron Ore Particles (page:63) Md Tariqul Hasan, C.L. Li, R.Y. Yang (University Of New South Wales)	Hydrogen Production In Fluidized Bed Membrane Reactors (page:209) Ramon J.W. Voncken, Ivo Roghair, Martin Van Sint Annaland (Eindhoven University Of Technology)
16:30-16:40	Numerical Study On Gas-Solid Two-Phase Flow In A Flue Gas Turbine (page:30) Jingna Pan, Jianjun Wang (China University Of Petroleum)	Experimental Study On Packing Densification Of Non-Spherical Particles Under Air Impact (page:64) Dazhao Gou, Xizhong An, Runyu Yang (Northeastern University)	Multiphase Direct Numerical Simulations (DNS) Of Oil-Water Flows Through Digitized Porous Rocks (page:211) H.V. Patel, J.A.M. Kuipers, E.A.J.F. Peters (Eindhoven University Of Technology)
16:40-16:50	Particle Scale Modelling To Study The Effect Of Bubble Dynamics On Orientation Of Ellipsoids (page:32) Siddhartha Shrestha And Zongyan Zhou (Monash University)	Shape Effects On Bulk Modulus Of Maximally Random Jamming Packing Of Intersecting Spherocylinders (page:65) Wei Deng, Lufeng Liu, Ye Yuan, Shuixiang Li (Peking University, China)	Determination Of The Minimum Fluidization Velocity In Fluidized Bed At Elevated Pressure And Temperature By CFD Simulation (page:223) Yingjuan Shao, Jinrao Gu, Wenqi Zhong, Aibing Yu (Southeast University)
16:50-17:00	A Continuum Model Of The Cohesive Avalanche Considering Stick-Slip Behaviours Of Granular Materials (page:34) LYM. Yang, Q.J. Zheng and A.B. Yu (Monash University)	Multi-Particle FEM Modelling On Hot Compaction Of Tic-316L Composite Powders (page:67) Defeng Wang, Xizhong An, Peng Han, Qian Jia (Northeastern University)	Simulation Of Combustion In Coal-Fired Circulating Fluidized Bed Boiler For Supercritical CO_2 Power Cycle (page:214) Ying Cui, Wenqi Zhong, Jun Xiang, Guoyao Liu (Southeast University)
17:00-17:10	Multi-Parameter Optimization Of Non-Catalytic Partial Oxidation Of Natural Gas Using Reduced Order Models And CFD (page:35) Philip Rößger, Yury Voloshchuk, Andreas Richter, Bernd Meyer (TU Bergakademie Freiberg)	Self-Assembly Of Granular Spheres Under One-Dimensional Vibration (page:68) Reza Amirifar, Kejun Dong, Qinghua Zeng (Western Sydney University)	Numerical Simulation Of Droplet Formation In Microfluidic Cross-Junction (page:221) Wei Gao, Wei Yu, Chengbin Zhang, Xiangdong Liu, Yongping Chen (Southeast University)
17:10-17:20	Modelling Biochemical Interactions In The Early Stage Formation Of Atherosclerosis Within The Arterial Wall (page:37) Ratchanon Piemjaiswang, Sargon A Gabriel, Yan Ding, Yuqing Feng, Pornpote Piumsomboon And Benjapon Chalermsinsuwan (Chulalongkorn University)	Waste-To- Energy Conversion Of Sewage Sludge Using Sorption-Enhanced Thermochemical Technology (page:57) Xiaoxia Yang And Yijiao Jiang (Macquarie University)	Direct Numerical Simulation Of Hot Spots In Packed Bed Reactors (page:217) V. Chandra, E.A.J.F. Peters And J.A.M Kuipers (Eindhoven University Of Technology)
17:20-17:30	On The Validity Of The Two-Fluid-KTGF Approach For Dense Gravity-Driven Granular Flows (page:38) Alexander Busch And Stein Tore Johansen (Norwegian University Of Science And Technology)	Shape Effects On Particle Segregation By Discrete Element Method (DEM) (page:70) Zhouzun Xie, Changxing Li, Xizhong An, Yansong Shen (University of New South Wales)	Cluster-Induced Turbulence Closure Models For Momentum And Heat Transfer In Large-Scale Gas-Solid Flows (page:219) Stefanie Rauchenzauner And Simon Schneiderbauer (Johannes Kepler University)
