

# *Program*



## The 12th International Conference on Fluidization

**New Horizons in Fluidization Engineering**

**May 13-18, 2007**

**Harrison Hot Springs Resort & Spa  
100 Esplanade Avenue  
Agassiz, British Columbia, Canada V0M 1K0  
Tel. 1-800-663-2266/1-604-796-2244/Fax: 1-604-796-3682**

### **Co-Chairs**

**Franco Berruti  
*University of Western Ontario, Canada*  
Xiaotao Bi  
*University of British Columbia, Canada*  
Todd Pugsley  
*University of Saskatchewan, Canada***

# **ECI**

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Adam Luckos	Mintek, South Africa
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## Sunday May 13, 2007

<i>16:00 – 18:00</i>	Conference Registration
<i>16:30 – 17:30</i>	Meeting of the Organizing Committee
<i>18:00 – 19:00</i>	Welcome Reception
<i>19:00 – 20:30</i>	Dinner and Opening Remarks
<i>20:30 – 21:30</i>	Social Hour

## Conference Themes

(symbols are used in the schedule of the presentations):

- Theme 1: Circulating Fluidized Beds (CFB)
- Theme 2: Bubbling Fluidized Beds (BF)
- Theme 3: Heat Transfer (HT)
- Theme 4: Gas-Liquid-Solid Fluidization (GLS)
- Theme 5: Fluidization of Ultrafine and Nano-particles (N)
- Theme 6: Sensors and Instrumentation (SI)
- Theme 7: Novel Reactor Systems (NR)
- Theme 8: Novel Manufacturing Processes (NM)
- Theme 9: Computational Fluid Dynamics (CFD)
- Theme 10: Jets and Distributors (JE)
- Theme 11: Downer Reactors (DO)
- Theme 12: Clean Energy Applications (CE)
- Theme 13: Polymerization (PO)

**Monday May 14, 2007**

07:00 - 08:15	<i>Breakfast</i>	
08.15 - 08:30	<i>Conference Welcome and Overview</i> <i>Franco Berruti, Xiaotao Bi and Todd Pugsley, Conference Co-Chairs</i> <i>Dale Keairns, Engineering Conferences International Liaison</i> <i>Barbara Hickernell, Engineering Conferences International Director</i>	
	<b>PLENARY 1</b> <i>Session Chair: L.S. Fan</i>	
08:30 - 09:15	<b>FLUIDIZED BED PROCESS DESIGN AND SCALE-UP</b> TED KNOWLTON - PSRI, USA	
09:15 - 09:30	<i>Discussion Period – Questions and Answers</i>	
09:30 - 10:00	<i>Coffee Break</i>	
	<b>THEME 1: CFB</b> <i>Session Co-Chairs: A. Luckos, K. Wirth</i>	<b>THEME 2: BF</b> <i>Session Co-Chairs: C. Briens, H. Tanfara</i>
10:00 - 10:15	<b>7 - FLOW REGIME STUDY IN A HIGH DENSITY CIRCULATING FLUIDIZED BED RISER WITH AN ABRUPT EXIT</b>  JOSEPH S. MEI, LAWRENCE J. SHADLE, PAUL C. YUE - National Energy Technology Laboratory/U. S. Department of Energy; USA  ESMAIL R. MONAZAM - REM Engineering Services PLLC, USA	<b>49 - TROUGHFLOW VELOCITY CROSSING THE DOME OF ERUPTING BUBBLES IN 2-D FLUIDIZED BEDS</b>  J.A. ALMENDROS-IBÁÑEZ – Carlos III University of Madrid, Department of Thermal Engineering and Fluids. Spain S. SÁNCHEZ-DELGADO, C. SOBRINO-FERNÁNDEZ, D. SANTANA, U. RUIZ-RIVAS, M. DE VEGA - Carlos III University of Madrid, Spain
10:15 -10:30	<b>9 - RADIAL DISTRIBUTION OF LOCAL CONCENTRATION WEIGHTED PARTICLE VELOCITIES IN HIGH DENSITY CIRCULATING FLUIDIZED BEDS</b> GORKEM KIRBAS - Department of Chemical Engineering, Middle East Technical University, Turkey SUNG WON KIM - LG Chemistry Research Park, South Korea XIAOTAO BI, JIM LIM, JOHN GRACE - Department of Chemical and Biological Engineering, University of British Columbia, Canada	<b>50 - THE EFFECTS OF THERMALLY INDUCED INTERPARTICLE FORCES ON THE EXPANSION AND BUBBLING BEHAVIOUR OF A FLUIDIZED BED</b> ROSSELLA GIRIMONTE – Department of Chemical Engineering and Material, Università della Calabria, Italy BRUNELLO FORMISANI – Department of Chemical Engineering and Material, Università della Calabria, Italy
10:30 - 10:45	<b>10 - LIQUID FEED INJECTION IN A HIGH-DENSITY RISER</b> K.E. WIRTH - Institute of Particle Technology, Erlangen, Germany, S. GEHRKE - Institute of Particle Technology, Germany	<b>163 - CYCLONE DIPLEGS AND TRICKLE VALVES IN FLUIDIZED BEDS</b> K. SMOLDERS, D. GELDART, J. BAEYENS-University of Leuven, Faculty of Industrial Engineering, Belgium University of Leeds & Powder Research Ltd, UK University of Birmingham, School of Engineering, UK

<p><i>10:45 - 11:00</i></p>	<p><b>11 - FLOW STRUCTURES IN THE BOTTOM REGION OF RISER</b>  HAIYAN ZHU - Department of Chemical and Biochemical Engineering, University of Western Ontario, Canada  JESSE ZHU - Department of Chemical and Biochemical Engineering, University of Western Ontario, Canada</p>	<p><b>53 - FOUR APPROACHES TO STRUCTURE GAS-SOLID FLUIDIZED BEDS</b>  J. RUUD VAN OMMEN - Delft University of Technology, The Netherlands  JOHN NIJENHUIS, MARC-OLIVIER COPPENS - Delft University of Technology, The Netherlands</p>
<p><i>11:00 - 11:15</i></p>	<p><b>12 - FRICTION BETWEEN GAS-SOLID SUSPENSION AND INTERNAL WALL OF CIRCULATING FLUIDIZED BEDS.</b></p> <p>XIAOBO QI - School of Chemical Engineering, Sichuan University, China  JESSE (JING XU) ZHU - Powder Technology Research Centre, Department of Chemical and Biochemical Engineering, University of Western Ontario, Canada  WEI-XING HUANG, YAN-FU SHI - School of Chemical Engineering, Sichuan University, China</p>	<p><b>54 - TAILORING PARTICLE MIXTURES FOR FLUIDIZED BED REACTORS USING HIGH-THROUGHPUT EXPERIMENTATION</b></p> <p>JOHN NIJENHUIS - Delft University of Technology, The Netherlands  J. RUUD VAN OMMEN - Delft University of Technology, The Netherlands</p>
<p><i>11:15 - 11:30</i></p>	<p><b>13 - MEASUREMENT OF GAS VELOCITIES IN THE PRESENCE OF SOLIDS IN THE RISER OF A COLD FLOW CIRCULATING FLUIDIZED BED</b></p> <p>JAMES SPENIK - National Energy Technology Laboratory, USA  J. CHRISTOPHER LUDLOW, REX COMPSTON, RONALD W. BREault  National Energy Technology Laboratory, USA</p>	<p><b>55 - TOWARDS FILTERED GAS-SOLID FLOW MODELS</b></p> <p>JURAY DE WILDE – Catholic University of Louvain, Materials and Process Engineering Department (IMAP), Belgium</p>
<p><i>11:30 - 11:45</i></p>	<p><b>14 - SOLIDS FLUX, VELOCITY AND LOCAL SOLID FRACTION MEASUREMENTS IN A CFB RISER</b></p> <p>RONALD W. BREault - US Department of Energy, USA  CHRIS GUENTHER - US Department of Energy, USA</p>	<p><b>51 - THE FLUIDIZATION PATTERN OF DENSITY-SEGREGATING TWO-SOLID BEDS</b></p> <p>BRUNELLO FORMISANI - Department of Chemical Engineering and Materials, University of the Calabria, Italy  ROSSELLA GIRIMONTE, TIZIANA LONGO - Department of Chemical Engineering and Materials, University of the Calabria, Italy</p>

11:45 - 12:00	<b>17 - MODELING ON HETERGEANEOUS STRUCTURE IN ACCELERATION REGIEME OF GAS-SOLID RISER FLOWS</b>  CHAO ZHU - New Jersey Institute of Technology, USA JUN YOU - New Jersey Inst. of Tech., USA L.S.FAN - Ohio State University, USA	57 - BUBBLE DISTRIBUTION IN A CYLINDRICAL FLUIDIZED BED: THE EFFECTS OF BED DEPTH AND GAS SPEED  A.J.CROXFORD - University of Bristol, Department of Mechanical Engineering, UK M.A.GILBERTSON - University of Bristol, UK
12:00 - 12:15	18 - TRANSIENT CHARACTERIZATION OF TYPE B PARTICLES IN A TRANSPORT RISER  LAWRENCE J. SHADLE - National Energy Technology Laboratory, USA ESMAIL R. MONAZAM, JOESEPH S. MEI - National Energy Technology Laboratory, USA	58 - ON THE PRESENCE OF PARTICLES AT THE WALL OF GAS FLUIDIZED BEDS  NAVID MOSTOUFI - University of Tehran, Iran REZA ZARGHAMI, RAHMAT SOTUDEH-GHAREBAGH - University of Tehran, Iran JAMAL CHAOUKI – Polytechnic School of Montreal, Canada
12:15 - 12:30	<b>19 - A COMPUTATIONAL STUDY OF THE DISTRIBUTION OF PARTICLES IN A LAB-SCALE CFB BOILER</b>  KIM GRANLY HANSEN - Aalborg University, Denmark TRON SOLBERG, BJORN H. HJERTAGER - Aalborg University, Denmark	<b>155 - DRYING OF MOIST SOLID PARTICULATE IN A BUBBLING FLUIDISED BED</b>  YASSIR MAKKAWI, JAMIE DUNCAN, MARC MCANDREW, RAFFAELLA OCONE - Chemical Engineering, Heriot-Watt University, UK
12:30 - 16:30	<i>Lunch and Free Time</i>	
16:30 - 17:00	<i>Afternoon Coffee Break</i>	
	<b>THEME 1: CFB (Cont.)</b> <i>Session Co-Chairs: R. Karri, J. Zhu</i>	<b>THEME 4: GLS</b> <i>Session Co-Chairs: J. Chaouki, A. Macchi</i>
17:00 - 17:15	<b>135 - AN ANALYSIS OF PRESSURE FLUCTUATIONS IN A CFB OF HEAVY MINERALS</b>  ADAM LUCKOS – Mintek, South Africa, QUINN REYNOLDS, PAUL DEN HOED – Mintek, South Africa	<b>114 - HYDRODYNAMIC AND RTD OF SECTIONALIZED BUBBLED COLUMN</b>  N. W. KASEER - University of Technology/Chem. Eng. Dept., Iraq ISSAM K. H., BIRHAN M. A. - University of Technology, Iraq
17:15 - 17:30	153 - EFFECT OF HORIZONTAL PASSAGE LENGTH ON SOLID RECYCLE THROUGH A LOOP SEAL IN A CIRCULATING FLUIDIZED BED  PRABIR BASU – Dalhousie University, Canada	<b>115 - NUMERICAL MODELING OF SLOSHING WITH VOF<sup>1</sup> METHOD</b>  HAMID REZAEI - Tehran, Iran  MOHAMMAD JAVAD KETABDARI

