Paper No	Title	Author(s)	Organisation

Part I Discrete-based modelling

Pre-Failure behaviour

76	Modelling soft-particle materials	S. Nezamabadi, F. Radjai, J. Averseng & J.-Y. Delenne	LMGC - University Montpellier 2
383	Pre-peak deformation of model granular materials: a DEM study	J.-N. Roux	Laboratoire Navier
470	Grain-scale discrete analysis methods for real granular matter: granular element and coupled level set-discrete element methods	K.-W. Lim, R. Kawamoto & J. E. Andrade	California Institute of Technology
173	Capturing the state-dependent nature of soil response using DEM	X. Huang, C. O'Sullivan, K.J. Hanley & C.Y. Kwok	Imperial College London, UK
369	Investigation of fabric evolution in elliptical granular materials for kinematic models using the Discrete Element Method	M.J. Jiang & T. Li	Tongji University, Shanghai,
145	Fabric of monosized granular media	J. Sánchez, G. Auvinet & B. Cambou	Instituto de Ingeniería, UNAM, México
204	Change of scale in 2D granular materials: behavior at meso- and macro-scales	S.K. Nguyen, H. Magoariec, E. Vincens & B. Cambou	Ecole Centrale de Lyon
235	Fabric evolution of 3D granular materials in rotational shear	D.S. Yang, X. Li & H.-S. Yu	University of Nottingham
56	Micro and macro behavior of granular materials in simple shear	M. Gutierrez & A. Muftah	Colorado School of Mines
322	Effects of sample preparation methods in DEM	M.L. Bernhardt, C. O'Sullivan & G. Biscontin	University of Arkansas
168	Characterization of induced microstructures in a simulated triaxial specimen	Y. Lu & Y. Tan	Shanghai University
381	Comparison between geometrical and dynamic particle packing	I. Koval, M. Roozbahani & D. Frost	Ecole des Ponts Paristech
308	Incremental stress and microstructural response of granular soils under undrained axisymmetric deformation	N. Kumar, S. Luding & V. Magnanimo	University of Twente

Post-Failure behaviour

262	Anisotropic Coulomb failure criterion: from DEM to experiments	P. Fu, Z. Tong & Y.F. Dafalias	Lawrence Livermore National Laboratory
183	Investigation of Christensen's two-parameter failure criterion for brittle materials	K. J. Hanley, C. O'Sullivan & X. Huang	Imperial College London
475	Instability in granular materials - a micromechanical investigation	J. C. Lopera Perez, C. Y. Kwok, C. O'Sullivan, K. H. Hanley & X. Huang	University of Hong Kong
119	Characteristic lengths in granular piles exhibiting steady surface flows	J.-F. Camenen & P. Richard	Esplanade des Arts et Métiers
181	Flow patterns in quasi-static deformation of dry granular materials	K. Viswanathan, A. Mahato, T. G. Murthy, T. Koziara & S. Chandrasekar	Purdue University
319	Comparison of fabric tensors for granular materials	A. Theocharis, E. Vairaktaris, P. Fu & Y.F. Dafalias	NTUA, Athens
175	On the role of meso-structures on the instability mechanism of granular soils	J. Wang & B. Zhou	City University of Hong Kong
248	Simulation of granular soil behaviour using physics engines	M. Pytlos, M. Gilbert & C.C. Smith	University of Sheffield
258	A microstructural cluster-based description of diffuse and localized failures	N. Hadda, F. Bourrier, L. Sibille, F. Nicot, R. Wan & F. Darve	University of Calgary

Particle shape and size effects

362	Effect of mean grain diameter on vortices, force chains and local volume changes in granular shear zones	M. Nitka, J. Tejchman, J. Kozicki & D. Leśniewska	Gdańsk University of Technology
377	A discrete element analysis of the micromechanical interaction of non-spherical particles in cohesionless granular solids under K0 condition	H. Khan, J.P. Morrissey, J.Y. Ooi & J. Tod Pittam	University of Edinburgh
217	Investigating the effects of particle shape on the normal compression of sand using DEM	J.P. de Bono & G.R. McDowell	University of Nottingham

83	Micromorphic continuum stress measures calculated from three-dimensional ellipsoidal discrete element simulations on granular media	R.A. Regueiro, B. Zhang, & F. Shahabi	University of Colorado
27	Characterizing and incorporating particle morphology in discrete element modeling	S. Thomas, C. Hurt, C. Cary, D. Barrot, P. Giordano, J. Corriveau, S. Mandayam, N. Das, A. Daouadji & B. Sukumaran	Rowan University
149	Shape effect of elongated soil particles on Discrete Element Modelling of methane hydrate soil sediments	Y. Yu, Y. P. Cheng, X. Xu & K. Soga	University College London
18	A study on a shape effect in rockfall simulation using DEM	S. Moriguchi, I. Tachibana, K. Terada, S. Takase, T. Kyoya, J. Kato, S. Sawada & A. Yashima	Tohoku University
47	A micromechanical study of the equivalent granular void ratio of soil mixtures using DEM	N.H. Minh & Y.P. Cheng	Nazarbayev University
146	Coordination number and geometric anisotropy in binary sphere mixtures	J. Sánchez, G. Auvinet & B. Cambou	UNAM, México
14	The influence of finer fraction and size-ratio on the micro-scale properties of dense bimodal materials	T. Shire, C. O'Sullivan & K. Hanley	Imperial College London
88	The influence of particle shape for granular media: a Fourier-shape-descriptor-based micromechanical study	Z. Liu, J. Zhao & G. Mollon	Hong Kong University of Science and Technology

