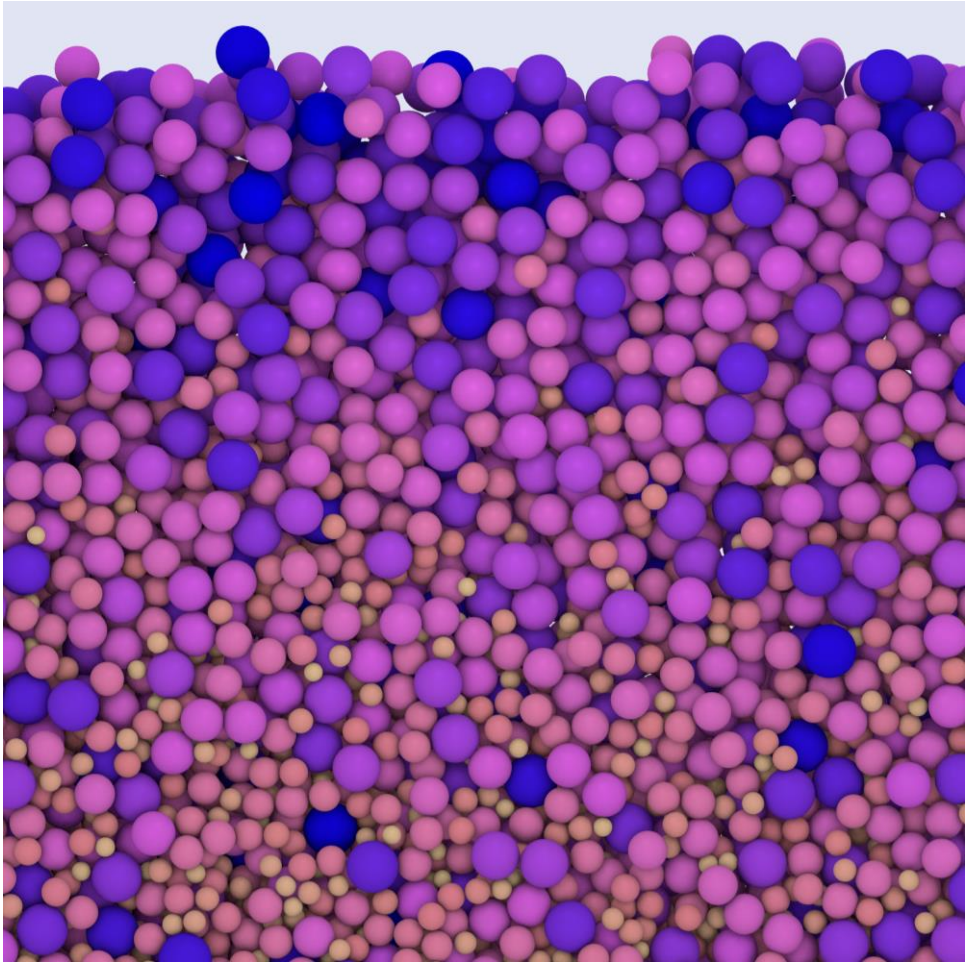


Grain Day

ANAGRAM

4 July 2019

THE UNIVERSITY OF SYDNEY

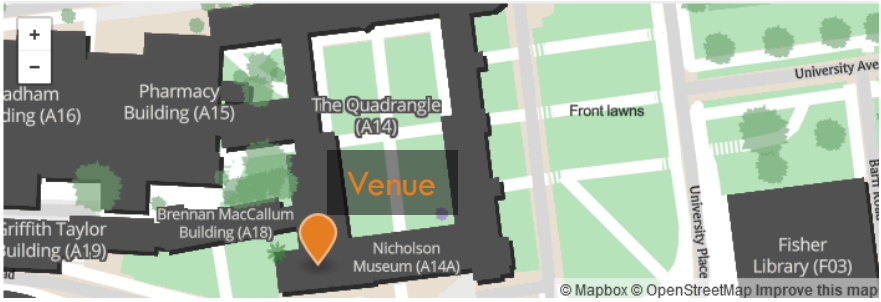
Info

Time and Date

09:00AM, Thursday, 4 July 2019

Location

Refectory Room H113 (Link to Directions)
Main Quadrangle Building
University of Sydney



