International Symposium on Simulation and Modelling of Particulate Systems (SIMPAS-2023)

Suzhou, China

25-28 August 2023

Outline

Preface

Simulation and Modelling of Particulate Systems (SIMPAS) aims to model and understand the fundamentals governing particle and particle-fluid flows which is of paramount importance to the design, control and optimisation of particulate and multiphase processes in many industries. This often involves a multiscale approach at different length and time scales, including at the molecular/sub-particle scale to determine the particle-particle/particle-fluid interaction forces; at the micro/particle scale to understand particle flow and force structures; at the meso/macro scale to formulate governing equations, constitutive relations and boundary conditions for continuum-based process modelling and simulation; and at the process equipment scale to quantify flow and process performance for control and optimisation. In the past two decades or so, many advanced computational technologies, either discrete or continuum-based, have been developed and applied to tackle problems of various types, which can be evidenced by some established dedicated international symposia. For example, following the spirit of SIMPAS, the ARC Research Hub for Computational Particle Technology (CPT) initiated the CPT symposium series since 2016. The SIMPAS and CPT symposia have provided an outstanding 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 symposium series also offers outstanding opportunities for idea exchange, networking and research collaboration.

SIMPAS Centre/Lab is an internationally recognized research facility in particle science and technology, established by Professor Aibing Yu at Univ of New South Wales (UNSW) and then at Monash University (MU) since 1992. Its research theme is to understand the fundamentals governing particulate flow and packing through rigorous simulation and modelling of the particle-particle and particle-fluid interactions at different time and length scales, with its application oriented to the mineral/metallurgical/material and related industries. It is a key player for a number of significant initiatives in Australia, including ARC Centre of Excellence for Functional Nanomaterials, Australia-China Joint Centre for Minerals, Metallurgy and Materials, ARC Hub for Computational Particle Technology and ARC Research Hub for Smart Process Design and Control in Mineral and Metallurgical Industries. In the past 30 years or so, SIMPAS has established its leading position through extensive publications in a number of areas, including: macroscopic modelling and microscopic simulation of particle packing, structural analysis and transport properties, granular and multi-phase flows, and computer simulation and modelling of particulate systems. SIMPAS at UNSW and MU has graduated >50 postdoc fellows and >130 PhD students, plus >100 visiting academics/scholars from different countries. SIMPAS members have spreading worldwide, including Australia, China, Japan, Netherlands, UK, USA and other countries.

SIMPAS 2023 symposium is to be held in Suzhou, China on 25-28 Aug 2023 to commemorate Professor Yu's 60th birthday and his over 35 years' research in particle technology. As before, it aims to showcase new achievements, discuss the frontier and challenging problems in SIMPAS. At the same time, it provides a forum to celebrate the achievements of Professor Yu and his research team SIMPAS in the past.

Organising Committee
Simpas International Symposium (SIMPAS-2023).

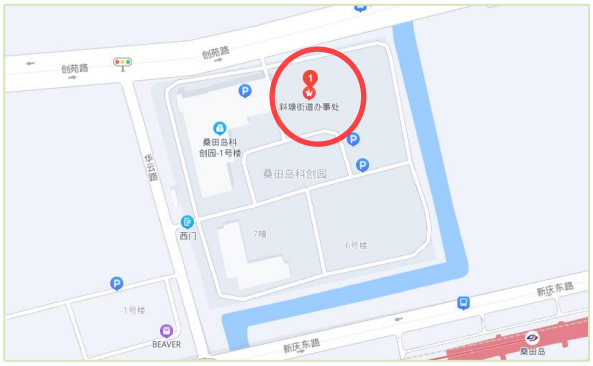
Conference Venue

Physical Conference Address and Floorplan

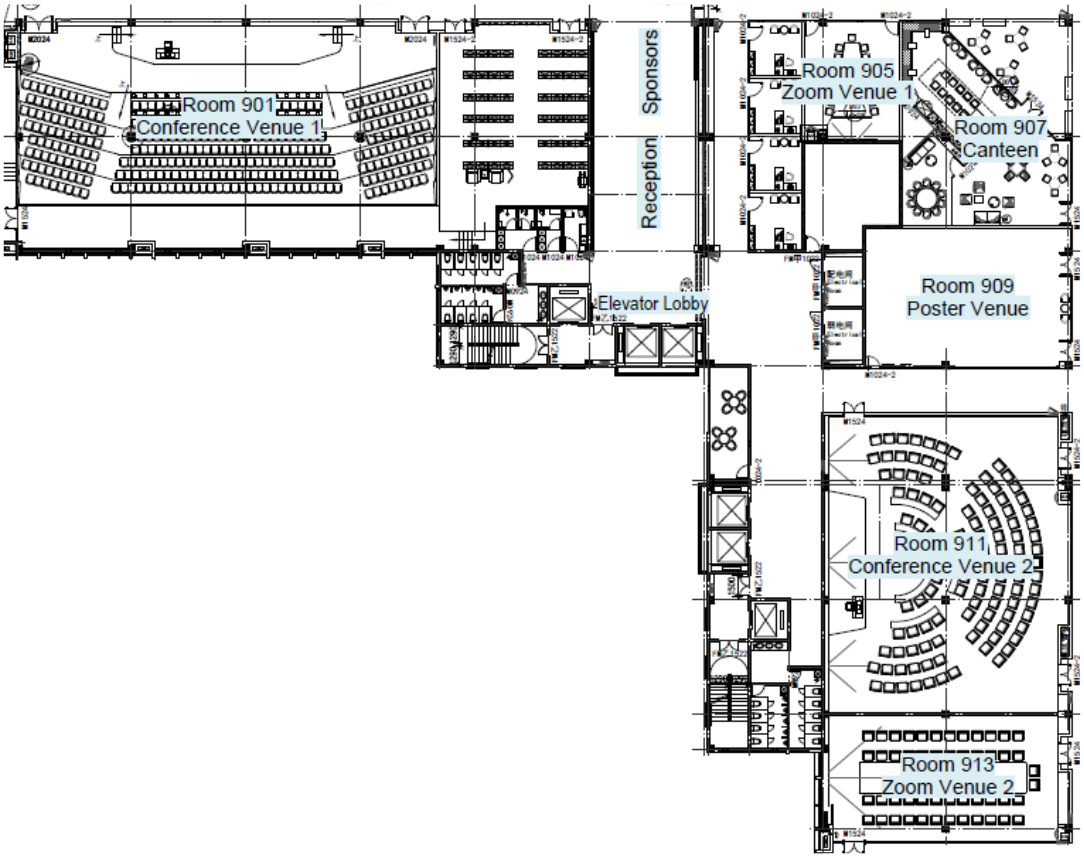
Conference address

SangTian Dao Innovation Park (Building 2, 9th floor, right photo), No 1 Huayun Rd, SIP, Suzhou, Jiangsu, China (Red circle, left photo)

