

Program

**Particulate Processes
in the
Pharmaceutical Industry**

June 26-30, 2005

**Plaza Hotel Centre-ville Downtown Montréal
Montréal, Canada**

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Chemical Engineering, University of Saskatchewan, Saskatoon, Canada

Co-chair

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Director of Formulation Development, Merck & Co., USA

ECI

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Sunday, June 26, 2005

16:00 – 18:00	Registration
17:00 – 18:00	Meeting of Organizing Committee
18:00 – 19:00	Opening Reception
19:00 – 21:00	Opening Dinner (drinks available for purchase)
21:00 – 22:00	Social Hour (cash bar)

NOTES

Participants should observe no smoking at ECI technical and social events.

During technical sessions please keep cell phones on vibrate or shut off. Take any telephone conversations out of the session room.

Presenters should leave time at the end of their talks for discussion.

Monday, June 27, 2005

- 07:30 - 08:30 Breakfast
- 08:30 - 09:00 Opening remarks:
Conference Co-Chairs: Todd Pugsley and Conrad Winters
ECI Liaison: Herman Bieber
- 09:00 - 09:45 **Plenary 1: Crystallization**
Keynote Speaker: Professor Yoshiaki Kawashima, Gifu Pharmaceutical University
- Technical Session 1 – Crystallization**
- 09:45 – 09:55 **MODELING CRYSTALLIZATION USING POPULATION BALANCES AND CFD**
K. Dhanasekharan, Fluent Inc., USA
- 09:55 – 10:05 TBA
- 10:05 – 10:15 **PARTICLE FORMULATION FOR PHARMACEUTICAL APPLICATIONS USING PGSSTM PROCESS**
Z. Knez, University of Maribor, Slovenia; E. Weidner, Ruhr University Bochum, Germany
- 10:15 – 10:25 TBA
- 10:25 – 10:35 **CFD SIMULATIONS AND SCALE-UP OF ANTI-SOLVENT CRYSTALLIZATION**
H. Arastoopour; X. Liu; D. Hatzivramidis; A. Myerson, Illinois Institute of Technology, USA
- 10:35 – 10:45 **DESIGN OF NANO DRUG BY MEANS OF NOVEL SUPER-CRITICAL FLUID PROCESSING**
S. Watano; Y. Nakagawa, Osaka Prefecture University; D. Iwamoto; K. Hamada, Nara Machinery Co., Ltd., Japan
- 10:45 - 11:30 Coffee Break and Poster Viewing for Session 1
- 11:30 - 12:20 General Q&A for Session 1
- 12:30 - 14:00 Lunch

Monday, June 27, 2005 (continued)

- 14:30 – 15:15 **Plenary 2: Granulation I**
Keynote Speaker: Dr. James Michaels, Merck & Co., USA
- Technical Session 2 – Granulation I**
- 15:15 – 15:25 **MECHANISTIC METHOD FOR UP SCALING OF HIGH SHEAR GRANULATION, BREAKAGE OR NO BREAKAGE, STOKES GIVES AN ANSWER**
K. van den Dries; R. Hooijmaijers; W. Oostra, Organon NV, Netherlands
- 15:25 – 15:35 **ENERGY-BASED MODEL OF HIGH-SHEAR WET GRANULATION**
R. Bandyopadhyay; A. Dhanarajan, Pfizer Global Research and Development, USA
- 15:35 – 15:45 **THE RELATIONSHIP BETWEEN SURFACE PROPERTIES AND BINDER PERFORMANCE IN GRANULATION**
S. J. R. Simons; D. Rossetti, University College London; R. Ward; S. Fitzpatrick, Merck Sharp & Dohme Ltd, UK
- 15:45 – 15:55 **END-POINT DETECTION IN HIGH-SHEAR GRANULATION USING SOUND AND VIBRATION SIGNAL ANALYSIS**
D. Daniher; L. Briens, The University of Western Ontario; A. Tallevi, GlaxoSmithKline Inc., Canada
- 15:55 – 16:05 TBA
- 16:05 – 16:15 **RATIONAL DESIGN OF GRANULES: THE EFFECT OF MICROSTRUCTURE ON DISSOLUTION RATE**
M. Ansari; F. Stepanek, Imperial College London, UK
- 16:15 – 16: 25 **IN-SITU PARTICLE CHARACTERIZATION OF HOT MELT GRANULATION**
S. Kanapuram, Amgen Inc., USA
- 16:25 – 17:25 Coffee Break and Poster Viewing for Session 2
- 17:25 – 18:25 General Q&A for Session 2
- 18:30 – 19:30 Cash Bar
- 19:30 – 21:00 Dinner (buffet)
- 21:00 – 22:30 Poster Session I and Social Hour