Particle crushing

226	A contribution to the numerical simulation of aggregate crushing	A. Neveu, R. Artoni, P. Richard & Y. Descantes	IFSTTAR
102	Force chain evolution during the gravity induced crushing of a fractal granular mixture	Z. Wang & L.E. Vallejo	University of Pittsburgh
256	New approach to grain fragmentation for discrete element methods	D. Cantor, N. Estrada & E. Azéma	Universidad de los Andes
99	An evaluation of the progressive crushing of granular materials under compression	L. E. Vallejo, S. Lobo-Guerrero, C. Sbarro, Z. Liu & J. R. Valdes	University of Pittsburgh
68	DEM modelling of a double-porosity crushable granular material	M.O. Ciantia, M. Arroyo, J. Butlanska & A. Gens	UPC, Spain
120	Evolution of particle size distributions in crushable granular materials	D.-H. Nguyen, E. Azéma, P. Sornay & F. Radja	University Montpellier 2
214	Compression behavior for assembly of DEM crushable cylindrical gravels	Y. Nakata & Y. Watabe	Yamaguchi University
208	A DEM investigation of a simple shear test on crushable materials	Y.S. Wang, S.H. Liu, C.M. Shen & Z.J. Wang	Hohai University

297	A probability-based approach for predicting particle crushing of granular soil	B. Zhou & J. Wang	City University of Hong Kong
324	Model methodology for studying crushing of unbound granular materials during compaction	M.S. Ocampo, B. Caicedo & L.E. Vallejo	Pontificia Universidad Javeriana

Dynamic behaviour

63	Micromechanics of seismic wave propagation in granular materials	J. O'Donovan, S. Hamlin, G. Marketos, C. O'Sullivan, E. Ibraim, M. Lings & D.M. Wood	Imperial College London
64	Novel methods of bender element test analysis	J. O'Donovan, G. Marketos & C. O'Sullivan	Imperial College London
361	Dynamic response of granular soils during dynamic compaction by PFC3D	M.C. Jia, X.H. Yang, S.H. Wu & J. Zhang	Tongji University
301	Macro and micro responses of granular materials under traffic load	J.G. Qian, Z.P. You, X.Q. Gu & M.S. Huang	Tongji University
388	Impact of seismic intensity on deformation of road embankment constructed by granular soil	J. Wang & R.Y.S. Pak	Southwest Jiaotong University
253	Dynamic soil-structure interaction around a monopile supporting a wind turbine	L. Cui & S. Bhattacharya	University of Surrey

Behaviour of bonded materials

314	Numerical investigation on effect of bond size on the compressive behavior of rigid bonded granules by FEM and DEM approaches	F. Liu, C. Sun, M. J. Jiang, Z. Li & G. Deng	Tongji University
400	Three-dimensional DEM investigation on failure criterion of cylinder-shaped bond between spheres	Z.F. Shen, M.J. Jiang & H.N. Wang	Tongji University
6	Shear behaviour of methane hydrate bearing sand: DEM simulations	J. S. Vinod, M. Hyodo, B. Indraratna & S Kajiyama	University of Wollongong
9	DEM analysis of geomechanical behavior of methane hydrate-bearing sediments	Q.J. Yang & C.F. Zhao	Tongji University
401	DEM analysis on formation of shear band of methane hydrate bearing soil under different temperatures and water pressures	M.J. Jiang, D. Peng, F. Liu & Z.F. Shen	Tongji University
403	Three-dimensional DEM simulation of mechanical behavior of methane hydrate under triaxial compression	M.J. Jiang, J. He, J.F. Wang & F. Liu	Tongji University

406	DEM simulations of methane hydrate dissociation by thermal recovery	M.J. Jiang, C. Fu, L. Cui, Z. F. Shen & F.Y. Zhu	Tongji University
372	A simple three-dimensional bond contact model for cemented sands considering the influence of bond width and thickness	M.J. Jiang & F.G. Zhang	Tongji University
379	Discrete Element Method for modeling the mechanical behavior of unsaturated granular media	K. Tourani, A. Mahboubi & E. Seyedi Hosseininia	Shahid Behehshti University
402	Discrete Element Modeling on strength degradation of concrete induced by sulfate attack	M.J. Jiang, Z.W. Liao, H.N. Wang & S.L. Chen	Tongji University
147	Significance of DEM input parameters on the modelling of low strength soft rock mechanical behaviour	D. Barreto, M. Rouainia & D. Simpson	Edinburgh Napier University

Fracturing and fragmentation

180	Blasting of cemented granular material and discrete element simulation of the process	N. Kikkawa, K. Itoh, T. Mizutani, T. Hori, Y. Toyosawa, M. J. Pender & R. P. Orense	National Institute of Occupational Safety and Health, Japan
53	Modelling fracturing process of geomaterial using Lattice Element Method	J. K.-W. Wong, K. Soga, X. Xu & J.-Y. Delenne	University of Cambridge
264	Coupled hydro-thermo-mechanical modeling of hydraulic fracturing in quasi-brittle rocks using DEM	I. Tomac & M. Gutierrez	Colorado School of Mines

Interface behaviour

231	Effects of joint geometry on the modelled material strengths of rock masses in the distinct element method	B.D. Roullier, P.A. Langston & X. Li	University of Nottingham
478	Particle flow modeling for direct shear behavior of rough joints	C.C. Xia, S.W. Zhou, S.G. Du & Y.L. Song	Tongji University
317	DEM investigation of geogrid-soil interaction under wheel load	Z. Wang, M. Ziegler, F. Jacobs & C. Yin	RWTH Aachen University
211	The influence of membranes on tests of coarse-grained materials at low cell pressures	L. Le Pen, J. Harkness, A. Zervos & W. Powrie	University of Southampton
39	Exploring the influence of normal boundary conditions on interface shear test	S. Liu & J. Wang	City University of Hong Kong

