Powders and Grains 2013
July 8-12, 2013 • Sydney, Australia

PROGRAM
**OVERVIEW**

**Sunday, 7 July 2013**
- 13:00 – 18:00: Registration
- 18:00 – 19:30: Welcome drink (wine, drinks and finger food)

**Monday, 8 July 2013**
- 08:00 – 08:30: Coffee/Registration
- 08:30 – 18:00: Oral & Poster Sessions (incl. coffee breaks & lunch)
- 18:00 – 20:00: Reception & Poster Session (wine, drinks and finger food)

**Tuesday, 9 July 2013**
- 08:00 – 08:30: Coffee/Registration
- 08:30 – 18:00: Oral & Poster Sessions (incl. coffee breaks & lunch)
- 18:00 – 20:00: Happy Hour (wine & drinks only) & Poster Session

**Wednesday, 10 July 2013**
- 08:00 – 08:30: Coffee/Registration
- 08:30 – 13:00: Oral & Poster Sessions
- 13:00 – 14:00: Lunch
- 14:00 – 17:30: Harbour Cruise tour (drinks and finger food) for pre-paid participants only
- 14:00 – 17:30: Lunch
- 14:00 – 17:30: Free time (tour, excursion and/or other activities)

**Thursday, 11 July 2013**
- 08:00 – 08:30: Coffee/Registration
- 08:30 – 18:00: Oral & Poster Sessions (incl. coffee breaks & lunch)
- 19:00 – 19:30: Pre-dinner drinks
- 19:30 – 22:00: Conference Dinner

**Friday, 12 July 2013**
- 08:00 – 08:30: Coffee/Registration
- 08:30 – 13:00: Oral & Poster Sessions
- 13:00 – 14:00: Lunch
- 14:00 – 14:30: Conclusion & Presenting poster awards
- 14:30 – 15:00: Departure
- 15:00 – 15:30: Visit to UNSW for interested participants

**NB:** All the activities, except for the harbour cruise, will be at the conference venue: Novotel Sydney Brighton beach hotel (The Grand Parade & Princess Street Junction, Brighton-le-Sands, NSW 2216, Australia).
## INVITED & ORAL PRESENTATIONS

### Monday, 8 July 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Session/Activity</th>
<th>Location</th>
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<tbody>
<tr>
<td>08:00</td>
<td>Coffee/Registration</td>
<td>Endeavour Ballroom Foyer</td>
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<tr>
<td>08:30</td>
<td><strong>Opening and Welcome</strong> <em>(Chair: Dr. Aibing Yu)</em>&lt;br&gt;Opening speech/presentation <em>(Professor Mark Hoffman, PVC-Research, University of New South Wales)</em></td>
<td>Endeavour Ballroom</td>
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<tr>
<td>09:00</td>
<td><strong>Session 1A: Contemporary Issues</strong> <em>(Chair: Dr. Stefan Luding &amp; Dr. Heinrich Jaeger)</em></td>
<td>Endeavour Ballroom</td>
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</table>
| 09:00 | (Invited) **1A-1** From nanoscale cohesion to macroscale entanglement: opportunities for designing granular aggregate behavior by tailoring grain shape and interactions<br>
*Heinrich M. Jaeger*, Marc Z. Miskin, Scott R. Waitukaitis | |
| 09:30 | **1A-2** Multidimensionality in fluidized nanopowder agglomerates<br>
*Lilian de Martín*, Wim G. Bouwman, J. Ruud van Ommen | |
| 09:45 | **1A-3** Agglomerating fluidization of nanoparticles in the vibration or magnetic field<br>
*Tao Zhou* *, Hao Duan, Hui Wang, Feng Zhang, Hiroyuki Kage, Yoshihide Mawatari* | |
| 10:00 | **1A-4** Shear-induced failure in jammed nanoparticle assemblies<br>
*Ishan Srivastava*, Kyle Smith, Timothy Fisher | |
| 10:15 | **1A-5** Tribo-electric charging particles in a shaker<br>
*Masayuki Imba, Toshiko Kanazawa, Junich Ida, Hideo Yamamoto, Mojtaba Ghadiri, Tatsushi Matsuyama* | |
| 10:30 | **Morning Tea & Poster Session I** | |
| 11:00 | **Session 1B: Contemporary Issues** *(Chair: Dr. Wei Ge & Dr. Fernando Alonso-Marroquin)* | Endeavour Ballroom |
| 11:00 | (Invited) **1B-1** From customized multiscale modeling to general mesoscience – the principle of compromise<br>
*Jinghai Li* | |
| 11:30 | **1B-2** Understanding multi-scale structural evolution in granular systems through gMEMS<br>
*David Walker*, Antoinette Tordesillas | |
| 11:45 | **1B-3** Dissipation of energy in driven granular matter in the absence of gravity<br>
*Achim Sack, Michael Heckel, Jonathan E. Kollmer*, Fabian Zimber, Thorsten Pöschel | |
| 12:00 | **1B-4** Self-assembly of particles: some thoughts and comments<br>
| 12:15 | **1B-5** Multi-scale simulation of discrete systems with multi-scale supercomputer<br>
*Wei Ge*, *Jinghai Li* | |
12:30  **1B-6)** Scaling laws in granular flow and pedestrian flow  
*Shumiao Chen, Fernando Alonso-Marroquin*, Jonathan Busch, Raul Cruz Hidalgo, Charmila Sathianandan, Alvaro Ramirez-Gomez, Peter Mora*

12:45  **1B-7)** Multiscale modelling of pharmaceutical powders: macroscopic behaviour prediction  
*Jonathan Loh*, William Ketterhagen, James Elliott

13:00  **Buffet Lunch**  
*Baygarden Restaurant*

14:00  **Session 2A: Geomaterials and Constructions**  
*Chair: Dr. Calixtro Yanqui & Dr. Jidong Zhao*

14:00  **2A-1)** Jamming and shear for granular materials  
*R. P. Behringer*, Joshua Dijksman, Jie Ren, Jie Zhang, Trushant Majmudar, Bulbul Chakraborty, Daipeng Bi, Antoinette Tordesillas

14:30  **2A-2)** Directional plastic flow and fabric dependencies in granular materials  
*Barthelemy Harthong, Richard Wan*

