



CHoPS 2012

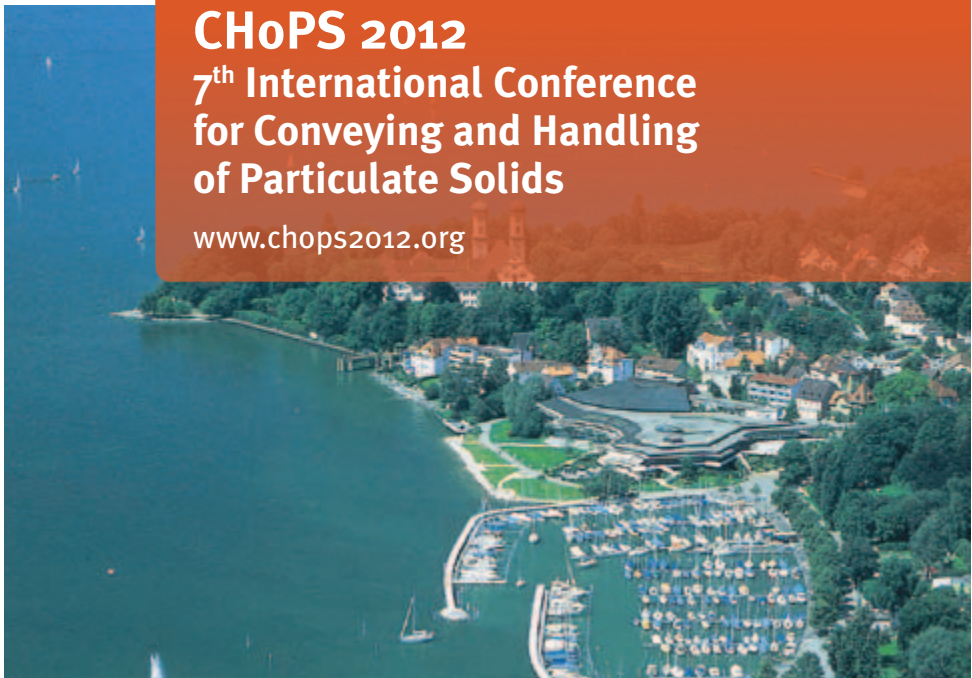
PROGRAMME

10. – 13. September 2012
Friedrichshafen · Germany

CHoPS 2012

7th International Conference for Conveying and Handling of Particulate Solids

www.chops2012.org



ORGANIZER



COMMITTEES

LOCAL ORGANISING COMMITTEE

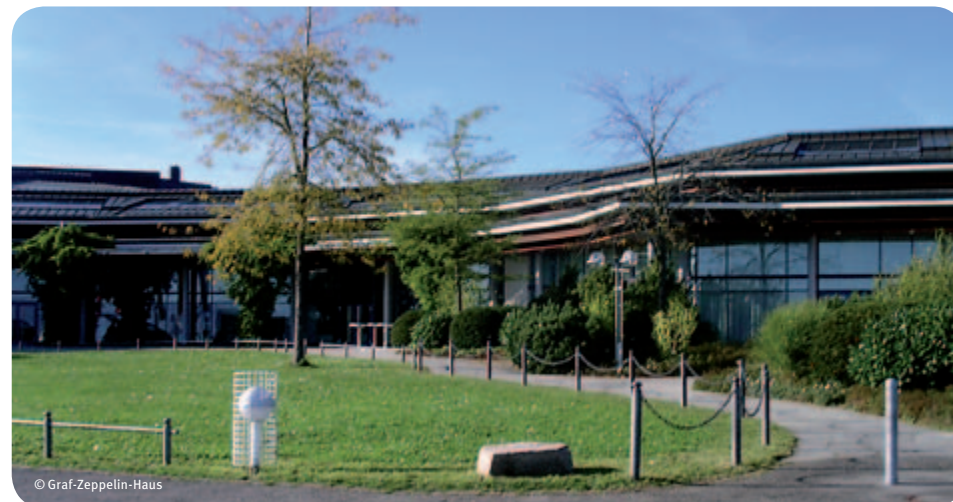
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A. Heim	University of Lodz/PL
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M. Takei	Chiba University/J
G. Tardos	City College of City University NY/USA
J. Tomas	University of Magdeburg/D
Y. Tsuji	Osaka University/J
U. Tuzun	University of Surrey/UK
A. Ullmann	Tel-Aviv University/IL
P. Wypych	University of Wollongong/AUS

SUPPORT

The organisers convey their sincere thanks to:



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PROGRAMME AT A GLANCE

Monday, September 10, 2012

13:20 - 13:50	PLENARY LECTURE: Herrmann			
14:20 - 16:00	Biomass handling	Silo design for flow	Mechanical conveying	DEM – process modeling
	Barletta	Puri	Schott	Morrissey
	Craig	Guo	Hewitt	Mio
	Puri	Zetzener	Weheeler	Heine
	Lestander	Wensrich	Gloess	Müller
16:30 - 17:45	Round table discussion	Simulations in pneumatic conveying	Industrial applications	DEM parameters
	Ramirez-Gomez	Kaushal	Schneider	Cury
	Round table discussion	Pei	Ratnayake	Wypych
		Müller	Stephan	Schott
18:15 - 19:15	EVENING LECTURE: Enkel			
19:15 - 21:30	Welcome Reception			

Tuesday, September 11, 2012

09:15 - 09:45	PLENARY LECTURE: Theuerkauf			
10:15 - 12:20	From particle contacts to bulk behavior	Industrial silo topics	Particle and agglomerate fracture	Multiphase
	Paulick	Bradley	Jones	Sanchez Quintanilla
	Combarros	McGee	Antonyuk	Valciu
	Wojtkowski	Wiche	Portnikov	Mizonov
	Imole	Van Laar	Pelgrom	Özahi
	Thakur	Skowaisa	Klenk	Mezhericher
13:50 - 14:20	PLENARY LECTURE: Einav			
14:45 - 16:25	From micro to macro	Element tests for pneumatic conveying	Particle impact	Multiphase
	Mathews	Biswas	Deng	Olatunji
	Frankowski	Hussain	Brosh	Rasteiro
	Lin	Klinzing	Pinto	Vlasek
	Kumar	Jasevicus	Xi	Chen
16:55 - 17:45	Two-phase flows, from micro to macro	Particle interaction and deformation	Characterization	Multiphase
	Ebrahimi	Tomasetta	Bonifazi	Mizonov
	Robinson	Mütze	Wypych	Mallick
17:45 - 19:30	Workshop			
17:45	Poster introduction			
18:45 - 19:45	Poster Party			