17:30-17:40	Direct Numerical Simulations And Force Correlations Of Assemblies Of Non-Spherical Particles (page:41) Sathish K. P., Sanjeevi And Johan T. Padding (Delft University Of Technology)	Molecular Dynamics Simulation Of Silica Oligomerization (page:71) Malgorzata Kaminska, Frederic Gruy, Jules Valente (Ecole Des Mines De Saint-Etienne, France)	Numerical Investigation Of Gas Redistribution Effects By Raceways On The In-Furnace States And Performance Of Ironmaking Blast Furnace (page:220) Lulu Jiao, Shibo Kuang, Aibing Yu, Yuntao Li, Xiaoming Mao, Hui Xu (Monash University)
17:40-17:50	An Immersed-Grid Method For Simulation Of Viscous Flows (page:42)	Valid Local Quantities of Particle-fluid Flows for Constitutive Relations	A Numerical Approach For Generic Three Phases Flow Simulation (page:260)

	Laneway Room 1	Laneway Room 2	Laneway Room 3
	T.T.V. Le, N. Mai-Duy, K. Le-Cao, T. Tran-Cong (University Of Southern Queensland)	Qinfu Hou, Zongyan Zhou, Jennifer S. Curtis, and Aibing Yu (Monash University)	Son Tung Dang, Stein Tore Johansen And John Christian Morud (Norwegian University Of Science And Technology)
17:50-18:00	Oxy-Fuel Combustion Behaviors In Fluidized Bed: Studied By Experiment And CFD Simulation (page:43) Qinwen Liu, Wenqi Zhong, Aibing Yu (*Southeast University*)	Numerical Investigation On The Rebound Mechanism Of Spherical Fine Particle Impacting Several Blade Materials (page:72) Juan DI, Shun-Sen WANG, Yong-Hui XIE (Xi'an Jiaotong University)	CFD Modelling Of Gas-Solid Fluidised Bed With Eularian Single Phase Air Coupled Explicitly With Eularian Solid Phase (page:213) Mst Farhana Diba, Md. Rezwanul Karim, Jamal Naser (Swinburne University Of Technology)
18:00-19:00	Poster Session & Happy Hour		

Day 2 (Thursday, 6 December)			
	Plenary Session Chair: Wei Ge, Hans Kuipers		
08:30-09:15	Using DEM To Develop Constitutive Models For CFD Simulations Of Particulate Flows (page:1) Professor Jennifer Curtis University of California, Davis		
09:15-10:00	DEM-CFD Analysis Of Contact Electrification Processes (page:3) Professor Chuan-Yu Wu University of Surrey		
10:00-10:30	Poster Session/Morning Tea		
	Laneway Room 1	Laneway Room 2	Laneway Room 3
	Particle-Fluid Flow & Multiphase Flow Chair: Runyu Yang, Hao Zhang	Granular Dynamics (Continued) Chair: David Pinson, Xizhong An	Multiphase, High-Temperature And Complicated Operations Chair: Benjapon Chalermsinsuwan, Yuqing Feng
10:30-11:00	Keynote Simulation And Modelling Of Ellipsoids In Particulate Systems (page:94) Zongyan Zhou Monash University	Keynote Reduced Stiffness Model For Cohesive Particles (page:73) Toshitsugu Tanaka Osaka University	Keynote The Mushy Zone In A Model Of Arc Welding Of Aluminium Alloys (page:224) Anthony B. Murphy CSIRO Manufacturing
11:00-11:15	Detachment Of Droplets On Solid Surface In The Surfactant Solution (page:95) Xinglong Shang, Zhengyuan Luo, Bofeng Bai (Xi'an Jiaotong University)	Keynote Transient Simulation Of Particle Segregation By Coupling Granular Flow Model And Diffusive, Segregating Fluxes (page:74) Qijun Zheng Monash University	Computational Models For Pyrometallurgical Phase Separation Problems (page:226) Quinn G. Reynolds, O.F. Oxtoby, M.W. Erwee, And P.J.A. Bezuidenhout (Mintek)
11:15-11:30	Computational Particle Fluid Dynamics Modeling Of Gas-Solids Flow In A Downer (page:96) Xingying Lan, Yingya Wu, Liqing Qin, Jinsen Gao (China University Of Petroleum, Beijing)		The Optical Properties And Electrical Field Enhancement Of Gold Nanospheres (page:204) Bin Chen, Linzhuang Xing, Dong Li, Wenjuan Wu (Xi'an Jiaotong University)
11:30-11:45	Interaction modelling for CFD-DEM simulations of floating particles (page:145) T.M.J. (Tim) Nijssen, K.A. (Kay) Buist, J.A.M. (Hans) Kuipers, J. (Jan) van der Stel and A.T. (Allert) Adema (Eindhoven University of Technology)	Advances in DEM simulations using GPUS: A focus on particle shape and number (page:16) Nicolin Govender, Charley Wu, Daniel Wilke, Johannes Kinhast (University of Surrey)	Mesoscale Modeling Of Drop Size Distribution In Rotor-Stator Devices (page:234) Ning Yang, Chao Chen, Xiaoping Guan, Ying Ren (Chinese Academy Of Sciences)