14:45  **2A-3)** Granular mechanics of the critical state of coarse soils  
*Calixtro Yanqui*

15:00  **2A-4)** A nonlinear dynamical systems modelling approach unveils chaotic dynamics in simulations of large strain behaviour of a granular material under biaxial compression  
*Michael Small*, David Walker, Antoinette Tordesillas

*Jidong Zhao*, Ning Guo

15:30  **2A-6)** Quantification of time-dependent microstructural change of a silty sand under load  
*Muhamad Yusa*, Elisabeth Bowman

15:45  **Afternoon Tea & Poster Session I**  
*Endeavour Ballroom Foyer*

16:15  **Session 2B: Geomaterials and Constructions**  
*Chair: Dr. Mingjing Jiang & Dr. T. Matthew Evans*

16:15  **2B-1)** Establishing predictive capabilities of DEM – verification and validation for complex granular processes  
*Jin Y. Ooi*

16:45  **2B-2)** Distinct element analyses of inclined cone penetration test in granular ground  
*Mingjing Jiang*, Yongsheng Dai, Zhifu Shen, Ning Zhang

17:00  **2B-3)** DEM modeling of penetration test in static and dynamic conditions  
*Quoc Anh Tran, Bastien Chevalier*, Pierre Breul

17:15  **2B-4)** Wave propagation in assemblies of cemented spheres  
*T. Matthew Evans*, Zhangwei Ning

17:30  **2B-5)** Penetration strength of coarse granular materials from DEM simulations  
*Juan Carlos Quezada*, Gilles Saussine, Pierre Breul, Farhang Radjai

17:45  **2B-6)** Modelling desiccation cracking in thin clay layer using three-dimensional discrete element method  
*Jun Sima*, Mingjing Jiang, Chuangbing Zhou

18:00 – 20:00  **Reception (drinks & finger food) & Poster Session I**  
*Endeavour Ballroom Foyer*
## Tuesday, 9 July 2013

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<thead>
<tr>
<th>Time</th>
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<tr>
<td>08:00</td>
<td>Coffee/ Registration</td>
<td>Endeavour Ballroom Foyer</td>
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<td>08:30</td>
<td><strong>Session 3A: Granular Solids</strong></td>
<td>Endeavour Ballroom</td>
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<td><em>Chair: Dr. Patrick Richard &amp; Dr. Nicolas Rivier</em></td>
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<tr>
<td>08:30</td>
<td>(Invited) 3A-1) The glass and jamming transitions in dense granular matter</td>
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<td></td>
<td>Corentin Coulais, Raphaël Candelier, Olivier Dauchot*</td>
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<td>09:00</td>
<td>3A-2) Dynamical systems model and discrete element simulations of a tapped granular column</td>
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<td>Anthony Rosato*, Denis Blackmore, Xavier Tricoche, Kevin Urban, Luo Zuo</td>
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<td>09:15</td>
<td>3A-3) Confined packings of frictionless spheres and polyhedra</td>
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<td>Jean-François Camenen, Yannick Descantes, Patrick Richard*</td>
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<td>09:30</td>
<td>3A-4) Microstructural characteristics of planar granular solids</td>
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<td>Takashi Matsushima*, Raphael Blumenfeld</td>
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<td>09:45</td>
<td>3A-5) Statistical mechanics of dry granular materials: between fragile solid (jamming) and dry fluid (rheology)</td>
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<td>Nicolas Rivier*, Jean-Yves Fortin</td>
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<td>10:00</td>
<td>3A-6) Force-chain identification in quasi-2D granular systems</td>
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<td>Ling Zhang, Jun-Qi Wu, Jie Zhang*</td>
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<td>10:15</td>
<td>3A-7) Shear alignment and orientational order of macroscopic rodlike grains</td>
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<td>Ralf Stannarius*, Sandra Wegner, Balazs Szabo, Tamas Borzsonyi</td>
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<tr>
<td>10:30</td>
<td><strong>Morning Tea &amp; Poster Session II</strong></td>
<td>Endeavour Ballroom Foyer</td>
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<td>11:00</td>
<td><strong>Session 3B: Granular Solids</strong></td>
<td>Endeavour Ballroom</td>
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<td><em>Chair: Dr. Takahiro Hatano &amp; Dr. Antoinette Tordesillas</em></td>
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<td>11:00</td>
<td>(Invited) 3B-1) Granular friction in a wide range of shear rates</td>
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<td>Osamu Kuwano, Ryosuke Ando, Takahiro Hatano*</td>
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<td>11:30</td>
<td>3B-2) Dynamic cone penetration tests in granular media: determination of the tip’s dynamic load-penetration curve</td>
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<td>Esteban Escobar*, Miguel Angel Benz Navarrete, Roland Gourvès, Pierre Breul</td>
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<td>11:45</td>
<td>3B-3) Granular matter: a special buffer for impact load</td>
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<td>Shunying Ji <em>, Xiaodong Chen, Pengfei Li, Ying Yan</em></td>
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<td>12:00</td>
<td>3B-4) Cushioning effect in highly polydisperse granular media</td>
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<td>Charles Voivret*</td>
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<td>12:15</td>
<td>3B-5) Dilation, compression and convection in granular shear experiments</td>
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<td>Nathan Beasley, Jacob Jantzi, Ryan Kinser, Jeffrey S. Olafsen*</td>
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<td>12:30</td>
<td>3B-6) Minimum cut and shear bands</td>
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<td>Antoinette Tordesillas*, Andrew Cramer, David M. Walker</td>
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<td>12:45</td>
<td>3B-7) Prediction of bulk particle breakage due to naturally formed shear bands</td>
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<td>Colin Hare*, Mojtaba Ghadiri</td>
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<td>13:00</td>
<td><strong>Buffet Lunch</strong></td>
<td>Baygarden Restaurant</td>
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<td>14:00</td>
<td><strong>Session 4A: Granular Solids</strong></td>
<td>Endeavour Ballroom</td>
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| 14:00 | **4A-1)** Statistical mechanics description of an isotropic compression and its relationship to micromechanics  
William Fernando Oquendo Patiño, Jose Daniel Muñoz Castaño* |  |
| 14:15 | **4A-2)** Simulation of current-activated pressure-assisted densification  
Sebastian Angst, Gabi Schierning, Dietrich Wolf, *(to be presented by Lothar Brendal)* |  |
| 14:30 | **4A-3)** Granular shear flows of flexible rod-like particles  
Yu Guo, Jennifer Curtis*, Carl Wassgren, Williams Ketterhagen, Bruno Hancock |  |
| 14:45 | **4A-4)** Study of some micro-structural phenomena in granular shear zones  
Jan Kozicki, Jacek Tejchman, Danuta Leśniewska* |  |
| 15:00 | **4A-5)** On liquid migration in sheared wet granular media  
Roman Mani*, Dirk Kadau, Dani Or, Hans J. Herrmann |  |
| 15:15 | **4A-6)** Constitutive relations of jammed frictionless granular materials under oscillatory shear  
Michio Otsuki*, Hisao Hayakawa |  |
| 15:30 | **4A-7)** Shear strength, force distributions and friction mobilization in sheared packings composed of angular particles  
Emilien Azéma, Nicolas Estrada*, Farhang Radjai |  |
| 15:45 | **Afternoon Tea & Poster Session II** | Endeavour Ballroom Foyer |
| 16:15 | **Session 4B: Granular Solids** | Endeavour Ballroom |
| 16:15 | *(Invited)* **4B-1)** 10,000 – A reason to study granular heat convection  
I. Einav*, P. Rognon, Y. Gan, T. Miller and D. Griffani |  |
| 16:45 | **4B-2)** Thermal conduction in particle packs via finite elements  
Jeremy Lechman*, Cole Yarrington, William Erikson, David Noble |  |
| 17:00 | **4B-3)** Forming and breaking of contacts in jammed granular media by nonlinear acoustic waves  
Siet Wildenberg, Yougu Yang, Martin van Hecke, Xiaoping Jia* |  |
| 17:15 | **4B-4)** A multiscale description of failure in granular materials  
Nejib Hadda, François Nicot, Luc Sibille, Farhang Radjai, Antoinette Tordesillas*, Félix Darve |  |
| 17:30 | **4B-5)** Experimental studies on the mechanics of cohesive frictional granular media  
Ramesh Kandasami, Tejas Murthy* |  |
| 17:45 | **4B-6)** Can one “hear” the aggregation state of a granular system?  
Christof A. Kruelle*, Almudena García Sánchez |  |
| 18:00 – 20:00 | **Happy Hour (wine & drinks only) & Poster Session II** | Endeavour Ballroom Foyer |
**Wednesday, 10 July 2013**