PROGRAMME AT A GLANCE

Wednesday, September 12, 2012

09:15 - 09:45	PLENARY LECTURE: Katterfeld			
10:15 - 12:20	PIKO	Innovative particle architectures and processes	Experimental investigations in pneumatic conveying	DEM contacts
	Haarmann	Bensmann	Bradley	Kadau
	Salameh	Quintanilla	Ratnayake	Brown
	Auernhammer	Kleinschmidt	Shaul	Rimsa
	Kozhar	Stark	Mallick	Lommen
	Kappl	Thakur	Cronin	Mellmann
13:50 - 14:20	PLENARY LECTURE: Wilms			
14:45 - 16:00	PIKO	Adhesion forces, friction and stress distribution during pressure agglomeration	Basic of flow	DEM shape & rolling
	Mader	Haider	Schott	Wensrich
	Paul	Prigge	Weigler	Williams
	Strege	Osborne	de Ryck	Kacianauskas
16:55 - 17:45	PIKO	Optimizing process and disintegration behavior	Wear & attrition in pneumatic conveying	DEM flow modeling
	Knoll	Chan	Farnish	Weinhart
	Knoop	Hahn	Santo	Artoni
	Rennecke	Mesnier	Rodnianski	Ramirez-Gomez

19:15 - 22:00 Conference Dinner

Thursday, September 13, 2012

09:15 - 09:45	PLENARY LECTURE: Bell			
10:15 - 12:20	PIKO	Continuous mixing	Hydraulic transport phenomena	Powder testing
	Torun	Dolgunin	Faraj	McGee
	Schmid	Müller	Schneider	Schulze
	Leroch	Sunkara	Faraj	Chen
	Cui	Cronin	Penik	Lommen
	Zellnitz	Gupta	Ulusarlan	Besant
13:50 - 14:20	PLENARY LECTURE: Jones			
14:45 - 16:00	PIKO	Batch mixing	Basic of flow	Mechanical behaviour of bulk materials
	Herrmann	Simons	Stratton	Wypych
	Wenzl	Ding	Nied	Su
	Meyer	Berthiaux	Lecreps-Prigge	Jäckel

16:00

Closing Ceremony

LECTURE PROGRAMME

Monday, September 10, 2012

Session: Biomass

13:00 **OPENING CEREMONY**13:20 **PLENARY LECTURE**

Blood purification using core/shell particles
I. Herrmann, ETH Zurich/CH

13:50 **Coffee Break****Biomass Handling**

14:20 **Can bulk solids best practice techniques for flow characterization and handling equipment design be used reliably for biomass materials?**

D. Barletta, Università di Salerno, Fisciano (SA)/I; R.J. Berry, University of Greenwich, Chatham/UK; S.H. Larsson, T. Lestander, Swedish University of Agricultural Sciences, Umea/S; M. Poletto, Università di Salerno, Fisciano (SA)/I; A. Ramirez Gomez, Universidad Politécnica de Madrid/E

14:45 **Solids handling issues involving fine biomass**

D. Craig, Jenike & Johanson, Inc., Tyngsboro/USA

15:10 **Fundamental mechanical properties of bio-feedstock in granular form for prediction of pellet quality**

H. Yi, A. Karamchandani, V.M. Puri, The Pennsylvania State University, University Park/USA

15:35 **On-line NIR characterisation of particulate solids from lignocellulosic biomass**

T. Lestander, Swedish University of Agricultural Sciences, Umea/S

16:00 **Coffee Break and Snacks****Round Table Discussion: Biomass, a new raw material?**

16:30 **On the determination of the risk of self-ignition of biomass materials**

A. Ramirez-Gomez, L. Medic-Pejic, E. Querol-Aragón, C. Grima-Olmedo, J. García-Torrent, Universidad Politécnica de Madrid/E

16:55 – **Round Table Discussion: Biomass, a new raw material?**

17:45

17:45 **Coffee Break**18:15 **EVENING LECTURE**

Why collaboration across industries is crucial for engineering companies
E. Enkel, Zeppelin University, Friedrichshafen/D

19:15

– **Welcome Reception**

21:30

LECTURE PROGRAMME

Monday, September 10, 2012

Session: Silo technology / Conveying

13:00 **OPENING CEREMONY**13:20 **PLENARY LECTURE**

Blood purification using core/shell particles
I. Herrmann, ETH Zurich/CH

13:50 **Coffee Break****Silo Design for Flow**

14:20 **Internal stress gradient of powder en masse under hydrostatic compression**
H. Yi, V. M. Puri, The Pennsylvania State University, Park/USA

14:45 **Investigation of arching behavior in mass-flow hoppers under surcharge pressures**
J. Guo, A.W. Roberts, J.D. Prigge, University of Newcastle/AUS

15:10 **A new approach for the design of funnel flow silos taking anisotropy into account**
H. Zetzener, TU Braunschweig/D; T. Ittershagen, Chemetall GmbH, Langelshelm/D; J. Stieghan, A. Kwade, TU Braunschweig/D

15:35 **Analysis of a train load-out bin using combined continuum methods and discrete element modelling**
T.J. Donohue, C.M. Wensrich, A.W. Roberts, D. Ilic, University of Newcastle/AUS; A. Katterfeld, University of Magdeburg/D

16:00 **Coffee Break and Snacks****Simulations in Pneumatic Conveying**

16:30 **CFD modeling for pipeline flow of coarse particles at high concentration**
D.R. Kaushal, Indian Institute of Technology, Delhi/IND; Y. Tomita, KIT Japan, Kitakyushu/J

16:55 **Numerical analysis of contact electrification in fluidization and pneumatic conveying**
C. Pei, C.-Y. Wu, University of Birmingham/UK; D. England, H. Berchtold, Sanofi-Aventis Deutschland GmbH, Frankfurt/D; M. Adams, University of Birmingham/UK

17:20 **Modeling the influence of particle shape on pneumatic conveying**
J.R. Third, G. Lu, C.R. Müller, ETH Zurich/CH

17:45 **Coffee Break**18:15 **EVENING LECTURE**

Why collaboration across industries is crucial for engineering companies
E. Enkel, Zeppelin University, Friedrichshafen/D

19:15

– **Welcome Reception**

21:30

LECTURE PROGRAMME

Monday, September 10, 2012

Session: Conveying

13:00 **OPENING CEREMONY**

13:20 **PLENARY LECTURE**
Blood purification using core/shell particles
 I. Herrmann, ETH Zurich/CH

13:50 **Coffee Break****Mechanical Conveying**

14:20 **Model for energy flow of screws acting on a free surface**
 C.P. Geijs, ESI Eurosil BV, Purmerend/NL; D.L. Schott, Delft University of Technology;
 J.P.J. Ruijgrok, ESI Eurosil BV, Purmerend/NL; G. Lodewijks, Delft University of
 Technology/NL

14:45 **Build-up of powders in auger fillers**
 C. Hewitt, A. Ingram, C. Wu, The University of Birmingham/UK; D. Smith, M. Ridyard,
 Procter & Gamble Technical Centres, Newcastle/UK