江苏省苏州市苏州工业园区华云路 1 号桑田岛科创园 2 号楼 9 层

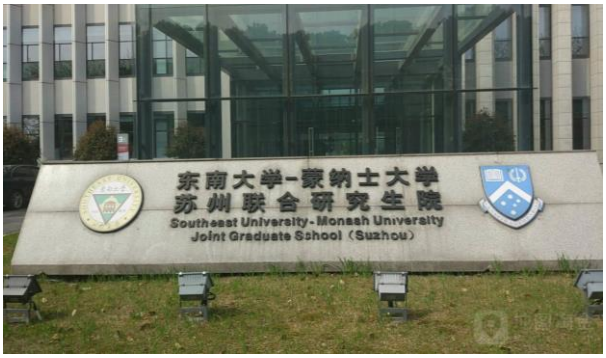


Floorplan



Conference Registration and Reception (25th Aug 2023, 2:30pm-5:30pm)

25 号会议签到地址:东南大学-蒙纳士大学苏州联合研究生院 1 楼，林泉街苏州工业园区林泉街 377 号公共学院 7 号楼；



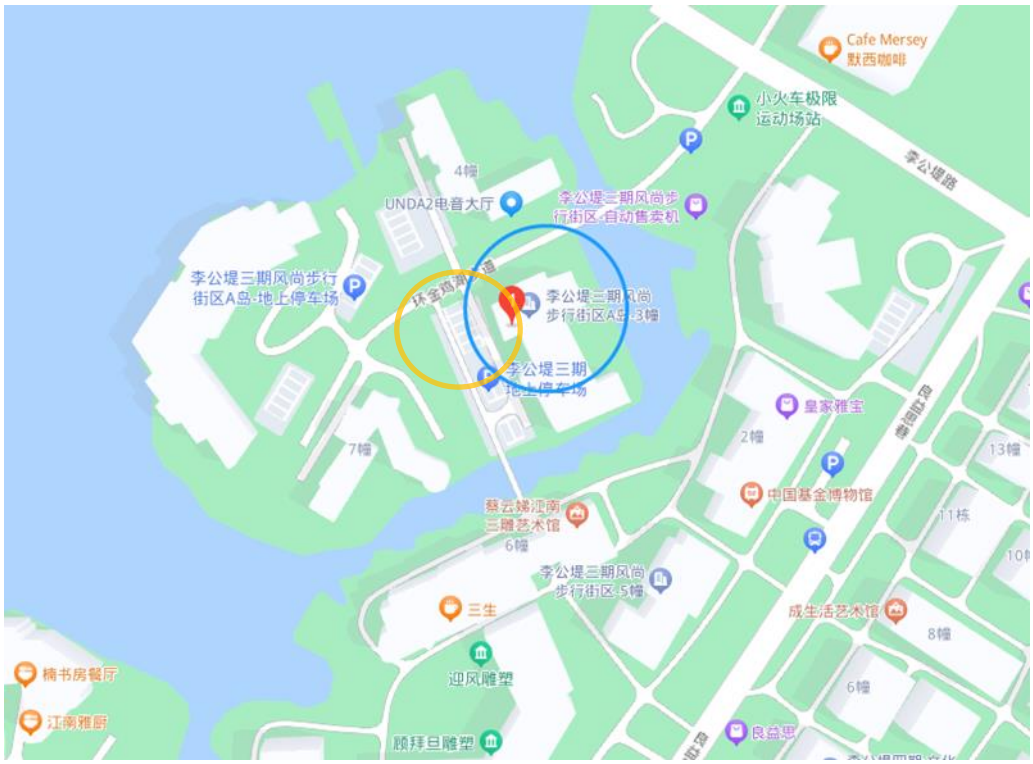
26-27 号会议签到地址(会议地点)苏州工业园区华云路 1 号桑田岛科创园 2 号楼 9 层