11:45-12:00	DEM-CFD Analysis On The Influence Mechanism Of Electrostatics On Single Bubble In Gas-Solid Fluidized Bed (page:100) Zhen Tan, Cai Liang, Junfei Li (Monash University)	Numerical Simulation Of Granular Flow Using Combined Discrete Element Model (page:78) Yongzhi Zhao, Huaqing Ma, Zihan Liu, Ying You, Changhua Xie, Yuan Zhao (Zhejiang University)	Characterization Of Size Resolved Atmospheric Particles In The Vicinity Of Iron And Steelmaking Industries In China (page:157) Vladimir Strezov, Tao Kan, Tim Evans, Xiaoxia Yang And Yijiao Jiang (Macquarie University)
12:00-12:15	Distribution Homogeneity Of Solid Particles In Slurry Taylor Flow (page:101) Zhengbiao Peng, Mohd. Mostafizur Rahman, Behdad Moghtaderi And Elham Doroodchi (The University Of Newcastle)	Liquid Film Modeling Within An Eulerian Multiphase Framework (page:79) Kshitij Neroorkar, Mohit Tandon, S. Jagan Mohan, And Raghavendra Krishnamurthy (Siemens Industry Software Computational Dynamics India Pvt Ltd)	Numerical Analysis Of The Component Interaction In A Hydrocyclone Treating Heterogeneous Mixture Using Multi-Phase CFD Model (page:230) Mandakini Padhi, Narasimha Mangadoddy (Indian Institute Of Technology)
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Time	Particle-Fluid Flow & Multiphase Flow (Continued) Chair: Qianbing Zhang, Nicolin Govender	Multiphase, High-Temperature And Complicated Operations (continued) Chair: Toshitsuga Tanaka, Qinfu Hou	Multiphase, High-Temperature And Complicated Operations Chair: G.W. Delaney, Josip Zoric
13:30-14:00	Keynote Multi-Scale Modeling Of Multiphase Complex Flows: Bridging The Gap Between Fundamentals And Industrial Applications (page:104) Yuqing Feng CSIRO Mineral Resources	Keynote Key Technologies For Industrial Granular Flow Simulations (page:147) Mikio Sakai The University Of Tokyo	Keynote Bubble Dynamics In Hydrogen Production By Photocatalytic Water Splitting (page:236) Liejin Guo Xi'an Jiaotong University
14:00-14:15	Keynote Modelling And Optimisation Of Reacting Particle Flow: Examples In Ironmaking Industry (page:105) Yansong Shen University Of New South Wales	Keynote Particle Size Segregation For Fun And (Hopefully) Profit (page:148) David Pinson Bluescope Steel	High-Resolution Large Time-Step Schemes for Inviscid Fluid Flow (page:238) Sigbjørn Løland Bore and Tore Flåtten (Norwegian University of Science and Technology)
14:15-14:30			Euler-Lagrangian Simulations On Pyrolysis Oil Spray And Viscosity Effects On A High-Pressure Multi-Hole Injector Nozzle (page:247) Carlos Varas, A.E., Buist, K.A., And Kuipers, J.A.M (Eindhoven University Of Technology)
14:30-14:45	Numerical Prediction On The Drag Force And Heat Transfer Of Various Particles In Supercritical Water (page:109) Hao Zhang, Bo Xiong, Xizhong An (Northeastern University)	Predictive Optimization Of SAG Mill Performance Using DEM (page:149) Peter Rizkalla, Rahul Bharadwaj And Lucilla Almeida (LEAP Australia Pty Ltd)	Numerical Simulation On Flow Field Characteristics Of Backflow Controller (page:242) Huaizhong Shi, Jingfeng Tao, Heqian Zhao (China University Of Petroleum (Beijing))
14:45-15:00	An Investigation On Interactions Between Ultrasonic Waves And Particles Based On The Monte Carlo Method (page:108) Mingxu Su, Bingfa Huang, Fengxian Fan, Huinan Yang, Jun Chen And Xiaoshu Cai (University Of Shanghai For Science And Technology)	Numerical Investigation On Heat Transfer Characteristics Of Particle In Supercritical Water (page:152) Zhenqun Wu, Hui Jin, Liang Zhao, Liejin Guo (Xi'an Jiaotong University)	Strengthening Of Microalloying Spring Steels By Secondary Particles (page:158) Xiaodong Ma, Zongze Huang, Zan Yao, Zhouhua Jiang, Geoff Wang, Baojun Zhao (University Of Queensland)