15:10 **Conveyor belt indentation rolling resistance – measurement and analysis**
 C. Wheeler, P. Munzenberger, University of Newcastle/AUS

15:35 **1A method for analysing the die filling behaviour of ceramic granules**
 B. Gloess, M. Fries, Fraunhofer Institute for Ceramic Technologies and Systems IKTS,
 Dresden/D; M. Nebelung, Dresden/D

16:00 **Coffee Break and Snacks****Industrial Applications**

16:30 **Successful implementation of a high capacity pneumatic conveying technology for minerals in the polymer industry**
 H. Schneider, G. Winkhardt, Zeppelin Systems GmbH, Friedrichshafen/D

16:55 **A design and simulation method for pneumatic conveying systems based on a scaling-up technique**
 C. Ratnayake, Tel-Tek, Porsgrunn/N

17:20 **Hygienic handling of bulk materials**
 M. Stephan, Coperion GmbH, Weingarten/D

17:45 **Coffee Break**

18:15 **EVENING LECTURE**
Why collaboration across industries is crucial for engineering companies
 E. Enkel, Zeppelin University, Friedrichshafen/D

19:15
 – **Welcome Reception**

21:30

LECTURE PROGRAMME

Monday, September 10, 2012

Session: DEM

13:00 **OPENING CEREMONY**

13:20 **PLENARY LECTURE**
Blood purification using core/shell particles
 I. Herrmann, ETH Zurich/CH

13:50 **Coffee Break****DEM – Process Modeling**

14:20 **An experimental and DEM study of the behavior of iron ore fines**
 J. Morrissey, J. Sun, J.F. Chen, J.Y. Ooi, K.T. Both, G. Horrigmoe, The University of Edinburgh,
 Scotland/UK

14:45 **Modeling of particle charging behavior of blast furnace using DEM and its measurement**
 H. Mio, M. Kadowaki, S. Matsuzaki, K. Higuchi, Nippon Steel Corporation, Futtsu/J

15:10 **Micro scale simulation of the particle formation in fluidized bed spray agglomeration**
 M. Heine, S. Antonyuk, S. Heinrich, Hamburg University of Technology/D; L. Fries,
 D. Dopfer, G. Niederreiter, Nestlé Research Center, Lausanne/CH; S. Palzer,
 Nestlé Product Technology Center, York/UK

15:35 **DEM-Simulation of the normal impact behaviour granules**
 P. Müller, J. Tomas, University of Magdeburg/D

16:00 **Coffee Break and Snacks****DEM Parameters**

16:30 **Characterizing the flow of bulk solids using a calibrated DEM material model**
 D. Curry, J. Favier, DEM Solutions Ltd, Edinburgh/UK

16:55 **Parameter sensitivity in discrete element modelling of conveyor transfers**
 D.B. Hastie, P.W. Wypych, University of Wollongong/AUS

17:20 **How small differences in the used contact model influence DEM simulation results**
 D.L. Schott, S.W. Lommen, Delft University of Technology/NL; A. Katterfeld, University of
 Magdeburg/D

17:45 **Coffee Break**

18:15 **EVENING LECTURE**
Why collaboration across industries is crucial for engineering companies
 E. Enkel, Zeppelin University, Friedrichshafen/D

19:15
 – **Welcome Reception**

21:30

LECTURE PROGRAMME

Tuesday, September 11, 2012

Session: PARDEM

9:15	PLENARY LECTURE Applications of discrete element method simulations in industry J. Theuerkauf, Dow Chemicals, Midland/USA
9:45	Coffee Break and Snacks
From particle contacts to bulk behavior	
10:15	Stiffness: definitions and application in DEM simulation A. Kwade, TU Braunschweig/D; M. Morgeneyer, M. Paulick, Université de Technologie de Compiègne/F; H. Zetzener, TU Braunschweig/D
10:40	Segregation of particulate solids: experiments and DEM simulations M. Combarros, TU Braunschweig/D; H.J. Feise, BASF SE, Ludwigshafen/D; H. Zetzener, A. Kwade, TU Braunschweig/D
11:05	Predictive studies on the avalanching behaviour of cohesive powders in a rotating drum M. Wojtkowski, O.I. Olukayode, S. Luding, University of Twente, Enschede/NL
11:30	Discrete element simulations and experiments on the deformation of cohesive powders in a bi-axial box O. Imole, N. Kumar, V. Magnanimo, S. Luding, University of Twente, Enschede/NL
11:55	Discrete element modelling of cohesive bulk materials S.C. Thakur, J.P. Morrissey, J. Sun, J.F. Chen, J. Ooi, University of Edinburgh/UK
12:20	Lunch Break
13:50	PLENARY LECTURE Cycles of melting and solidifications: from geological faults to industrial hot melt agglomeration I. Einav, The University of Sidney/AU
14:20	Coffee Break and Snacks

LECTURE PROGRAMME

Tuesday, September 11, 2012

Session: PARDEM

From micro to macro	
14:45	Silo model tests in geotechnical centrifuge J. Mathews, University of Natural Resources and Life Science, Vienna/A
15:10	Correlation of experimental and numerical DEM results to investigate underlying mechanical processes. P. Frankowski, M. Morgeneyer, Université de Technologie de Compiègne/F; A. Kwade, TU Braunschweig/D
15:35	Asymmetry of the stress tensor in granular materials J. Lin, W. Wu, University of Natural Resources and Life Sciences, Vienna/A
16:00	Constitutive behavior from elementary deformation modes for assemblies of polydisperse spheres N. Kumar, O. I. Imole, V. Magnanimo, S. Luding, University of Twente, Enschede/NL
16:25	Coffee Break and Snacks
Two-phase flows; From micro to macro	
16:55	Simulation of dilute horizontal pneumatic conveying with experimental validation (PARDEM Project 8) M. Ebrahimi, M. Crapper, University of Edinburgh/UK
17:20	Meshfree simulation of mesoscale fluid-particle systems M. Robinson, S. Luding, University of Twente, Enschede/NL; M. Ramaioli, Nestlé Research Center, Lausanne/CH
17:45	

LECTURE PROGRAMME

Tuesday, September 11, 2012

Session: Silo technology

9:15	PLENARY LECTURE Applications of discrete element method simulations in industry J. Theuerkauf, Dow Chemicals, Midland/USA
9:45	Coffee Break and Snacks
Industrial silo topics	
10:15	An integrated approach to bulk solids characterization and prediction of behavior for plant design and troubleshooting M. Bradley, R. Farnish, R. Berry, University of Greenwich, Chatham Maritime, Kent/UK
10:40	Design considerations for hopper outlet loads on feeders E. McGee, L. Bates, Ajax Equipment, Bolton/UK
11:05	Improved design procedures for wet solids concentrator vessels S. Wiche, I. Lecreps-Prigge, Tunra Bulk Solids Handling Research Associates, Callaghan/AUS
11:30	Static discharges: small ignition sources, big effects G. Van Laar, B. Broeckmann, Inburex GmbH Consulting, Hamm/D
11:55	Cost savings using modern radar technology for level measurement J. Skowaisa, VEGA Grieshaber KG, Schiltach/D
12:20	Lunch Break
13:50	PLENARY LECTURE Cycles of melting and solidifications: from geological faults to industrial hot melt agglomeration I. Einav, The University of Sidney/AU
14:20	Coffee Break and Snacks