<p><i>17:30 - 17:45</i></p>	<p>162 - IMPROVED STANDPIPE ENTRANCE FOR STABLE HIGH-FLUX SOLIDS FLOW</p> <p>D. RUSNELL - P. RONAN - Syncrude Canada Limited, Canada  J.R. GRACE - H.T. BI - C.J. LIM - Department of Chemical and Biological Engineering, University of British Columbia, Canada  C.A. MCKNIGHT - Syncrude Research Centre, Canada</p>	<p><b>109 - NUMERICAL INVESTIGATION OF THE LAYER-INVERSION PHENOMENON IN BINARY-SOLID LIQUID FLUIDIZED BEDS</b></p> <p>KEVIN F. MALONE - Institute of Particle Science and Engineering University of Leeds, UK  BAO H. XU, MICHAEL FAIRWEATHER - Institute of Particle Science and Engineering University of Leeds, UK</p>
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	<b>THEME 3: HT</b> <i>Session Co-Chairs: L. Glicksman, S. Moffat</i>	
<i>17:45 - 18:00</i>	<p>41 - ANALYSIS OF HEAT TRANSFER BETWEEN PARTICLES FOR DEM SIMULATIONS</p> <p>KENYA KUWAGI - Okayama University of Science, Japan TOSHIHIRO TAKAMI - Okayama University of Science, Japan MASAYUKI HORIO - Tokyo University of Agriculture and Technology, Japan</p>	<p><b>110 - VOLUME CONTRACTION IN LIQUID FLUIDIZATION OF BINARY SOLIDS MIXTURES</b></p> <p>NORMAN EPSTEIN - University of British Columbia, Canada RENAUD ESCUDIE - Laboratory of Biotechnology of Environment (LBE), National Institute of Research, France JOHN GRACE, HSIAOTAO T. BI - University of British Columbia, Canada</p>
<i>18:00 - 18:15</i>	<p>42 - ANALYSIS OF THE VOID FRACTION AROUND A SURFACE IMMERSSED IN A FLUIDIZED BED BY SURFACE-TO-BED HEAT TRANSFER MEASUREMENTS</p> <p>FRANCESCO DI NATALE - Department of Chemical Engineering - University of Naples, Italy AMEDEO LANCIA, ROBERTO NIGRO - Department of Chemical Engineering, University of Naples, Italy</p>	<p><b>111 - FLUID MECHANICAL PHENOMENA OF LIQUID-SOLID FLUIDIZATION IN THE CENTRIFUGAL FIELD</b></p> <p>JAN MARGRAF - TuTech Innovation GmbH, Germany JOACHIM WERTHER - TuTech Innovation GmbH, Germany</p>
<i>18:15 - 18:30</i>	<p>47 - RADIATION HEAT TRANSFER IN CIRCULATING FLUIDIZED BEDS</p> <p>LEON R GLICKSMAN – Massachusetts Institute of Technology, USA</p>	<p>112 - HYDRODYNAMICS AND MASS TRANSFER IN A MODIFIED GAS-LIQUID-SOLID AIRLIFT-LOOP REACTOR WITH A CONTINUOUS SLURRY PHASE</p> <p>MENG-XI LIU - Chemical Engineering Department, China University, China CHUN-XI LU, MING-XIAN SHI - Chemical Engineering Department, China University, China</p>
<i>18:30 - 18:45</i>	<p>125 - THE MEASUREMENT OF THERMAL PERFORMANCE FOR A FLUIDIZED BED</p> <p>HAMID R GOSHAYSHI - Azad University, University of Engineering, Department of Mechanical Engineering, Iran</p>	<p>118 - Dynamic Simulation of GAS HYDRATE FORMATION IN AN AGITATED SLURRY REACTOR</p> <p>SHAHRZAD HASHEMI - University of Ottawa, Canada ARTURO MACCHI - University of Ottawa, Canada PHILLIP SERVIO - McGill University, Canada</p>

18:45 - 19:00	<p><b>139 - SCALE-UP EFFECT ON HEAT TRANSFER IN A FLUIDIZED BED NEAR THE ONSET OF TURBULENT FLUIDIZATION</b></p> <p>ANA STEFANOVA - University of British Columbia, Department of Chemical and Biological Engineering, Canada  J. R. GRACE, X. BI, C. J. LIM - University of British Columbia, Department of Chemical and Biological Engineering, Canada  S. K. LIM, J. SANDERSON - CSIRO Minerals, Australia</p>	<p><b>154 - FLOW CHARACTERISTICS OF FULLY WETTED BINARY SOLID MIXTURES IN GAS FLUIDIZED BEDS WITH INCLINED GAS DISTRIBUTORS</b></p> <p>YUSUMI NAGAHASHI - Dept. Mech. Eng., Kochi National College of Technology, Japan  JOHN R. GRACE, NORM EPSTEIN - Department Chem. &amp; Biological Engineering, Canada  Y. ASAKO – Tokyo Metropolitan University, Japan  A. YOKOGAWA - Kochi University of Technology, Japan</p>
19:15 - 21:00	<b>Dinner</b>	
21:00 - 23:00	<p><b>Poster Session and Social Hour</b> (Chair: P. Mehrani)  <i>In addition to all the oral presentations of Themes 1, 2, 3 and 4, the Free Forum Posters for Monday will be presented.</i></p>	

**Tuesday, May 15, 2007**

07:00 - 08:30	<i>Breakfast</i>	
	<b>PLENARY 2</b> <i>Session Chair: J. Grace</i>	
08:30 - 09:15	ANALYTICAL MULTI-SCALE METHODOLOGY FOR FLUIDIZATION SYSTEMS JINGHAI LI - Chinese Academy of Sciences, Beijing, China	
09:15 - 09:30	<i>Discussion Period – Questions and Answers</i>	
09:30 - 10:00	<i>Coffee Break</i>	
	<b>THEME 5: N</b> <i>Session Co-Chairs: M. Rhodes, A. Weimer</i>	<b>THEME 6: SI</b> <i>Session Co-Chairs: C. Davis, M. Muhle</i>
10:00 - 10:15	59 - DEVELOPMENT OF A NEW MEASUREMENT METHOD TO EVALUATE THE PHYSICAL PROPERTIES OF GRANULES FOR DRY POWDER INHALATION PRODUCED BY NEW SPOUTED BED TYPE BINDERLESS GRANULATOR SHIGENOBU HATANO - Department of Chemical Engineering, Nagoya University, Japan NOBUYUKI NAKAMURA, NOBUSUKE KOBAYASHI, YOSHINORI ITAYA, SHIGEKATSU MORI - Nagoya University, Japan YASUHIRO SHIMADA - Nano Seeds Corporation	129 - INVESTIGATION OF THE SOURCE OF VARIABILITY IN THE WURSTER COATER: ANALYSIS OF PARTICLE CYCLE TIMES USING PEPT SARAH PALMER - Department of Chemical Engineering, University of Birmingham, UK ANDY INGRAM, JONATHAN SEVILLE - Department of Chemical Engineering, University of Birmingham, UK XIANFENG FAN - Positron Imaging Centre, University of Birmingham, UK SHAUN FITZPATRICK - Merck Sharp & Dohme Ltd
10:15 - 10:30	60 - MECHANISTIC STUDY OF NANO-PARTICLE FLUIDIZATION M.J. RHODES - Monash University, Department of Chemical Engineering, Australia F. RAHMAN, X.S. WANG - Monash University, Australia	130 - TOWARDS SELECTIVE AGGLOMERATION DETECTION IN FLUIDIZED BEDS USING ADVANCED SIGNAL ANALYSIS METHODS MALTE BARTELS, BART VERMEER - Delft University of Technology, The Netherlands JOHN NIJENHUIS, RUUD VAN OMMEN, FREEK KAPTEIJN - Delft University of Technology, The Netherlands
10:30 - 10:45	61 - ROLE OF SOUND VIBRATION DURING AERATION OF NANO-SIZED POWDERS PAOLA AMMENDOLA – Institute of Searches on Combustion – CNR, Italy RICCARDO CHIRONE - Institute of Searches on Combustion – CNR, Italy	131 - MULTIPLE PARTICLE TRACKING IN A FLUIDISED BED A. INGRAM - The University of Birmingham, Centre of Formulation Engineering, UK Z. YANG, S. BAKALIS - Centre of Formulation Engineering, UK X. FAN, D.J. PARKER - School of Physics and Astronomy, The University of Birmingham, UK P. J. FRYER, P.J.K SEVILLE - Centre of Formulation Engineering, The University of Birmingham, UK