Tuesday, June 28, 2005

07:30 - 08:30 Breakfast

08:30 - 09:15

Plenary 3: Granulation II

Keynote Speaker: Professor Hans Leuenberger, University of Basel, Switzerland

Technical Session 3 – Granulation II

09:15 – 09:25

AGGLOMERATE STABILITY IN A FLUIDIZED BED OF GLASS BEADS

S. Weber; C. Briens; F. Berruti, University of Western Ontario, Canada

09:25 – 09:35

GRANULAR FLOW BEHAVIOUR OF DRY AND COHESIVE POWDERS IN VERTICAL HIGH SHEAR MIXERS

A. Tran; J. D. Lister, University of Queensland, Australia; J.P.K. Seville; A. Ingram; D.J. Parker; X. Fan, University of Birmingham, UK

09:35 – 09:45

THE RANDOM PACKING DENSITY OF ANISOTROPIC GRANULES

A.P. Philipse, Utrecht University, Netherlands

09:45 – 09:55

MICRO-GRANULATION AND IMPROVEMENT OF FLOWABILITY OF ADHESIVE FINE DRUG BY A NOVEL SUPERCRITICAL FREEZE GRANULATION

T. Akachi; S. Watano, Osaka Prefecture University, Japan

09:55 – 10:05

SCALE-UP OF WET GRANULATION AND KNEADING IN A HIGH SHEAR MIXER

Y. Sato; T. Okamoto; S. Watano, Osaka Prefecture University, Japan

10:05 – 10:15

COMPRESSION TEST OF WET POWDER FOR FORMULATION STUDY AND PROCESS CONTROL OF WET GRANULATION

Y. Ohnishi, Taiho Pharmaceutical Co., Ltd.; S.Watano, Osaka Prefecture University, Japan

10:15 – 10:25

CORRELATING DRUG-BINDER ADHESIVE STRENGTHS MEASURED USING INVERSE GAS CHROMATOGRAPHY WITH TABLET PERFORMANCE

F. Thielmann; D. Burnett, Surface Measurement Systems, UK

10:25 - 11:25

Coffee Break and Poster Viewing for Session 3

11:25 - 12:25

General Q&A for Session 3

12:30 - 14:00

Lunch

14:30 – 15:15

Plenary 4: Drying/Coating

Keynote Speaker: Professor Richard Turton, West Virginia University, USA

Tuesday, June 28, 2005 (continued)