Dinner Restaurant Addresses

1. 百盛天地月亮湾店一楼喜汇厅 （26th August 2023）

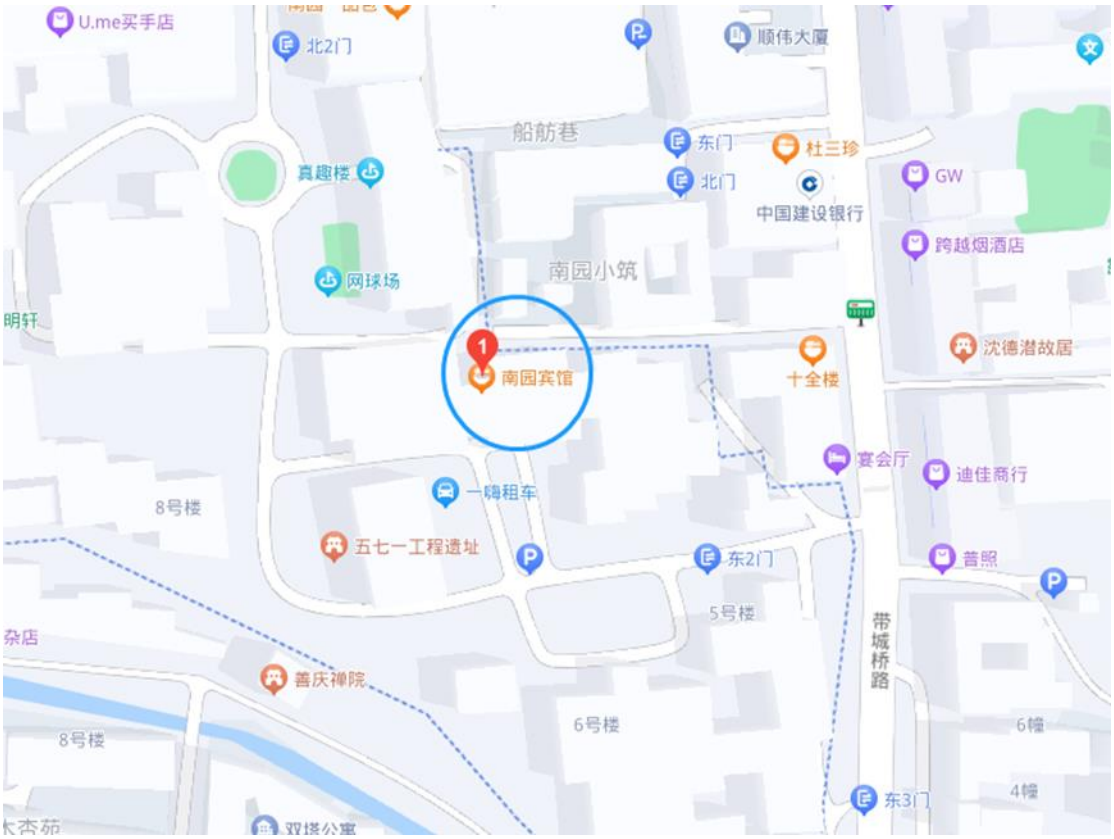
   地址: 苏州工业园区翠薇街 9 号独墅湖体育馆对面

2. 金堤花园酒店：一楼金玉良缘厅 (27th August 2023)
地址：苏州工业园区李公堤三期 3 号楼



3. 南园宾馆-忆江南咖啡厅 (28th August 2023)

地址: 带城桥路 99 号南园宾馆 5 号楼



Conference Program

SIMPAS INTERNATIONAL SYMPOSIUM (SIMPAS-2023)

25 – 28 August 2023

Suzhou Industrial Park

Day 1 (August 26)		
08:30-09:30	Opening Session	
09:30-11:00	Session 1 (Plenary Session)	
11:20-13:00	Session 2 (Parallel Session)	Session 3 (Parallel Session)
13:00-14:00	Lunch	
14:00-16:00	Session 4 (Plenary Session)	
16:00-18:30	Session 5 (Parallel Session, including poster session)	Session 6 (Parallel Session, including poster session)
19:00-21:00	Dinner	
Day 2 (August 27)		
8:30-10:30	Session 7 (Plenary Session)	
10:50-13:00	Session 8 (Parallel Session)	Session 9 (Parallel Session)
13:00-14:00	Lunch	
14:00-16:00	Session 10 (Plenary Session)	
16:00-18:30	Session 11 (Parallel Session, including poster session)	Session 12 (Parallel Session, including poster session)
19:00-21:00	Banquet	
Day 3 (August 28)		
8:30-11:00	Session 13 (Parallel Session)	Session 14 (Parallel Session)
11:10-12:40	Session 15 (Plenary Session)	
12:40-13:00	Closing Session	
13:00-14:00	Lunch	
14:00-20:00	Lab/City Tour & Dinner	

Note: All time here are in Beijing time (GMT+8). Duration of presentations: plenary – 30 minutes; keynote – 25 minutes; oral – 10 minutes; posters – 3 minutes.

[1] The official language of the symposium is English.

[2] For updated information, please visit symposium website https://www.monash.edu/simpascpthub-congress

[3] Registration via the symposium website or http://www.simpas.cn/ythbm/index_55.html.

[4] For any enquiries, please contact symposium secretary via arc.hub.secretariat@monash.edu.

Day 0 (Friday, 25 August 2023)		
14:30-17:30	Registration (Finger food & drink 14:30 pm-17:30 pm) Registration address on 25 Aug: 1st floor, Southeast University - Monash University Joint Graduate School, Building 7, Public College, No. 377, Linquan Street, Suzhou Industrial Park (Note that the registration on 26-28 Aug will be at the conference venue: SangTian Dao Innovation Park - Building 2, 9th floor, No 1 Huayun Rd, SIP, Suzhou)	
Day 1 (Saturday, 26 August 2023)		
	Opening Session	
08:30-08:50	Professor Aibing Yu Welcome, Opening & Introduction	
08:50-09:30	Professor Jinghai Li Science: Facing global challenges in shifting its paradigm	
	Session 1: Plenary Session (Room 901) Chair: Zongyan Zhou	
09:30-10:00	**Plenary**: Professor Liang-Shih Fan Modeling the Drag Forces of Irregular-Shaped Particles in Gas-Solid Flows – a Machine Learning Approach	
10:00-10:30	**Plenary**: Professor Jim Litster Right First Time Manufacture of Pharmaceuticals	
10:30-11:00	**Plenary**: Professor Liejin Guo Modelling of Multiphase Flow, Transport, and Chemical Reactions in Green Hydrogen Production	
11:00-11:20	Break & Symposium photo	
	Session 2 (Room 901) Chair: Xizhong An/Yuqing Feng	**Session 3 (Room 911)** Chair: Limin Wang/Kejun Dong
11:20-11:45	**Keynote**: Advanced Materials in Micro-Nanoscale for Thermal Management (Minsu Liu, SEU-Monash Joint Research Institute, China)	**Keynote**: A discrete element method for rigid and deformable smooth polyhedrons with arbitrary morphology (Shunying Ji, Dalian University of Technology, China)
11:45-12:10	**Keynote**: Development of Technologies Approaching to Low Emission and Carbon Neutrality for Steel Industry (Guoxiong Wang, University of Queensland, Australia)	**Keynote**: Microscopic simulation and structural analysis of particle packing (Kejun Dong, Western Sydney University, Australia)