<p>10:45 - 11:00</p>	<p><b>62 - IMPROVED LI-ION BATTERY PERFORMANCE BY COATING CATHODE NANO-PARTICLES USING ATOMIC LAYER DEPOSITION</b>  RENSKE BEETSTRA - TU Delft, The Netherlands  JOHN NIJENHUIS, ERIK KELDER, RUUD VAN OMMEN - TU Delft, The Netherlands</p>	<p><b>132 - LASER DIAGNOSTICS OF HYDRODYNAMICS AND GAS-MIXING IN THE SPLASH ZONE OF GAS-FLUIDIZED BEDS</b>  ROBERTO SOLIMENE - Institute of Searches on Combustion, Italy  ANTONIO MARZOCHELLA – Department of Chemical Engineering - University of Naples Federico II, Italy  RAFFAELE RAGUCCI - Institute of Searches on the Combustion, Italy  PIERO SALATINO - Department of Chemical Engineering - University of Naples Federico II, Italy</p>
<p>11:00 - 11:15</p>	<p><b>63 THE EFFECT OF VIBRATIONS ON FLUIDIZED COHESIVE POWDERS</b>   MASSIMO POLETTO - Department of Chemical and Food Engineering, University of Salerno, Italy  DIEGO BARLETTA, GIORGIO DONSI, GIOVANNA FERRARI, MASSIMO POLETTO, PAOLA RUSSO - Department of Chemical and Food Engineering, University of Salerno, Italy</p>	<p><b>134 - PARTICLE SIZE ESTIMATION AND MONITORING IN A BUBBLING FLUIDIZED BED USING PRESSURE FLUCTUATION MEASUREMENTS</b>   CLIVE E DAVIES - Massey University, New Zealand  DONAL KROUSE - Industrial Research Limited, New Zealand  ALISON CARROLL – New Zealand</p>
<p>11:15 - 11:30</p>	<p><b>64 - HYDRODYNAMIC EFFECTS OF PARTICLE CHAINING IN LIQUID-SOLID MAGNETOFLUIDIZED BEDS</b>   CARLOS F. CRUZ-FIERRO – Technological Institute of Durango, Mexico  BRIAN P. REED, GORAN N. JOVANOVIĆ - Oregon State University, USA  JOAQUIN PINTO-ESPINOZA –Technological Institute of Durango, Mexico</p>	<p><b>136 - DEVELOPMENT OF ELECTRICAL CAPACITANCE VOLUME TOMOGRAPHY (ECVT) AND ELECTROSTATIC TOMOGRAPHY (EST) FOR 3D DENSITY AND CHARGE IMAGING OF FLUIDIZED BED SYSTEM</b>   LIANG-SHIH FAN - The Ohio State University, USA  BING DU, Q. MARASHDEH, W. WARSITO, A. -H. A. PARK - The Ohio State University, USA</p>
<p>11:30 - 11:45</p>	<p><b>65 - MULTI-WALL CARBON NANOTUBES OBTAINED BY FLUIDIZED BED PYROLYSIS OF VIRGIN OR RECYCLED PLASTICS</b>   UMBERTO ARENA - Department of Environmental Sciences - Second University of Naples, Italy  MARIA LAURA MASTELLONE - Department of Environmental Sciences - Second University of Naples, Italy</p>	<p><b>137 - X-RAY FLUOROSCOPY MEASUREMENTS AND CFD SIMULATION OF HYDRODYNAMICS IN A TWO DIMENSIONAL GAS-SOLIDS FLUIDIZED BED</b>   BANGYOU WU - University of Calgary, Tomographic Imaging and Porous Media Laboratory, Department of Chemical and Petroleum Engineering, Canada  ZHENGXING HE, APOSTOLOS KANTZAS, CELINE BELLEHUMEUR, SERGEY KRYUCHKOV - University of Calgary, Canada</p>

11:45 - 12:00	<p><b>68 - EVALUATION OF ASSISTED FLUIDIZATION OF NANOAGGLOMERATES BY MONITORING MOISTURE IN THE GAS PHASE AND THE INFLUENCE OF GAS VISCOSITY</b></p> <p>ROBERT PFEFFER - NJIT, USA  JOSE A. QUEVEDO, DANIEL LEPEK, AYOKUNLE OMOSEBI, R. N. DAVE – NJIT, USA</p>	<p>138 - MICROFLUIDIC VELOCITY MEASUREMENTS USING THREE-DIMENSIONAL CONFOCAL MICRO PARTICLE TRACKING VELOCIMETRY (CM-PTV)</p> <p>LIANG-SHIH FAN - The Ohio State University, USA  ORIN HEMMINGER, ZHAO YU, CHUNHE ZHANG, JAMES LEE - The Ohio State University, USA</p>
12:00 - 12:15	<p><b>69 - AN INVESTIGATION OF CARBON NANOTUBE JET GRINDING</b></p> <p>CEDRIC BRIENS - University of Western Ontario, Department of Chemical Engineering, Canada  CAROLE BADDOUR - McGill University, Canada  SERGE BORDERE, PATRICE GAILLARD, DIDIER ANGLEROT – Arkema, Canada</p>	<p>143 - PORTABLE POSITRON EMISSION PARTICLE TRACKING (PEPT) FOR INDUSTRIAL SCALE USE</p> <p>J P K SEVILLE - University of Birmingham, UK  A INGRAM, M.HAUSARD, X.FAN, D.J. PARKER - University of Birmingham, UK</p>
12:15 - 12:30	<p><b>70 - NOVEL FLUIDIZED BED POLYMER PARTICLE ALD™ PROCESS FOR PRODUCING HDPE/ALUMINA NANOCOMPOSITES</b></p> <p>ALAN W. WEIMER - University of Colorado, Department of Chemical and Biological Engineering, USA  JOSEPH SPENCER II, KAREN J. BUECHLER - ALD NanoSolutions, Inc., USA  JOHN FERGUSON, STEVEN GEORGE - University of Colorado, USA  JOHN BLACKSON, CHARLES WOOD - The Dow Chemical Company, USA  JOHN DORGAN - Colorado School of Mines, USA</p>	<p>145 - IN SITU MEASUREMENT OF DYNAMIC MIXING IN GASA-SOLID FLUIDIZED BEDS USING MAGNETIC RESONANCE</p> <p>D.J. HOLLAND, P.S. FENNELL, C.R. MULLER, J.S. DENNIS, L.F. GLADDEN, A.J. SEDERMAN - Department of Chemical Engineering, University of Cambridge, UK</p>
12:30 - 12:45	<p><b>71 - VIBRO-FLUIDIZATION CHARACTERISTICS FOR SIZE ARRANGED AGGLOMERATES</b></p> <p>YOSHIHIDE MAWATARI - Kyushu Institute of Technology, Japan  YUJI TATEMOTO, KATSUJI NODA - Shizuoka University, Japan  MASATO YAMAMURA, HIROYUKI KAGE - Kyushu Institute of Technology, Japan</p>	<p>159 - MEASUREMENT OF BUBBLE BEHAVIORS IN A TURBULENT FLUIDIZED BED WITH FCC PARTICLES BY OPTICAL FIBER PROBE</p> <p>XIAOPING ZHANG - College of Environmental Science and Engineering, South China University of Technology, China</p>
12:45 - 16:45	<i>Lunch and Free Time</i>	
16:45 - 17:00	<i>Afternoon Coffee Break</i>	

	<b>THEME 7: NR</b> <i>Session Co-Chairs: M. Coppens, N. Epstein</i>	<b>THEME 8: NM</b> <i>Session Co-Chairs: L. Briens, R. Cocco</i>
<b>17:00 - 17:15</b>	<p>102 - COLD MODELLING OF AN INTERNALLY CIRCULATING FLUIDIZED BED MEMBRANE REACTOR</p> <p>TONY BOYD - University of British Columbia, Canada J.R. GRACE, C.J. LIM, A.M. ADRIS - University of British Columbia, Canada</p>	<p>72 - TREATMENT OF VOC EMISSIONS IN A GAS-SOLID FLUIDIZED BIOREACTOR</p> <p>KYLA CLARKE - Chemical Engineering University of Saskatchewan, Canada GORDON A. HILL, TODD PUGSLEY – Chemical Engineering University of Saskatchewan, Canada</p>
<b>17:15 - 17:30</b>	<p>103 - EXPERIMENTAL AND COMPUTATIONAL STUDIES OF GAS MIXING IN CONICAL SPOUTED BEDS</p> <p>C. JIM LIM - University of British Columbia, Canada ZHIGUO WANG, XIAOTAO T. BI - University of British Columbia, Canada</p>	<p>74 - MODELING MERCURY CAPTURE BY POWDERED ACTIVATED CARBON IN A FLUIDIZED BED REACTOR</p> <p>FABRIZIO SCALA – Institute of Searches on Combustion – CNR, Italy RICCARDO CHIRONE – Institute of Searches on Combustion – CNR, Italy AMEDEO LANCIA – Department of Chemical Engineering , University of Napoli Federico II, Italy</p>
<b>17:30 - 17:45</b>	<p>104 - SCALING RELATIONSHIP OF GAS-SOLID SPOUTED BEDS</p> <p>JIAN XU - China University of Petroleum, China YE JI, WEISHENG WEI, XIAOJUN BAO, WEI DU - China University of Petroleum, China</p>	<p>75 PHOTOCATALYTIC DEGRADATION OF TOLUENE BY NANO-TIO<sub>2</sub> IN A FLUIDIZED BED</p> <p>ZHANG XIAOPING* LIAO CONG - College of Environmental Science and Engineering, South China, University of Technology, China</p>
<b>17:45 - 18:00</b>	<p>106 - TAPERED FLUIDISED BEDS AND THE ROLE OF FLUIDISATION IN MINERAL EMPLACEMENT</p> <p>THOMAS M.GERNON - University of Bristol, Department of Earth Sciences, Wills Memorial Building, UK MARK A.GILBERTSON - Department of Mechanical Engineering, University of Bristol, UK R.STEPHEN J.SPARKS, MATTHEW FIELD - Department of Earth Sciences, University of Bristol, UK</p>	<p>77 - 2-D SIMULATION OF THE CATALYTIC DECHLORINATION OF P-CHLOROPHENOL IN A MAGNETICALLY STABILIZED FLUIDIZED BED</p> <p>JOAQUIN PINTO-ESPINOZA – Technological Institute of Durango, Mexico DAMIAN REYES-JAQUEZ, ADRIANA MARTÍNEZ-PRADO, CARLOS F. CRUZ-FIERRO – Technological Institute of Durango, Mexico</p>
<b>18:00 - 18:15</b>	<p>107 - NUMERICAL SIMULATION OF SPOUTED BED REACTORS USING PROCESS ENGINEERING MODELS: APPLICATION TO COAL GASIFICATION</p> <p>MENDES A. - LCU CEA Cadarache, CNRS PROMES, PROMES CNRS, France DOLLET A., FLAMANT G - CNRS PROMES, Odeillo-Perpignan, France ABLITZER C, PERRAIS C. - LCU CEA Cadarache, France</p>	<p>78 - STUDY OF METHANOL TO FORMALDEHYDE REACTION IN FLUIDIZED BED REACTOR</p> <p>JAMSHID KHORSHIDI - Hormozgan University, Iran BANDAR ABBAS - Iran MANSOUR KALBASI -.Amir Kabir University of Technology, Iran</p>

