The First International Workshop on Computational Particle Technology and Multiphase Processes

(9-12 March 2016, Suzhou, China)

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 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 First International Workshop on Computational Particle Technology and Multiphase Processes is to highlight the progress in this area. It will be jointly organized by Centre for Simulation and Modelling of Particulate Systems (SIMPAS), Monash-Southeast University Joint Research Institute, and Center for Mesoscience, Institute of Process Engineering, Chinese Academy of Sciences. The workshop will 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. It is to be composed of keynote, oral and poster presentations. To be a focused and high-level forum, world-leading scientists in this area from different countries are invited to deliver the keynote and oral presentations at the workshop.

Venue:

The workshop will be held in the newly established Monash-Southeast University Joint Research Institute (http://JRI.eng.monash.edu/), located in Suzhou, China. A city west of Shanghai, Suzhou is known for its canals, bridges and classical gardens. The Humble Administrator's Garden, dating to 1513, contains zigzag bridges over connected pools and islands. The Lingering Garden features ornate viewing pavilions and the Crown of Clouds Peak, a striking limestone formation. Tiger Hill offers attractions including the 7-story, leaning Cloud Rock Pagoda at its summit.

The transportation to Suzhou can be via Shanghai Hongqiao Airport or Shanghai Train Station (it takes about 35 minutes by high speed train or 75 minutes by car), or Pudong International Airport (one can take a taxi or underground to Shanghai Hongqiao Airport (about 1 hr), followed by high speed train to Suzhou, or go to Suzhou directly by car (about 2 hrs, depending on the traffic)).

Key Dates:

The workshop will be held on 9-12 March 2016. Registration and reception on Wednesday 9 March. Workshop on Thursday 10 March, Friday 11 March and Saturday morning 12 March, followed by sightseeing on Saturday afternoon. Detailed workshop program will be available in due course.

Organisation:

1) Chairmen: Professor Aibing Yu (Monash University, Australia)
Professor Jinghai Li (Chinese Academy of Sciences, China)
Professor Delong Xu (Chinese Academy of Engineering, China)
NB: International Advisory Committee (to be listed in the website)

2) Organizing Committee：

Dr. Jiang Chen (Monash University, Australia)
Prof. Xiaodong Chen (Soochow University, China)
Dr. Kaiwei Chu (Monash University, Australia)
Prof. Wei Ge (Chinese Academy of Sciences, China)
Dr. Zhen Jiao (Southeast University, China)
Dr. Shibo Kuang (Monash University, Australia)
Prof. Jinghai Li (Chinese Academy of Sciences, China)
Prof. Wei Wang (Chinese Academy of Sciences, China)
Prof. Ning Yang (Chinese Academy of Sciences, China)
Prof. Aibing Yu (Monash University, Australia)
Dr. Zongyan Zhou (Monash University, Australia)
Prof. Wenqi Zhong (Southeast University, China)

3) Conference Secretariat：

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Presentations:

The workshop will include keynote, oral and poster sessions. Keynote and oral presentations are for invited speakers only. Posters are for other participants, and three best poster awards will be given (with certificate and cash prize).

Submission and Publications:

A workshop booklet will be published at the workshop. It will include: workshop program, abstracts and biographies (of presenters). For this purpose, please submit a one-page abstract to the Conference Secretariat before the 15th of February 2016. A submission should include an abstract and short biography (of its presenter). It should be prepared in a common file format, e.g. MS Word. As seen from the template attached, it should be single spaced typed in English using an A4 paper.

A special issue on this topic will be formally published in *Powder Technology* in 2016. The special issue will be co-edited by Professor Aibing Yu and Professor Charley Wu. Participants are encouraged to submit their full papers online before or after the workshop.

Important dates are

Deadline for submitting abstracts for the workshop	February 15, 2016
Deadline for submitting full papers for *Powder Technology*	May 1, 2016

Registration, accommodation and visa application:

The registration fee is 1800 RMB for a normal participant and 1000 RBM for a student. The fee covers the costs for workshop attendance, workshop booklet, reception on 9 March, banquet on 11 March, and lunches and tea/coffee breaks during the workshop on 10-12 March 2016.

Participants need to arrange their own accommodation (hotel information to be provided soon). For those from overseas, if needed, invitation letters will be issued for their visa application.

Please contact Conference Secretariat for further information and help.