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<th>Time</th>
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<td>08:00</td>
<td>Coffee/ Arrival</td>
<td>Pre-function Area</td>
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<td>08:30</td>
<td><strong>Session 5A: Granular Flow</strong></td>
<td>Endeavour Ballroom</td>
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<td><em>Chair: Dr. Chuan-Yu Wu &amp; Dr. James Jenkins</em></td>
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<tr>
<td>08:30</td>
<td>(Invited) <strong>5A-1</strong> Quasistatic behaviour of granular materials: some things we learned from DEM studies</td>
<td>Endeavour Ballroom</td>
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<td><em>Jean-Noël Roux</em></td>
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<td>09:00</td>
<td><strong>5A-2</strong> Granular force on objects and correlation length: drag coefficient enhancement in low Froude number flow regimes</td>
<td>Endeavour Ballroom</td>
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<td><em>Thierry Faug</em></td>
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<td>09:15</td>
<td><strong>5A-3</strong> Numerical analysis of impact processes of granular jets</td>
<td>Endeavour Ballroom</td>
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<td><em>Tomohiko Sano</em>, <em>Hisao Hayakawa</em></td>
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<td>09:30</td>
<td><strong>5A-4</strong> Inclined granular flows on collisional layers</td>
<td>Endeavour Ballroom</td>
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<td><em>James Jenkins</em>, <em>Diego Berzi</em></td>
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<td>09:45</td>
<td><strong>5A-5</strong> An energy-based splash function for the impact of particles with granular beds</td>
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<td><em>Chuan-Yu Wu</em></td>
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<td>10:00</td>
<td><strong>5A-6</strong> Identification of avalanche precursors by acoustic probing in the bulk of tilted granular layers</td>
<td>Endeavour Ballroom</td>
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<td><em>Mickaël Duranteau</em>, <em>Vincent Tournat</em>, <em>Vladimir Zaitsev</em>, <em>Renaud Delannay</em>, <em>Patrick Richard</em></td>
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<td>10:15</td>
<td><strong>5A-7</strong> Granular segregation in quasi-2d rectangular bin</td>
<td>Endeavour Ballroom</td>
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<td><em>Sandip Gharat</em>, <em>Devang Khakhara</em></td>
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<td>10:30</td>
<td><strong>Morning Tea &amp; Poster Session III</strong></td>
<td>Endeavour Ballroom Foyer</td>
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<td>11:00</td>
<td><strong>Session 5B: Granular Flow</strong></td>
<td>Endeavour Ballroom</td>
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<td><em>Chair: Dr. Alberto Di Renzo &amp; Dr. CM Wensrich</em></td>
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<td>11:00</td>
<td><strong>5B-1</strong> Size separation of binary mixture under vibration</td>
<td>Endeavour Ballroom</td>
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<td><em>Chuanping Liu</em>, <em>Lige Tong</em>, <em>Shaowu Yin</em>, <em>Peikun Zhang</em>, <em>Li Wang</em></td>
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<td>11:15</td>
<td><strong>5B-2</strong> Non-contact measurement of the stress within granular materials via neutron diffraction</td>
<td>Endeavour Ballroom</td>
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<td><em>CM Wensrich</em>, <em>EH Kisi</em>, <em>V Luzin</em>, <em>O Kirstein</em></td>
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<td>11:30</td>
<td><strong>5B-3</strong> Where to dig for gold? - density segregation inside migrating dunes</td>
<td>Endeavour Ballroom</td>
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<td><em>Christopher Groh</em>, <em>Ingo Rehberg</em>, <em>Christof A. Kruelle</em></td>
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<td>11:45</td>
<td><strong>5B-4</strong> FEM-DEM simulation of two-way fluid-solid interaction in fibrous porous media</td>
<td>Endeavour Ballroom</td>
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<td><em>Kazem Yazdchi</em>, <em>S. Srivastava</em>, <em>S. Luding</em></td>
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<td>12:00</td>
<td><strong>5B-5</strong> Characterization of fluid-particle interactions in poly-disperse systems</td>
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<td><em>Francesco P. Di Maio</em>, <em>Alberto Di Renzo</em></td>
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<td>12:15</td>
<td><strong>5B-6</strong> Simulation of aeolian salination</td>
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<td><em>Marcus Vinicius Carneiro</em>, <em>Hans Jürgen Herrmann</em></td>
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<td>12:30</td>
<td><strong>5B-7</strong> X-ray imaging study of granular materials</td>
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<td><em>Yujie Wang</em></td>
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<td>12:45</td>
<td><strong>5B-8</strong> DEM-PFV analysis of solid-fluid transition in granular sediments under the action of waves</td>
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<td><em>Emanuele Catalano</em>, <em>Bruno Chareyre</em>, <em>Eric Barthélémy</em></td>
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<td>13:00</td>
<td><strong>Buffet Lunch</strong></td>
<td>Baygarden Restaurant</td>
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<td>14:00</td>
<td><strong>Harbour Cruise (Pre-paid Participants only)</strong></td>
<td>Darling Harbour, Sydney</td>
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<td>14:00</td>
<td><strong>Free time/tour/excursion/other activities</strong></td>
<td>Own arrangements</td>
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Thursday, 11 July 2013