18:15 - 18:30	<p>140 HYDRODYNAMIC ASPECTS AND CORRELATIONS FOR THE DESIGN OF DRAFT-TUBE CONICAL SPOUTED BEDS</p> <p>HARITZ ALTZIBAR, G. LOPEZ, R. AGUADO, JAVIER. BILBAO, MARTIN OLAZAR - University of the Basque Country, Spain</p>	<p>151 -TIME SCALE ANALYSIS OF A FLUIDIZED-BED CATALYTIC REACTOR BASED ON A GENERALIZED DYNAMIC MODEL</p> <p>ANDRÉS MAHECHA-BOTERO, JOHN R. GRACE, SAID S.E.H. ELNASHAIE, C. JIM LIM - Department of Chemical and Biological Engineering, University of British Columbia, Canada</p>
18:30 - 18:45	<p>147 - SIMULATION OF A SILICON CVD SPOUTED FLUIDIZED BED REACTOR: SEMI-BATCH OPERATIONS</p> <p>JULIANA PIÑA*, VERÓNICA BUCALÁ*, SUSANA N. SCHBIB*, PAUL EGE†, HUGO I. DE LASA‡. - * Chem. Eng. Dep., Universidad Nacional del Sur, PLAPIQUI (CONICET), Argentina, † REC Silicon Inc., USA, ‡ Chemical Reactor Engineering Centre, University of Western Ontario, Canada</p>	<p>157 - STUDY ON THE WASTE EDIBLE OIL FLUID CATALYTIC CRACKING PROCESS</p> <p>XIAOPING TANG - Department of Chemical Engineering, Tsinghua University, China</p>
18:45 - 19:00	<p>156 - A ROTATING FLUIDIZED BED IN A STATIC GEOMETRY: EXPERIMENTAL PROOF OF CONCEPT</p> <p>JURAY DE WILDE – Catholic University of Louvain, Dept. Materials and Process Eng. (IMAP), Belgium  GUY B. MARIN - Laboratorium voor Petrochemische Techniek, Ghent University, Belgium  GERALDINE J. HEYNDERICKX - Laboratorium voor Petrochemische Techniek, Axel de Broqueville, Université catholique de Louvain, Dept. Materials and Process Eng. (IMAP), Belgium</p>	<p>160 - SIMPLE METHOD FOR THE APPROXIMATE SOLUTION OF GAS-SOLID REACTIONS IN FLUIDISED BED</p> <p>A. GÓMEZ-BAREA<sup>A,B*</sup>, B. LECKNER<sup>B</sup>, P. OLLERO<sup>A</sup>  <sup>a</sup> Chemical and Environmental Engineering Department. Superior school of Engineers (University of Seville), Spain<sup>b</sup> Department of Energy and Environment. Chalmers University of Technology, Sweden</p>
19:15 - 21:00	<i>Dinner</i>	
21:00 - 23:00	<p><b>Poster Session and Social Hour</b> (Chair: G. Kirras)  <i>In addition to all the oral presentations of Themes 5, 6, 7 and 8, the Free Forum Posters for Tuesday will be presented.</i></p>	

**Wednesday May 16, 2007**

07:00 - 08:30	Breakfast	
	<b>PLENARY 3</b> <i>Session Chair: J. Werther</i>	
08:30 - 09:15	MEASURING THE GAS-SOLID DISTRIBUTION IN FLUIDIZED BEDS: A REVIEW RUUD VAN OMMEN - Delft University, The Netherlands	
09:15 - 09:30	<i>Discussion Period – Questions and Answers</i>	
09:30 - 10:00	Coffee Break	
	<b>THEME 9: CFD</b> <i>Session Co-Chairs: H. Arastoopour, A. Yu</i>	<b>THEME 10: JE</b> <i>Session Co-Chairs: P. Cai, S. Mori</i>
10:00 – 10:15	29 NUMERICAL STUDY OF THE INTRINSIC AND FEEDBACK DYNAMICS OF A GAS-SOLID FLUIDIZED BED  F. BONNIOL - Laboratoire de l'IUSTI, Polytech' Marseille – DME, France C. SIERRA, H. BOURNOT, R. OCCELLI, L. TADRIST - Laboratoire de l'IUSTI, Polytech' Marseille – DME, France	21 HYDRODYNAMIC CHARACTERISTICS OF A FLUIDIZED BED WITH ROTATING DISTRIBUTOR  C. SOBRINO-FERNÁNDEZ - Thermal and Fluid Mechanics Department, Universidad Carlos III de Madrid, Spain S. SÁNCHEZ, J.A. ALMENDROS-IBÁÑEZ, M. DE VEGA, U. RUIZ-RIVAS, D. SANTANA - Thermal and Fluid Mechanics Department Universidad Carlos III de Madrid, Madrid
10:15 – 10:30	30 - EFFECT OF PARTICLE SIZE DISTRIBUTION ON THE PERFORMANCE OF A CATALYTIC FLUIDIZED BED REACTOR  TODD PUGSLEY - University of Saskatchewan, Canada SANJIB DAS SHARMA - University of Saskatchewan, Canada	23 - DETECTION OF GAS BYPASSING DUE TO JET STREAMING IN DEEP FLUIDIZED BEDS GROUP A PARTICLES  ALLAN ISSANGYA, PSRI, USA S. B. REDDY KARRI, TED M. KNOWLTON – PSRI, USA
10:30 – 10:45	31 - HOMOGENEOUS TO BUBBLING REGIME TRANSITION IN GAS- AND LIQUID-FLUIDIZED BEDS THROUGH DEM-CFD SIMULATIONS  DI RENZO ALBERTO - Department of Chemical Engineering and Materials, University of the Calabria, Italy FRANCESCO PAOLO DI MAIO - Department of Chemical Engineering and the Materials, University of the Calabria, Italy	24 - STUDY OF HORIZONTAL SONIC GAS JETS IN GAS-SOLID FLUIDIZED BEDS  MATTHEW DAWE - University of Western Ontario, Canada CEDRIC BRIENS, FRANCO BERRUTI – The University of Western Ontario, Canada



<p><i>10:45 – 11:00</i></p>	<p><b>32 - AN INVESTIGATION OF FLUIDIZED BED SCALING LAWS BY DEM SIMULATION</b></p> <p>P. JOHN SANDERSON - CSIRO Minerals, Australia  X. SHAN WANG, MARTIN J. RHODES - Monash University, Department of Chemical Engineering, Australia  K. SENG LIM - CSIRO Minerals, Australia</p>	<p><b>25 - STUDY OF HIGH VELOCITY ATTRITION NOZZLES IN FLUIDIZED BEDS</b></p> <p>JENNIFER MCMILLAN - The University of Western Ontario, Faculty of Engineering, Canada  CEDRIC BRIENS, FRANCO BERRUTI - The University of Western Ontario, Canada  EDWARD CHAN – Syncrude,Canada</p>
<p><i>11:00 - 11:15</i></p>	<p><b>34 - A DEM STUDY OF GELDART GROUP A PARTICLE BED FLUIDISATION BEHAVIOUR ACROSS THE REGIMES</b></p> <p>F. YANG, D. KAFUI, C.THORNTON, J.P.K.SEVILLE - University of Birmingham, School of Engineering, England</p>	<p><b>26 - IMPROVING THE PERFORMANCE OF FLUIDIZED BEDS THROUGH SECONDARY INJECTION</b></p> <p>DANA CHRISTENSEN - Delft University of Technology, The Netherlands  JOHN NIJENHUIS, J. RUUD VAN OMMEN, MARC-OLIVIER COPPENS - Delft University of Technology, The Netherlands</p>
<p><i>11:15 - 11:30</i></p>	<p><b>35 - A TWO-DIMENSIONAL FLUID DYNAMIC MODEL FOR THE CFD SIMULATIONS OF GAS FLUIDIZED BEDS</b></p> <p>LUCA MAZZEI - University College London, UK  PAOLA LETTIERI - University College London, UK</p>	<p><b>27 EFFECT OF THE GAS-TO-LIQUID RATIO ON THE PERFORMANCE OF NOZZLES INJECTING GAS-ATOMIZED LIQUID INTO A FLUIDIZED BED</b></p> <p>FEDERICA PORTOGHESE - UWO, Department of Chemical and Biochemical, Engineering, Canada  FRANCO BERRUTI , CEDRIC BRIENS, LORENZO FERRANTE – The University of Western Ontario, Canada  EDWARD CHAN – Syncrude,Canada</p>
<p><i>11:30 - 11:45</i></p>	<p><b>36 - A CFD STUDY INTO THE INFLUENCE OF THE PARTICLE PARTICLE DRAG FORCE ON THE DYNAMICS OF BINARY GAS SOLID FLUIDIZED BEDS</b></p> <p>OLUMUYIWA OWOYEMI, PAOLA LETTIERI - University College London, Department of Chemical Engineering, UK</p>	<p><b>28 THE INFLUENCE OF DISTRIBUTOR DESIGN ON FLUIDIZED BED DRYER HYDRODYNAMICS</b></p> <p>MICHAEL WORMSBECKER - University of Saskatchewan, Canada  TODD PUGSLEY - University of Saskatchewan, Canada  HELEN TANFARA - Merck Frosst Canada Ltd.</p>
<p><i>11:45 - 12:00</i></p>	<p><b>37 - GAS FLUIDISATION IN CONFINED BEDS: A NUMERICAL STUDY</b></p> <p>YURONG HE - Institute of Particle Science &amp; Engineering, University of Leeds, UK  YULONG DING - Institute of Particle Science &amp; Engineering, University of Leeds, UK  HUILIN LU - College of Energy Science &amp; Engineering, Harbin Institute of Technology, China</p>	<p><b>141 EXPERIMENTAL VALIDATION OF MACRO- AND MICRO-LEVEL SCALING LAWS IN SMALL- AND MEDIUM-SCALE TOP-SPRAY FLUIDISED BED COATERS</b></p> <p>PETER DYBDAHL HEDE - Technical University of Denmark, Denmark  POUL BACH - Novozymes A/S, Denmark  ANKER DEGN JENSEN - Technical University of Denmark, Denmark</p>

<i>12:00 - 12:15</i>	<b>38 - DYNAMIC RESPONSE CHARACTERISTICS OF LOCAL CAPACITIVE MEASUREMENT DEVICES WITH APPLICATION TO CFD VALIDATION</b> CLAY R. SUTTON - ExxonMobil Research & Engineering Company, USA JOHN C. CHEN - Department of Chemical Engineering, Lehigh University, USA	152 - GAS-SOLID STRUCTURE IN THE VICINITY OF A SPARGER NOZZLE IN A FLUIDIZED BED PIERRE SAURIOL – Department of Chemical Engineering, Polytechnic School of Montréal, Canada HEPING CUI - Department of Chemical and Biological Eng., Canada JAMAL CHAOUKI – Department of Chemical Engineering, Polytechnic School of Montréal, Canada
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12:15 – 12:30	<b>39 - PREDICTION THE DYNAMICS OF A FLUIDIZED BED REACTOR USING ARTIFICIAL NEURAL NETWORKS</b> NAVID MOSTOUFI - University of Tehran, Iran SHAYAN KARIMIPOUR, RAHMAT, Iran SOTUDEH-GHAREBAGH - University of Tehran, Iran	<b>56 - AGGLOMERATE BEHAVIOUR IN FLUIDIZED BEDS</b> SARAH C. WEBER - University of Western Ontario, Thompson Engineering Building, Canada CEDRIC BRIENS, FRANCO BERRUTI - University of Western Ontario, Canada EDWARD CHAN - Syncrude Canada Ltd. MURRAY R. GRAY - University of Alberta, Canada
12:45 - 15:00	<i>Lunch and Free Time</i>	