12:10-12:20	Interlaminar Toughening and Impact Resistance of Fiber Reinforced Polymer Composites (Weifu Sun, Beijing Institute of Technology, China)	Numerical Study on The Influence of Screening Parameters on The Processing Performance of Cross Screen (Lala Zhao, China University of Mining and Technology, China)
12:20-12:30	Comparative Analysis of Particle Density Effects on Initial Fluidization in Gas-Solid Fluidized Beds (Shuyue Li, China University of Petroleum-Beijing, China)	DEM modeling of the mechanical response of brittle material under shock loading (Xiaoxing Liu, Chinese Academy of Sciences, China)
12:30-12:40	Modelling Multiphase Transportation and Solid Mechanics of Deformable Porous Media based on Filtering Continuum Approach (ZhiSong Ou, Chinese Academy of Sciences, China)	Two-phase Flow Modelling on Granular Materials in a Quasi-2D Flat-bottomed Moving Bed with Centric Discharge (Chengshan Wang, Chongqing University, China)
12:40-12:50	Numerical study of gas-solid flow in the horizontal stepped pipeline with inserts (Zhengquan Li, Jiangxi University of Science and Technology, China)	Magnetic Density Separation: Physics, Tests and Applications (Lin Wang, Delft University of Technology, Netherlands)
12:50-13:00	Gas-solid mixing performance of two joint spouting in rectangular spout-fluidized beds (Yuanhe Yue, Hebei University of Technology, China)	Numerical investigation of burden distribution formed in the throat of bell-less blast furnace (Han Wei, Jiangsu University of Science and Technology, China)
	Lunch (13:00-14:00)	
	Session 4: Plenary Session (Room 901) Chair: Yansong Shen	
14:00-14:30	**Plenary**: Hidehiro Kamiya (Tokyo University of Agriculture and Technology, Japan) Fine and nanoparticles behavior characterization, modeling, and control for applications in various fields	
14:30-15:00	**Plenary**: Antoinette Tordesillas (University of Melbourne, Australia) Pinpointing an impending catastrophic hazard from space: a case study of the 2017 Xinmo landslide in a chain of cascading climate hazards at the regional scale	
15:00-15:30	**Plenary**: Toshitsugu Tanaka (Osaka University, Japan) Mechanism of momentum transport in contact-dominant granular shear flow of cohesive particles	
15:30-16:00	**Plenary**: Peter Witt (CSIRO, Australia) How CFD can assist in understanding and developing industrial processes	
16:00-16:20	Break	
	Session 5 (Room 901) Chair: Weifu Sun/Dianyu E	**Session 6 (Room 911)** Chair: Shunying Ji/Heng Zhou
16:20-16:45	**Keynote**: Modelling of Raceway Dynamics and Conventional/Renewable Fuels Injections in Ironmaking Processes: A Review (Yansong Shen, University of New South Wales, Australia)	**Keynote**: Modelling and application in materials manufacturing (Xizhong An, Northeastern University, China)

16:45-17:10	**Keynote**: Particle Dynamics and Chemical Reaction Kinetics in Supercritical Fluids (Bofeng Bai, Xi'an Jiaotong University, China)	**Keynote**: Mesoscience-based structural model for heterogeneous gas-solid flows (Junwu Wang, Chinese Academy of Sciences)
17:10-17:20	Numerical simulation of multi-scale fluid-particulate reacting system in modern ironmaking industry (Yinxuan Qiu, University of Queensland, Australia)	Experimental Study on Fluidized Attrition Characteristics and Mechanism of Quartz Sand Particles (Lei Peng, Southeast University, China)
17:20-18:30	**Presentation for Posters (3 minutes) #1**: Panel: Zhengquan Li/Li Ji/Haitao Fu [1] MBD-DEM co-simulation of operations of hydraulic excavators for polydisperse bulk materials and different configurated buckets (Bowen Liu, Monash University, Australia) [2] The particle segregation under different gravity levels (Changxing Li, Hengshui University, China) [3] Development of Computational Fluid Dynamics for CO2 Capture Using an Internally Circulating Fluidized Bed (ICFB) Reactor (Chatiya Tripoonsuk, CSIRO, Australia) [4] Study on soft measurement method of overflow particle size distribution of hydrocyclone based on CNN (Chen Zeng, Jiangxi University of Science and Technology, China) [5] Numerical Simulation Study on Pressured Pneumatic Conveying Characteristics of Binary Geldart-D Particles (Chi Ma, Jiangsu University, China) [6] Investigating particle breakage characteristics under blast loading: understanding breakage behavior and mechanisms (Chuanshan Zhang, Beijing Institute of Technology, China) [7] Influence of Co-Charging Operation on Granular Distribution in Sintering Process by DEM Simulation (Cong Leng, Chongqing University, China) [8] Numerical Simulation of Gas Behavior inside Real Particle Based on X-Ray Microcomputed Tomograph (Dejin Qiu, Shanghai University, China) [9] A novel furfural residue activated carbon Powder for the removal of flus gas Hg (Dihong Liu, Jiangsu University, China) [10] Simulation of Particle Triboelectrification in Horizontal Pneumatic Conveying (Fayuan Huang, Monash University, Australia) [11] Numerical simulation and optimization of using certain small size sinter particles in a bell-less top blast furnace (Fei Teng, University of Science and Technology Beijing, China) [12] The Influence of Pre-melting on Defect Generation and Surface Roughness in Laser Powder Bed Fusion (Fuzhong Chu, Monash University, Australia) [13] Influence of hot gas supply on thermal drying process of sludge: A CFD-DEM study (Gong Li, Southeast University, China) [14] Cement Productivity Prediction Using a Self-Attention Spatial-Temporal Autoencoder (Guangsi Shi, Monash University, Australia)	**Presentation for Posters (3 minutes) #2**: Panel: Jin Xu/Yongli Wu/Lala Zhao [1] Numerical investigation of wear of rollers and liner in a vertical roller mill by DEM-MBD (Hui Yuan, Zhejiang University, China) [2] Numerical simulation of particle percolation in packings of spherical and nonspherical particles (Jia Ma, Jiangxi University of Science and Technology, China) [3] Fundamental Research on Degassing Kinetic Behavior of during Vacuum Refining Process of High-quality Steel (Jiang Zhong, Jiangxi University of Science and Technology, China) [4] CFD simulation of fluid environments in caves: A case of the Mogao Grottoes (Jianing Quan, Lanzhou University, China) [5] Modeling and Analysis of the Hydrogen Reduction of Magnetite in the Flash Ironmaking Process (Jiayi Wang, Monash University, Australia) [6] From Geometric to Topological close-packing Ag(100-x)Nix nanoparticles (Jie Wang, Guizhou University, China) [7] Scaling up Studies for Radial Segregation of Binary Spherical Mixed Particles in a Rotating Drums (Jielong He, Jiangxi University of Science and Technology, China) [8] Numerical Simulation of the Deposition Characteristics in the Intermediate Heat Exchanger of HTGR (Xiaozhong Wang, Tsinghua University, China) [9] Numerical simulation of iron ore sintering process based on fuel layer distribution technology (Jinhu Zhang, Jiangxi University of Science and Technology, China) [10] Effects of the geometry of a Wurster fluidized bed on coating uniformity (Jinnan Guo, Southeast University, China) [11] Numerical investigation on influences of injection angle on flow characteristics and wall erosion in a bottom-blown converter (Jun Chen, Northeastern University, China) [12] Numerical Investigation of the Effects of Blast Furnace profile with Varying Volumes (Junjie Li, Southeast University, China) [13] Influence of Rotating Chute Structure on Particle Trajectory and Segregation Behavior in Blast Furnace Burden Distribution (Junqing Wang, Jiangxi University of Science and Technology, China) [14] Numerical Analysis of Gas-Solid Behavior in the Cyclone Separator of Circulating Fluidized Beds (Kaixuan Zhou, Jiangxi University of Science and Technology, China)