Technical Session 4 – Drying/Coating

- 15:15 – 15:25 **PARTICLE MOTION IN A FLUIDISED BED DRYING AND COATING PROCESS AS REVEALED BY POSITRON EMISSION PARTICLE TRACKING**
F. Depypere; K. Dewettinck; J. Pieters, Ghent University, Belgium; X. Fan; A. Ingram; D. Parker; J. P.K. Seville, University of Birmingham, UK
- 15:25 – 15:35 **TOMOGRAPHIC IMAGING OF A FLUIDIZED BED OF DRY PHARMACEUTICAL GRANULE**
T. Pugsley, J. Wiens, University of Saskatchewan, Canada
- 15:35 – 15:45 **ATMOSPHERIC SPRAY-FREEZE DRYING OF THERMOSENSITIVE PHARMACEUTICALS USING COCURRENT FLOWS**
Z. Wang; W. Finlay, University of Alberta, Canada
- 15:45 – 15:55 TBA
- 15:55 – 16:05 TBA
- 16:05 – 16:15 **COLON-SPECIFIC DELIVERY OF PEPTIDE-BASED DRUGS MICROENCAPSULATED WITH ACRYLIC TERPOLYMERS THROUGH AIR-SUSPENSION COATING PROCESS**
H. Ichikawa; Y. Fukumori, Kobe Gakuin University; M. Arimoto, Alfresa Pharma Corp., Japan
- 16:15 – 16:25 **TAILORING THE PHYSICAL PROPERTIES OF MICRO-PARTICLES FOR PHARMACEUTICAL APPLICATIONS**
K.-E. Wirth, University of Erlangen-Nuremberg; M. Linsenbuehler, BASF AG, Germany
- 16:25 – 16:35 **NUMERICAL SIMULATION OF FILM COATING PROCESS IN A NOVEL ROTATING FLUIDIZED BED**
H. Nakamura; S. Watano, Osaka Prefecture University, Japan
- 16:35 – 16:45 **MONITORING OF A ROTARY DRYER USING ACOUSTIC EMISSIONS**
R. Smith; L. Briens; C. Briens, University of Western Ontario, Canada
- 16:45 - 17:45 Coffee Break and Poster Viewing for Session 4
- 17:45 – 18:45 General Q&A for Session 4
- 18:45 Free evening on own at local restaurants (list of recommended restaurants will be provided)

Wednesday, June 29, 2005

- 07:30 - 08:30 Breakfast
- 08:30 - 09:15 **Plenary 5: Fine Powder Flow**
Keynote Speaker: James Prescott, Jenike & Johansen, USA
- Technical Session 5 – Powder Flow, Mixing and Blending**
- 09:15 – 09:25 TBA
- 09:25 – 09:35 **MAPPING SOLIDS FLOW FIELDS IN A V-BLENDER USING RPT**
J. Doucet; J. Chaouki; F. Bertrand, École Polytechnique de Montréal, Canada
- 09:35 – 09:45 **MODELING PARTICLE SEGREGATION DURING HOPPER DISCHARGE**
J. Sinclair Curtis; B. Ketterhagen, University of Florida; C. Wassgren, Purdue University, USA
- 09:45 – 09:55 **AN EXPERIMENTAL INVESTIGATION OF EFFUSIVITY AS AN INDICATOR OF POWDER BLEND UNIFORMITY**
G. Leonard; F. Bertrand; J. Chaouki, École Polytechnique de Montréal; P. Gosselin, Research and Development Center, Ratiopharm Operations, Mirabel, Canada
- 09:55 – 10:05 **APPLICATION OF PARTICLE TRACKING VELOCIMETRY TO A FREE-SURFACE GRANULAR FLOW**
N. Jesuthasan; B. Baliga; S. Savage, McGill University, Canada
- 10:05 – 10:15 **SURFACE MODIFIED DRUG PARTICLES FOR THE ADVANCED DRY POWDER INHALATION**
J. Raula; E. Kauppinen, Helsinki University of Technology, Finland
- 10:15 – 10:25 **NUMERICAL MODELING OF POWDER FLOW IN COMPLEX BLENDERS**
F. Viens; M. Lemieux; J. Doucet; G. Leonard; L.-A. Leclaire; F. Bertrand; J. Chaouki, École Polytechnique de Montréal, Canada
- 10:25 – 10:35 **INSIGHT ON THE ROLES OF ELECTROSTATIC FORCES ON THE BEHAVIOR OF DRY PHARMACEUTICAL PARTICULATE SYSTEMS**
E. Desrosiers-Lachiver; N. Abatzoglou, Université de Sherbrooke; J.-S. Simard, Wyeth Pharmaceuticals Inc., Canada
- 10:35 – 10:45 **A PHENOMENOLOGICAL MODEL FOR PREDICTING SEGREGATION IN PARTICULATE MIXTURES**
N. Abatzoglou, Université de Sherbrooke; J.-S. Simard, Wyeth Pharmaceuticals Inc., Canada
- 10:45 - 11:45 Coffee Break and Poster Viewing for Session 5
- 11:45 - 12:45 General Q&A for Session 5