	<b><i>THEME 9: CFD (CONT.)</i></b> <i>Session Co-Chairs: H. Kuipers, P. Lettieri</i>	<b><i>THEME 11: DO</i></b> <i>Session Co-Chairs: J. Matsen, H. de Lasa</i>
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15:00 - 15:15	<p><b>40 - COMPARISON OF SIMULATED AND MEASURED FLOW PATTERNS: SOLID AND GAS MIXING IN A 2D TURBULENT FLUIDIZED BED</b></p> <p>ULLA OJANIEMI – VTT, Finland SIRPA KALLIO, ALF HERMANSON - Åbo Akademi University, Finland MIKKO MANNINEN, MAIJU SEPPÄLÄ, VEIKKO TAIVASSALO – VTT, Finland</p>	<p><b>3 - OZONE DECOMPOSITION IN A DOWNER REACTOR</b></p> <p>WENLI SONG - Multi-phase Reaction Laboratory, Institute of Process Engineering, Chinese Academy of Sciences, China CHUIGANG FAN, YONG ZHANG, WEIGANG LIN - Multi-phase Reaction Laboratory, Institute of Process Engineering, Chinese Academy of Sciences, China XIAOTAO BI - Fluidization Research Centre, University of British Columbia, Canada</p>
15:15 - 15:30	<p><b>146 - DISCRETE PARTICLE SIMULATION OF THE GAS-SOLID FLOW IN A CIRCULATING FLUIDIZED BED</b></p> <p>K. W. CHU, B. WANG, AIBING YU - Centre for Simulation and Modeling of Particulate Systems, School of Materials Science and Engineering. University of New South Wales, Australia</p>	<p><b>4 - UNDERSTANDING THE HYDRODYNAMICS IN A 2-DIMENSIONAL DOWNER BY CFD-DEM SIMULATION</b></p> <p>YI CHENG - Tsinghua University, Department of Chemical Engineering, China YONGZHI ZHAO, YONG JIN - Tsinghua University, China</p>
15:30 - 15:45	<p><b>158 - TWO-DIMENSIONAL SIMULATION OF A GAS-SOLID PULSATING FLUIDIZED BED USING THE EULERIAN GRANULAR APPROACH</b></p> <p>SHYAM SHANKAR DOKKA, HAMID ARASTOPOUR - Department of Chemical and Environmental Engineering, Illinois Institute of Technology, USA</p>	<p><b>5 - ON THE MOTION OF FLUIDIZED GRANULAR CURRENTS: MOTION ALONG HORIZONTAL SURFACES</b></p> <p>DAVID E. JESSOP - Department of Mathematics, University of Bristol, UK DR M. A. GILBERTSON - Department of Mechanical Engineering, University of Bristol, UK DR A. J. HOGG, - Department of Mathematics, University of Bristol, UK</p>
15:45 - 16:00	<p><b>161 - DISCRETE PARTICLE SIMULATIONS OF HIGH PRESSURE FLUIDIZATION</b></p> <p>W. GODLIEB - University of Twente, Faculty of Science and Technology, The Netherlands N.G. DEEN, - Dutch Polymer Institute, The Netherlands J.A.M. KUIPERS - University of Twente, The Netherlands</p>	<p><b>6 - SELF-FLUIDIZATION OF FASTLY-MOVING GRANULAR GRAVITY CURRENTS WITH IMPLICATION ON PYROCLASTIC FLOWS</b></p> <p>PIERO SALATINO – Department of Chemical Engineering, University of Napoli Federico II, Italy PIERO BARESCINO, ANTONIO MARZOCHELLA – Department of Chemical Engineering, University of Napoli Federico II, Italy TERESITA GRAVINA, LUCIO LIRER, PAOLA PETROSINO – Department of Earth Science, University, Napoli Federico II, Italy</p>
16:00 - 16:15	<p><b>164 - INFLUENCE OF BUBBLE-BUBBLE INTERACTIONS ON THE MACROSCALE CIRCULATION PATTERNS IN A BUBBLING GAS-SOLID FLUIDISED BED</b></p> <p>J.A. LAVERMAN, M. VAN SINT ANNALAND, J.A.M. KUIPERS - University of Twente, The Netherlands,</p>	<p><b>148 - RADIAL DISTRIBUTION OF PARTICLE CLUSTERS IN DOWN FLOW REACTORS</b></p> <p>SAMUEL NOVA, STEFAN KROL, HUGO DE LASA – Chemical Reactor Engineering Centre, University of Western Ontario, Canada</p>
16:15 - 16:30	<i>Afternoon Coffee Break</i>	

<i>16:30 - 17:30</i>	<i>WORKSHOP 1: Large Scale Applications of Fluid Beds in the Energy Sector (D. Keairns)</i>
<i>17:30 - 18:30</i>	<i>WORKSHOP 2: CFD-DEM (H. Kuipers)</i>
<i>18:30 - 19:30</i>	<i>WORKSOP 3: Videos (M. Rhodes)</i>
<i>19:30 - 21:00</i>	<i>Dinner</i>
<i>21:00 - 23:00</i>	<b>Poster Session and Social Hour (Chair: A. Park)</b> <i>In addition to all the oral presentations of Themes 9, 10 and 11, the Free Forum Posters for Wednesday will be presented.</i>

**Thursday, May 17, 2007**

07:00 - 08:30	<i>Breakfast</i>	
	<b>PLENARY 4</b> <i>Session Co-Chairs: J. Chen</i>	
08:30 - 09:15	FLUIDIZED BED APPLICATIONS FOR CLEAN/RENEWABLE ENERGY FILIP JOHNSON - Chalmers University of Technology, Goteborg, Sweden	
09:15 - 09:30	<i>Discussion Period – Questions and Answers</i>	
09:30 - 10:00	<i>Coffee Break</i>	
	<b>Theme 12: CE</b> <i>Session Co-Chairs: P. Basu, P. Salatino</i>	<b>Theme 12: CE (CONT.)</b> <i>Session Co-Chairs: N. Ellis, A. Hartge</i>
10:00 - 10:15	80 - H <sub>2</sub> -RICH SYNGAS FROM RENEWABLE SOURCES BY DUAL FLUIDIZED BED STEAM GASIFICATION OF SOLID BIOMASS  CHRISTOPH PFEIFER - Vienna University of Technology, Institute of Chemical Engineering, Austria TOBIAS PRÖLL, BERNHARD PUCHNER, HERMANN HOFBAUER - Vienna University of Technology, Institute of Chemical Engineering, Austria	97 - THE INFLUENCE OF AIR NOZZLES' SHAPE ON THE NOX EMISSION IN THE LARGE-SCALE 670MWT CFB BOILER  MIREK P. - Czestochowa University of Technology, Poland SEKRET R., NOWAK W. - Czestochowa University of Technology, Poland
10:15 - 10:30	81 - FAST PYROLYSIS OF BIOMASS IN A CIRCULATING FLUIDISED BED (CFB)  MANON VAN DE VELDEN, JAN BAEYENS - University of Birmingham, School of Chemical Engineering, UK ANDY INGRAM, XIANFEND FAN - University of Birmingham, UK	99 - PARTICLE POPULATION BALANCES IN A REFUSE DERIVED FUEL FIRED CIRCULATING FLUIDIZED BED COMBUSTOR  KAI REDEMANN - TUTech Innovation GmbH, Germany ERNEST-ULRICH HARTGE, JOACHIM WERTHER - TUTech Innovation GmbH, Germany
10:30 - 10:45	100 - THERMAL CONVERSION OF BIOMASS AND WASTE LIBAN YASSIN - University College London, Department of Chemical Engineering, UK PAOLA LETTIERI, STEFAAN SIMONS - University College London, UK ANTONINO GERMANÀ - Germanà & Partners Consulting Engineers, Italy	82 - INFLUENCE OF FB CONDITIONS ON PROCESSES WITHIN LARGE FUEL PARTICLE DURING INITIAL PHASES OF CONVERSION  MILIJANA PAPRIKA - Institute of Nuclear Sciences Vinca, Serbia MIRKO KOMATINA - Faculty of Mechanical Engineering, University of Belgrade, Serbia DRAGOLJUB DAKIC - Institute for Nuclear Sciences Vinca, Blegrade, Serbia FRANZ WINTER - Institute of Chemical Engineering, Vienna University of Technology, Austria

		<b>Theme 13: PO</b> <b>Session Co-Chairs: A. Kantzas</b>
<i>10:45 - 11:00</i>	<p>85 - FLUID-DYNAMIC INVESTIGATIONS IN A SCALED COLD MODEL FOR A DUAL FLUIDIZED BED BIOMASS STEAM GASIFICATION PROCESS: OPTIMIZATION OF THE CYCLONE</p> <p>CHRISTOPH PFEIFER - Vienna University of Technology, Institute of Chemical Engineering, Austria ANDREAS KREUZEDER, HERMANN HOFBAUER - Vienna University of Technology, Institute of Chemical Engineering, Austria</p>	<p>120 - ROLE OF INTRINSIC KINETICS AND CATALYST PARTICLE SIZE DISTRIBUTION IN CFD SIMULATIONS OF POLYMERIZATION REACTORS</p> <p>RONG FAN - Iowa State University, USA RODNEY O. FOX - Iowa State University, USA MICHAEL E. MUHLE - Univation Technology, USA</p>
<i>11:00 - 11:15</i>	<p><b>88 - MODELING OF INTERCONNECTED FLUIDIZED BED REACTORS FOR CHEMICAL LOOPING COMBUSTION</b></p> <p>MIN XU - Fluidization Research Centre, Department of Chemical and Biological Engineering, The University of British Columbia, Canada HO-JUNG RYU - Advanced Clean Energy Process Research Center, Korea Institute of Energy Research, Canada NAOKO ELLIS, C. JIM LIM - Fluidization Research Centre, Department of Chemical and Biological Engineering, The University of British Columbia, Canada</p>	<p>121 - MONITORING ELECTROSTATIC CHARGES IN FLUIDIZED BEDS</p> <p>XIAOTAO T. BI - University of British Columbia, Canada AIHUA CHEN, JOHN GRACE - University of British Columbia, Canada</p>
<i>11:15 - 11:30</i>	<p><b>95 - EXPERIMENTAL ANALYSIS OF FUEL MIXING PATTERNS IN A FLUIDIZED BED</b></p> <p>DAVID PALLARÈS, PEDRO A. DIEZ - Department of Energy and Environment, Energy Conversion, Chalmers University of Technology, Sweden FILIP JOHNSON - Department of Energy and Environment, Energy Conversion, Chalmers University of Technology, Sweden</p>	<p>122 - PARTICLE SIZE DISTRIBUTION IN GAS-PHASE POLYETHYLENE REACTORS</p> <p>NAVID MOSTOUFI - University of Tehran, Process Design and Simulation Research Center, Department of Chemical Engineering, Iran OMID ASHRAFI, RAHMAT SOTUDEH-GHAREBAGH - University of Tehran, Iran</p>
<i>11:30 - 11:45</i>	<p>90 - PERFORMANCE CHARACTERISTICS OF AN 8 MW(TH) COMBINED HEAT AND POWER PLANT BASED ON DUAL FLUIDIZED BED STEAM GASIFICATION OF SOLID BIOMASS</p> <p>TOBIAS PRÖLL - Vienna University of Technology, Austria HERMANN HOFBAUER - Vienna University of Technology, Austria</p>	<p>123 - HYDRODYNAMICS OF GAS-SOLIDS BUBBLING FLUIDIZED BEDS USING POLYETHYLENE RESIN</p> <p>BANGYOU WU - University of Calgary, Tomographic Imaging and Porous Media Laboratory, Department of Chemical and Petroleum Engineering, Canada JOHN SHEPPERSON, LONI VAN DER LEE, APOSTOLOS KANTZAS, CELINE BELLEHUMEUR - University of Calgary, Canada</p>