	[15] A Machine Learning Study of Instantaneously Predicting Inner Behaviors of a Hydrocyclone (Guangtai Xu, Jiangxi University of Science and Technology, China) [16] Numerical studies of solid flow and wall wear in circulating fluidized bed boilers (Guanlin Du, Jiangxi University of Science and Technology, China) [17] Performance Evaluation and Design Optimization of Savonius Turbine in Solar Aero Vortex Power Station (Guiyuan Zhao, Lanzhou University, China) [18] Experimental investigation on the promotion of particle agglomeration by different vortex generator angles (Hainuo Wang, Lanzhou University, China) [19] Microscopic analysis of increased discharging rate for curved hoppers (Haiying Wu, Jiangxi University of Science and Technology, China) [20] Experimental Study on the Sliding Friction of Cuttings Bed and Pipe During Horizontal-Well Drilling Considering Pipe Rotation (Hao Xiao, China University of Petroleum-Beijing, China) [21] CFD-DEM investigation of non-uniform particle size behaviour in centrifugal slurry pump (Haoyu Wang, Monash University, Australia) [22] Effect of The Operational and Equipment Parameters on Porosity Distribution and Segregation of Burden Layers in the Blast Furnace Throat by DEM Simulation (Haoyuan Wei, University of Science and Technology Beijing, China) [23] Physics-Informed Neural Networks and Computational Fluid Dynamics for Flow Field Reconstruction in Cyclone Separators (Haoyuan Xue, Lanzhou University, China) [24] Modelling of Laser Energy Distribution in Laser Powder Bed Fusion (Hongyu Yang, Jiangxi University of Science and Technology, China) [25] Particle-scale modelling of injected hydrogen and coke co-combustion in the raceway of an ironmaking blast furnace (Yuwenlong Liu, Jiangxi University of Science and Technology, China) [26] Numerical Study of Structural Design Optimization For The Sewage Treatment Hydrocyclone (Yuhao Zhang, Jiangxi University of Science and Technology, China) [27] A Multistage Ion Transport Channel ZIF-8@SiO 2 /PVDF-HFP Composite Solid Polymer Electrolyte with Superior Ion Conductivity (Hu Wang, Guilin University of Electronic Technology, China)	[15] Effect of Immersed Tubes Configurations on Mixing and Heat Transfer of Mixed Biomass and Silica Sand in a Bubbling Fluidized Bed Using CFD-DEM and Statistical Experimental Design Analysis (Krittin Korkerd, Chulalongkorn University, Thailand) [16] Numerical Investigation of Particle Size on the Performance of Ironmaking Blast Furnace (LuLu Jiao, Southeast University, China) [17] Explosive dispersal of granular media (Lvlan Miu, Beijing Institute of Technology, China) [18] CFD-DEM Modeling and Analysis Study of Proppant Transport in Rough Fracture (Mengmeng Zhou, China University of Petroleum-Beijing, China) [19] The Surface Properties of PtSe2 Monolayer Modified By Pd3 Clusters Improve the Gas Sensing Performance of SF6 Decomposition Gases (Mengting Li, Guizhou University, China) [20] Achieving Consistent and Reliable Control of Soil Swelling Potential: A Scientific Solution (Mengyuan Zhu, Western Sydney University, Australia) [21] Experimental and Simulation Exploration of Surfactant Enhanced Heterogeneous Vapor Condensation on Aggregation and Growth of Fine Particles (Minghao Mu, Lanzhou University, China) [22] Improving the Removal of Fine Particles in Cyclone by the Coupling of Atomization Agglomeration and Heterogeneous Condensation (Mingqing Tao, Lanzhou University, China) [23] Unrevealing Energy Dissipation during Iron Ore transfer through chutes with different designs (Patricio Jacobs Capdeville, Monash University, Australia) [24] Numerical Investigation of Mixed Layer Effect on Thermochemical Behavior in a Dynamic Blast Furnace (Shengfu Cao, Jiangxi University of Science and Technology, China) [25] Optimization of printing nozzle for fused deposition modelling based on CFD-DEM simulation (Pengyue Guo, Northeastern University, China) [26] Particle-Scale Modeling of the Effect of Burden Distribution on Thermochemical Behaviors in a Blast Furnace (Bin Zhao, Jiangxi University of Science and Technology, China) [27] Water wall temperature reconstruction for coal-fired boiler based on gappy POD reduced order model (Tianyi Wang, Southeast University, China)
19:00-21:00	Dinner	