15:00-15:15	A Multi-Scale Modelling Of Oscillatory Blood Flow And Mass Transportation In A Human Coronary Sargon A. Gabriel, Yan Ding, John A. Gear, Yuqing Feng (CSIRO)	Lattice Boltzmann investigation on the interactions between non-Newtonian fluid and ellipsoid particles Zheng Qi, Shibo Kuang, Aibing Yu (Monash University)	Numerical investigation of the effects of oxygen enrichment on an ironmaking blast furnace Haiqi Nie, Zhaoyang Li, Shibo Kuang and Aibing Yu (Monash-SEU JRI)
15:15-15:30	Numerical Investigation On Erosion Characteristics Of Double Elbows For Gas-Solid Flow (page:151) Yu Wang, Rongtang Liu, Ming Liu, Junjie Yan (Xi'an Jiaotong University)	Numerical Investigation On The Impacts Of The Evaporation Process On Cough Droplets Dispersions In An Enclosed Environment (page:154) Yihuan Yan, Xiangdong Li And Jiyuan Tu (RMIT University)	An Experimental Study Of Enhanced Heat Transfer Of Nano-Encapsulated Phase Change Material Slurry Embedded In Metal Foam (page:243) Wenqiang Li, Hao Wan, Peijin Liu, Guoqiang He, Fei Qin (Northwestern Polytechnical University)
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16:00-16:10	A DNS-DEM Coupling Methodology For Turbulent Non-Newtonian Suspension Flow (page:113) E.Z. Zheng, M. Rudman, S.B. Kuang, A. Chryss (Monash University)	Shape Optimization Of Axial Symmetrical Hoppers In The Discharging Of Granular Materials (page:80) Xingjian Huang, Qijun Zheng, Aibing Yu And Wenyi Yan (Monash University)	CFD Modelling Of A Lime Kiln Burner (page:249) Brad Wilson, Roger Hassold, Yvonne Yu, Renata Favalli, Jordan Parham (FCT Combustion Pty Ltd)
16:10-16:20	Numerical Simulation Of Solid-Fluid Interaction In A Supercritical Water Fluidized Bed (page:119) Changsheng Ren, Liejin Guo, Hui Jin, Xingang Qi, Zhisong Ou (Xi'an Jiaotong Universty)	DEM Study On Granular Mixing In A Double-Screw Conical Mixer (page:82) Ruihuan Cai, Malin Liu, Yongzhi Zhao (Zhejiang University)	Modelling Of Effect Of Gas Flow Rate On Open-Eye Formation And Mixing Time Of Nickel Alloy In Argon Stirred Industrial Ladle (page:251) Eshwar Kumar Ramasetti, Ville-Valtteri Visuri, Petri Sulasalmi And Timo Fabritius (University OF Oulu)
16:20-16:30	Effect Of Lift And Hydrodynamic Torque On Fluidization Of Non-Spherical Particles: Experimental Validation (page:116) Ivan Mema, Vinay Mahajan, Kay Buist, Hans Kuipers, Johan T. Padding (Delft University Of Technology)	A Numerical Study On The Solid Flow Behavior In A Rotating Drum Based On An Eulerian-Eulerian Approach Using A Frictional Stress Model (page:83) Wenjie Rong, Yuqing Feng, Peter Witt, Phil Schwarz, Baokuan Li, Tao Song, Junwu Zhou (Northeastern University)	Droplet-Droplet Collisions In A Spray Dryer (page:252) Giulia Finotello, K.A. Buist, J.T. Padding, A. Jongsma, F. Innings, J.A.M. Kuipers (Eindhoven University Of Technology)
16:30-16:40	CFD-DEM simulation of particle-laden liquid-solid flow interacting with a resolved fixed spherical bubble (page:117) Linhan Ge, Roberto Moreno-Atanasio, Geoffrey (The University Of Newcastle)	Numerical Analysis Of Elongated Particles Flowing Through Shear Cell (page:84) M. Hossain, H. P. Zhu, A. B. Yu (Western Sydney University)	Numerical Study Of Droplet Generation Via Co-Flowing Microfluidic Device Under Electric Field (page:292) Lei Li, Jiayu Zhang, Chengbin Zhang (Southeast University)