Fluid-Grain Coupling

41	Lattice Boltzmann modeling of liquid clusters in granular media	J.-Y Delenne, V. Richefeu & F. Radjai	INRA, France
188	Shear flow of dense granular suspensions by computer simulations	L. Amarsid, P. Mutabaruka, J.-Y. Delenne, Y. Monerie & F. Radjai	IRSN, PSN, France
241	Underwater granular flows down inclined planes	K. Kumar, K. Soga & J-Y. Delenne	University of Cambridge
210	Coupled LBM-DEM modeling of Bingham fluids with suspended particles	S.G. Chen, C.H. Zhang, Q.C. Sun & F. Jin	Tsinghua University
414	A coupled CFD-DEM model for fluid-particle flows with free surface: formulation and validation	L. Jing, C.Y. Kwok & Y.F. Leung	University of Hong Kong
371	Coupled CFD-DEM simulations of submarine landslide induced by thermal dissociation of methane hydrate	M.J. Jiang, C. Sun, W.C. Zhang & F. Liu	Tongji University
250	Investigation of submerged debris flows via CFD-DEM coupling	T. Zhao, G. T. Houlsby & S. Utili	University of Oxford
72	A new discontinuous model for three dimensional analysis of fluid-solid interaction behavior	H. Zhang, G. Chen, L. Zheng, Y. Zhang, Y.Q. Wu, Z. Han, F.S. Fan, P.D. Jing & W. Wang	Kyushu University
101	Contact mechanics in presence of fluid under pressure	L. Mongiovi	University of Trento
285	Numerical simulation of liquefaction behavior on gravelly soil in dynamic triaxial test by particle flow code	Y. L. Wang, Z. L. Cheng, Y. Wang & Z. B. Wang	Yangtze River Scientific Research Institute
295	Microstructure evolution of granular soils during liquefaction process	J. Wei & G. Wang	Hong Kong University of Science and Technology
201	Numerical analysis of internal stability of granular materials using discrete element method	N. Abdoulaye Hama, T. Ouahbi, S. Taibi, J.M. Fleureau, A. Pantet & H. Souli	University of Le Havre
408	Numerical simulation of localised fluidisation due to a leaking pipe	J. Li, X.L. Cui, A.H.C. Chan, L.W. Kong & X.W. Zhang	Hubei University of Technology
344	Mesoscale simulation of clay aggregate formation and mechanical properties	D. Ebrahimi, R. J.-M. Pellenq & A. J. Whittle	Massachusetts Institute of Technology

Applications

138	Probing DEM specimen heterogeneity by simulated CPT	J. Butlanska, M. Arroyo & A. Gens	Universitat Politècnica de Catalunya
2	Three dimensional modelling of the behaviour of stone columns using the discrete element method	F. Siahaan, B. Indraratna & C. Rujikiatkamjorn	University of Wollongong
3	A study of the behaviour of fresh and coal fouled ballast reinforced by geogrid using the discrete element method	N.T. Ngo, B. Indraratna & C. Rujikiatkamjorn	University of Wollongong
19	Analysis of micro characteristics and influence factors of foundation pit failure	Y.Q. Li, Z.L. Hu, X. Fang & J. Fonseca	Shanghai University
57	Distinct element analysis on uplift resistance of belled and multi-belled piles in layered ground	T. Honda	Takenaka Corporation
128	A 2D DEM mono-pile model under combined loading condition	N. Duan & Y.P. Cheng	University College London
255	DEM analysis of green rubberised backfills towards future smart Integral Abutment Bridges (IABs)	L.Cui & S. Mitoulis	University of Surrey
367	The effect of relative density on tunnelling-induced settlements - DEM simulations versus centrifuge test results	B. Zhou, I. Elkayam & A.M. Marshall	University of Nottingham
428	DEM analyses of pipe-soil interaction for offshore pipelines on sand	G. Macaro, S. Utili & C.M. Martin	University of Oxford
349	Granular ratcheting phenomena behind a model retaining wall	F. Gabrieli, G. Zorzi & R. Wan	University of Padova
477	DEM modelling of boulders for rubble mound embankment construction	X. Zhao, J. Xu, B. Li & B. Mu	Southeast University