11:45-12:00	92 - COMBUSTION STUDIES OF SAWDUST IN FLUIDIZED BED DR. K.V.N. SRINIVASA RAO - Vignan's Engineering College, Vadlamudi, India DR. G. VENKAT REDDY - National Institute of Technology, Warangal	N/A
12:00 -12:15	94 - MODELING FUEL MIXING IN A FLUIDIZED BED COMBUSTOR DAVID PALLARÈS - Department of Energy and Environment, Energy Conversion, Chalmers University of Technology, Sweden FILIP JOHNSSON - Department of Energy and Environment, Energy Conversion, Chalmers University of Technology, Sweden	N/A
12:15 - 12:30	89 - CONTINUOUS AND SEMI-CONTINUOUS OPERATIONS OF CHEMICAL-LOOPING COMBUSTION IN AN ANNULAR FLUIDIZED BED REACTOR WITH SOLIDS CIRCULATION SUNG REAL SON, SANG DONE KIM - Korea Advanced Institute of Science and Technology, Dept. of Chemical and Biomolecular Eng., Korea JEA-KEUN LEE - Dept of Env. Eng., Pukyong National University, Korea	N/A
12:45 - 16:30	<i>Lunch and Free Time</i>	
16:30 - 17:00	<i>Afternoon Coffee Break</i>	
17:00 -18:30	<b>Poster Session and Social Hour</b> (Chair: J. McMillan) <i>In addition to all the oral presentations of Themes 12 and 13, the Free Forum Posters for Thursday will be presented.</i>	
19:00 - 22:00	<i>Conference Banquet followed by Social Time</i>	



Friday May 18, 2007

<i>07:00 - 08:30</i>	<i>Breakfast</i>
<i>07:30 and 09:30</i>	<i>Departure of buses</i>

**THEME 1  
CIRCULATING FLUIDIZED BEDS  
POSTER LIST**

- CFB 7**      **FLOW REGIME STUDY IN A HIGH DENSITY CIRCULATING FLUIDIZED BED RISER WITH AN ABRUPT EXIT**  
Joseph S. Mei, Lawrence J. Shadle, Paul C. Yue, Esmail R. Monazam
- CFB9**      **RADIAL DISTRIBUTION OF LOCAL CONCENTRATION-WEIGHTED PARTICLE VELOCITIES IN HIGH-DENSITY CIRCULATING FLUIDIZED BEDS**  
G. Kirbaş, S.W. Kim, H.T. Bi, C.J. Lim and J.R. Grace
- CFB10**     **LIQUID FEED INJECTION IN A HIGH-DENSITY RISER**  
S. Gehrke, K.E. Wirth
- CFB11**     **FLOW STRUCTURES IN THE BOTTOM REGION OF RISERS**  
Haiyan Zhu and Jesse Zhu
- CFB12**     **FRICTION BETWEEN GAS-SOLID SUSPENSION AND CIRCULATING FLUIDIZED BED DOWNERS**  
Xiao-Bo Qi, Hui Zhang, Jesse Zhu
- CFB13**     **MEASUREMENT OF GAS VELOCITIES IN THE PRESENCE OF SOLIDS IN THE RISER OF A COLD FLOW CIRCULATING FLUIDIZED BED**  
James Spenik, J. Christopher Ludlow, Rex Compston, and Ronald W. Breault
- CFB14**     **SOLIDS FLUX, VELOCITY AND LOCAL SOLID FRACTION MEASUREMENTS IN A CFB RISER**  
Ronald W. Breault and Christopher Guenther
- CFB17**     **MODELING ON HETEROGENEOUS STRUCTURE IN ACCELERATION REGIME OF GAS-SOLID RISER FLOWS**  
Jun You, Chao Zhu, L. S. Fan
- CFB18**     **TRANSIENT CHARACTERIZATION OF TYPE B PARTICLES IN A CIRCULATING FLUIDIZED BED RISER**  
Lawrence J. Shadle, Esmail R. Monazam, and Joseph S. Mei
- CFB19**     **A COMPUTATIONAL STUDY OF THE DISTRIBUTION OF PARTICLES IN A LAB-SCALE CFB BOILER**  
Kim Granly Hansen, Tron Solberg and Bjorn H. Hjertager
- CFB135**    **AN ANALYSIS OF PRESSURE FLUCTUATIONS IN A CFB OF HEAVY MINERALS**  
A. Luckos,<sup>†</sup> Q.G. Reynolds and P. den Hoed
- CFB153**    **EFFECT OF HORIZONTAL PASSAGE LENGTH ON SOLID RECYCLE THROUGH A LOOP SEAL IN A CIRCULATING FLUIDIZED BED**  
James W. Butler, Prabir Basu
- CFB162**    **IMPROVED STANDPIPE ENTRANCE FOR STABLE HIGH-FLUX SOLIDS FLOW**  
D. Rusnell, J.R. Grace, H.T. Bi, C.J. Lim, P. Ronan, C.A. McKnight

## THEME 2 BUBBLING FLUIDIZED BEDS

- BF49**      **THROUGHFLOW VELOCITY CROSSING THE DOME OF ERUPTING BUBBLES IN 2-D FLUIDIZED BEDS**  
J.A. Almendros-Ibáñez, C. Sobrino, S. Sánchez-Delgado, D.Santana,  
M. de Vega and U. Ruiz-Rivas
- BF50**      **EFFECTS OF THERMALLY INDUCED INTERPARTICLE FORCES ON THE EXPANSION AND BUBBLING BEHAVIOUR OF A FLUIDIZED BED**  
Rossella Girimonte, Brunello Formisani
- BF53**      **FOUR APPROACHES TO STRUCTURE GAS-SOLID FLUIDIZED BEDS**  
J. Ruud van Ommen, John Nijenhuis, and Marc-Olivier Coppens
- BF54**      **TAILORING PARTICLE MIXTURES FOR FLUIDIZED BED REACTORS USING HIGH-THROUGHPUT EXPERIMENTATION**  
John Nijenhuis and J. Ruud van Ommen
- BF55**      **TOWARDS FILTERED GAS-SOLID FLOW MODELS**  
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- BF51**      **THE FLUIDIZATION PATTERN OF DENSITY-SEGREGATING TWO-SOLID BEDS**  
Brunello Formisani, Rossella Girimonte and Tiziana Longo
- BF57**      **BUBBLE DISTRIBUTION IN CYLINDRICAL FLUIDIZED BEDS: THE EFFECTS OF BED DEPTH AND GAS SPEED**  
Anthony Croxford, Mark Gilbertson
- BF58**      **ON THE PRESENCE OF PARTICLES AT THE WALL OF GAS FLUIDIZED BEDS**  
R. Zarghami, N. Mostoufi, R. Sotudeh-Gharebagh, J. Chaouki
- BF155**     **DRYING OF MOIST SOLID PARTICULATE IN A BUBBLING FLUIDISED BED**  
Yassir Makkawi, Jamie Duncan, Marc McAndrew, Raffaella Ocone

## THEME 12

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- CE80      H<sub>2</sub>-RICH SYNGAS FROM RENEWABLE SOURCES BY DUAL FLUIDIZED BED STEAM GASIFICATION OF SOLID BIOMASS  
Christoph Pfeifer, Tobias Pröll, Bernhard Puchner, Hermann Hofbauer
- CE81      FAST PYROLYSIS OF BIOMASS IN A CIRCULATING FLUIDISED BED  
Manon Van de Velden, Xianfeng Fan, Andy Ingram and Jan Baeyens
- CE100     THERMAL CONVERSION OF BIOMASS AND WASTE  
Liban Yassin, Paola Lettieri, Stefaan Simons, Antonino Germanà
- CE85      FLUID-DYNAMIC INVESTIGATIONS IN A COLD MODEL FOR A DUAL FLUIDIZED BED BIOMASS STEAM GASIFICATION PROCESS: OPTIMIZATION OF THE CYCLONE  
Andreas Kreuzeder, Christoph Pfeifer, Hermann Hofbauer
- CE88      MODELING OF AN INTERCONNECTED FLUIDIZED BED REACTOR FOR CHEMICAL LOOPING COMBUSTION  
Min Xu, Naoko Ellis, Ho-Jung Ryu, C. Jim Lim
- CE95      EXPERIMENTAL ANALYSIS OF FUEL MIXING PATTERNS IN A FLUIDIZED BED  
David Pallarès, Pedro A. Díez, Filip Johnsson
- CE90      PERFORMANCE CHARACTERISTICS OF AN 8 MW<sub>TH</sub> COMBINED HEAT AND POWER PLANT BASED ON DUAL FLUIDIZED BED STEAM GASIFICATION OF SOLID BIOMASS  
Tobias Pröll, Reinhard Rauch, Christian Aichernig, and Hermann Hofbauer
- CE92      COMBUSTION STUDIES OF SAWDUST IN A BUBBLING FLUIDIZED BED  
K.V.N. Srinivasa Rao
- CE94      MODELING FUEL MIXING IN A FLUIDIZED BED COMBUSTOR  
David Pallarès, Filip Johnsson
- CE89      CONTINUOUS AND SEMI-CONTINUOUS OPERATIONS OF CHEMICAL-LOOPING COMBUSTION IN AN ANNULAR FLUIDIZED BED REACTOR WITH SOLID CIRCULATION  
Sung Real Son, Sang Done Kim and Jea-Keun Lee