16:40-16:50	Three-Dimensional Simulation Of Oxy-Fuel Combustion In A Circulation Fluidized Bed (page:126) Jinrao Gu, Wenqi Zhong And Aibing Yu (Southeast University)	DEM Study Of Copper Stave-Burden Interaction In The Ironmaking Blast Furnace (page:85) Joel Samsu, Zongyan Zhou, David Pinson, Sheng Chew (Monash University)	Numerical And Experimental Study Of Bubble Formation In Supersaturated Water (page:256) A. Battistella, S.S.C. Aelen, I. Roghair, M. Van Sint Annaland (Eindhoven University Of Technology)
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17:10-17:20	Direct Numerical Simulations Of Low-Reynolds-Number Flow Past Arrays Of Ellipsoidal Particles: Effect Of Particle Orientation On Drag Force (page:123) Xinyang Li, Ming Jiang, Zheqing Huang And Qiang Zhou (Xi'an Jiaotong University)	Axial Segregation Of Binary-Sized Mixture Of Ellipsoids In A Rotating Drum (page:89) Siyuan He, Jieqing Gan, Aibing Yu, David Pinson, And Zongyan Zhou (Monash University)	Three Phase Flows Using DSMC Method For Simulating Slurry Bubble Columns (page:262) S.S. Kamath, J.T. Padding, K.A. Buist, J. A. M. Kuipers (Eindhoven University Of Technology)
17:20-17:30	Analysis On Retention Capacity Of Liquid Bridge Between Two Particles Under Oscillation (page:124) Jian Chen, Kenneth Williams, Jie Guo (The University Of Newcastle)	DEM Study Of The Performance Of Screw Conveyor With An Inclined Screw Blade (page:90) Xin Li, Qinfu Hou, Jieqing Gan, Ruiping Zou, Aibing Yu (Monash University)	Assessing The Efficacy Of Inhomogeneous Thermal Conductivity To Enhance Heat Transfer Within Fusion Reactor Blankets (page:264) C. J. Camobreco, A. PothÉRat And G. J. Sheard (Monash University)
17:30-17:40	Study Of Particle Velocity Distribution And Mixing Index In Single And Multiple Jets Fluidized Bed: Comparison Of Model Predictions With Experiments (page:125) Runjia Liu, Zongyan Zhou, Rui Xiao And Aibing Yu (Monash University)	Numerical Study Of Vibration Induced Size Segregation (page:91) Dizhe Zhang, Zongyan Zhou, And David Pinson (Monash University)	CFD Modelling Of Bubble-Particle Collision Efficiency In Froth Flotation (page:265) Shuofu Li, Yuqing Feng, Phil Schwarz, Peter Witt, Chunbao Sun (University Of Science And Technology Beijing)
17:40-17:50	CFD-PBM Modelling Of Mixer Settler (page:173) Guo Xu-Huan, Zhao Qiu-Yue, Zhang Zi-Mu, Zhang Ting-An, Zhu Shuai (Northeastern University)	Analysis Of Factors Affecting Funnel-Shaped Moving Bed (page:88) D.W. Sang, L. Qiu, Y. Feng, And X. Zhang (University Of Science And Technology Beijing)	Characteristics Of Axial Velocity Wave Zone And Internal Particle Movement In Hydrocyclones (page:266) Qiang Zhao , Baoyu Cui, Dezhou Wei, Xuetao Wang , Yuqing Feng (Northeastern University)
17:50-18:00	TBA	TBA	TBA
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09:00-09:15	DEM-Based Virtual Experimental Blast Furnace Model And Its Applications (page:245) Qinfu Hou, Dianyu E, Shibo Kuang, Zhaoyang Li, And Aibing Yu (Monash University)	Development Of A DEM-CFD Multiphysics Model For Predicting Powder Behavior In A Dry Powder Inhaler (page:156) Ariel R. Muliadi, Lucilla Almeida, Yu Liu, Carl Wassgren, Rahul Bharadwaj, Edward Yost, Ajit Narang (Genentech, South San Francisco)	Application Of Scale-Resolving And RANS Approaches To The Simulation Of Fluid Mixing And Residence Time In An Industrial Crystalliser (page:281) Gary J. Brown, David F. Fletcher, Jeremy W. Leggoe, David S. Whyte (The University Of Western Australia)
09:15-09:30	Discrete Simulation Of Particle Manipulation In Micro-Fluid With Acoustic Force (page:129) Wenjing Yang, Peijin Liu, Qiang Li And Guoqiang He (Northwestern Polytechnical University)	Study On The Characteristics And Influence Factors Of Air Core Inside Hydrocyclone (page:233) Baoyu Cui, Dezhou Wei, Qiang Zhao, Xuetao Wang, Yuqing Feng (Northeastern University)	Modelling Heat Loss In Metal Runner During Furnace Tapping (page:273) Jan Erik Olsen And Maria Hoem (SINTEF Industry)