Part 2 Continnum-based modelling

Constitutive modelling

4	Constitutive modelling of fabric anisotropy in sand	Z.W. Gao, J.D. Zhao, X.S. Li & Y.F. Dafalias	University of Glasgow
336	Sand model within anisotropic critical state theory with evolving fabric	A. G. Papadimitriou, Y. F. Dafalias & X. S. Li	University of Thessaly
326	Granular material behaviour along proportional strain loading paths	P.-Y. Hicher	Ecole Centrale de Nantes
266	A quasi-static and hysteretic constitutive model for sand based on granular solid hydrodynamics: a triaxial compression example	H. Wang, Z. Chen & X. Cheng	Tsinghua University
267	A Thermo-mechanical coupled constitutive model for clay based on extended granular solid hydrodynamics	Z.C. Zhang & X.H. Cheng	Tsinghua University
263	SCLAY1S-BS: an anisotropic model for simulation of cyclic behaviour of clays	M. Rezania, H. Dejaloud & M. Mousavi Nezhad	The University of Nottingham
150	Computations of plastic flow in granular assemblies under rotation of principal stresses	N. Hadda, R. Wan & M. Pouragha	University of Calgary
244	A microstructural plastic potential for granular materials	M. Pouragha, R. Wan & N. Hadda	Univesity of Calgary
44	Pre- and post-failure analysis using a two-scale constitutive model	M.T. Manzari & K. Yonten	The George Washington University
113	Modelling the shear strength and dilatancy of dry sand in triaxial compression tests	J. Fern, T. Sakanoue & K. Soga	University of Cambridge
143	Incorporation of initial static shear stress in the dilatancy flow rule of granular materials under quasi-static loading	H. Shaverdi, F. Kalantary, M. R. Taha	Ilam University
307	Why do constitutive models using (p and q) have problems?	T. Nakai, H.M. Shahin, M. Hinokio & H. Kyokawa	Geo-Research Institute, Japan
87	Method for shear strength of coarse granular materials based on fractal grain crushing	Y.F. Xu, Y. Xi & F.F. Chu	Shanghai Jiao Tong University
272	A theory predicting breakage dependence of critical state in sand	A. Tengattini, A. Das & I. Einav	University of Sydney
373	A new method for establishing elastic-viscoplastic constitutive model of clay	Z. Wang, M. Jiang, Z. Shen, S. Chen & J. Cai	Xiangtan University
114	Modelling tertiary creep in geomaterials using a continuum damage mechanics approach	A. S. Osmanm & T. J. Birchall	Durham University

24	The constitutive model for unsaturated sands based on thermodynamics	W. Zhang & C. Zhao	Beijing Jiaotong University
320	Comparison of strength criteria of rock under complex stress state	H.Z. Li, H.J. Liao, J.N. Ren, G.D. Xiong, G.P. Zhao & C.M. Ning	Xi'an Jiaotong University
135	Constitutive modelling of granular soils and interfaces considering their internal state	J. Duriez & É. Vincens	Université Joseph Fourier
129	Microscopic image of meta-stability of clays	T. Takeyama, A. Ikeda, E. Nakayama, M. Taya, I. Kobayashi, T. Pipatpongsa & H. Ohta	Tokyo Institute of Technology
40	Thermodynamically consistent fabric tensor definition from DEM to continuum	X.S. Li & Y.F. Dafalias	University of California at Davis
103	Multiscale failure modeling in granular soils	F. Nicot, G. Veylon, H. Zhu & F. Darve	francois.nicot@irstea.fr

Multi-scale modelling

25	Bridging the micro and macro for granular media: a computational multi-scale paradigm	J.D. Zhao & N. Guo	Hong Kong University of Science and Technology
22	Deformation analysis of granular materials at micro and macro scales	N.P. Kruyt, O. Millet & F. Nicot	La Rochelle University
42	Numerical simulation of the macro-micro mechanical behavior of granular materials based on a two-scale method	X. Chu, C. Yu & Y. Xu	Wuhan University
166	FE modelling of sand with micro-characterization	D. Takano & Y. Miyata	Port and Airport Research Institute, Japan
338	Scale effect in composites with matrix-inclusion morphology	D. Lydzba, M. Rajczakowska, A. Rozanski, A. Serwicki, M. Sobotka & D. Stefaniuk	Wroclaw University of Technology
391	Fabric anisotropy & DEM informed two-surface hyperplasticity: constitutive formulation, asymptotic states & experimental validation	W.M. Coombs & R.S. Crouch	Durham University
425	The role of micro-mechanical parameters in the runout length of high-speed granular masses. Modeling and numerical simulations	F. Federico & C. Cesali	University of Rome Tor Vergata
435	Mesoscale simulation of quartzite and porous sandstone at high loading rates	N. Durr & M. Sauer	Fraunhofer EMI
384	Scale effects in relation to swelling pressure in anhydritic claystones	K. Serafeimidis, G. Anagnostou & A. Vrakas	ETH Zurich
274	Numerical simulation of transformation of an obliquely incident shear wave at rock joint	R. Sebastian & T.G. Sitharam	Indian Institute of Science

Multiphase modelling

199	Study on H-M-C coupling mechanism of bentonite engineering barrier based on fractal theory	H. Jiang, Y.F. Xu, G.S. Xiang & T. Chen	Shanghai Jiao Tong University
418	Equating pore and particle surface areas with application to soil-water characteristic curve derivations	A.R. Russell	UNSW Australia
227	Hydro-mechanical modelling and numerical simulation of the water retention properties of the Callovo-Oxfordian argillites	X.P. Nguyen, B. Bary & C. Imbert & P. Sémété	CEA Saclay
479	Evolution of the soil water characteristic curve with void ratio using a fractal approach	A. Khoshghalb, A.Y. Pasha & N. Khalili	UNSW Australia
79	Analysis of dynamical effects in the formation of compaction bands	F. Cecinato & A. Gajo	University of Trento
118	On micro-macro transitions and linear wave propagation in saturated and partially saturated porous media	B. Albers	TU Berlin
318	Physicochemical conceptual model on reversible and non-reversible volumetric variations in non-swelling clays	M. Pedrotti & A. Tarantino	University of Strathclyde
410	Comparing double porosity and single porosity models for the simulation of coupled chemo-hydro-mechanical behavior of compacted active clays	G. Musso & G. Della Vecchia	Politecnico di Torino
148	Doublescale modelling of hydromechanical coupling and anisotropy in localization problems	B. van den Eijnden, P. Bésuelle, F. Collin & R. Chambon	CNRS
51	Effective stress and the role of liquid fabric in unsaturated granular soils	K. N. Manahiloh, B. Muhunthan & W. J. Likos	University of Delaware