08:00 Coffee/ Arrival Endeavour Ballroom Foyer

08:30 Session 6A: Granular and Particle-Fluid Flows

Chair: Dr. Michael Adams & Dr. Zhibing Zhang

08:30 (Invited)

08:30-09:00 6A-1) Rheometry of dense granular materials: the crucial effects of gravity and confining walls
V. Shravan Kumar, Tejas Murthy, Prabhu R. Nott*

09:00-09:15 6A-2) Velocity and density scaling at the outlet of a silo and its role in the expression of the mass flow rate
Diego Maza*, Alvaro Janda, Sara Rubio-Largo, Iker Zuriguel, Raul Cruz Hidalgo

09:15-09:30 6A-3) Prediction of silo-vibrations using a modified lambda-meter
Stefan Jäckel*, Ralf Schünemann, Thomas Mütze, Urs A. Peuker

09:30-09:45 6A-4) Visualising shear stress distribution inside flow geometries containing pharmaceutical powder excipients using photo stress analysis tomography and DEM simulations
S. M. Albaraki, S. Joseph Antony*, C. B. Arowosola

09:45-10:15 6A-5) Mode coupling theory for sheared granular liquids
Koshiro Suzuki, Hisao Hayakawa*

10:00-10:30 6A-6) Coulombic wall slip of concentrated soft-particle suspensions
Michael Adams*, Wei Liu, Zhibing Zhang, Peter Fryer

11:00 Session 6B: Granular and Particle-Fluid Flows

Chair: Dr. Colin Thornton & Dr. Mario Liu

11:00 (Invited)

11:00-11:15 6B-1) Stress- and rate-controlled granular rheology
Yimin Jiang, Mario Liu*

11:15-11:45 6B-2) DEM simulation of particle mixing for optimizing the overcoating drum in HTR fuel fabrication
Malin Liu*, Zhenming Lu, Bing Liu, Youlin Shao

11:45-12:00 6B-3) Grain dispersion by liquid injection using SPH-DEM
Martin Robinson, Stefan Luding, Marco Ramaoli*

12:00-12:15 6B-4) Particle dynamics in the fluidized bed: magnetic particle tracking and discrete particle modelling
Johannes Neuwirth*, Sergiy Antonyuk, Stefan Heinrich

12:15-12:45 6B-5) Transitional behaviour in gas-fluidized beds
Colin Thornton*, Fang Yang, Jonathan Seville

12:45-13:00 6B-6) Computational study of heat transfer in gas fluidization
Q. F. Hou*, Z. Y. Zhou, A. B. Yu

13:00-13:15 6B-7) Dust emission modelling around a stockpile by using computational fluid dynamics and discrete element method
Sayed Mohammadebrahim Derakhshani*, Dingena L. Schott, Gabriel Lodewijks

13:00 Buffet Lunch Baygarden Restaurant
<table>
<thead>
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<th>Time</th>
<th>Session 7A: Particle Properties</th>
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<tr>
<td>14:00</td>
<td><strong>Chair:</strong> Dr. Mojtaba Ghadiri &amp; Dr. Hayley Shen</td>
<td>Endeavour Ballroom</td>
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</table>
| 14:00 | **7A-1** Identifying and following particle-to-particle contacts in real granular media: an experimental challenge  
Gioacchino Viggiani *, Edward Andò, Clara Jaquet, Hugues Talbot | |
| 14:30 | **7A-2** Rolling resistance effect for sheared granular materials in the inertial regime  
Hayley Shen * | |
| 14:45 | **7A-3** A new contact model for modelling of elastic-plastic-adhesive spheres in distinct element method  
Massih Pasha *, Selasi Dogbe, Colin Hare, Ali Hassanspou, Mojtaba Ghadiri | |
| 15:00 | **7A-4** Wear particles: influence on local stress and dynamical instabilities  
Viet-Hung Nhu *, Mathieu Renouf, Francesco Massi, Aurélien Saulot | |
| 15:15 | **7A-5** From particle to powder properties – a mesoscopic approach combining micro-scale experiments and X-ray microtomography  
Stefan Streege *, Harald Zetzen, Arno Kwade | |
| 15:30 | **7A-6** Unitary stick-slip motion in granular beds  
James Hilton *, Paul Cleary, Antoinette Tordesillas | |