Grain Day Programme

Time schedule

09:00AM – 09:20AM	Welcome and Icebreaker Networking Event
09:20AM – 10:40AM	Presentations – round 1 of 3
10:40AM – 11:10AM	Coffee break
11:10AM – 12:30AM	Presentations – round 2 of 3
12:30PM – 14:00PM	Lunch
14:00PM – 16:00PM	Presentations – round 3 of 3
16:00PM – 16:15PM	Break
16:15PM – 17:00PM	ANAGRAM's Annual General Meeting

Presentations – round 1 of 3 (09:20AM – 10:40AM)

Matthew Macaulay (USyd) **09:20AM – 09:40AM**
How Clusters Drive the Diffusion of Cohesive Grains

Chathurika Jayasundara (Monash) **09:40AM – 10:00AM**
A Generalized Constitutive Model for Unsaturated Compacted Soils Considering Wetting/Drying Cycles and Environmentally Stabilized Lime

Ebrahim Alaei (Usyd) **10:00AM – 10:20AM**
Constructing a Granular Hydrodynamic Framework That Captures Rheological Observations

Alex Lavrinec (UoN) **10:20AM – 10:40AM**
The Use of an Inertial Measurement Unit to Study Pneumatic Conveying

Presentations – round 2 of 3 (11:10AM – 12:30PM)

Caroline Gomes de Oliveira (UoN) **11:10AM – 11:30AM**
Development of a Novel Impact Wear Test System

Grain Day Programme

Edward Yang (Monash) **11:30AM – 11:50AM**
High-resolution Modelling of the Axisymmetric Granular Column Collapse Using Parallelised SPH

Jian Chen (UoN) **11:50AM – 12:10PM**
A Coupled DEM-SPH Model for Moisture Migration in Unsaturated Granular Matters Undergoing Oscillation

Nhu Nguyen (Monash) **12:10PM – 12:30AM**
An Approach to Calculating Large Strain Accumulation for DEM Simulations of Granular Media

Presentations – round 3 of 3 (14:00PM – 16:00PM)

Priscilla Freire (UoN) **14:00PM – 14:20PM**
Adaptive Economic Modelling of Complex Materials Handling Systems

Zvonimir Maranic (USyd) **14:20PM – 14:40PM**
Granular Convection

Dr Kejun Dong (WSyd) **14:40PM – 15:00PM**
Self-assembly of Granular Spheres Under Vibration

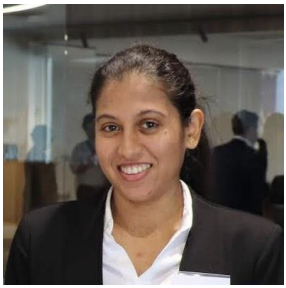
Wenbin Fei (UniMelb) **15:00PM – 15:20PM**
Impact of Interparticle Rigid Structure on Heat Transfer in Granular Materials

Dr Klaus Thoeni (UoN) **15:20PM – 15:40PM**
Modelling flexible geostructures and deformable particles with DEM

Mehrdad Ahmadi (UniMelb) **15:40PM – 16:00PM**
Impacts of Internal Erosion on Mechanical Behaviour of Granular Material Using Coupled CFD-DEM

Matthew Macaulay
matthew.macaulay@sydney.edu.au

In shear granular flows, cohesive forces produce clusters that strongly enhance the diffusion of grains. He will present how the reason behind this large effect comes from the associated size and lifetime of clusters.



Chathurika Jayasundara
chathurika.jayasundara@monash.edu

She developed a generalised MPK model incorporating environmental stabilisation concept in Monash-Peradeniya-Kodikara (MPK) framework to capture plastic strain accumulation and structure stabilisation in wet/dry cycles.

Ebrahim Alaei
ebrahim.alaei@sydney.eu.au

His study furthers the hydrodynamic framework for granular materials, where the granular temperature is distinguished from the true temperature. He developed coupled inelastic evolution equations to enable the model to satisfy important rheological observations.

Alex Lavrinec
c3273316@uon.edu.au

His work revolves around in-situ measurements using an inertial measurement unit (IMU) to study pneumatic conveying. The IMU is inserted into the flow and we are able to measure velocities and gas pressures inside of slugs.