- CE97      THE INFLUENCE OF AIR NOZZLES' SHAPE ON THE NO<sub>x</sub> EMISSION  
EMISSION IN THE LARGE-SCALE 670MW<sub>T</sub> CFB BOILER  
Pawel Mirek, Robert Sekret, Wojciech Nowak
- CE99      PARTICLE POPULATION BALANCES IN A REFUSE DERIVED FUEL  
FIRED CIRCULATING FLUIDIZED BED COMBUSTOR  
Kai Redemann, Ernst-Ulrich Hartge and Joachim Werther
- CE82      INFLUENCE OF FB CONDITIONS ON PROCESSES WITHIN A LARGE  
FUEL PARTICLE DURING INITIAL PHASES OF CONVERSION  
Milijana J. Paprika, Mirko Komatina, Dragoljub Dakić

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- CFD30      **EFFECT OF PARTICLE SIZE DISTRIBUTION ON THE PERFORMANCE OF A CATALYTIC FLUIDIZED BED REACTOR**  
Sanjib das Sharma and Todd Pugsley
- CFD31      **HOMOGENEOUS TO BUBBLING REGIME TRANSITION IN GAS- AND LIQUID-FLUIDIZED BEDS THROUGH DEM-CFD SIMULATIONS**  
Alberto Di Renzo and Francesco P. Di Maio
- CFD32      **AN INVESTIGATION OF FLUIDIZED BED SCALING LAWS BY DEM SIMULATION**  
John Sanderson, Shan Wang, Martin Rhodes and Seng Lim
- CFD34      **A DEM STUDY OF GELDART GROUP A PARTICLE BED FLUIDISATION BEHAVIOR ACROSS THE REGIMES**  
Fang Yang, David K. Kafui, Colin Thornton and Jonathan P. K. Seville
- CFD35      **A NEW FLUID DYNAMIC MODEL FOR THE CFD SIMULATIONS OF FLUIDIZED BEDS**  
Luca Mazzei, Paola Lettieri
- CFD36      **CFD STUDY INTO THE INFLUENCE OF PARTICLE PARTICLE DRAG FORCE ON THE DYNAMICS OF BINARY GAS SOLID FLUIDIZED BEDS**  
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- CFD37      **GAS FLUIDIZATION AND PNEUMATIC CONVEYING IN CONFINED BEDS: A NUMERICAL STUDY**  
Yurong He, Thang Ngoc Cong, Yulong Ding, Huilin Lu
- CFD38      **DYNAMIC RESPONSE CHARACTERISTICS OF LOCAL CAPACITIVE MEASUREMENT DEVICES WITH APPLICATION TO CFD VALIDATION**  
Clay R. Sutton and John C. Chen
- CFD39      **PREDICTION OF THE DYNAMICS OF A FLUIDIZED BED REACTOR USING ARTIFICIAL NEURAL NETWORKS**  
Shayan Karimipour, Navid Mostoufi, Rahmat Sotudeh
- CFD40      **COMPARISON OF SIMULATED AND MEASURED FLOW TERMS: SOLID AND GAS MIXING IN A 2D TURBULENT FLUIDIZED BED**  
Ulla Ojaniemi, Sirpa Kallio, Alf Hermanson
- CFD146     **DISCRETE PARTICLE SIMULATION OF THE GAS-SOLID FLOW IN A CIRCULATING FLUIDIZED BED**  
K. W. Chu, B. Wang and A. B. Yu

- CFD158      **SIMULATION OF A PULSATING BED USING EULERIAN APPROACH**  
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- CFD161      **A DISCRETE PARTICLE SIMULATION STUDY OF SOLIDS  
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W. Godlieb, N.G. Deen, J.A.M. Kuipers
- CFD164      **INFLUENCE OF BUBBLE-BUBBLE INTERACTIONS ON THE  
MACROSCALE CIRCULATION PATTERNS IN A BUBBLING  
GAS-SOLID FLUIDIZED BED**  
J.A. Laverman, M. van Sint Annaland, J.A.M. Kuipers

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- DO4**            **UNDERSTANDING THE HYDRODYNAMICS IN A 2-DIMENSIONAL  
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- DO5**            **ON THE MOTION OF FLUIDISED GRANULAR CURRENTS:  
MOTION ALONG HORIZONTAL SURFACES**  
By D. E. JESSOP, M. A. GILBERTSON and A. J. HOGG
- DO6**            **SELF-FLUIDIZATION OF FASTLY-MOVING GRANULAR GRAVITY  
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- DO148**        **RADIAL DISTRIBUTION OF PARTICLE CLUSTERS IN DOWN FLOW  
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Samuel Nova, Stefan Krol, Hugo I. de Lasa



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Nahidh W. Mecaial, Burhan Sadik
- GLS115      **NUMERICAL MODELING OF SLOSHING WITH VOLUME OF  
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H. Rezaei, M.J. Ketabdari
- GLS109      **NUMERICAL INVESTIGATION OF THE LAYER-INVERSION  
PHENOMENON IN BINARY-SOLID LIQUID FLUIDIZED BEDS**  
Kevin F. Malone, Bao H. Xu, Michael Fairweather
- GLS110      **VOLUME CONTRACTION IN LIQUID FLUIDIZATION OF BINARY SOLIDS  
MIXTURES**  
R. Escudié, N. Epstein, J.R. Grace, H.T. Bi
- GLS111      **FLUID MECHANICAL PHENOMENA OF LIQUID-SOLID FLUIDIZATION IN  
THE CENTRIFUGAL FIELD**  
Jan Margraf and Joachim Werther
- GLS112      **BUBBLE SIZE AND MASS TRANSFER IN A MODIFIED AIRLIFT LOOP  
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Liu Mengxi, Lu Chunxi, Shi Mingxian
- GLS118      **DYNAMIC SIMULATION OF GAS HYDRATE FORMATION IN AN  
AGITATED THREE-PHASE SLURRY REACTOR**  
Shahrazad Hashemi, Arturo Macchi, Phillip Servio
- GLS154      **FLOW CHARACTERISTICS OF FULLY WETTED BINARY SOLID  
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- HT47**      **RADIATION HEAT TRANSFER IN CIRCULATING FLUIDIZED BEDS**  
Leon R. Glicksman
- HT125**     **THE MEASUREMENT OF THERMAL PERFORMANCE FOR A FLUIDIZED BED**  
H. R. Goshayshi
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A. Stefanova, J. R. Grace, C. J. Lim, X. Bi, K.S. Lim, J. Sanderson

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C. Sobrino, J.A. Almendros-Ibáñez, S. Sánchez-Delgado, M. de Vega, D. Santana, and U. Ruiz-Rivas
- JE23**      **DETECTION OF GAS BYPASSING DUE TO JET STREAMING IN DEEP FLUIDIZED BEDS OF GROUP A PARTICLES**  
Allan S. Issangya, Ted M. Knowlton and S. B. Reddy Karri
- JE24**      **STUDY OF HORIZONTAL SONIC GAS JETS IN GAS-SOLID FLUIDIZED BEDS**  
Matthew Dawe, Cedric Briens, and Franco Berruti
- JE25**      **STUDY OF HIGH VELOCITY ATTRITION NOZZLES IN FLUIDIZED BEDS**  
Jennifer McMillan, Cedric Briens, Franco Berruti
- JE26**      **IMPROVING THE CONVERSION IN FLUIDISED BEDS WITH SECONDARY INJECTION**  
D. Christensen, J. Nijenhuis, J.R. van Ommen, and M.-O. Coppens
- JE27**      **EFFECT OF THE GAS-TO-LIQUID RATIO ON THE PERFORMANCE OF NOZZLES INJECTING GAS-ATOMIZED LIQUID INTO A FLUIDIZED BED**  
Federica Portoghese, Lorenzo Ferrante, Franco Berruti, Cedric Briens, Edward Chan
- JE28**      **THE INFLUENCE OF DISTRIBUTOR DESIGN ON FLUIDIZED BED DRYER HYDRODYNAMICS**  
Michael Wormsbecker, Todd Pugsley and Helen Tanfara
- JE141**      **EXPERIMENTAL VALIDATION OF MACRO- AND MICRO-LEVEL SCALING LAWS IN SMALL- AND MEDIUM-SCALE TOP-SPRAY FLUIDISED BED COATERS**  
Peter Dybdahl Hede, Poul Bach, Anker D. Jensen
- JE152**      **GAS-SOLID STRUCTURE IN THE VICINITY OF A SPARGER NOZZLE IN A FLUIDIZED BED**  
Pierre Sauriol, Heping Cui and Jamal Chaouki
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Sarah Weber, Cedric Briens, Franco Berruti, Edward Chan, Murray Gray