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<tr>
<th>Time</th>
<th>Session 7B: Particle Properties</th>
<th>Location</th>
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<tr>
<td>15:45</td>
<td><strong>Chair:</strong> Dr. A. Kwade &amp; Dr. Runyu Yang</td>
<td>Endeavour Ballroom</td>
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</table>
| 16:15 | **7B-1** Erosion rate and instability of a wet/dry granular interface  
Gautier Lefebvre *, Pierre Jop | |
| 16:30 | **7B-2** Electrically-enhanced deposition of fine particles on a fiber: a numerical study using DEM  
Mengmeng Yang, Shuiqing Li *, Guanqing Liu, Qiang Yao | |
| 16:45 | **7B-3** DEM study on the interaction between wet cohesive granular materials and tools  
Takuya Tsuji *, Yu Matsui, Yuta Nakagawa, Yuuichi Kadono, Toshtisugu Tanaka | |
| 17:00 | **7B-4** Micromechanical properties of colloidal structures  
A. Kwade *, C Schilde, C. Burmeister, M. Roth, P. Lellig, G. Auernhammer | |
| 17:15 | **7B-5** Force correlations, anisotropy, and friction mobilization in granular assemblies under uniaxial deformation  
Olukayode Imole *, Mateusz Wojtkowski, Vanessa Magnanimo, Stefan Luding | |
| 17:30 | **7B-6** Particle scale investigation of flow and mixing of wet particles in rotating drums  
Peiyuan Liu, Runyu Yang *, Aibing Yu | |
| 17:45 | **7B-7** Numerical simulation of interaction between two PM2.5 particles under acoustic travelling wave conditions  
Fengxian Fan *, Mingjun Zhang, Chang Nyung Kim | |

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<tr>
<th>Time</th>
<th>Social Activities &amp; Poster Session IV</th>
<th>Location</th>
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<tr>
<td>18:00</td>
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<td>Endeavour Ballroom Foyer</td>
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<td>18:30</td>
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<tr>
<td>18:30</td>
<td>Conference Dinner</td>
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<td>21:30</td>
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<tr>
<td>08:00</td>
<td>Coffee/ Arrival</td>
<td>Endeavour Ballroom Foyer</td>
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<td>08:30</td>
<td><strong>Session 8A: Continuum and Process Modelling</strong></td>
<td>Endeavour Ballroom</td>
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<td>Chair: Dr. Meiying Hou &amp; Dr. Alain de Ryck</td>
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<tr>
<td>08:30</td>
<td>(Invited) <strong>8A-1</strong> A hierarchy of particle-size segregation models: from polydisperse mixtures to depth-averaged theories</td>
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<td></td>
<td>J.M.N.T. Gray*</td>
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<td>09:00</td>
<td><strong>8A-2</strong> A brief investigation into ejection times from a conical mass flow hopper - coulomb and conical model difference</td>
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<td></td>
<td>Luke Fullard*, Clive Davies</td>
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<td>09:15</td>
<td><strong>8A-3</strong> Shearbanding and inhomogeneous states in granular fluid</td>
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<td>Meheboob Alam*, Priyanka Shukla</td>
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<td>09:30</td>
<td><strong>8A-4</strong> Asymmetric velocity distribution in boundary-heating granular gas and a hydrodynamic description</td>
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<td>YanPei Chen, Meiying Hou*, Pierre Evesque, Yimin Jiang, Mario Liu</td>
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<td>09:45</td>
<td><strong>8A-5</strong> Granular statistical mechanics: volume-stress phase space, equipartition and equations of state</td>
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<td>Raphael Blumenfeld*, Jos F. Jordan, Sam F. Edwards</td>
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<tr>
<td>10:00</td>
<td>From discrete particles to continuum fields in mixtures</td>
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<td>Thomas Weinhart*, Stefan Luding, Anthony R Thornton</td>
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<td>10:15</td>
<td><strong>8A-6</strong> Determining key variables of the kinetic theory of granular flow using DWS</td>
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<td>Vladimir Zivkovic*, K. Berry, Donald H. Glass, Mark J. Biggs</td>
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<td>10:30</td>
<td>Morning Tea &amp; Poster Session IV</td>
<td>Endeavour Ballroom Foyer</td>
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<td>11:00</td>
<td><strong>Session 8B: Continuum and Process Modelling</strong></td>
<td>Endeavour Ballroom</td>
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<td>Chair: Dr. Gaël Combe &amp; Dr. Luc Oger</td>
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<td>11:00</td>
<td><strong>8B-1</strong> Modeling of a cohesive granular materials by a multi-scale approach</td>
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<td>Trung Kiên Nguyen, Gaël Combe*, Denis Caillerie, Jacques Desrues</td>
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<td>11:15</td>
<td><strong>8B-2</strong> Non-linear deformation behavior of granular media by elliptic microstructure based model</td>
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<td>Kenichi Maeda*, Kinya Miura</td>
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<td>11:30</td>
<td><strong>8B-3</strong> Dense annular flows of granular media</td>
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<td>Alain de Ryck*, Olivier Louisnard</td>
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<td>11:45</td>
<td><strong>8B-4</strong> Multi-phase mechanics and multi-scale interactions among soil-water-gas in tsunami disaster</td>
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<td>Tatsuya Imase*, Kenichi Maeda, Yoshimi Ito, Mai Goto</td>
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<td>12:00</td>
<td><strong>8B-5</strong> 2D DEM model of sand transport with wind interaction</td>
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<td>Luc Oger*, Alexandre Valance</td>
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<td>12:15</td>
<td><strong>8B-6</strong> Numerical simulations of gas-liquid flow in the gas injection process with mechanical stirring</td>
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<td>Pin Shao, Ting’an Zhang*, Yan Liu, Zimu Zhang, Dongxing Wang</td>
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<td>12:30</td>
<td><strong>8B-7</strong> Modelling of the mechanical behaviour of two pure PTFE powders during their compaction at room temperature</td>
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<td>Carole Fredy *, Rodrigo Canto, Nicolas Schmitt, Stéphane Roux, René Billardon</td>
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<tr>
<td>12:45</td>
<td>Conference conclusion &amp; Presenting poster awards</td>
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<td></td>
<td>Stefan Luding (AEMMG President) Aibing Yu (Conf Chair) &amp; Others</td>
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<tr>
<td>13:00</td>
<td>Buffet Lunch</td>
<td>Baygarden Restaurant</td>
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<tr>
<td>14:00</td>
<td>Departure or Visit to UNSW</td>
<td>Contact On-site Registration</td>
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Poster Session I: Contemporary issues, packing and jamming
Monday, 8 July

PI-1) A parallel version of the contact dynamics method
Zahra Shojaaee, M. Reza Shaebani, Lothar Brendel, Janos Torok, Dietrich E. Wolf