Wednesday, June 29, 2005 (continued)

- 12:45 - 14:15 Lunch
- 14:15 – 15:00 **Plenary 6: Tablet Compaction**
Keynote Speaker: Professor Gerard Thomas, École des Mines de St. Etienne, France
- Technical Session 6 – Tablet Compaction**
- 15:00 – 15:10 **INTELLIGENT SOFTWARE FOR ROLLER COMPACTED TABLET FORMULATIONS**
J.P.K. Seville; R. Mansa; R. Bridson; R. Greenwood, University of Birmingham; H. Barker, Pharmaceutical R&D, Pfizer, UK
- 15:10 – 15:20 **STRENGTH ANISOTROPY IN COLD COMPACTED DUCTILE AND BRITTLE POWDERS**
S. Galen, Merck & Co., Inc.; A. Zavaliangos, Drexel University, USA
- 15:20 – 15:30 **ROLL COMPACTION OF PHARMACEUTICAL EXCIPIENTS: PARTICLE TRACKING STUDIES USING PEPT**
B. Gururajan, University of Greenwich; J. P. K. Seville; L. Perera; R. Greenwood; M. Adams; D. Parker, The University of Birmingham; S. Fitzpatrick, Merck Sharp and Dohme Ltd., UK
- 15:30 – 15:40 **NUMERICAL AND EXPERIMENTAL INVESTIGATION OF CAPPING MECHANISMS DURING TABLET COMPACTION**
C.-Y. Wu; S. Best; J. Elliott, University of Cambridge; A. Mills; A. Bentham; B. Hancock, Pfizer Global Research and Development, UK
- 15:40 – 15:50 **MICROENCAPSULATION OF LIQUIDS WITH SUPERCRITICAL FLUIDS**
E. Weidner, Ruhr University, Germany; Z. Knez, University of Maribor, Slovenia
- 15:50 – 16:00 **SCALE UP CHALLENGES ON THE ROLL COMPACTION OF PHARMACEUTICAL POWDERS**
B. Gururajan; J. Mitchell; M. Snowden, University of Greenwich; P. Cote, M. Bouty, E. Razzano, C. Bentham, Pfizer Limited, UK
- 16:00 – 16:10 **FINITE ELEMENT SIMULATION OF TABLET COMPACTION AND SUBSEQUENT DIAMETRICAL COMPRESSION**
W. Wang; A. Zavaliangos, Drexel University; J. Cunningham, Merck Research Laboratories, USA; I. Csaba Sinka, Merck Sharp and Dohme Ltd., UK
- 16:10 – 16:20 **EVALUATION OF FORMULATION AND PROCESS EFFECTS IN ROLLER COMPACTION**
V. Swaminathan, Pfizer, USA
- 16:20 – 16:30 **A NOVEL SCALING METHOD FOR ROLLER COMPACTION PROCESS**
F. Li; B. Meyer, Merck & Co. Inc.; R. Flessner, University of Illinois, USA

Wednesday, June 29, 2005 (continued)

- 16:30 – 16:40 **COMPARATIVE INVESTIGATION OF DISINTEGRANT ACTIVITIES OF BREADFRUIT STARCH WITH OFFICIAL CORN STARCH**
S. Adebayo; E. Brown-Myrie, University of Technology, Jamaica; O. Itiola, University of Ibadan, Nigeria
- 16:40 - 17:10 Coffee Break and Poster Viewing for Session 6
- 17:10 - 18:10 General Q&A for Session 6
- 18:30 – 19:30 Cash bar
- 19:30 – 21:30 Conference Farewell Dinner
- 21:30 – 22:30 Poster Session II and Social Hour

