

Monday 10/06

TOPICS:

'History and Model Developments: Continuum vs. Discrete (Statistical) Mechanics - Multi-Scale Modelling of Granular Systems: Science to Engineering (Part 1)'

'Multi-Scale Modelling of Granular Systems: Science to Engineering (Part 2), Demonstrations with Animations and Simulation Examples: Nano-Formulations to Avalanches'

1. Prof. Ugur Tuzun; Oxford University; ugur.tuzun@eng.ox.ac.uk

Professor Tüzün's research interests cover a number of topics in particulate and multiphase mechanics:



Mathematical Modelling of Multiphase Particulate Systems:

Modelling efforts are pursued at microscopic (single particle contact mechanics), mesoscopic (microstructural assembly mechanics) and macroscopic (continuum and statistical mechanics) length scales using a number of analytical and numerical techniques. Process applications modelled include compaction and sintering of powders, slow-shearing granular flows in hoppers, gas/solid and liquid/solid fluidisation, flow of liquids through porous media in adsorbent, catalytic reactor and filter beds.

Quality in Particulate-Based Manufacturing:

As part of the EPSRC Innovative Manufacturing Initiative for Process Industries, segregation, degradation and caking of powders in raw material handling and product processing and packaging operations modelled using innovative computational methods and experimental studies, see also QPM.

Flow Visualisation and Interactive Flow Modelling:

In collaboration with Departments of Physics and Chemistry, "cutting-edge" radiation tomography techniques are developed to image process flows which are used to validate the novel computational algorithms used in discrete element and statistical mechanical models of particulate flows, see also Flow Visualisation. Most recent research also includes the application of X-ray micro-tomography to the examination of the micro-structure of the nano-powder compacts.

2. Dr Paul Langston; The University of Nottingham; p.langston@nottingham.ac.uk

Lecturer in chemical engineering at the University of Nottingham, UK. He holds a PhD in Chemical Engineering from the University of Surrey. He has worked for many years both in academia and for consultants in mathematical modelling undertaking projects for commercial and defence organisations. His main areas of work are in computer simulation of particle and fluid flow, steady-

state & dynamic process flow sheet simulations, crowd dynamics, monte-carlo models and applications of Bayes' theorem in engineering systems.

<http://www.nottingham.ac.uk/~eczpal/Research.htm>

TOPIC:

'Climate effects on slopes: field observations - Advances in Testing Unsaturated soil'

3. Prof. David Toll, Durham University; d.g.toll@durham.ac.uk



David Toll's research encompasses two highly relevant areas of civil engineering: the application of information technology to geotechnical engineering and the engineering behaviour of unsaturated and tropical soils. His research in information technology involves work on knowledge-based (expert) systems, databases, data exchange, data acquisition and computer control systems and computer-aided learning. The primary focus for his work on unsaturated soils is to find engineering solutions for natural hazards, particularly landslides, including the impacts of climate change.

<http://www.dur.ac.uk/ecs/engineering/staff/teachstaff/?id=259>

Tuesday 11/06

TOPICS:

'1g physical modelling of laboratory-scale granular debris flows'

'Geotechnical centrifuge modelling of debris flows: advantages and challenges'

4. Dr Elisabeth Bowman; Sheffield University; e.bowman@sheffield.ac.uk

Fields of Research

- Geomechanics
- Geotechnical/Foundation engineering
- Slope stability/landslide mechanics

Researcher Summary

Research interests include:

- Mechanics of mass movements in granular materials
- Physical modelling of geotechnical processes
- Time effects in soil and their influence on construction activities
- Micro-mechanics of particulate systems
- Soil characterization

<http://www.canterbury.ac.nz/UCResearchProfile/Researcher.aspx?researcherid=1102270>



TOPICS:

'Identification, classification and characterisation of offshore landslides and runout'

'Site-wide predictive slope stability assessment'

5. Michael Clare; Fugro GeoConsulting Ltd UK

6. David Rushton; Fugro GeoConsulting Ltd UK

Michael is chartered geologist with specific expertise in deep water sedimentological interpretation and geohazard assessment. Currently leading the Engineering Geology and Geohazards Team (14 staff) at Fugro GeoConsulting Ltd in Wallingford and working in a diverse range of geographic and geological settings. Also pursuing part time postgraduate research into deep water sediment density flows with respect to event timing, flow transformation and geotechnical characterisation.