Fluid flow modelling

380	Micro and macro modeling of internal erosion	K. Maeda, A. Kondo & D. Muir Wood	Nagoya Institute of Technology
69	Simulation of two-phase flow in soils using microscopic pore network model	J. N. Meegoda, S. Gao, L. Hu & P. Zhang	Tsinghua University
70	Shale gas migration modeling considering pore scale and fracture density	L. Hu, P. Zhang & J.N. Meegoda	Tsinghua University
473	Two methods for simulating the relationship between the tortuosity and porosity	X. W. Tangm, Z. F. Sun & G. C. Cheng	Zhejiang University

90	A study on the causes of debris flow focusing on groundwater infiltration	Y. Kochi & M. Suzuki	K S Lab. Inc.
240	Three-dimensional network modelling of the influence of microstructure on mass transport in unsaturated soils	I. Athanasiadis, S. Wheeler & P. Grassl	University of Glasgow
469	3D neurofuzzy modeling of Lugeon values at the abutments of a dam site	S.R. García, V. Castellanos, J. López, J. Landa & J. Alemán	Instituto de Ingenierí-a UNAM
426	Effects of granulometric stability of cohesionless materials on safety of geotechnical structures	F. Federico & M. Iannucci	University of Rome Tor Vergata

Numerical modelling - Continuum based methods

283	Support mechanism of anchor type retaining wall and influence of existing structure in braced excavation	H.M. Shahin, T. Nakai, K. Okuda & M. Kato	Nagoya Institute of Technology
161	Research of rigid-pile composite foundation with crushed stone cushion based on FDM-PFC coupling method	Y. Li, X. Han, J. Ji & H. Wang	South China University of Technology
205	Sensitivity analyses on the influence of constitutive parameters on the numerical simulation of the behavior of a cavern in rock salt	E. Mahmoudi, K. Khaledi, D. König & T.Schanz	Ruhr-Universität Bochum
302	A multiscale approach for evaluating the failure condition of calcarenite structures subject to environmental loads	M.O. Ciantia, R. Castellanza, J.A. Fernandez Merodo & T. Hueckel	UPC, Spain
193	Finite element modeling of the behavior of salt caverns under cyclic loading	K. Khaledi, E. Mahmoudi, M. Datcheva & T. Schanz	Ruhr-Universität Bochum
451	Winkler springs (p-y curves) for liquefied soil from element tests	M. Rouholamin, S. Bhattacharya & D. Lombardi	University of Surrey

Numerical modelling - Particle based methods

15	Numerical simulations of triaxial compression tests using the Material Point Method	T. Kiriyama	Shimizu Institute of Technology, Shimizu Corporation
192	Two-phase Material Point Method applied to cone penetration for different drainage conditions	F. Ceccato, L. Beuth, P. A. Vermeer & P. Simonini	University of Padova
290	Numerical simulation of a series of flume tests with dry and wet sands by using depth averaged material point method	K. Abe & K. Konagai	Railway Technical Research Institute, Japan

378	Run-out of landslides in brittle soils: an MPM analysis	A. Yerro, E.E. Alonso & N.M. Pinyol	UPC, Spain
32	Development of the cellular automaton model for simulating the propagation extent of debris flow at the alluvial fan: a case study of Yohutagawa, Japan	Z. Han, G. Chen, Y. Li, H. Zhang, F. Fan, P. Jing, W. Wang, S. Zhou, L. Xu & S. Chen	Kyushu University
140	Modelling crushing of granular materials using Markovian processes	B. Caicedo, M. Ocampo & L. E. Vallejo	Universidad de Los Andes
61	Development of Moving Particle Simulation method using a rigid plastic constitutive model	K. Isobe, S. Ohtsuka & T. Hoshina	Hokkaido University
111	SPH model of water jet erosion in granular soils with a boundary layer of liquefied soil	B. Stefanova & J. Grabe	Hamburg University of Technology

Part 3 Experiment-based Investigation

Micro-scale experiments

321	3D fracture behavior of sand at the particle level: experimental versus numerical modeling	K.A. Alshibli, M.B. Cil & A.M. Druckrey	University of Tennessee - Knoxville
177	An experimental investigation of the micromechanical behaviour of cemented sand particles	V. Nardelli & M.R. Coop	City University of Hong Kong
33	Experimental investigation into the primary fabric of stress transmitting particles	J. Fonseca, C.C. Reyes-Aldasoro, C. O'Sullivan & M.R. Coop	City University London
66	Photo-elastic and DIC techniques to study development of shear and compaction bands within granular materials	D. Lesniewska, M. Pietrzak & J. Tejchman	Koszalin University of Technology
54	Application of digital image technology for investigation of shear band of soil specimen in triaxial test	L.T. Shao, G. Liu & X. X. Guo,	Dalian University of Technology, Dalian, Liaoning, China
167	Three-dimensional translucent segregation table (3D-TST) test for soil particle size and shape distribution	J. Zheng, R. D. Hryciw & H-S. Ohm	University of Michigan
190	New insights into the micromechanics of soft clay shearing on rough and smooth interfaces	M. Y-H. Kuo	University of Cambridge
187	Imaging of crushable grains when shearing against rough interfaces	M. Y-H. Kuo & M. D. Bolton	University of Cambridge
449	From nano to macroscale: a new experimental approach to mechanical characterization of rock materials	A. Bandini & P. Berry	University of Bologna