Day 2 (Sunday, 27 August 2023)		
	Session 7: Plenary Session (Room 901) Chair: Runyu Yang	
08:30-09:00	**Plenary**: Stefan Luding (University of Twente, Netherlands) From flowing to static: statistics of elasto-plastic transitions	
09:00-09:30	**Plenary**: Paul Zulli (University of Wollongong, Australia) Successful and Fruitful Academia-Industry Collaborative Journey to Advance Technologies for Sustainable Steel Manufacturing	
09:30-10:00	**Plenary**: Mikio Sakai (University of Tokyo, Japan) Powder Process Digital Twin: Advancements in Discrete Element Method Simulation	
10:00-10:30	**Plenary**: Jie Bao (University of New South Wales, Australia) Monitoring and control of industrial processes – where control theory meets practice	
10:30-10:50	Break	
	Session 8 (Room 901) Chair: Qijun Zheng/Wenjing Sun	**Session 9 (Room 911)** Chair: Zhenbo Tong/Kun Luo
10:50-11:15	**Keynote**: Interparticle Forces: Bridging Scales across the Nanoworld (Qinghua Zeng, Western Sydney University, Australia)	**Keynote**: Interface-resolved simulation of reactive multiphase flows (Kun Luo, Zhejiang University, China)
11:15-11:40	**Keynote**: Optimization of Slurry Loop Reactors by Understanding the Complex Mesoscale Structure of Liquid–Solid Flow (Ning Yang, Chinese Academy of Sciences, China)	**Keynote**: A review of general drag force model for particle-fluid system (Zheng Qi, China Iron & Steel Research Institute Group, China)
11:40-12:05	**Keynote**: DEM & CFD-DEM application in industry (Haiping Zhu, Western Sydney University, Australia)	**Keynote:** Multiscale modeling and simulation for the digestive system: how physiological features influence digestion and absorption (Jie Xiao, Soochow University, China)
12:05-12:15	Increasing hydrogen usage in ironmaking blast furnace (Jing Li, Monash University, Australia)	Elasto-plastic and adhesive contact: An improved linear model and its application (Wenguang Nan, Nanjing Tech University, China)
12:15-12:25	Simulation of the gasification process of cubic biomass particles in a fluidized bed (Jun Xie, Nanjing Normal University, China)	Theoretical and Experimental Investigation on Nonlinear Dynamic of Grain-Beam System (Guangyang Hong, Northeastern University, China)
12:25-12:35	Numerical Study on Particle Deposition Characteristics of Turbine Blades with Cooling Jets (Wenjing Sun, Nanjing University of Aeronautics and Astronautics, China)	DEM simulation of multiphase flow in solid rocket motor (Wenjing Yang, Northwestern Polytechnical University, China)

12:35-12:45	An LES-LBM-IMB-DEM Model of Pressure Drop Evaluation for Heterogeneous Alternative-Layer Packed Bed Towards Application to Ironmaking Blast Furnaces (Qiang Li, Northeastern University, China)	Construction and application of transient metal oxide gas-sensing nanomaterials (Haitao Fu, Northeastern University, China)
12:45-12:55	Preparation and assembly of photo electrodes towards Photoelectrochemical water splitting (Xiaohong Yang, Northeastern University, China)	Research on the Application of Rare Earth Oxide Particles in Offshore Engineering Steel (Diqiang Luo, Jiangxi University of Science and Technology, China)
12:55-13:05	Fundamental Research on the Kinetic Behavior of Iron Ore Particle during Hydrogen Based Flash Reduction Process (Jin Xu, Jiangxi University of Science and Technology, China)	The experimental and numerical study of the densification mechanism of NdFeB particles and the process optimization (Liuyimei Yang, Chinese Academy of Sciences, China)
	Lunch (13:00-14:00)	
	Session 10: Plenary Session (Room 901) Chair: Shibo Kuang	
14:00-14:30	**Plenary**: Paul Cleary (CSIRO, Australia) Mineral processing and human digestion: from minerals to the mouth, an interdisciplinary view of particle scale modelling of comminution related extraction processes	
14:30-15:00	**Plenary**: Alain De Ryck (IMT Mines Albi, France) Texture of cohesive material: a review and a limit geometrical model for packing	
15:00-15:30	**Plenary**: Harald Kruggel-Emden (Technical University of Berlin, Germany) Modeling of dust release from bulk solids	
15:30-16:00	**Plenary**: Chuan-Yu Wu (University of Surrey, UK) A DEM Approach to Analyse Cohesive Powder Behaviours Using Individual Particle Properties	
16:00-16:20	Break	
	Session 11 (Room 901) Chair: Qinghua Zeng/Wenjing Yang	**Session 12 (Room 911)** Chair: Lulu Jiao/Jie Xiao
16:20-16:45	**Keynote**: Continuum modelling of granular matter (Qijun Zheng, Monash University, Australia)	**Keynote**: Modeling of linear die filling based on coarse graining DEM simulations (Yuanqiang Tan, Huaqiao University, China)
16:45-17:10	**Keynote**: Wenqi Zhong (Southeast University, China) TBA	**Keynote**: Role of CFD based in Silico modelling in establishing an in vitro-in vivo correlation of aerosol deposition in the respiratory tract (Zhenbo Tong, Southeast University, China)
17:10-17:20	Combustion characteristics of charcoal, semicoke, and pulverized coal in blast furnace and their impacts on reactor performance (Lingling Liu, Pangang Group Research Institute, China)	Investigation of mini-hydrocyclone performance in removing small-size microplastics and mammalian cells (Li Ji, Shandong University, China)