LECTURE PROGRAMME

Tuesday, September 11, 2012

Session: Element tests

Element tests for pneumatic conveying	
14:45	A study on surface behavior of ductile material in erosion S. Biswas, A. Cenna, K. Williams, M. Jones, The University of Newcastle/AUS
15:10	A sensing technique for electrostatic charge polarity of particles in material pneumatic handling progresses T. Hussain, University of Greenwich, Kent/UK
15:35	Development of a microprobe for pneumatic conveying measurements and analysis M. Zhang, G. Klinzing, W. Clark, University of Pittsburgh/USA
16:00	Energy dissipation during oblique impact of ultrafine particles R. Jasevicius, Vilnius Gediminas Technical University/LT and J. Tomas, University of Magdeburg/D; R. Kacianauskas, Vilnius Gediminas Technical University/LT
16:25	Coffee Break and Snacks
Particle interaction and deformation	
16:55	A theoretical framework for the interpretation of the effect of temperature on the interparticle interactions I. Tomasetta, D. Barletta, M. Poletto, University of Salerno, Fisciano (SA)/I
17:20	Modelling and parameter study of the elastic-plastic deformation T. Mütze, TU Bergakademie Freiberg/D
17:45	
17:45	WORKSHOP:
–	Development to a new functional design – concept to pneumatic conveying systems
19:30	F.A. Rizk, Neuhofen/D

LECTURE PROGRAMME

Tuesday, September 11, 2012

Session: Comminution

9:15	PLENARY LECTURE Applications of discrete element method simulations in industry J. Theuerkauf, Dow Chemicals, Midland/USA
9:45	Coffee Break and Snacks
Particle and agglomerate fracture	
10:15	Analysis of wear mechanisms and surface modifications in fly ash conveying pipelines A.A. Cenna, K.C. Williams, M.G. Jones, The University of Newcastle, Callaghan/AUS; W. Robinson, Delta Electricity, Wallerawang/AUS
10:40	Breakage behavior of non-spherical agglomerates: numerical simulations based on experimental results S. Antonyuk, M. Dosta, S. Heinrich, Hamburg University of Technology/D
11:05	The effect of high temperature on the strength measurements of particles D. Portnikov, H. Kalman, Ben-Gurion University of the Negev, Beer Sheva/IL
11:30	Controlled fracture behaviour of field peas via the state diagram P.J.M. Pelgrom, M.A.I. Schutyser, R.M. Boom, Wageningen University/NL
11:55	Dust reduction with spray nozzles U. Klenk, E. Schmidt, University of Wuppertal/D
12:20	Lunch Break
13:50	PLENARY LECTURE Cycles of melting and solidifications: from geological faults to industrial hot melt agglomeration I. Einav, The University of Sidney/AU
14:20	Coffee Break and Snacks

LECTURE PROGRAMME

Tuesday, September 11, 2012 Session: Comminution/Characterization

Particle impact	
14:45	Centrifugal impact testing for measurements of particle adhesion, erosive wear and particle degradation T. Deng, M.S.A. Bradley, University of Greenwich, Chatham/UK
15:10	The effect of van der waals force on particle comminution in jet-mill T. Brosh, H. Kalman, A. Levy, Ben-Gurion University of the Negev, Beer-Sheva/IL
15:35	Model-based scale-up of impact milling M. Pinto, S. Bermingham, Process Systems Enterprise, London/UK; B.T. Gettelfinger, S.R. Glassmeyer, Procter & Gamble, Cincinnati/USA
16:00	Size reduction and shape control with a pin mill to manufacture particulate solids with desired flow property Z. Xi, S. Ding, POSTEC and Tel-Tek, Porsgrunn/N; G. Enstad, Telemark University College, Porsgrunn/N
16:25	Coffee Break and Snacks
Characterization	
16:55	Hyperspectral imaging logics and algorithms in particulate solids analysis: examples review S. Serranti, G. Bonifazi, Sapienza - Università di Roma/I
17:20	Review and evaluation of dustiness testing methods for powders and granular bulk materials P. Wypych, V. Karthik, L. Mar, University of Wollongong/AUS
17:45	Poster introduction Two parallel sessions
18:45	Poster Party
19:45	

LECTURE PROGRAMME

Tuesday, September 11, 2012

Session: Multiphase

9:15	PLENARY LECTURE Applications of discrete element method simulations in industry J. Theuerkauf, Dow Chemicals, Midland/USA
9:45	Coffee Break and Snacks
Multiphase	
10:15	Effect of magnetic field orientation on magneto-stabilization of fluidized beds M. Sanchez Quintanilla, J.M. Valverde, M.J. Espin, University of Seville/E
10:40	Investigation of fluidization patterns for binary powder mixtures S. Valciu, A. Dyrøy, Hydro Aluminium, Porsgrunn/N; S.A. Bradley, University of Greenwich, Chatham/UK
11:05	A cell model of heat transfer between crosswise flows of gas and particulate solids V. Mizonov, Ivanovo State Power Engineering University/RUS; V. Zaitsev, N. Yelin, Ivanovo State University of Chemical Technology, Ivanovo/RUS
11:30	Recent developments on fluidized bed drying of particles E. Özahi, M.Ö. Çarpınlioğlu, H. Demir, University of Gaziantep/TR
11:55	Droplet-droplet and particle-particle interactions in multiphase flow of spray dryers M. Mezhericher, A. Levy, I. Borde, Ben-Gurion University of the Negev, Beer Sheva/IL
12:20	Lunch Break
13:50	PLENARY LECTURE Cycles of melting and solidifications: from geological faults to industrial hot melt agglomeration I. Einav, The University of Sidney/AU
14:20	Coffee Break and Snacks