Caroline Gomes de Oliveira
caroline.gomesdeoliveira@uon.edu.au

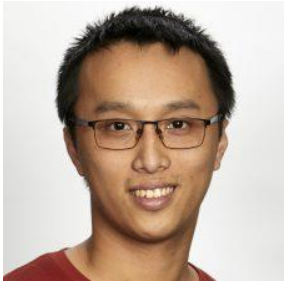
Her work aims to develop an impact wear test system that provides accurate impact wear prediction for in-service conditions common in materials handling industry.

Edward Yang
edward.yang@monash.edu

He will present high resolution modelling of the granular column collapse using SPH. By using two models he found that differences in models arise because of compressibility assumptions of the material and the allowance for localized shearing and velocity discontinuities.

Jian Chen
jchen17@uon.edu.au

His work is oriented at development of simulation model that couples discrete element model (DEM) and smooth particle hydrodynamics(SPH)



Nhu Nguyen
nguyen.nhu@monash.edu

He is developing a new strain calculation method for DEM simulations of granular media using the interpolation functions of SPH. The proposed method does not require mesh or background grid for interpolation, leading to advantages in calculating accumulated strain under large deformation.

Priscilla Freire
priscilla.freire@newcastle.edu.au

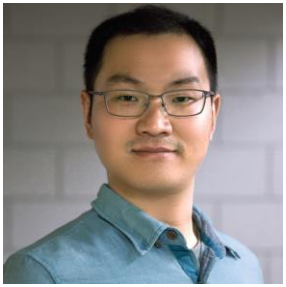
Her aim is to develop a probabilistic economic model through the use of the Life Cycle Cost Assessment methodology to evaluate the economic benefits of applying a high level understanding of material behaviour in the design of transfer chutes.

Zvonimir Maranic
zvonimir.maranic@sydney.edu.au

He is using novel X-Ray experimental techinques to measure granular temperature in granular convection experiment. Those measurements will be used to model the granular convection by using hydrodynamic continuum framework.

Dr Kejun Dong
kejun.dong@westernsydney.edu.au

His presentation introduces his recent studies on the self-assembly of granular spheres under vibration: (i) a phase diagram with order fraction as a function of vibration amplitude and frequency; (ii) bimodal self-assembly from tapping wall and shearing wall.



Wenbin Fei
wenbin.fei@unimelb.edu.au

He uses complex network to characterize the rigidity of granular materials and its impact on effective thermal conductivity.

Klaus Thoeni
klaus.thoeni@newcastle.edu.au

He will present recent developments implemented into the open-source framework YADE and their application to model highly flexible geotextiles and wire meshes, soil-inclusion problems, and deformable rubber particles.

Mehrdad Ahmadi
mehrdada@student.unimelb.edu.au

He uses Discrete Element Method (DEM) to quantify fine particle's role in internally unstable gap-graded soils. The role of fine particles play influential factors on the soil response to hydraulic forces and consequently on internal erosion. The coordination number of the fine particles and their stress reduction factor (α) are strong indicators of fine particle's contribution to soil fabric that can be calculated at particulate level in DEM.

Lunch

Locations

Among many options we would recommend the following that are within the campus:

Ralph's Café (Link)
The legendary Ralph's where you can find anything from breakfast, pastries to full meals. Not to mention that they have great coffee.

Holme Building Atrium (Link)
Behind the Quadrangle, similar to Ralph's. Don't be discouraged if you don't see any restaurants at the location – you have to enter the building and go into the interior courtyard, there you will find the restaurant.

Law School Eateries (Link)
A few kiosks with fast food or lovely Baguette restaurant that we warmly recommend. Take a walk around the building to explore all of the options.

Manning Bar (Link)
If you are looking for something close, fast and for take-away then this is the place to be. There are many shops with variety of cuisines. There are two floors open – the upper one is easy to miss if you enter the building on the ground floor.

Or outside the campus:

Broadway/Glebe (Link)
Many great restaurants are just 15 minutes of walk away from the Grain Day venue. Try checking out Glebe Point Rd for many options. If not sure how to get there it's best to ask Grain Day attendees from Uni Sydney.

THE UNIVERSITY OF SYDNEY

For more information feel free to contact ANAGRAM's officials:

Organizer | Zvonimir Maranic
T - | **E** zvonimir.maranic@sydney.edu.au

Interim President | Itai Einav
T - | **E** itai.einav@sydney.edu.au