Particle effects

174	The effect of the coordination number on particle crushing	M.C. Todisco, M.R. Coop, Q. Guo & K. Senetakis	City University of Hong Kong, Hong Kong
200	Compressibility and creep behaviour of a crushed carbonate sand	D.W. Airey & G. Miao	University of Sydney
382	Compressiblity and grain breakage of a gap graded material	M. Tapias, E. E. Alonso & J. Gili	Technical University of Catalonia, Spain
34	Effect of particle crushing on the dynamic properties of pumice sand	R.P. Orense, M.J. Pender & L. Liu	University of Auckland

280	The effect of particle characteristics on shear behavior with methane hydrate bearing sand	S. Kajiyama, M. Hyodo ,Y. Nakata, N. Yoshimoto & A. Kato	Yamaguchi University, Ube, Japan
287	Effect of particle shape on the mechanical response of a granular ensemble	R. K. Kandasami & T. G. Murthy	Indian Institute of Science
296	Effect of particle characteristics on the shear strength of clinker ash	M.J. Winter, T. Sueshima, N. Yoshimoto, M. Hyodo, Y. Nakata, A. Nakashita & Y. Nakamura	Yamaguchi University, Ube, Japan
411	Index test for liquefaction potential considering the granulometric properties	E. Schwiteilo & I. Herle	Technical University Dresden
159	Japanese and New Zealand pumice sands: comparison of particle shapes and surface void structures	M. J. Pender, R. P. Orense & N. Kikkawa	Univeristy of Auckland
104	A methodology for accurate roughness measurements of soils using optical interferometry	M. Otsubo, C. O'Sullivan & W. Sim	Imperial College London

Non-destructive Imaging

109	Investigation of the fracture behaviour of individual LBS particle using Nanofocus X-ray CT	B. D. Zhao, J. Wang & M. R. Coop	City University of Hong Kong, Hong Kong
85	Visualisation of grain crushing using micro-focused X-ray CT scanning	W.M. Yan, Y. Shi, T. Mukunoki, T. Sato & J. Otani	The University of Hong Kong
112	XRCT scanning of unsaturated soil: microstructure at different scales?	J.C. Smith & C.E. Augarde	Durham University
73	Micro-focus X-ray CT scanning of chemically improved sand	Y.Nakata, K.Ogawa, H.Akagi, J.Kawamura & Y.Watanabe	Waseda University, Japan
78	Challenges in analyzing micro-CT images of dam filter materials	H.F. Taylor, C. O'Sullivan & W.W. Sim	Imperial College London
238	Using CAT to obtain density maps in Sherbrooke specimens of silty soils	N. Sau, M. Arroyo, N. Pérez & J. A. Pineda	Technical University of Catalonia
108	Chemo-mechanical couplings characterisation by nuclear magnetic resonance in lime-treated soil	O.Cuisinier & G. Kervern	Université de Lorraine, France
46	The use of P-wave velocity tomography - a particular application on exploring the mechanism of friction fatigue	Z. Zhang & Y-H. Wang	The Hong Kong University of Science and Technology, China
100	A muCT investigation of the collapse of a loose unsaturated sand specimen: comparison between macroscopic and mesoscopic scale	J.-F. Bruchon, M. Vandamme, J.-M. Pereira, N. Lenoir, M Bornert & P. Delage	Université Paris-Est, Laboratoire Navier, France

Characterisation - coarse grained materials

223	Displacement fluctuations in granular materials: a direct manifestation of grain rearrangement	G. Combe, V. Richefeu & G. Viggiani	UJF-Grenoble 1, Grenoble
265	The multi-fractal nature of soil particle size distribution	X. Zhang & B.A. Baudet	The University of Hong Kong
281	Prediction of the effects of compaction on granular materials	G. Chiaro, G. Modoni & E. Salvatore	University of Tokyo
316	Shear zone of sand and its rate effect in ring shearing	M. Suzuki, N. Otani & N. van Hai	Yamaguchi University
21	Contact fatigue: a key mechanism of time effects in silica sand	R.L. Michalowski & S.S. Nadukuru	University of Michigan
89	A view of small strain shear modulus from very large strain levels	S. Teachavorasinskun	Chulalongkorn University
286	Experimental studies on the cutting of granular materials	S. Yadav, S. Singh, R. K. Kandasami, T. G. Murthy & C. Saldana	Indian Institute of Science
48	Compaction and shear localization in porous sandstone and sand	A. Torabi, E. Andò, R. Alikarami & G. Viggiani	Uni Research CIPR, Norway
419	Microstructural pore changes in Gosford sandstone during compressive loading	A. Sufian & A.R. Russell	UNSW, Australia
122	The liquefaction resistance of weakly cemented sands	A.D. Vranna & Th. Tika	Aristotle University of Thessaloniki
417	Micro-meso-structure model of fissured lateritic soil based on physical and mechanical characteristics	W. Bai, L. W. Kong, K. Mu & S. Yin	Institute of Rock and Soil Mechanics, Chinese Academy of Sciences
245	Collapsibility study of Najran soils	A. Rouaiguia & M.A. Dahim	Najran University
45	Time effects in granular materials: from micro to macro behavior	P. V. Lade & H. Karimpour	The Catholic University of America