LECTURE PROGRAMME

Tuesday, September 11, 2012

Session: Multiphase

Multiphase	
14:45	Determination of dispersion stability by particle sedimentation O. Olatunji, J. Tomas, University of Magdeburg/D
15:10	Modelling solid-liquid flow in pipes using CFD: study of the effect of turbulence modification R. Silva, F. A. P. Garcia, P. M. Faia, M. G. Rasteiro, Universidade de Coimbra/P
15:35	Particle-laden flow in circular pipe with stationary particulate bed P. Vlasak, Z. Chara, B. Kysela, Institute of Hydrodynamics ASCR, v. v. i., Prague 6/CZ
16:00	Experimental validation of the simulation of multiphase flow using computational fluid dynamics (CFD) X. Chen, C. Wheeler, The University of Newcastle/AUS
16:25	Coffee Break and Snacks
Multiphase	
16:55	Modelling of fluidized bed by means of the theory of markov chains V. Mizonov, A. Mitrofanov, A. Ogurtzov, Ivanovo State Power Engineering University/RUS; K. Tannous, University of Campinas/BR
17:20	Modelling thermal conductivity for nanopowder suspension in fluid (nanofluid) S. Mallick, A. Misra, Thapar University, Patiala/IND
17:45	Poster introduction Two parallel sessions
18:45	–
19:45	Poster Party

LECTURE PROGRAMME

Wednesday, September 12, 2012

Session: PIKO

9:15	PLENARY LECTURE Application of the discrete element method in mechanical bulk material conveying A. Katterfeld, University of Magdeburg/D
9:45	Coffee Break and Snacks
PIKO	
10:15	Simulation of adhesion-moments depending on the van der Waals interactions between rough particles and smooth walls in gaseous environment A. Haarmann, E. Schmidt, University of Wuppertal/D
10:40	Adhesion mechanisms of the contact interface of TiO₂ nanoparticles in films and aggregates S. Salameh, University of Bremen/D; M. Seo, Catholic University of Leuven/B; L. Colombi Ciacchi, L. Mädler, University of Bremen/D
11:05	Colloidal aggregates tested via nano indentation and simultaneous 3D imaging M. Roth, MPI for Polymer Research, Mainz/D; C. Schilde, TU Braunschweig/D; P. Lellig, MPI for Polymer Research, Mainz/D; A. Kwade, TU Braunschweig/D; G. K. Auernhammer, MPI for Polymer Research, Mainz/D
11:30	Experimentally calibrated contact models for micrometer-sized particles, S. Kozhar, S. Antonyuk, S. Heinrich, Hamburg University of Technology /D; L. Gilson, U. Bröckel, Umwelt-Campus Birkenfeld/D
11:55	Kinetics of viscous sintering of powder particles M. Ye, M. Kappl, MPI for Polymer Research, Mainz/D
12:20	Lunch Break
13:50	PLENARY LECTURE The role of solids handling expertise in plant engineering H. Wilms, Zeppelin Systems GmbH, Friedrichshafen/D
14:20	Coffee Break and Snacks

LECTURE PROGRAMME

Wednesday, September 12, 2012

Session: PIKO

PIKO	
14:45	Fine adhesive particles – a contact model including viscous damping K. Mader, J. Tomas, University of Magdeburg/D
15:10	In-situ deformation studies in SEM and TEM of micro- and nanoparticles J. Paul, M. Ziener, S. Romeis, W. Peukert, University of Erlangen-Nuremberg/D
15:35	Structural changes of a fine cohesive powder induced by shearing and compaction A. Weuster, Universität Duisburg-Essen/D; S. Strege, H. Zetzener, A. Kwade, TU Braunschweig/D; L. Brendel, D.E. Wolf, Universität Duisburg-Essen/D
16:00	Coffee Break and Snacks
PIKO	
16:30	Influence of the surface properties and the magnetic field strength on the adhesion forces of magnetic composite particles J. Knoll, H. Nirschl, Karlsruhe Institute of Technology/D
16:55	Particles in ultrasound agitated gases C. Knoop, U. Fritsching, University of Bremen/D
17:20 – 17:45	Continuous dry dispersion of nanoparticle agglomerates by impact loading S. Rennecke, A.P. Weber, Clausthal University of Technology/D
19:15 – 22:00	Conference Dinner

LECTURE PROGRAMME

Wednesday, September 12, 2012

Session: Product design

9:15	PLENARY LECTURE Application of the discrete element method in mechanical bulk material conveying A. Katterfeld, University of Magdeburg/D
9:45	Coffee Break and Snacks
Innovative particle architectures and processes	
10:15	Formulation of hollow sphere granules in a granulation dish S. Bensmann, T. Pischel, G. Grünewald, F. Kleine Jäger, BASF SE, Ludwigshafen/D
10:40	A Ca(OH)₂/SiO₂ composite for enhanced sorption of CO₂ J.M. Valverde, F. Pontiga, C. Soria-Hoyo, M.A.S. Quintanilla, H. Moreno, F.J. Duran, M.J. Espin, University of Seville/E
11:05	Improvement of flowability of cohesive powders by nano-scaled flow additives S. Kleinschmidt, J. Tomas, Otto-von-Guericke-University Magdeburg/D
11:30	Degassing of polyolefines – a must to avoid hazards and quality problems B. Stark, Coperion GmbH, Weingarten/D
11:55	An experimental and numerical study of compression and shear behaviour of detergent powders S.C. Thakur, J. Sun, J.F. Chen, J.Y. Ooi, Edinburgh University/UK; A. Hossein, Procter and Gamble, Newcastle upon tyne/UK
12:20	Lunch Break
13:50	PLENARY LECTURE The role of solids handling expertise in plant engineering H. Wilms, Zeppelin Systems GmbH, Friedrichshafen/D
14:20	Coffee Break and Snacks

LECTURE PROGRAMME

Wednesday, September 12, 2012

Session: Agglomeration

Adhesion forces, friction and stress distribution during pressure agglomeration	
14:45	Assessment of particle contact mechanisms in pressure agglomeration by micromanipulation of primary particle pairs C. Haider, The University of Sheffield/UK; T. Althaus, G. Niederreiter, Nestlé Research Center, Lausanne/CH; S. Palzer, Nestlé Product Technology Centre, York/UK; A. Salman, The University of Sheffield/UK
15:10	Investigations of the wall friction in powder die compaction by an innovative measurement technique J. Prigge, TUNRA Bulk Solids Handling Research Associates, Callaghan/AUS; K. Sommer, TU München, Freising/D
15:35	Ribbon temperatures during roller compaction J.D. Osborne, The University of Sheffield /UK; T. Althaus, G. Niederreiter, Nestle Research Centre, Lausanne/CH; S. Palzer, Nestle PTC, York/UK; M.J. Hounslow, A.D. Salman, The University of Sheffield /UK
16:00	Coffee Break and Snacks
Optimizing process and disintegration behaviour	
16:30	Blade – granule bed stress in a cylindrical high shear granulator: wet bed study E. Chan, The University of Sheffield/UK; G.K. Reynolds, AstraZeneca, Macclesfield/UK; B. Gururajan, AstraZeneca, Mölndal/S; M.J. Hounslow, A.D. Salman, The University of Sheffield/UK
16:55	Particle cluster formation and reduction in concentrated fermented milk as affected by post-processing C. Hahn, W. Rösingh, S. Nöbel, J. Hinrichs, J. Weiss, Universität Hohenheim, Stuttgart/D
17:20 – 17:45	Incorporation of food grade disintegrants to promote fast tablet dissolution X. Mesnier, The University of Sheffield /UK; T. Althaus, L. Forny, G. Niederreiter, Nestlé Research Centre, Lausanne/CH; S. Palzer, Nestlé PTC, York /UK; M.J. Hounslow, A.D. Salman, The University of Sheffield/UK
19:15 – 22:00	Conference Dinner