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Shigenobu Hatano, Nobuyuki Nakamura, Nobusuke Kobayashi,  
Yoshinori Itaya, Shigekatsu Mori and Yasuhiro Shimada
- N60**      **MECHANISTIC STUDY OF NANO-PARTICLE FLUIDIZATION**  
X.S. Wang, F. Rahman, M.J. Rhodes
- N61**      **ROLE OF SOUND VIBRATION DURING AERATION OF NANO-SIZED POWDERS**  
Ammendola P. and Chirone R
- N62**      **IMPROVED LI-ION BATTERY PERFORMANCE BY COATING CATHODE NANO-PARTICLES USING ATOMIC LAYER DEPOSITION**  
Renske Beetstra, John Nijenhuis, Erik M. Kelder and J. Ruud van Ommen
- N63**      **THE EFFECT OF VIBRATIONS ON FLUIDIZED COHESIVE POWDERS**  
Diego Barletta, Giorgio Donsi, Giovanna Ferrari, Massimo Poletto ,Paola Russo
- N64**      **HYDRODYNAMIC EFFECTS OF PARTICLE CHAINING IN LIQUID-SOLID MAGNETOFLUIDIZED BEDS**  
Carlos Francisco Cruz-Fierro, Brian P. Reed, Joaquin Pinto-Espinoza,  
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- N65**      **MULTI-WALL CARBON NANOTUBES OBTAINED BY FLUIDIZED BED PYROLYSIS OF VIRGIN OR RECYCLED PLASTICS**  
Umberto Arena and Maria Laura Mastellone
- N68**      **EVALUATION OF ASSISTED FLUIDIZATION OF NANOAGGLOMERATES BY MONITORING MOISTURE IN THE GAS PHASE AND THE INFLUENCE OF GAS VISCOSITY**  
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- N69**      **AN INVESTIGATION OF CARBON NANOTUBE JET GRINDING**  
Cedric L. Briens, Carole E. Baddour, Serge Bordere, Patrice Gaillard,  
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- N70**      **FLUIDIZED BED POLYMER PARTICLE ALD™ PROCESS FOR PRODUCING HDPE/ALUMINA NANOCOMPOSITES**  
Joseph A. Spencer II, Xinhua Liang, David M. King, Steven M. George,  
Alan W. Weimer, Karen J. Buechler, John Blackson, Charles J. Wood,  
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- N71**      **VIBRO-FLUIDIZATION CHARACTERISTICS FOR SIZE ARRANGED AGGLOMERATES**  
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Kyla Clarke, Gordon A. Hill, Todd S. Pugsley
- NM74      MODELING MERCURY CAPTURE BY POWDERED ACTIVATED CARBON IN A FLUIDIZED BED REACTOR  
Fabrizio Scala, Riccardo Chirone, Amedeo Lancia
- NM75      PHOTOCATALYTIC DEGRADATION OF TOLUENE BY NANO-TIO<sub>2</sub> IN A FLUIDIZED BED  
Xiaoping Zhang, Cong Liao
- NM77      2-D SIMULATION OF THE CATALYTIC DECHLORINATION OF *P*-CHLOROPHENOL IN A MAGNETICALLY STABILIZED FLUIDIZED BED  
Joaquín Pinto-Espinoza, Damian Reyes-Jaquez, Adriana Martínez-Prado, and Carlos F. Cruz-Fierro
- NM78      STUDY OF METHANOL TO FORMALDEHYDE REACTION IN FLUIDIZED BED REACTOR  
Jamshid Khorshidi, Mansour Kalbasi
- NM151     TIME-SCALE ANALYSIS OF A FLUIDIZED-BED CATALYTIC REACTOR BASED ON A GENERALIZED DYNAMIC MODEL  
Andrés Mahecha-Botero, John R. Grace, Said S.E.H. Elnashaie, C. Jim Lim
- NM157     WASTE EDIBLE OIL FLUID CATALYTIC CRACKING IN A DOWNER REACTOR  
Xiaoping Tang, Fei Wei
- NM160     APPROXIMATE PREDICTION OF GAS-SOLID CONVERSION IN FLUIDIZED BED REACTOR S  
A. Gómez-Barea, B. Leckner, M. Campoy

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- NR102**      **COLD MODELING OF AN INTERNALLY CIRCULATING FLUIDIZED BED MEMBRANE REACTOR**  
Tony Boyd, John R. Grace, C. Jim Lim, A.M. Adris
- NR103**      **EXPERIMENTAL AND COMPUTATIONAL STUDIES OF GAS MIXING IN CONICAL SPOUTED BEDS**  
Zhiguo Wang, C. Jim Lim and Hsiaotao T. Bi
- NR104**      **SCALING RELATIONSHIP OF GAS-SOLID SPOUTED BEDS**  
Jian Xu, Ye Ji, Weisheng Wei, Xiaojun Bao, Wei Du
- NR106**      **TAPERED FLUIDIZED BEDS AND THE ROLE OF FLUIDIZATION IN MINERAL EMPLACEMENT**  
Thomas M. Gernon, Mark A. Gilbertson, R. Stephen J. Sparks and Matthew Field
- NR107**      **NUMERICAL SIMULATION OF SPOUTED BED REACTORS USING PROCESS ENGINEERING MODELS: APPLICATION TO COAL GASIFICATION**  
Alexandra Mendes, Alain Dollet, Carine Ablitzer, Gilles Flamant, Christophe Perrais
- NR140**      **HYDRODYNAMIC ASPECTS AND CORRELATIONS FOR THE DESIGN OF DRAFT-TUBE CONICAL SPOUTED BEDS**  
H. Altzibar, S. Alvarez, M.J. San José, R. Aguado, J. Bilbao, M. Olazar
- NR147**      **SIMULATION OF A SILICON CVD SPOUTED FLUIDIZED BED REACTOR: SEMI - BATCH OPERATIONS**  
Juliana Piña, Verónica Bucalá, Susana N. Schbib, Paul Ege, Hugo I. de Lasa
- NR156**      **A ROTATING FLUIDIZED BED IN A STATIC GEOMETRY: EXPERIMENTAL PROOF OF CONCEPT**  
Juray De Wilde, Luc Wautier, Guy B. Marin, Geraldine J. Heynderickx, Axel de Broqueville

## **THEME 13 POLYMERIZATION**

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Rong Fan, Rodney O. Fox and Michael E. Muhle
- PO121**      **MONITORING ELECTROSTATIC CHARGES IN FLUIDIZED BEDS**  
Hsiaotao T. Bi, Aihua Chen and John R. Grace
- PO122**      **PARTICLE SIZE DISTRIBUTION IN GAS-PHASE POLYETHYLENE REACTORS**  
Omid Ashrafi, Navid Mostoufi and Rahmat Sotudeh
- PO123**      **HYDRODYNAMICS OF GAS-SOLIDS BUBBLING FLUIDIZED BEDS USING POLYETHYLENE RESIN**  
Bangyou Wu, John Shepperson, Loni van der Lee, Céline Bellehumeur, Apostolos Kantzas

## THEME 6

### SENSORS AND INSTRUMENTATION

- SI129** INVESTIGATION OF THE SOURCES OF VARIABILITY IN THE WURSTER COATER: ANALYSIS OF PARTICLE CYCLE TIMES USING PEPT  
Sarah Palmer, Andy Ingram, Xianfeng Fan, Shaun Fitzpatrick, Jonathan Seville
- SI130** TOWARDS SELECTIVE AGGLOMERATION DETECTION IN FLUIDIZED BEDS USING ADVANCED SIGNAL ANALYSIS METHODS  
Malte Bartels, Bart Vermeer, John Nijenhuis, Ruud van Ommen, Freek Kapteijn
- SI131** MULTIPLE PARTICLE TRACKING IN A FLUIDISED BED  
A. Ingram, Z. Yang, S. Bakalis, D.J. Parker, X. Fan, P.J. Fryer, J.P.K. Seville
- SI132** LASER DIAGNOSTICS OF HYDRODYNAMICS AND GAS MIXING IN THE SPLASH ZONE OF GAS-FLUIDIZED BEDS  
Roberto Solimene, Antonio Marzocchella, Raffaele Ragucci, Piero Salatino
- SI134** PARTICLE SIZE ESTIMATION AND MONITORING IN A BUBBLING FLUIDIZED BED USING PRESSURE FLUCTUATION MEASUREMENTS  
Clive E Davies, Donal Krouse
- SI136** DEVELOPMENT OF ELECTRICAL CAPACITANCE VOLUME TOMOGRAPHY (ECVT) AND ELECTROSTATIC TOMOGRAPHY (EST) FOR 3D DENSITY IMAGING OF FLUIDIZED BED SYSTEM  
Du, B., Marashdeh, Q., Warsito, W., Park, A.-H. A., and Fan, L.-S
- SI137** X-RAY FLUOROSCOPY MEASUREMENTS AND CFD SIMULATION OF HYDRODYNAMICS IN TWO DIMENSIONAL GAS-SOLIDS FLUIDIZED BED  
Zhengxing He, Bangyou Wu, Blake Chandrasekaran, Celine Bellehumeur, Apostolos Kantzas
- SI138** MICROFLUIDIC VELOCITY MEASUREMENTS USING THREE- DIMENSIONAL CONFOCAL MICRO PARTICLE TRACKING VELOCIMETRY (CM-PTV)  
Orin Hemminger, Zhao Yu, Chunhe Zhang, L. James Lee, Liang-Shih Fan
- SI143** PORTABLE POSITRON EMISSION PARTICLE TRACKING (PEPT) FOR INDUSTRIAL SCALE USE  
A. Ingram, M. Hausard, X. Fan, D. J. Parker, J. P. K. Seville, N. Finn, R. Kilvington and M. Evans
- SI145** IN SITU MEASUREMENT OF DYNAMIC MIXING IN GAS-SOLID FLUIDIZED BEDS USING MAGNETIC RESONANCE  
D.J. Holland, P.S. Fennell, C.R. Müller, J.S. Dennis, L.F. Gladden, A.J. Sederman
- SI133** DETECTION OF OVERSIZED MATERIAL IN A HYDROTRANSPORT LURRY PIPE USING A NON-INVASIVE ACOUSTIC METHOD  
Katherine Albion, Joseph Downey, Erin Hansuld, Derek Hartling, Lauren Briens, Cedric Briens, Franco Berruti, Steven McDougall



## Free Forum Posters - Monday

### Monday

- BF 211 The hydrodynamic behavior in a cylindrical fluidized bed dryer
- BF 218 Effect of gas pulsation on the bubbling behavior of fluidized sand particles
- BF 220 Void fraction profiles near a horizontal cylinder immersed in a fluidized bed by local heat transfer coefficient experiments
- BF 222 Electrostatic charge generation in gas-solid fluidized beds
- BF 223 Effects of elevated pressure, temperature and gas velocity on electrostatics in gas-solid fluidized beds
- CFB 203 Wavelet analysis of the pressure fluctuation signals in circulating fluidized beds
- CFB 216 Stripping efficiency in a cold-flow FCCU stripper

## Free Forum Posters - Tuesday

### Tuesday

- N 202 High-quality multi-walled carbon nanotubes from catalytic decomposition of carbon sources
- N 207 Modeling the fluidization of cohesive FCC particles
- N 209 Assisted fluidization of nanoparticles through gas-phase pulsation
- NM 204 Direct DME synthesis from CO-rich Syngas in a fluidized bed reactor
- NM 206 Process design and feasibility study of fluidized bed system for steam methane advanced reforming technology
- NR 205 Noble two-interconnected fluidized bed system for continuous solid circulation
- SI 215 Acoustic measurement techniques in solids conveying
- SI 217 Acoustic monitoring of particulate processes
- SI 219 A novel particle tracking technique using a high speed video camera coupled to a borescope

## Free Forum Posters - Wednesday

### Wednesday

- CFD 208 CFD simulations of fluidized beds with different distributor structures
- CFD 214 Insights into secondary gas injection in a bubbling fluidized bed via discrete particle simulations
- CFD 226 3D DEM/CFD simulations of the fluidized behavior of Geldart group a powder beds
- JE 201 3D numerical simulation of horizontal gas jet penetration in a fluidized bed
- JE 210 Characterization of the performance of gas-atomization nozzles injecting liquid into gas-solid fluidized beds using electric conductance measurements
- JE 221 Wet agglomerate behavior in fluidized beds at reacting conditions

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### Thursday

- CE 200 MILENA, an indirect biomass gasifier
- CE 213 Dual-fluid-bed gasification using Kunii's classic design
- CE 224 Biomass gasification with clay bed material in a circulating fluidized bed
- CE 225 Performance of a Fluidized-bed membrane reactor for high-purity hydrogen production
- PO 212 Fluidized bed reactor modeling at NOVA chemicals