Thursday, June 30, 2005

- 07:30 - 08:30 Breakfast
- 08:30 – 09:15 **Plenary 7: Measurement Techniques**
Keynote Speaker: Professor Jonathan Seville, University of Birmingham, UK
- Technical Session 7 – Measurement Techniques**
- 09:15 – 09:25 **ADDRESSING PAT INITIATIVES BY IMPLEMENTING ON-LINE PARTICLE SIZE ANALYSIS**
R. Ferraro; L. Rouzic, Malvern Process Systems, USA
- 09:25 – 09:35 **DEVELOPMENT OF A TRIBOELECTRIC PROCEDURE FOR THE MEASUREMENT OF MIXING AND DRYING RATE IN A VIBRATED FLUIDIZED BED**
G. Book; W. Brennan; M. Jacobson; C. Briens; L. Briens, The University of Western Ontario, Canada
- 09:35 – 09:45 **PRECISION POWDER METERING UTILIZING VIBRATION FREQUENCIES DETERMINED THROUGH POWDER FLOW CHARACTERIZATION METHODOLOGIES**
T. Crowder, Oriel Therapeutics, Inc., USA
- 09:45 – 09:55 **A NEW VISUALIZATION TECHNIQUE ENABLING QUANTITATIVE ANALYSIS OF PORE STRUCTURE IN TABLETS**
Y. Wu; H.W. Frijlink; I. Stokroos, University of Groningen; L.J. van Vliet, Delft University of Technology; K. van der Voort Maarschalk, NV Organon, Netherlands
- 09:55 – 10:05 **DETECTION OF THE ATTRITION OF PHARMACEUTICAL TABLETS IN PNEUMATIC TRANSPORT**
K. Albion; L. Briens; C. Briens; F. Berruti, The University of Western Ontario, Canada
- 10:05 – 10:15 **EVALUATING RAW MATERIAL CHARACTERISTICS TO IMPROVE FORMULATION DESIGN AND PROCESS OUTPUT USING TA.XT+ POWDER FLOW ANALYSER**
J.-S. Simard, Wyeth Pharmaceuticals Inc.; N. Abatzoglou; É. Desrosiers-Lachiver, Université de Sherbrooke, Canada
- 10:15 – 10:25 **MONITORING POWDER BLENDING HOMOGENEITY WITH FREQUENCY DOMAIN PHOTON MIGRATION**
T. Pan; E. Sevick-Muraca, Texas A&M University, USA
- 10:25 – 10:35 **IN-LINE MONITORING OF GRANULE SIZE AND GRANULE NUMBER DURING FLUID BED GRANULATION PROCESSES**
T. Redman, M. Hubert; B. Smith; E. Dycus, Mettler-Toledo Real Time Analytics; A. Birkmire; K. Walter, GEA Niro Inc., USA
- 10:35 – 10:45 **CONTINUOUS ON-LINE MEASUREMENT OF SOLID MOISTURE CONTENT DURING FLUIDIZED BED DRYING BY MEANS OF TRIBOELECTRIC PROBES**
F. Portoghese; F. Berruti; C. Briens, University of Western Ontario, Canada

Thursday, June 30, 2005 (continued)

10:45 – 11:45	Coffee Break and Poster Viewing for Session 7
11:45 – 12:30	General Q&A for Session 7
12:30 – 12:45	Wrap-up/Final remarks
12:45 - 13:55	Lunch and departure