LECTURE PROGRAMME

Wednesday, September 12, 2012

Session: Conveying

9:15	PLENARY LECTURE Application of the discrete element method in mechanical bulk material conveying A. Katterfeld, University of Magdeburg/D
9:45	Coffee Break and Snacks
Experimental investigations in pneumatic conveying	
10:15	Monitoring particle velocity with an electrostatic sensor in pneumatic conveyors T. Gorman, D.I. Armour-Chélu, T. Deng, <u>M.S.A. Bradley</u> , University of Greenwich, Chatham/UK
10:40	Pneumatic conveying of fish feed pellets with minimum degradation <u>C. Ratnayake</u> , Tel-Tek, Porsgrunn/N; K. Sveinsvoll, Skretting AS, Stavanger/N
11:05	Typical fluidization characteristics for Geldart's classification groups <u>S. Shaul</u> , R. Evgeny, K. Haim, Ben-Gurion University of the Negev, Beer Sheva/IL
11:30	Investigating into straight-pipe conveying characteristics and minimum transport criteria for fluidised dense-phase pneumatic transport G. Setia, A. Bansal, <u>S. Mallick</u> , Thapar University, Patiala/IND
11:55	Probabilistic analysis of particle velocity in pneumatic conveying <u>K. Cronin</u> , K. Hanley, E. Byrne, University College Cork/IRL
12:20	Lunch Break
13:50	PLENARY LECTURE The role of solids handling expertise in plant engineering H. Wilms, Zeppelin Systems GmbH GmbH, Friedrichshafen/D
14:20	Coffee Break and Snacks

LECTURE PROGRAMME

Wednesday, September 12, 2012

Session: Conveying

Basics of Flow	
14:45	Dynamic moisture distribution in stockpiles for asphalt production D.L. Schott, Delft University of Technology/NL; B. de Bruin, BAM Wegen Materieel, Tiel/NL; J.A. Ottjes, Delft University of Technology/NL; E.W. Demmink, BAM Wegen Materieel, Tiel/NL; G. Lodewijks, Delft University of Technology/NL
15:10	Investigation of mass flow in a mixed flow grain dryer <u>F. Weigler</u> , H. Scaar, J. Mellmann, Leibniz Institute for Agricultural Engineering Potsdam-Bornim /D
15:35	Confined flows of non-cohesive granular materials A. de Ryck, Mines Albi - Université de Toulouse, Albi/F
16:00	Coffee Break and Snacks
Wear & Attrition in Pneumatic Conveying	
16:30	Prediction of particle breakage through industrial pneumatic conveyors using laboratory equipment <u>R. Farnish</u> , J. Rojas, M.S.A. Bradley, University of Greenwich, Chatham/UK
16:55	Attrition of particles in bends of pneumatic conveying systems <u>N. Santo</u> , H. Kalman, Ben-Gurion University of the Negev, Beer Sheva/IL
17:20	Experimental investigation of the significant parameters influencing the size-reduction process in a jet mill
17:45	<u>V. Rodnianski</u> , O. Nitzan, Y. Turgeman, A. Levy, H. Kalman, Ben-Gurion University of the Negev, Beer-Sheva/IL
19:15	
-	Conference Dinner
22:00	

Wednesday, September 12, 2012

Session: DEM

9:15	PLENARY LECTURE Application of the discrete element method in mechanical bulk material conveying A. Katterfeld, University of Magdeburg/D
9:45	Coffee Break and Snacks
DEM contacts	
10:15	Loose powders and collapsible structures: discrete modeling D. Kadau, ETH Zurich/CH; H. J. Herrmann, ETH Zurich/CH
10:40	A bond model for DEM simulation of bonded particles and deformable boundaries N. Brown, J.F. Chen, J.Y. Ooi, The University of Edinburgh/UK
11:05	Simulation of interaction of particles via viscoelastic interface V. Rimsa, R. Kacianauskas, H. Sivilevicius, Vilnius Gediminas Technical University/LT
11:30	DEM speedup: stiffness effects on bulk material behavior S. Lommen, D. Schott, G. Lodewijks, Delft University of Technology/NL
11:55	Influence of particle shape on the flow properties of grain products J. Mellmann, T. Hoffmann, Chr. Fürll, Leibniz Institute for Agricultural Engineering Potsdam-Bornim/D
12:20	Lunch Break
13:50	PLENARY LECTURE The role of solids handling expertise in plant engineering H. Wilms, Zeppelin Systems GmbH, Friedrichshafen/D
14:20	Coffee Break and Snacks

Wednesday, September 12, 2012

Session: DEM

DEM shape & rolling	
14:45	Rolling friction and shape in discrete element modelling C. Wensrich, University of Newcastle, Callaghan/AUS; A. Katterfeld, University of Magdeburg/D; D. Sugo, University of Newcastle, Callaghan/AUS
15:10	Particle shape characterisation and its application to discrete element modelling K.C. Williams, TUNRA Bulk Solids, Newcastle/AUS; S. Weeger, University of Nuremberg/D; T.J. Donohue, W. Chen, TUNRA Bulk Solids, Newcastle/AUS
15:35	Simulation of impact of randomly-shaped quasi-spherical particle L. Tumonis, R. Kacianauskas, Vilnius Gediminas Technical university/LT; A. Dziugys, Lithuanian Energy Institute, Kaunas/LT
16:00	Coffee Break and Snacks
DEM flow modeling	
16:30	Closure relations for shallow granular flows from particle simulations T. Weinhart, A.R. Thornton, O. Bokhove, S. Luding, University of Twente, Enschede/NL
16:55	Effective wall slip in chutes and channels: experiments and discrete element simulations R. Artoni, A. Santomaso, P. Canu, University of Padova, I
17:20	Numerical effects on DEM-predicted silo wall pressures derived from the use of different filling procedures
17:45	C. González-Montellano, Á. Ramírez-Gómez, J.M Fuentes, F. Ayuga, Universidad Politécnica de Madrid/E
19:15	
-	Conference Dinner
22:00	