Characterisation - Fine grained materials

97	The oedometer compression curve is a pore size distribution curve in loose structured clays	P. Delage	Ecole des ponts Paris Tech
164	Microstructure behavior of intact soft clay after principal stress rotation	J. Zhou, X. Ning, Y. Deng & C. Xu	Zhejiang University
7	Geochemistry and geotechnical characteristics of London Clay from Heathrow Airport	A. J. Lutenegger	University of Massachusetts
132	Shear strength test of expansive soils with different cracks development characteristics	L. Chen, X.L. Zhao, L. Lu, Y. Zhang, W.Z. Gao & B.B. Xia	Geotechnical Research Institute of Hohai University
134	The composition of freshwater and saltwater lacustrine soft soil deposits in Mexico City	J.L. Rangel-Núñez, F. Almanza-Hernández & E. Garfias-García	Universidad Autónoma Metropolitana-Azc
433	Microstructural identification in a clayey mix material at the ultimate state	T. Hammad, M. Hattab & J.-M. Fleureau	LEM3-Université de Lorraine
356	A method of measuring the specific surface area of bentonite for evaluation of the hydraulic performance of bentonite engineered barriers	I. Kobayashi, H. Owada, T. Ishii & A. Iizuka	Kajima Corporation
169	A method to determine fractal dimension of microfabric surface in marine clay	X. W. Zhang, J. Li, C. M. Wang & D. H. Ma	Chinese Academy of Sciences
476	Plastic strain-induced small strain stiffness anisotropy: a multi-scale experimental evidence	A. Amorosi, G. Mitaritonna & F. Cotecchia	Technical University of Bari
26	Micro-structure and collapsibility of loess in China	X. H. Bai, F. L. Ma, M. Wang & J. G. Jia	Taiyuan University of Technology

Mixtures

365	Transition fines contents of sand-clay mixtures under one dimensional compression	A. F. Cabalar, N. Akbulut & H. Isik	University of Gaziantep
121	Effect of fines content on monotonic and cyclic shear characteristics of sand-clay mixtures	S. Watanabe & M. Hyodo	Fukken co., Ltd
139	Micro and macro mechanical response of granular packing containing fine materials	M. Goudarzy, H. Viefhaus, D. König & T. Schanz	Ruhr Universität Bochum
394	Undrained monotonic simple shear response of clayey sands and silts	Y. Suzuki & B.M. Lehane	The University of Western Australia

176	The influence of fines on the deformation properties of sands imposed to dynamic loading	P. A. Kallioglou & Th. Tika	University of Thessalay
92	Unconfined compression strength of unsaturated completely decomposed granite soil with different clay mixing ratios	W.H. Zhou & X. Xu	University of Macau
170	An investigation of the particle breakage behaviour of rubber reinforced sand	R. Fu, M. R. Coop, K. Senetakis & X.Q.Li	Huazhong University of Science and Technology
209	Size effect study on fibre-reinforced cement-treated clay	H.W. Xiao, Ng Choy Hing Yannick, F.H. Lee, M.H. Zhang & B. S. Ahmad	National University of Singapore
298	In-situ shearing response and shear strength of various solid waste ground focused on fibrous materials composition	S. Miyamoto, N. Yasufuku, K. Omine, R. Ishikura, S. Kawai & A. Yamawaki	Kyushu University
273	Effects of random fibre reinforcement on the density of granular materials	O. Ajayi, L. Le Pen, A. Zervos & W. Powrie	University of Southampton
440	Mechanical properties of glass foam, sand and cement mixtures	B. Teymur & E.Y. Tuncel	Istanbul Technical University
442	Determination of geotechnical properties of sand-EPS foam and cement mixtures	B. Teymur & R. Ahmadov	Istanbul Technical University
343	Building a nanostructure in the pore fluid of granular soils	M. Santagata, A. Bobet, A. El-Howayek, C.T. Johnston, F. Ochoa-Cornejo & J.V. Sinfield	Purdue University
277	Monotonic and cyclic shear behaviour of tire chips	M. Fuchiyama, M. Hyodo, Y. Nakata, N. Yoshimoto, K. Imada & A. Konja	Yamaguchi University

Partial saturation

62	Shear strength and dilatancy of partially saturated sand in direct shear tests	J. Fern, D. J. Robert & K. Soga	University of Cambridge
144	Strain-rate effects in dry and partially-saturated sand under one-dimensional compression at high pressures	A. D. Barr, S. D. Clarke, M. Petkovski, A. Tyas, J. Warren & S. Kerr	The University of Sheffield
182	One-dimensional compression of a crushable sand in dry and wet conditions	L. Wils, P.O. Van Impe & W. Haegeman	Ghent University
269	Micro-structure characteristics of undisturbed expansive soil under the wetting–drying effect	Y. Wang, L. W. Kong, Y. L. Wang & T. Liu	Institute of Rock and Soil Mechanics, Chinese Academy of Science
357	Particle breakage of volcanic coarse-grained soils due to wet-dry cycles and freeze-thaw actions	T. Ishikawa, T. Tokoro & S. Miura	Hokkaido University

216	Relationships between desiccation cracking behavior and microstructure of the Tournemire clay-rock by coupling DIC and SEM methods	A-L. Fauchille, S. Hedan, D. Prêt, V. Valle, J. Cabrera & P. Cosenza	IC2MP, France
275	Water retention curve of soils with distinct pore space characteristics	T. Mine, L. Handoko & N. Yasufuku	Kyushu University
424	Soil water retention curves of the unsaturated residual soil from Brazilian coast	P. D. G. Orlando, R. M. Mendes & F. A. M. Marinho	University of São Paulo
306	Experimental study on the development of the law of fissures of expansive soil under different climatic conditions	L. Chen, X. Ding, H. Hu, B. Xia & W. Gao	Hohai University
310	Crack developing law of compacted expansive soil subject to laboratory wet-dry cycles	G.S. Liu, W. Li & T. Yao	Institute of Rock and Soil Mechanics, Chinese Academy of Sciences