09:30-09:45	Higmill Modelling By DEM And CFD (page:135) Alex Heath (Outotec Australia)	Conversion Characteristics Of A Single Coal Char Particle With High Porosity Moving In A Hot O_2/CO_2 Atmosphere (page:161) Zhicun Xue, Qinghua Guo, Yan Gong, Yifei Wang, Guangsuo Yu (East China University Of Science And Technology)	Debottlenecking Of Flow In A Hot Strip Mill Walking Beam Furnace (page:275) Habib D. Zughbi And Iain Mcdonald (Bluescope Steel)
09:45-10:00	Fluid Flow Through Unresolved CT Data-Sets – Can Gray-Scale LB Deliver Useful Results? (page:136) Gerald G Pereira (CSIRO)	Imaging Soft Matters and Interfaces at Nano-to-Micro Scale (page:304) Jing Fu (Monash University)	Modelling Of Diesel Spray Combustion For Top-Submerged-Lance Processes (page:277) Daniele Obiso And Sebastian Kriebitzsch (CIC Virtuhcon)
10:00-10:15	Non-spherical Particle Behaviors in a Spouted Bed (page:102)	Modeling Of Multiphase Flow And Particle Deposition Characteristics In Radiant Syngas	A Novel Tundish Design Based On CFD-DEM Study (page:279)

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10:30-11:00	Poster Session/Morning Tea		
	Particle-Fluid Flow & Multiphase Flow (Continued) Chair: Hidehiro Kamiya, Yu Zhang	Multiphase, High-Temperature And Complicated Operations (continued) Chair: Vladimir Strezov, Haiping Zhu	Multiphase, High-Temperature And Complicated Operations Chair: Matt Sinnott, Ning Yang
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11:30-11:45	Effects Of Diffusion Of Metal Vapour In An Argon TIG Welding Plasma (page:138) J. Xiang, F. F. Chen, H. Park And A. B. Murphy (CSIRO)	Industrial Scale Simulations Of Tablets On Gpus: A Validation Study (page:163) Hermann Kureck, Nicolin Govender, Johannes G. Khinast (Research Center Pharmaceutical Engineering, Austria)	Keynote Application Of Mathematical Models For Different Electroslag Remelting Processes (page:284) Zhouhua Jiang Northeastern University
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	Multiphase, High-Temperature And Complicated Operations (continued)) (Student Session) Chair: Daniel N. Wilke, Chenxi Zhang	Multiphase, High-Temperature And Complicated Operations (continued) (Student Session) Chair: Rachel M. Smith, Yuli Zhang	Multiphase, High-Temperature And Complicated Operations (Student Session) Chair: Gerald G. Pereira, Mohit P. Tandon
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14:10-14:20	Numerical Modelling Of Low-Rank Coal Briquettes Pyrolysis In A Gas Heat Carrier Pyrolyzer (page:183) Yuting Zhuo And Yansong Shen (University Of New South Wales)	Gas Effect On Particle Flow Trajectories In Bell-Less Top Blast Furnace Burden Distribution (page:177) Yinxuan Qiu, Zongyan Zhou, David Pinson, Sheng Chew (Monash University)	Numerical Simulation Of A Large Scale Bubble Column On Massively Parallel Computers (page:296) M.V. Masterov And M.W. Baltussen, J.A.M. Kuipers (Eindhoven University Of Technology)
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	Ruizhi Jin, Erfan Keshavarzian, Bo Wang, Kejun Dong, Kenny Kwok, Ming Zhao (Western Sydney University)	Yu Qiu, Wenqi Zhong, Yingjuan Shao, Aibing Yu (Southeast University)	Helmholtz-Zentrum Dresden – Rossendorf, Institute Of Fluid Dynamics
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P014	The emerging and coupling of localized zones in sheared granular materials(page:321)	Wei Zhou, Yiao Li, Gang Ma, Jiaying Liu
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