Specialties: Sedimentological interpretation. Detailed geohazard core logging. Deepwater geohazard assessment. Geomorphological mapping. Integrated engineering geological studies. Ground modelling. Geophysical interpretation.

<http://www.fugro.co.uk/>

<http://mac1y11.wix.com/geohazard>

Wednesday 12/06

TOPICS:

'Shock waves in granular avalanches'

'Particle size segregation and levee formation in granular free-surface flows'

7. Prof. Nico Gray; University of Manchester; nico.gray@manchester.ac.uk

Research interests: Understanding and modelling the flow of granular materials, in small scale experiments, industrial processes and geophysical flows.

Current research is aimed at understanding fundamental processes such as the flow past obstacles, shock waves, dead-zones, fluid-solid phase transitions, particle size segregation and pattern formation. A novel and important feature of all my work is the close interplay of theory, numerical computation and experiment to investigate these nonlinear systems.



<http://www.manchester.ac.uk/research/nico.gray/personaldetails>

<http://www.maths.manchester.ac.uk/~ngray/>

TOPICS:

'Advanced modelling of two-phase debris flows'

'Full dimensional and multi-scale modelling of landslides and avalanches'

8. Dr. Shiva P. Pudasaini; University of Bonn; pudasaini@geo.uni-bonn.de

Research interests:

- Modeling, Simulation
- Landslides, Avalanches
- Debris Flows

<http://www2.geo.uni-bonn.de/members/pudasaini/>



Thursday 13/06

TOPICS:

'Experimental approaches to debris flow dynamics'

'Laboratory visit'

**9. Dr Barbara Turnbull, The University of Nottingham;
barbara.turnbull@nottingham.ac.uk**

Research interests are motivated by particle- laden geophysical flows such as powder snow avalanches, desert haboobs and submarine turbidity currents, debris flow. She is also interested in frictional melting, accretion and clustering phenomena in icy systems as ice falls, aircraft wings and comets.

<http://www.nottingham.ac.uk/~evzabt/Site/Welcome.html>



TOPIC:

'Snow avalanche simulation: different modelling approaches and their evaluation'

10. Dr. Jan-Thomas Fischer

http://bfw.ac.at/rz/personen.liste_publicationen?person_id_in=973&online_in=publikationen&no_title=0

Friday 14/06

TOPICS:

'Landslide impacts'

'Understanding landslide movement'

11. Prof. Dave Pettley, Durham University; d.n.petley@durham.ac.uk

Research interests lie primarily in the understanding of landslides and landslide mechanics, especially in high mountain areas within less developed countries. Landslide hazard and risk assessment, Landslide mechanics and processes, Landslide monitoring, Material deformation.

<http://www.dur.ac.uk/geography/staff/geogstaffhidden/?id=354>



TOPICS:

'Coupling of mechanical and water retention behaviour in unsaturated soils'

'Coupling of mechanical and water retention behaviour in unsaturated soils'

12. Prof. Simon Wheeler, University of Glasgow, Simon.Wheeler@glasgow.ac.uk

Research interests: Laboratory testing of soils, development of constitutive models for soils, numerical modelling of coupled hydro-mechanical problems and application to practical problems in geotechnical engineering.

<http://www.gla.ac.uk/schools/engineering/staff/simonwheeler/>



Monday 17/06

TOPICS:

'Coupled DEM and Lattice Boltzmann methods'

13. Prof Y.T. Feng, Swansea University, y.feng@swansea.ac.uk

Research interests: Computational Mechanics, Computational Science and Engineering

<http://www.swansea.ac.uk/staff/academic/engineering/fengyuntian/>