Fluid-grain coupling

364	Influences of grain shape and size distribution on permeability	N. Akbulut, M. Wiszniewski & A. F. Cabalar	Hasan Kalyoncu University
212	Effects of flow velocity and particle size distribution on the filtration of polydispersive particles in saturated porous medium	A. Hammadi, N.-D. Ahfir, A. Alem & H.-Q. Wang	Université du Havre
222	Soil erosion characteristics of a residual soil under wetting-drying cycles	K. Vilayvong, N. Yasufuku & K. Iwami	Kyushu University
249	Self-potential method applied to the characterization of a clogged porous medium	S.Taoudiat, N-D. Ahfir, A. Jardani, H-Q. Wang & J-P. Dupont	Université du Havre
350	Clay-bearing rocks slaking characterization using artificial vision	O. Rincón, L. Florez & M.S. Ocampo	Universidad de la Salle
328	Permeability changes due to volumetric dilation and shear band formation in sands under triaxial loading	S. Feia , J. Sulem, J. Canou, S. Ghabezloo & X. Clain	Université Paris Est

Biological and Chemical effects

91	Soil particle composition effect on the strengthening behavior of biopolymer treatment	I. Chang, J. Im & G.C. Cho	Korea Institute of Construction Technology
252	The compression strength and micro structure analysis of silty sands stabilized with colloidal silica	G. Moradi & Sh. Seyedi	University of Tabriz

163	The occurrence of free iron oxides in soil microstructure	X. W. Zhang, L.W. Kong, X.L. Cui & M. Zang	Chinese Academy of Sciences
37	Fibres and roots for soil improvement	D. Muir Wood, A. Diambra & E. Ibraim	Chalmers Tekniska Högskola
243	Multi-scale analysis of lime treated sand-bentonite mixtures	M.A. Hashemi & B. François, T.J. Massart, S. Salager & G. Herrier	Université Libre de Bruxelles
436	Immediate soil-lime reaction studied on the basis of the lime consumption rate	F. Gueridi & Z. Derriche	Ecole Nationale Supérieure des Travaux Publics (ENSTP)
291	Coral sand solidification test using ureolytic bacteria	T. Danjo, S. Kawasaki, S. Shimazaki & K. Koizuka	Hokkaido University
429	Microstructural approach for heavy metal propagation in saturated clays	N. Saiyouri & X. Liu	Bordeaux University
230	A chemo-mechanical coupling for lime treated soils	V. Robin, O. Cuisinier, A. Javadi & F. Masrouri	Université de Lorraine

Thermal effects

360	Effect of microstructure on heat transfer through compacted cement-stabilised soils	C. Beckett & D. Ciancio	University of Western Australia
432	Microwave absorption and its thermo-mechanical consequences in heterogeneous rocks	M. Toifl, R. Meisels, P. Hartlieb, F. Kuchar & T. Antretter	Montanuniversitaet Leoben

Observations from physical model tests and field tests

224	Towards measurement of “granular temperature” inside a flowing unsteady saturated granular medium	N. Sanvitale & E.T. Bowman	University of Sheffield
480	Segregation effects in granular collapses	J. S. Caplan, S. Tunyasuvunakool, S. B. Dalziel & N. M. Vriend	University of Cambridge
77	Simulation of granular soil behaviour using the Bullet physics library	E. Izadi & A. Bezuijen	Ghent University
131	Interaction between two localized fluidization cavities in granular media: experiments and numerical simulation	J. Ngoma, P. Philippe, S. Bonelli, J.-Y. Delenne & F. Radjai	National Research Institute of Science and Technology for Environment and Agriculture

116	Crush characteristics of abrasive particles during abrasive waterjet rock cutting	T.M. Oh, G.W. Joo, K.J. Yun & G.C. Cho	Korea Advanced Institute of Science and Technology
154	Micromechanics on scour of sandy soil due to tsunami flow with multiphase interaction	T. Matsuda & K. Maeda	Nagoya Institute of Technology
465	Susceptibility assessment of shallow landslides on Umyeon mountain, Korea, under extreme-rainfall events	S.S. Jeong, J.H. Kim, Y.M. Kim, J.K. Lee, & K.W. Lee	Yonsei University
95	Microstructural study of the deformation zones around a penetrating cone tip in silty soil	P. Paniagua, J. Fonseca, A.S. Gylland & S. Nordal	Norwegian University of Science and Technology
228	Sand displacement field analysis during pile installation using x-ray tomography and digital image correlation	M. Silva & G. Combe	Université de Grenoble
8	Ageing mechanism of driven and jacked pipe piles in clays	A. J. Lutenegger	University of Massachusetts
75	Centrifuge modeling of wrapped-reinforced sand slope	J. Zhou, Y.-H. Zhou & F. Li	Tongji University
254	Theoretical & experimental modeling of settlement of rigid footing over collapsible soil	B. Kafle, H. Hailemariam & F. Wuttke	Christian Albrechts University
261	How local perturbation in regularity changes force chains in model granular soil under the shallow foundation	Y.-H. Jung, J.-W. Jung & T.-G. Kim	Kyung Hee University
133	On the fine particles migration within French conventional railway substructure	T.V. Duong, Y.J. Cui, A.M. Tang, J.C. Dupla, J. Canou, N. Calon & A. Robinet	Ecole des Ponts ParisTech
98	Suitability of the superpave gyratory compactor for the assessment of compaction characteristics of unbound materials	C.E. Cary, C. Kumpel, A. Bagriacik, R. Cohen, M. Lecorvaisier, J. Clark, B. Sukumaran & A. Daouadji	Rowan University
218	Dilatancy based similitude of small-scale 1g models and prototypes for cohesionless soils	O. Cinicioglu, A. Altunbas, B. Soltanbeigi & A.T. Gezgin	Bogazici University