LECTURE PROGRAMME

Thursday, September 13, 2012

Session: PIKO

9:15	PLENARY LECTURE Where have we gone wrong (or right) – reflections on solids handling in the chemical industry T. Bell, DuPont/USA
9:45	Coffee Break and Snacks
PIKO	
10:15	Combined <i>in-situ</i> QCM and FTIR studies of the influence of UV irradiation and relative humidity on TiO₂ particle ensembles B. Torun, C. Kunze, University of Paderborn/D
10:40	Influence of relative humidity on flow properties of nanoparticles M. Dörmann, B. Torun, G. Grundmeier, H.-J. Schmid, University of Paderborn/D
11:05	Adhesion forces of silica nanoparticles in humid air, investigated by molecular dynamic simulations and SAXS measurements S. Leroch, University of Life sciences Vienna /A; H. Peterlik, University of Vienna/A; M. Wendland, University of Life sciences, Vienna/A
11:30	Laminar flow about a carrier particle coated with small drug particles Y. Cui, M. Sommerfeld, Martin-Luther-Universität Halle-Wittenberg, Merseburg/D
11:55	Glass beads as alternative carrier systems for dry powder inhalers S. Zellnitz, J.D. Redlinger-Pohn, Graz Technical University/A; H. Schroettner, FELMI_ZFE, Graz/A; N.A. Urbanetz, Research Center Pharmaceutical Engineering, Graz/A
12:20	Lunch Break
13:50	PLENARY LECTURE Bulk solids handling: an australian perspective M. Jones, TUNRA Bulk Solids/AU
14:20	Coffee Break and Snacks
PIKO	
14:45	Liquid distribution in powders under shear R. Mani, D. Kadau, J.H. Herrmann, ETH Zürich/CH
15:10	3D observation of wet granulates under shear J. Wenzl, M. Roth, R. Stangenberg, G.K. Auernhammer, MPI for Polymer Research, Mainz/D
15:35	Probing the mechanical particle/particle and particle/wall interaction based on nanoindentation J. Meyer, R. Fuchs, A. Kumar, T. Staedler, X. Jiang, University of Siegen/D
16:00	Closing Ceremony

LECTURE PROGRAMME

Thursday, September 13, 2012

Session: Mixing

9:15	PLENARY LECTURE Where have we gone wrong (or right) – reflections on solids handling in the chemical industry T. Bell, DuPont/USA
9:45	Coffee Break and Snacks
Continuous Mixing	
10:15	The continuous mixing process of particulate solids with portions delivery of some components V. Dolgunin, O. Ivanov, A. Klimov, E. Ryabova, Tambov State Technical University/RUS
10:40	Axial dispersion within rotating cylinders J.R. Third, L. Guang, C.R. Müller, ETH Zurich/CH
11:05	A study on the influencing parameters of the particle motion in a flighted rotary drum K. R Sunkara, Otto-von-Guericke-University Magdeburg/D; J. Mellmann, Leibniz Institute for Agricultural Engineering (ATB), Potsdam/D; F. Herz, E. Specht, Otto-von-Guericke-University Magdeburg/D
11:30	Continuous time markov chain model of particle motion in a rotary drum K. Cronin, University College Cork/IRL
11:55	Effect of hydrodynamic interaction on the segregation rate in bidisperse gas-solid fluidised beds P. Gupta, J. Sun, J.Y. Ooi, University of Edinburgh/UK
12:20	Lunch Break
13:50	PLENARY LECTURE Bulk solids handling: an australian perspective M. Jones, TUNRA Bulk Solids/AU
14:20	Coffee Break and Snacks
Batch Mixing	
14:45	Experiments and simulation of granular flow in a helical ribbon blade mixer T.A.H. Simons, S. Bensmann, BASF SE, Ludwigshafen/D; H. Zetzener, University of Technology, Braunschweig /D; M. Schilling, H.J. Feise, BASF SE, Ludwigshafen/D; A. Kwade, University of Technology, Braunschweig /D
15:10	Experimental investigation into mixing operation between particulate solid and viscous fluid with a shear batch mixer M. Ye, Telemark University College, Porsgrunn/N; S. Ding, POSTEC, Tel-Tek, Porsgrunn/N; H. Yang, University of Technology, Wuhan/PRC
15:35	Optimisation of mixing of segregating particulate solids V. Mizonov, S. Krupin, K. Shelatonova, E. Barantseva, Ivanovo State Power Engineering University /RUS; H. Berthiaux, C. Gatamel, Ecole des Mines d'Albi/F
16:00	Closing Ceremony

Thursday, September 13, 2012

Session: Conveying

9:15	PLENARY LECTURE Where have we gone wrong (or right) – reflections on solids handling in the chemical industry T. Bell, DuPont/USA
9:45	Coffee Break and Snacks
Hydraulic Transport Phenomena	
10:15	Fast and non-intrusive measurement and visualisation of solids velocity and concentration in horizontal sand-water flow Y. Faraj, M. Wang, University of Leeds/UK
10:40	Hydraulic conveying of polymers – advanced technology for long distances and high capacities H. Schneider, H. Wilms, Zeppelin Systems GmbH, Friedrichshafen/D
11:05	Application of the ERT for slurry flow regime characterisation and analysis of stratified flow Y. Faraj, M. Wang, University of Leeds/UK
11:30	Concentration distribution in pipe flow of glass-bead slurry: measured profiles and their comparison with models V. Penik, V. Matousek, J. Krupicka, IH ASCR, Prague/CZ
11:55	Experimental study on the effect of diameter ratio on velocity for the low density spherical capsule train flow D. Ulusarlan, Yildiz Technical University, Istanbul/TR
12:20	Lunch Break
13:50	PLENARY LECTURE Bulk solids handling: an australian perspective M. Jones, TUNRA Bulk Solids/AU
14:20	Coffee Break and Snacks
Slug Conveying Phenomena	
14:45	Stress analysis of horizontal slug Flow pneumatic conveying via DEM-CFD simulation R. Stratton, University of Newcastle, Callaghan/AUS
15:10	Stress states and pressure loss in pneumatically conveyed single plugs C. Nied, TU München, Freising/D; H. Dauth, University of Applied Sciences Münster/D; K. Sommer, TU München, Freising/D
15:35	An insight into the physical mechanisms involved in slug transport and pipe blockage I. Lecreps-Prigge, M.G. Jones, Tunra Bulk Solids Handling Research Associates, Callaghan/AUS; K. Sommer, TU München, Freising/D
16:00	Closing Ceremony