PI-2) On the use of graphics processing units (GPUs) for molecular dynamics simulation of spherical particles
Raúl Cruz Hidalgo, Takeichi Kanzaki Cabrera, Fernando Alonso-Marroquin, Stefan Luding

PI-3) Dynamic and impact contact mechanics of geologic materials: grain-scale experiments and modeling
David Cole, Mark Hopkins, Stephen Ketcham

PI-4) Particle-based simulation of hydraulic fracture and fluid/heat flow in geothermal reservoirs
Peter Mora, Yucang Wang, Fernando Alonso-Marroquin

PI-5) Uncertainty quantification and granular thermodynamics
Jeffrey D Picka

PI-6) DEM simulation of particles of complex shapes using the multisphere method: application for additive manufacturing
Eric J. R. Parteli

PI-7) Numerical simulation of suffusion phenomena through granular media
Francesco Federico, Andrea Montanaro, Mauro Scienza

PI-8) Experimental & theoretical study of a micro-fluidized bed
V. Zivkovic, M.N. Kashani, M.J. Biggs

PI-9) Two-phase nc-TiN/a-(C,CNx) nanocomposite films: a hrtem and mc simulation study
J. Guo, Y.H. Lu, X.J. Hu, Y.G. Shen

PI-10) A DEM model for contact electrification of irregular shaped particles
Chunlei Pei, Chuan-Yu Wu, Michael Adams, David England, Stephen Byard, Harald Berchtold

PI-11) Axial segregation of horizontally vibrated binary granular mixtures in an offset-christmas tree channel
Ashish Bhateja, Ishan Sharma, Jayant K. Singh

PI-12) Diffusion of light in two-dimensional granular materials
Zeinab Sadjadi, MirFaez Miri

PI-13) Synergistic combination dry powders for inhaled antimicrobial therapy
Desmond Heng, Sie Huey Lee, Jeanette Teo, Wai Kiong Ng, Hak-Kim Chan, Reginald B.H. Tan

PI-14) Electrostatics effects in granular materials
Saurabh Sarkar, Bodhisatwaa Chaushuri

PI-15) The characterizations and electrochemical properties of lignosulfonate templates based mesoporous NiO
Feng Chen, Hongfei Yao, Ping Fan, Jintao Yang, Mingqiang Zhong

PI-16) Influence of sintering additives and TiC on properties of TiC/Si3N4 ceramics
Yong Jiang, Laner Wu, Wenzhou Sun

PI-17) Fabrication and characterisation of patterned magnetorheological elastomers
WeiHua Li, Xianzhou Zhang, Tongfei Tian, and Weijia Wen
PI-18) Study of shear-stiffened elastomers
   Tongfei Tian, Weihua Li, Jie Ding, Gursel Alici, Haiping Du

PI-19) Preparation of γ-alon transparent ceramics by one-step method with high-activity Al2O3 powders
   Wenzhou Sun, Yuhong Chen, Laner Wu, Yong Jiang

PI-20) Effect of particle fineness on the finely disseminated iron ore for beneficiation
   T.S. Qiu, W.X. Zhang, X.H. Fang, G.K. Gao

PI-21) Controllable preparation of silver small particles for electronics
   Chunyan Liu, Zhiying Zhang, Shidong Nie, Xuefu Cui, Wendong Yang

PI-22) One-Step synthesis of the silver particles with a flake-belt integrated structure
   Nie Shidong, Zhiying Zhang, Xuefu Cui, Chunyan Liu

PI-23) The influence of void ratio on small strain shear modulus of granular materials: a micromechanical perspective
   Xiaomin Xu, Yipik Cheng, Daosheng Ling

PI-24) Distinct element analyses of collapsible behaviour of structured loess under one-dimensional compression
   M.J. Jiang, T. Li, H.J. Hu

PI-25) Numerical simulation of rock failure process using improved rigid body spring method
   Chi Yao, Qinghui Jiang, Jianfu Shao, Chuangbing Zhou

PI-26) Micro-characteristics of monodisperse and best-packing mixture samples under one dimensional compression
   N.H. Minh, Y.P. Cheng

PI-27) On the physical meaning of equivalent skeleton void ratio for granular soil with fines
   Bei-Bing Dai, Jun Yang

PI-28) Strength and fabric evolution of unsaturated granular materials by 3D DEM analyses
   Mingjing Jiang, Zhifu Shen

PI-29) Challenges of simulating undrained tests using the constant volume method in DEM
   Kevin J. Hanley, Xin Huang, Catherine O’Sullivan, Fiona Kwok

PI-30) Effect of inter-particle rolling resistance on passive earth pressure against a translating rigid retaining wall
   Mingjing Jiang, Jie He, Fang Liu, Huaning Wang

PI-31) Feasible use of particle-flow virtual test for the mechanical properties mixed soil
   Jia-ming Zhang, Yong-qiang Ren, Xiao-quan Shao, Gang Wang

PI-32) Postmortem analysis of sand grain crushing from pile interface using x-ray tomography
   Matias Silva I., Gaël Combe, Pierre Foray, Frédéric Flin, Bernard Lesaffre
PI-39) Physical and mechanical properties of cement-treated granular soils with respect to geotechnical application
Kimitoshi Hayano, Phan Huy Dong, Yoshiyuki Morikawa

PI-40) Optimum mixture design of granular materials reinforced by short fiber
Shigeki Hozoe, Kenji Kaneko, Yutaka Hashizume

PI-41) CPT-based estimation of bearing and deformation indexes for Ti-1 lunar soil simulant ground
Mingjing Jiang, Ning Zhang, Zhifu Shen, Xiaofeng Wu

PI-42) DEM simulation of footpads quasi-statically penetrating into granular ground
Chao Sun, Fang Liu, Mingjing Jiang, Huaning Wang

PI-43) Settlement statistics of a granular layer composed of polyhedral particles
Juan Carlos Quezada, Gilles Saussine, Pierre Breul, Farhang Rajdai

PI-44) DEM simulations of experimental dense granular packing
Maryam Hanifpour, Nicolas Francois, Mehdi Vaez Allaei, Mohammad Saadatfar

PI-45) The theory of granular packings for coarse soils
Calixtro Yanqui

PI-46) Analysis of the behavior of granular materials at a meso-scale
Ngoc-Son Nguyen, Helene Magoirier, Bernard Cambou