17:20-18:30	**Presentation for Posters (3 minutes) #3**: Judge panel: Qiang Li/Shuai Wang/Jing Li [1] Numerical simulation of the migration and deposition of micro proppant over rough fractures (Qianqian Zhou, China University of Petroleum, China) [2] CFD-DEM Simulation on The Flow Characteristics of Mixed Non-spherical Particles in A Blast Furnace Raceway (Qinglai Hua, Jiangxi University of Science and Technology, China) [3] Research on Deep Learning-Based MTO Catalyst Particle Recognition (Qingyu Wang, Southeast University, China) [4] Numerical study of the vortex eccentricity and improvement mean in a gas cyclone (Qinyu Cai, Lanzhou University, China) [5] Segregation flow behavior of polydisperse size-induced particle mixtures with skew distribution in a rotating drum (Qiuhua Miao, Southeast University, China) [6] Aerosol Delivery Performance of Elongated Particles in Turbuhaler (Qixuan Zhu, University of New South Wales, Australia) [7] Effect of graphene on solid-liquid coexistence in Cu nanodroplets (Quan Zheng, Guizhou University, China) [8] Pumping suction simulation of fresh concrete using SPH (Sheng Xie, Xiangtan University, China) [9] Applying the response surface method to optimize the performance of turbine blade in a Solar Aero Vortex Power Station (Shijun Yan, Lanzhou University, China) [10] Intrapore Water-Gas Shift Reaction Inhibits Coal Gasification in Supercritical Water (Shuaiqi Zhao, Xi'an Jiaotong University, China) [11] Impact of Chute Cross-Sectional Shape on the Ironmaking Process of Blast Furnace: A Numerical Investigation (Sida Liu, Jiangxi University of Science and Technology, China) [12] Experimental Investigation of Spherical Particles Settling in Annulus Filled with Bubble-Containing Newtonian Fluids (Silin Jing, China University of Petroleum-Beijing, China) [13] Tunable Magnetism and Half-Metallicity in Hole-Doped Monolayer PbClI (Songli Dai, Guizhou University, China) [14] The Simulation Study of the Effect of Boundary Lubrication Layer on the Pumping Pressure Loss of Fresh Concrete Using the CFD (Tong Ye, University of South China, China) [15] Particle size segregation during charging and discharging processes in bell-less blast furnace with serial type hoppers (Wang Zeng, University of Science and Technology Beijing, China) [16] CFD-DEM investigation on effects of particle size distribution and gas temperature on minimum fluidization velocity of pyrites (Wei Long, Northeastern University, China) [17] Multi-objective optimization of concrete pumping S-pipe based on DEM and NSGA-Ⅱ algorithm (Wei Zhang, Xiangtan University, China)	**Presentation for Posters (3 minutes) #4**: Judge panel: Hao Zhang/Wenbo Wu/Xiaohong Yang [1] Effect of proppant sizes and injection modes on proppant transportation and distribution in the tortuous fracture model (Siyuan He, Southwest Petroleum University, China) [2] Modeling of hydrogen shaft furnace and grain sintering based on a porous moving bed (Yang Fei, Monash University, Australia) [3] A Polyhedral Model Simplification Algorithm for Improving Computational Efficiency in Discrete Element Method (Yangsi Shen, Zhejiang University, China) [4] Numerical investigation on frictional characteristics of binary mixtures consisting of flexible cylindrical and spherical particles (Yanping Zhu, Northeastern University, China) [5] Powder Spreading Process on Metal 3D Printing (Yaping Wu, Jiangxi University of Science and Technology, China) [6] Recent Advances in Development of Particle-based Methods (Yi He, TenFong Technology, China) [7] Numerical study of high-concentration droplet deposition in an idealized mouth-throat model using a two-way coupling model (Yi Jin, Nanjing Normal University, China) [8] Numerical investigation of critical velocity for cuttings transport in extended-reach horizontal wells (Yi Sun, China University of Petroleum-Beijing, China) [9] Particle-pore scale modeling of particle-fluid flow heat transfer (Yi Zou, Monash University, Australia) [10] A combined data-driven and mechanical modeling methods to predict the segregation process of particle flow in chutes (Yicheng He, Jiangxi University of Science and Technology, China) [11] CFD-DEM Modeling and Study of Particle Dissolution in Stirred Tank (Yide Wang, Jiangxi University of Science and Technology, China) [12] CFD-DEM Simulation of Non-spherical particles deposition in the deformed upper airways (Yikang Hu, University of New South Wales, Australia) [13] A Micro-macro Constitutive Relationship for the Normal Stress of Solid Phase in Dense Fluid-particle Flows (Yinghui Wu, Monash University, Australia) [14] Investigation of Heterogeneous Particle Blending in Stirred Tanks by DEM-VOF Method (Yingming Wen, Jiangxi University of Science and Technology, China) [15] Magnetic Image Sensor for Sorting Aluminium Scrap Particles with Small Ferrous Contaminants (Yongli Wu, Delft University of Technology, Netherlands) [16] Optimization of the delivery performance of vibrating mesh nebulizers (Yu Liu, Nanjing Normal University, China) [17] Identification and Influencing Factors of Random Eddies during Water Surface Evaporation (Yuchao Cai, Lanzhou University, China) [18] Predictive Analysis Of Wear Evolution And Its Effect On The Operation Of A Lab-scale HPGR Mill With Discrete Element Method (Yudong Zou, University of New South Wales, Australia)

	[18] Influences of Charging Angle and Stock Line on Burden Flow Trajectory by a Calibrated DEM Model (Weicong Tu, Chongqing University, China) [19] A surrogate model for internal physical field prediction of blast furnace based on ensemble learning (Wenbo Wu, Southeast University, China) [20] Development of CFD-DEM based Virtual Sinter Pot Model (Xiaobo Yang, Jiangxi University of Science and Technology, China) [21] Study on The Effect of JKR Surface Energy on the Fluidity of Fresh Concrete Based on Discrete Element Method (Xiaowei Lu, University of South China, China) [22] The Segregation of Cement Clinker Particles in A Mill-feeding Hopper: PIV Experiment and FEM Modelling (Xinyu Liu, Monash University, Australia) [23] Numerical investigation on multi-phase reaction flow characteristics in pyrite fluidized roasters: Effect of particle size (Xiwen Mu, Northeastern University, China) [24] Numerical simulation of the influence of operating parameters on the inner characteristics in a hydrogen-enriched shaft furnace (Xu Tian, University of Science and Technology Beijing, China) [25] Numerical investigation on local resistance coefficient of three-way pipes: Effect of dust particle content (Yajun Wu, Northeastern University, China) [26] Numerical investigation of atypical particle flow characteristics and free-surface evolution behaviors in a stirred tank (Yiliu Wu, Jiangxi University of Science and Technology, China) [27] Numerical simulation of the optimization for the material inlet structure of the reduction furnace in the phosphogypsum reduction process by sulfur vapor (Leilei Zhang, XI'AN university of Architecture and Technology, China) [28] Study of NO emissions characteristics during staged combustion in cement calciner based on CPFD (Xiangyu Li, Southeast University, China)	[19] Numerical simulation of particle mixing and granulation Behavior in the Sintering Process (Yuelei Wang, Jiangxi University of Science and Technology, China) [20] Research on stirring process based on artificial neural network and multi-phase flow simulation technology (Yukun Wu, Jiangxi University of Science and Technology, China) [21] Analysis of Flow Field in Hydrocyclone Using Dynamic Mode Decomposition Technique (Yuxiang Liu, Lanzhou University, China) [22] Numerical Simulation Study on Structural Optimization of Rare Earth Electrolytic Cells Based on Electrothermal Coupling (Yuyang Hu, Lanzhou University, China) [23] Numerical Simulation of Mid-Air Collisions Between Droplets and Particles: An Examination of Particle Forces and Energy Dissipation (Zhiheng Fan, Southeast University, China) [24] Numerical simulation of pneumatic conveying of wet particles based on CFD-DEM (Zhiheng Xu, Jiangxi University of Science and Technology, China) [25] Numerical investigation of the effect of oxy-fuel combustion on inner thermochemical behaviors in a dynamic reheating furnace (Yifeng Yang, Jiangxi University of Science and Technology, China) [26] A 3D Simulation study of pressurized oxy-fuel co-combustion of coal and biomass in fluidized beds (Qinwen Liu, Southeast University, China) [27] Temporal Prediction of Gas-Solid Fluidized Bed Flow Fields Using Spectral POD (Hang Shu, Southeast University, China)
19:00-21:00	Banquet Banquet speech: My SIMPAS career (Professor Aibing Yu)	