Thursday, September 13, 2012

Session: Shear testing

9:15	PLENARY LECTURE Where have we gone wrong (or right) – reflections on solids handling in the chemical industry T. Bell, DuPont/USA
9:45	Coffee Break and Snacks
Powder testing	
10:15	Wall Friction: some guidance gained by comparison of measurements made by different laboratories E. McGee, Ajax Equipment Ltd, Bolton/UK
10:40	How to deal with orientation-dependent wall friction D. Schulze, Ostfalia University of Applied Science, Wolfsburg/D; H. Heinrici, Schwedes + Schulze Schüttguttechnik GmbH, Wolfenbüttel/D
11:05	Hydrostatic yield stress measurement and analyses of aerated powders using a fluidising cone penetrometre W. Chen, K. Williams, M. Jones, TUNRA Bulk Solids Research Associates, Callaghan/AUS
11:30	Effect of moisture in iron ore on angle of repose and cargo liquefaction S. Lommen, A. Miszewski, G. Schott, G. Lodewijks, Delft University of Technology/NL
11:55	Effect of storage bed height and ambient air relativ humidity on bulk potash cake strength S. Gao, R.W. Evitts, R.W. Besant, University of Saskatchewan, Saskatoon/CDN
12:20	Lunch Break
13:50	PLENARY LECTURE Bulk solids handling: an australian perspective M. Jones, TUNRA Bulk Solids/AU
14:20	Coffee Break and Snacks
Mechanical Behaviour of Bulk Materials	
14:45	The sensitivity of particle parameters in discrete element modelling of conveyor belt zrajectories D.B. Hastie, P.W. Wypych, University of Wollongong/AUS
15:10	Research on new constitutive models for cohesive powder simulation C. Su, M. Brandley, University of Greenwich, Chatham/UK; K. Perocleous, M. Patel, University of Greenwich, London/UK
15:35	Prediction of silo-vibrations using a dynamic Lambdameter S. Jäckel, M. Mütze, U.A. Peuker, TU Bergakademie Freiberg/D
16:00	Closing Ceremony

POSTER PROGRAMME

- P1 **Hyperspectral imaging based platforms for particulate solids characterization, inspection and quality control**
G. Bonifazi, S. Serranti, Sapeinza - Università di Roma/I
-
- P 3 **Choosing the optimal silica based flow aid for individual types of bulk solids while maintaining low dust**
C. Drexel, F. Heindl, J. Paul, Evonik Industries AG, Hanau/D
-
- P 4 **Correlation of potash cake strength with storage bed height and ambient air relative humidity**
S. Gao, R.W. Evitts, R.W. Besant, University of Saskatchewan, Saskatoon/CDN
-
- P 5 **Drying and recrystallization proces between two moistened potash particles in contact**
X. Nie, R.W. Evitts, R.W. Besant, University of Saskatchewan, Saskatoon/CDN
-
- P 9 **Direct observation of translation and rotation of granulates under mechanical load**
J. Wenzl, M. Roth, G.K. Auernhammer, Max Planck Institute for Polymer Research, Mainz/D
-
- P 10 **Characterisation of flow properties of coal-petcoke-biomass mixtures for co-firing**
D. Barletta, M. Poletto, Università di Salerno, Fisciano/I
-
- P 11 **Simulation of the transport of RDF particles in an air classifier**
B. Krüger, A. Mrotzek, Fraunhofer UMSICHT, Oberhausen/D; S. Wirtz, W. Arnhold, Lehrstuhl für Energieanlagen und Energieprozesstechnik, Bochum/D
-
- P 12 **Proliferation of dustiness testing methods for bulk materials and the absence of effective correlation between the indices**
P. Wypych, University of Wollongong/AUS
-
- P 13 **Modular archimede's screw. This innovations helps in reducing operation cost and increases efficiency on screw conveyors.**
S. Osmani, EXVENTYS ARCHIMEDYS, Saint Quentin/F
-
- P 14 **Characterization of surface and adsorbate chemistry on TiO₂(100) and (110) surfaces prepared under ambient conditions**
C. Kunze, B. Torun, G. Grundmeier, University of Paderborn/D
-
- P 16 **Incipient motion of a particle on regular substrates in laminar shear flow**
J. Rodríguez Agudo, A. Wierschem, University of Erlangen-Nuremberg/D
-
- P 18 **New possibilities of heating or cooling bulk materials with a bulk solids heat exchanger**
G. Dehm, Coperion GmbH, Weingarten/D
-
- P 19 **Dense flow of granular materials in silos and hoppers: results from a continuum model**
R. Artoni, A. Santomaso, P. Canu, University of Padova/I
-
- P 20 **Characterisation of flowability of cohesive powders by indentation**
U. Zafar, M. Pasha, C. Hare, A. Hassanpour, M. Ghadiri, Leeds University/UK

POSTER PROGRAMME

- P 22 **EVO - The new architecture for modern conveying**
G. Bieri, Martin Engineering GmbH, Walluf/D
-
- P 24 **An analysis on pressure drop measurements through fixed and rotary beds of cracked particles of natural zeolite**
M. Çarpınlioglu, E. Özahi, M. Yildirim, University of Gaziantep/TR
-
- P 25 **Grain material treatment taking into account the residence time distribution of nonuniform particles**
V. Dolgunin, O. Ivanov, A. Ukolov, A. Klimov, V. Pronin, Tambov State Technical University, Tambov/RUS
-
- P 26 **An analysis of rolling contact of a spherical particle subject to varying load**
D. Zabulionis, R. Kacianauskas, Vilnius Gediminas Technikal University/LT
-
- P 27 **Effect of the number of grinding media contact points on breakage function for wet grinding**
T. Olejnik, Technical University of Lodz/PL
-
- P 28 **Analysing a two-component mixture in a continuous dynamic powder mixer by using the Fokker-Planck-Equation**
E. Schlosser, Technische Universität München, Freising/D; H. Dauth, Fachhochschule Münster - University of Applied Sciences, Münster/D; K. Sommer, Technische Universität München/D
-
- P 29 **Parallel computations of hopper discharge employing dynamic domain decomposition**
D. Markauskas, A. Kacianuskas, Vilnius Gediminas Technical University /LT
-
- P 30 **Modelling of a spray drying process for flowsheet-based solids process design**
P. Bach, Novozymes A/S, Copenhagen/DK; M.A. Pinto, S.K. Bermingham, Process Systems Enterprise, London/UK
-
- P 31 **Mechanochemistry changes of the calcium carbonate grinding stock under the dry mode of the ultra-fine grinding conditions**
T. Sverak, P. Kejik, Brno University of Technology/CZ
-
- P 33 **Influence of the internal structure of spray-dried ceramic granules on the resulting mechanical properties**
S. Eckhard, M. Fries, M. Nebelung, Fraunhofer Institute for Ceramic Technologies and Systems IKTS, Dresden/D; S. Heinrich, S. Antonyuk, Hamburg University of Technology /D
-
- P 34 **Packing and discharging of non-spherical particles in hoppers**
G. Lu, J.R. Third, C.R. Müller, ETH Zurich/CH
-
- P 35 **tionalization and surface modification of spherical glass beads**
Z. Kutelova, Otto-von-Guericke-University Magdeburg /D
-
- P 36 **Evaluation of a semi empirical model for predicting bulk flow properties based on measured particle properties**
R.J. Berry, J. Santana, M.S.A. Bradley, University of Greenwich, Chatham/UK

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