PI-47) Minkowski tensors and local structure metrics: amorphous and crystalline sphere packings

PI-48) Analysis of voronoi clusters in the packing of uniform spheres
Chuncheng Wang, Kejun Dong, Aibing Yu

PI-49) Discrete modelling of packing of ellipsoidal particles
Zongyan Zhou, Ruiping Zou, David Pinson, Aibing Yu

PI-50) The role of inter-grain friction in determining the mechanical and structural properties of superellipsoid packings
Gary W. Delaney, James E. Hilton, Paul W. Cleary, Claire Miller

PI-51) Fast synchrotron x-ray tomography study of the rod packing structures
Xiaodan Zhang, Chengjie Xia, Haohua Sun, Yujie Wang

PI-52) Crystallisation in a granular material
Nicolas Francois, Mohammad Saadatfar, Maryam Hanifpour, Ron Cruikshank, Adrian Sheppard

PI-53) A method for structural analysis of disordered particle systems
Z. A. Tian, K. J. Dong, A. B. Yu

PI-54) Tomographic analysis of jammed ellipsoid packings
Fabian Schaller, Max Neudecker, Mohammad Saadatfar, Gary Delaney, Klaus Mecke, Gerd Schröder-Turk, Matthias Schröter

PI-55) Non-gaussian behavior in jamming / unjamming transition in dense granular materials
A. P. F. Atman, E. Kolb, G. Combe, H. A. Paiva, G.H.B. Martins

PI-56) Granular jamming transitions for a robotic mechanism
Allen Jiang, Tomaso Aste, Prokar Dasgupta, Kasper Althoefer, Thrishantha, Nanayakkara

PI-57) Scaling laws in aeolian sand transport: erodible versus non-erodible bed
Alexandre Valance, Tuan Duc Ho, Ahmed Ould El Moctar, Pascal Dupont, (to be presented by L. Oger)
**Poster Session II: Granular solids and granular flow**
**Tuesday, 9 July**

**PII-1)** Critical-Like Features of a Granular Intruder
*Benjamin D. Elwood, Leonardo E. Silbert*

**PII-2)** Experimental evidence and structural mechanics analysis of force chain buckling at the microscale in a 2D polymeric granular layer
*Andrew B. Croll, Antoinette Tordesillas, David Carey, Bekele Gurmessa*

**PII-3)** Force distribution/transmission in amorphous and crystalline packings of spheres
*Xizhong An, Fei Huang*

**PII-4)** A mechanistic analysis of bulk powder caking
*Graham Calvert, Nikola Curcic, Mojtaba Ghadiri*

**PII-5)** Anisotropy of microstructure and force chains in granular materials
*Xihua Chu, Lunlun Zhou, Yuanjie Xu*

**PII-6)** Experimental investigations of micro-structural phenomena inside strain localisation in granular materials
*Danuta Lesniewska, Magdalena Pietrzak*

**PII-7)** An attempt in assessing contact forces from a kinematic field
*Vincent Richefeu, Gaël Combe, Raphaël Maurin*

**PII-8)** Local elastic fields in granular solids
*J.Boberski, L.Brendel, D.E.Wolf*

**PII-9)** Cooperative dynamics of a group of intruders subsiding in granular media: a DEM study
*Cher Hui Goey, Chuan-Yu Wu*

**PII-10)** The formation of polygon-shaped patterns in vibrated, cylindrical granular beds
*Guang Lu, James Third, Maximilian Köhl, Christoph Müller*

**PII-11)** Granular impact dynamics: fluctuations at short time scales
*Abram Clark, Lou Kondic, Robert Behringer*

**PII-12)** Experimental evidence of “granulence”
*Gaël Combe, Vincent Richefeu, Gioacchino Viggiani, Steven A. Hall, Alessandro Tengattini, Allbens P.F. Atman*

**PII-13)** Imaging soft sphere packings in a novel triaxial shear setup
*Joshua A. Dijksman, Hu Zheng, Robert P. Behringer*

**PII-14)** Tracker: a particle image tracking (PIT) technique dedicated to nonsmooth motions involved in granular packings
*Gaël Combe, Vincent Richefeu*

**PII-15)** Novel experimental apparatus for granular experiments on basal friction
*Hu Zheng, Joshua. A. Dijksman, Robert P. Behringer*

**PII-16)** Measuring creep and stick-slip behavior in 2-dimensional photoelastic granular medium
*N. Sepúlveda, R. P. Behringer*

**PII-17)** Experimental investigation of the Rowe’s dilatancy law on an atypical granular medium from a municipal solid waste incineration bottom ash
*Frédéric BECQUART, Nor Edine ABRIAK*

**PII-18)** Experimental studies of precursors to failure in granular material
*Antoine Le Bouil, Axelle Amon, Jérôme Crassous*

**PII-19)** Development of a biaxial compression test apparatus for granular materials
*Lian-Wei Zhang, Jian-Min Zhang*

**PII-20)** The stadium shear device: a novel apparatus for studying dense granular flows
*Tom Miller, Pierre Rognons, Itai Einav*

**PII-21)** Simulation of sheared, caking powder
*Alexander Weuster, Lothar Brendel, Dietrich E. Wolf*
PII-22) Shear strength and microstructure of 3D assemblies of platy particles
Mauricio Boton, Emilien Azéma, Nicolas Estrada, Farhang Radjai, Arcesio Lizcano

PII-23) Evolution of the contact distribution in sheared 2D granular packings
Jens Boberski, M. Reza Shaebani, Dietrich E. Wolf

PII-24) Homogeneity and packing structure of a 2D sheared granular system
Jie Ren, Joshua Dijksman, Robert Behringer

PII-25) Numerical investigation of granular flow in a shear cell
X. Wang, H.P. Zhu, A.B. Yu, S. Luding

PII-26) Constrained optimisation in granular network flows: games with a loaded dice
Qun Lin, Antoinette Tordesillas

PII-27) Transport pathways within percolating pore space networks of granular materials
Kevin Vo, David Walker, Antoinette Tordesillas

PII-28) A Micromechanical Model For Effective Transport Properties Of Granular Electrode Structures
Julia Ott, Benjamin Völker, Yixiang Gan, Robert M. McMeeking, Marc Kamlah

