

## DEM 2007 Editorial

Stefan Luding · Paul Cleary

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### DEM 2007: 4th International Conference on Discrete Element Methods

Conference website: <http://www.min-eng.com/dem07/>

#### Guest Editors for this special issue

##### Stefan Luding

Multi Scale Mechanics, CTW, UTwente  
P.O. Box 217, 7500 AE Enschede, The Netherlands  
Tel.: +31-53-4894212  
e-mail: [s.luding@utwente.nl](mailto:s.luding@utwente.nl)  
<http://www2.msm.ctw.utwente.nl/sluding/>

##### Paul Cleary

Leader, Computational Modelling  
CSIRO Mathematical and Information Sciences  
Phone: +61-3-95458005  
e-mail: [Paul.Cleary@csiro.au](mailto:Paul.Cleary@csiro.au)  
<http://www.csiro.au/people/Paul.Cleary.html>

Conference dates:  
Monday 27 August to Wednesday 29 August 2007  
Location: Brisbane Hilton, Australia

#### Organising Committee:

- Dr Paul Cleary, Chairman (CSIRO)
- Dr Gideon Chitombo (UQ/SMI)
- Dr Rob Morrison (UQ/JKMRC)

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S. Luding (✉)  
Multi Scale Mechanics, CTW, UTwente, P.O. Box 217,  
7500 AE, Enschede, The Netherlands  
e-mail: [s.luding@utwente.nl](mailto:s.luding@utwente.nl)  
URL: <http://www2.msm.ctw.utwente.nl/sluding/>

P. Cleary  
Computational Modelling, CSIRO Mathematical  
and Information Sciences, Clayton, Australia  
e-mail: [Paul.Cleary@csiro.au](mailto:Paul.Cleary@csiro.au)  
URL: <http://www.csiro.au/people/Paul.Cleary.html>

#### Conference Logistics:

Dr Barry Wills, Minerals Engineering International,  
<http://www.min-eng.com>

Discrete element methods (DEM) are a suite of numerical techniques developed over the past 30 years to model granular materials, rock, and other discontinuous materials at the grain scale. The motion of particulates and the deformation of solids are dominated by the contact forces between bodies. The prediction of these forces and the subsequent evolution of the particulate system is the basis of the DEM methods. DEM is increasingly coupled to other important physics such as fluid motion, material deformation, and fracture.

The DEM 2007 conference was the fourth in the series and was dedicated to bringing together leading researchers from the many scientific disciplines and application areas that are spanned by these discrete computational methods. The three previous conferences were held in the USA, in Golden, Colorado in 1989, Cambridge, Massachusetts in 1993 and Santa Fe, New Mexico in 2002.

The conference dealt with all aspects of:

- The numerical schemes that drive DEM, including coupling to other methods
- Experimental validation of predictions
- Contact force, cohesion and breakage models
- All applications of DEM including industrial applications.

These were organized into four broad themes:

- Theme 1: Numerical methods, Validation and Novel Applications
- Theme 2: Powder Technology, Process Engineering and Industrial Applications
- Theme 3: Mining, Geomechanics and Geophysics
- Theme 4: Mineral and Physical Processing

This special issue deals mostly with the Theme 1: Numerical methods, Validation and Novel Applications. The seven papers include DEM results involving spherical and non-spherical particles. New algorithms for particle contacts, their rotation, and non-spherical objects are introduced, and state-of-the-art methods for parameter identification are presented. The systems studied involve small-scale shear-banding, vibrated beds, and large scale industrial applications such as a blast-furnace.

The conference hosted the first DEM Gallery organized by Prof. Dr. Mark Sawley (from EPFL, Switzerland), in which images submitted by the DEM community were assessed on both their artistic and scientific content. The posters from the DEM Gallery as well as the guidelines, the contributors and

the awards, can be found on the MEI web site at: [http://www.min-eng.com/dem07/gallery/DEM\\_Gallery/Home.html](http://www.min-eng.com/dem07/gallery/DEM_Gallery/Home.html)

Anyone wishing to get a copy of the DEM07 CD can find details of how to order them at <http://www.min-eng.com/dem07/paps.html>

Enschede and Melbourne, June, 2009

Stefan Luding and Paul Cleary

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