Day 3 (Monday, 28 August 2023)		
	Session 13 (Room 901) Chair: Yongzhi Zhao/Zheng Qi	**Session 14 (Room 911)** Chair: Yu Guo/Kaiwei Chu
08:30-08:55	**Keynote**: Ironmaking blast furnaces: Recent model development and application (Shibo Kuang, Monash University, Australia)	**Keynote**: Mathematic modelling of industrial cyclone separators: A review (Kaiwei Chu, Shandong University, China)
08:55-09:20	**Keynote:** Applications of Mathematical and Intelligent Models in the Ironmaking Industry (Jianliang Zhang, University of Science and Technology Beijing, China)	**keynote**: Coupled lattice Boltzmann method and discrete element method enabling discrete simulation of gas-solid flows (Limin Wang/Wei Ge, Chinese Academy of Sciences, China)
09:20-09:45	**Keynote**: Integrated mechanistic and data driven modelling for particulate systems (Runyu Yang, University of New South Wales, Australia)	**Keynote**: Packing and flow of ellipsoidal particles (Zongyan Zhou, Jiangxi University of Science and Technology, China)
09:45-10:10	**Keynote:** Computational Modelling of Particulate Multiphase Flows with Disparate Particle Sizes (Yuqing Feng, CSIRO, Australia)	**Keynote**: Synthesis of Rare Earth Materials with Conversion Property for Intelligent Film Applications (Xuchuan Jiang, Jinan University, China)
10:10-10:20	Discrete element modelling and simulation of granular system containing non-spherical particles (Yongzhi Zhao, Zhejiang University, China)	Development of Discrete Element Methods for the Studies of Irregular-Shaped Fibers and Shape Memory Fibers (Yu Guo, Zhejiang University, China)
10:20-10:30	Effect of Time-Dependence on the Concrete Transportation Process (Guodong Cao, Xiangtan University, China)	Bond particle model for dilated polyhedron considering fracture modes and its application to lateral resistance of ballast bed in cold region (Xu Li, Xiangtan University, China)
10:30-10:40	Multi-objective Optimization of Powder Paving Process of Nylon Powder in Selective Laser Sintering based on DEM simulation (Xiangwu Xiao, Xiangtan University, China)	Evaluation of drag force and heat transfer for cuboid-like particles with super-quadric shape (Chunhai Ke, Xinyang Normal University, China)
10:40-10:50	Effects of particle size and absorbance of minerals on XRD patterns (Yu Du, University of Science and Technology Beijing, China)	Numerical study of the condensation growth of particles in supersaturated water vapor (Yumeng Zhang, Lanzhou University, China)
10:50-11:00	Eulerian-Lagrangian simulation of biomass gasification in fluidized beds (Shuai Wang, Zhejiang University, China)	Modal Analysis of Flow Field in a Gas Cyclone Using Dynamic Mode Decomposition (Sijie Dong, Zhejiang University of Science and Technology, China)
11:00-11:10	Computational Fluid Dynamics Study of the Effects of Coal Properties on Pulverized Coal Gasification in the Dome Zone of COREX Melter Gasifier (Heng Zhou, University of Science and Technology Beijing, China)	Multi-objective optimization of spiral guide vanes for comprehensive performance of tangential cyclone separator using computational fluid dynamics and response surface methodology (Zihui Zhang, Lanzhou University, China)
11:10-11:30	**Break**	

	Session 15: Plenary Session (Room 901) Chair: Chuan-Yu Wu
11:30-12:00	**Plenary**: Jennifer Curtis (University of Florida, Davis, USA) Influence of mechanical interlocking on the flow behavior of granular particles
12:00-12:30	**Plenary:** Xiaodong Chen (Soochow University, China) Anecdotes of Mathematical Modelling: Sometimes It's about the Techniques but Most of the Time It's about Understanding of the Processes
	Closing Session (Room 901)
12:30-13:00	Award Presentation, Wrap-Up and Conclusion Chair: Ruiping Zou
13:00-21:00	Lunch Sightseeing/visiting Dinner

List of Example Local Times for International Participants

For example, we will start the conference program at Beijing Time 8:30 am (Universal coordinated time UTC + 8) on 26th August 2023. The local time and date for major regions and cities are given below (already considered the daylight-saving time).

Presenters please check your local time against the Beijing time and make sure the time is correct.

Region/City	Local Time	Time Zone	Date
Melbourne/Sydney	10:30 am	UTC + 10	26th August 2023
Brisbane	10:30 am	UTC + 10	26th August 2023
Tokyo	9:30 am	UTC + 9	26th August 2023
United Kingdom	1:30 am	UTC + 1	26th August 2023
Central Europe (Paris)	2.30 am	UTC + 2	26th August 2023
US East Coast (New York)	20.30 pm	UTC - 4	25th August 2023
US Central Time (Chicago)	19:30 pm	UTC - 5	25th August 2023
US West Coast (Los Angeles)	17:30 pm	UTC - 7	25th August 2023