POSTER SESSION I

- 1. FLOW REGIME DETERMINATION IN HORIZONTAL PNEUMATIC TRANSPORT OF FINE POWDERS USING NON-INTRUSIVE ACOUSTIC PROBES**
K. Albion; L. Briens; C. Briens; F. Berruti, The University of Western Ontario, Canada
- 2. END-POINT DETECTION IN PHARMACEUTICAL FLUIDIZED-BED DRYING USING ACOUSTIC SIGNAL ANALYSIS**
D. Daniher; L. Briens, The University of Western Ontario, Canada
- 3. NUMERICAL SIMULATIONS OF GRANULAR MATERIALS FLOW AROUND OBSTACLES**
A. Levy, Ben-Gurion University of The Negev, Israel; M. Sayed, Canadian Hydraulics Centre, National Research Council, Canada
- 4. CONTROLLED PARTICLE DEPOSITION BY DESIGN OF AN ELECTROCHEMICAL ADSORPTION CELL**
E. Bakhshi; F. Abniki, National Petrochemical Company (Pardis Group), Iran
- 5. A NOVEL DRY SEPARATION SYSTEM BASED ON DENSITY DIFFERENCE**
E. Johnson; B. S.-J. Kang, West Virginia University, USA
- 6. DETERMINING THE MOISTURE-INDUCED GLASS TRANSITION IN AN AMORPHOUS PHARMACEUTICAL POWDER**
F. Thielmann; D. Burnett, Surface Measurement Systems, UK
- 7. NOVEL PREDICTIVE TOOLS FOR FLUID BED GRANULATION**
D. Pipkorn; O. AbuBaker, Pfizer Inc., D. Friesen; L. Graham, Bend Research Inc., USA
- 8. EFFECTS OF GRADIENT OF CYTOKINE CONCENTRATION ON CHEMOTAXIS OF NEUTROPHILE WHITE BLOOD CELLS**
M. Tamagawa, Kyushu Institute of Technology; K. Mukai, Kurosaki Harima Co Ltd.; Y. Furukawa, Hokkaido University, Japan
- 9. SOLUBILITY IMPROVEMENT OF THE POOR SOLUBILITY DRUG BY THE NEW MECHANOCHEMICAL DISPERSING DEVICE**
H. Yuasa, Tokyo University of Pharmacy and Life Science; K. Imai; K. Kabasawa, Tokyo Printing Ink MFG. Co., Ltd.; M. Arikawa, Dalton Co., Ltd., Japan
- 10. MINIATURIZATION OF THE WET GRANULATION PROCESS TRAIN**
M. Granger; B. Down, Merck Frosst Canada & Co., Canada
- 11. CHARACTERIZATION OF DRUG RELEASE BEHAVIOR OF FLUID BED GRANULATIONS USING FOCUSED BEAM REFLECTANCE MEASUREMENT (FBRM)**
C. Medina; S. Kanapuram; D. Daurio; F. Alvarez, Amgen Inc, USA
- 12. PARTICLE DESIGN FOR DRY POWDER INHALATION BY PRESSURE SWING GRANULATION**
K. Takano, Dalton Corporation; M. Horio, Tokyo University of Agriculture and Technology, Japan
- 13. NUCLEATION PHENOMENA IN GAS-LIQUID JETS IMMERSSED IN FLUIDIZED BEDS**
P. House; C. Briens; F. Berruti, University of Western Ontario, Canada

14. DISCRETE ELEMENT MODEL OF A HORIZONTAL PAN COATER

C. Wassgreen; J. Perez; K. Morris, Purdue University, USA

15. CONTROL OF API POWDER PROPERTIES VIA AGITATED DRYING

D. Berglund; S. Ramakrishnan; S. Cusack; J. Hilden, Bristol-Myers Squibb Co., USA

POSTER SESSION II

1. VARIATION IN SURFACE PROPERTIES OF PARACETAMOL DUE TO MILLING AND CRYSTALLISATION

F. Thielmann; M. Naderi, Surface Measurement Systems; J. Heng, Imperial College London, UK

2. DETERMINING SMALL AMORPHOUS CONTENTS OF PHARMACEUTICAL POWDERS USING THE SORPTION PROPERTIES OF ORGANIC VAPORS BY DYNAMIC VAPOR SORPTION