PII-29) Study on small-strain behaviours of methane hydrate sandy sediments using discrete element method
Yanxin Yu, Xiaomin Xu, Yi Pik Cheng, Kenichi Soga

PII-30) Dispersive behavior and acoustic scaling in granular rocks
Santos Carlos, Urdaneta Vanessa, Medina Ernesto, Garcia Xavier

PII-31) Global markov modelling and analysis of the dynamics of granular deformation and flow
Gary Froyland, Antoinette Tordesillas, David Walker

PII-32) Granular acoustics of polyhedral particles
Wei Shen Cheng, Jian Chen, Hans-Georg Matuttis

PII-33) Grain-based characterisation and acoustic wave propagation in a sand packing subject to triaxial compression
Mohammad Saadatfar, Nicolas Francois, Alon Aarod, Mahyar Madadi, Adrian Sheppard, Tim Senden, Mark Knackstedt

PII-34) Energy transmission through grain-to-grain contacts: the role of bulk and Rayleigh waves
Bart Van Damme, Emil Shaykhilislamov, Alessandro Spadoni

PII-35) Hydraulic and acoustic investigation of sintered glass beads
Ibrahim Gueven, Stefan Luding, Holger Steeb

PII-36) Distinguishing and predicting granular failure via multiscale evolution of contact cycle topologies
Sebastian Pucilowski, David M. Walker, Antoinette Tordesillas

PII-37) Structural evolution of force chains
Antoinette Tordesillas, David Carey, Jingyu Shi

PII-38) Modelling of compressible self-organized granular media under static load
Mikhail N. Skachkov

PII-39) Effect of fabric on the strength of granular materials in biaxial compression
Hoomoyoun Shaverdi, Mohd. Raihan Taha, Farzin Kalantary

PII-40) Impaction of particle streams on a granular bed
Sida Liu, Zongyan Zhou, Kejun Dong, Aibing Yu, John Tsalapatis, David Pinson

PII-41) Dissipative discrete element model applied to rock avalanches
Guilhem Mollon, Vincent Richefeu, Pascal Villard, Dominique Daudon

PII-42) Jumps and bores in bulky frictional granular flows
Thierry Faug

PII-43) Effect of cohesive force on the formation of a sandpile

PII-44) Study of solids contact shearing and collisions in granular debris flows
Gordon G. D. Zhou, Q. C. Sun, M. L. Fei
PII-45) Design of protection structures: the role of the grainsize distribution
Benjy Marks, Aurelio Valaulta, Alexander Puzrin, Itai Einav

PII-46) Tumbling sandpiles in a fluid
Farhang Radjai, Vincent Topin, Frederic Perales, Yann Monerie

PII-47) Experimental investigation on failure mode of fine-grain rainfall-induced debris flow
Zhao Cheng, Zhou Jian, Li Yexun, Tian Jiashen

PII-48) Sheared-induced particle ring dynamics in granular matter
Chun-Chung Liao, Shu-San Hsiau, Yu-Ming Hu

PII-49) Effect of friction and cohesion on anisotropy in quasi-static granular materials under shear
Abhinendra Singh, Vanessa Magnanimo, Stefan Luding

PII-50) Avoiding clogs: the shape of arches and their stability against vibrations
Angel Garcimartín, Celia Lozano, Geoffroy Lumay, Iker Zuriguel

PII-51) The influence of particle shape on granular hopper flow
Guilhem Mollon, Jidong Zhao

PII-52) Microscopic analysis of hopper flow with ellipsoidal particles
Sida Liu, Zongyan Zhou, Ruiping Zou, David Pinson, Aibing Yu

PII-53) Silo clogging reduction by placing an obstacle above the outlet
C. Lozano, I. Zuriguel, A. Janda, A. Garcimartín, R. Arévalo and D. Maza

PII-54) Dynamics of rotating spirals in agitated wet granular matter
Kai Huang, Lorenz Butzhammer, Ingo Rehberg

PII-55) Pipe transport in underground mining: an experimental approach
Alvaro Janda, Iker Zuriguel, Javier Bienzobas, Angel Garcimartín, Diego Maza

PII-56) Investigating Granular Phenomena in Three Dimensions using Positron Emission Particle Tracking
Christopher (Kit) Windows-Yule
Poster Session III: Particle properties and particle-fluid flow
Wednesday, 10 July - Thursday, 11 July noon

PIII-1) Segregation in dense, dry, inclined flows of binary mixtures of grains
Michele Larcher, James T. Jenkins

PIII-2) Influence of rotation on BN separation in binary particle system
Ping Wu, Shuang Wang, Ziang Xie, Yuming Huang, Lige Tong, Peikun Zhang, Shaowu Yin, Chuaping Liu, Li Wang

PIII-3) Effect of shear-induced diffusion on the transfer of heat across a sheared suspension
Ouamar Rahli, Xiaolong Yin, Bloen Metzger

PIII-4) Mixing behaviour of cohesive and non-cohesive particle mixtures in a ribbon mixer
Musha Halidan, Kejun Dong, Rohana Chandratilleke, John Bridgwater, Aibing Yu

PIII-5) Simulations on the flow segregation problem in bidimensional piles
Jessica Benito, Rodolfo Uñac, Ana Vídeles, Irene Ippolito

PIII-6) Effects of size and density differences on mixing of binary mixtures of particles
Musha Halidan, Rohana Chandratilleke, Sammy Chan, John Bridgwater, Aibing Yu

PIII-7) Radial segregation driven by axial migration
Xiaoxing Liu, Wei Ge, Jinghai Li

PIII-8) Effect of order structure formation on particle percolation in a vibrated bed
Amir Hossein Esfandiari, Kejun Dong, Aibing Yu

PIII-9) Numerical analysis of separation and mixing dynamics in multiphase granular systems
Tracy Rushmer, Antoinette Tordesillas, David Walker, Nick Petford

PIII-10) Pattern formation in a flat rotating box
Frank Rietz, Ralf Stannarius

PIII-11) Segregation of binary mixtures of spheres and ellipsoids
Changxing Li, Zongyan Zhou, Ruiping Zou, David Pinson, Aibing Yu

PIII-12) Segregation and convection rolls in two-dimensional packings
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