F. Thielmann; D. Burnett, Surface Measurement Systems, UK

3. A COMPARISON BETWEEN DIFFERENT COMPRESSION PARAMETERS FOR PHARMACEUTICAL GRANULES

J. Hellström; G. Frenning; G. Alderborn, Uppsala University, Sweden

4. SUPERSATURATION MONITORING WITH ATR-FTIR: AUTOMATED POLYThERMAL METHOD FOR SOLUBILITY AND MSZW DETERMINATION

T. Redman; W. Walker; C. Didierjean; J. Worlitschek, Mettler Toledo, Inc., USA

5. A COMPARATIVE STUDY OF CONVENTIONAL PHARMACEUTICAL FLUID BED DRYER DISTRIBUTOR DESIGNS

M. Wormsbecker; T. Pugsley, University of Saskatchewan; H. Tanfara, Merck Frosst Canada & Co., Canada

6. ATOMIC LAYER DEPOSITION FOR PARTICLE COATING IN THE PHARMACEUTICAL INDUSTRY

J. Hryn; J. Elam, Argonne National Laboratory, USA

7. THE USE OF WIRELESS THERMAL EFFUSIVITY SENSORS TO GENERATE DRYING PROFILES IN A FLUID BED PROCESS

S. Closs; J. Boodram; R. Bhatangar; A. Freedman; C. Minchom, Patheon, Canada

8. NOVEL TECHNIQUE TO MEASURE THE DYNAMIC ANGLE OF REPOSE USING ELECTRICAL CAPACITANCE TOMOGRAPHY

A. Bodhmag; T. Pugsley, University of Saskatchewan, Canada

9. NOZZLE SELECTION FOR THE SUPERCRITICAL-DRYING OF LYSOZYME

A. Bouchard; G. Hofland; G.-J. Witkamp, Delft University of Technology; N. Jovanovic; D. J.A. Crommelin; W. Jiskoot, Utrecht Institute for Pharmaceutical Sciences, Netherlands

10. CHARACTERIZATION OF FILM COATINGS USING A LASER INDUCED BREAKDOWN SPECTROSCOPIC (LIBS) TECHNIQUE

S. Debnath; C. Madamba; W. Mullett; E. Kwong, Merck Frosst Canada & Co., Canada

11. STUDY OF FLOW STRUCTURE IN GAS CYCLONES BY PIV

Z. Liu; Y. Zheng; Q. Zhang, University of New Brunswick; L. Jia, CANMET Energy Technology Center, Canada

12. INHALED POWDER-DRUG DELIVERY VIA A FINE MESH: THE INFLUENCE OF POWDER FORMULATIONS

Z. Wang; B. Grgic; W. Finlay, University of Alberta, Canada

13. PHYSICAL PROPERTIES OF SOME JAMAICAN YAM (DIOSCOREA SP.) STARCHES AND THEIR IMPLICATION IN TABLET FORMULATION

C. Riley; A. Wheatley; H. Asemota, University of the West Indies Mona; A. Adebayo, University of Technology, Jamaica

14. EFFECTS OF OPERATING CONDITIONS ON AGGLOMERATION OF PARACETAMOL CRYSTALS IN ANTI-SOLVENT CRYSTALLIZATION

R. Tan; P. S. Chow, National University of Singapore, Singapore

15. COMPARATIVE EVALUATION OF METHODS OF GRANULATION FOR LOW AND HIGH DRUG CONTAINING DOSAGE

F. Hasan, Hamdard University, India

16. CREATION OF A HIGHLY ACTIVATED AMORPHOUS SURFACE LAYER ON DRUG PARTICLES BY DRY MIXING

M. Heidarian; C. Nystrom, Uppsala University, Sweden