

# Monday, September 28

08:00-08:30 **Chemeca2009 Opening**

08:30-09:30 **Plenary Session 1**

**Accelerated Evolution - Chemical Engineers and the Survival of the Fittest**

*Ian Shott, Excelsyn, United Kingdom*

*Chair: Thys Heyns, BP Refinery Kwinana, Australia*

09:30-10:00 **Morning Tea**

10:00-12:00 **Concurrent Sessions**

*Grand Ballroom 1*

**Particle Technology Session 1:**

*Chair: Iztok Livk, CSIRO Minerals, Australia  
Co-Chair: Nicoleta Maynard, Curtin University of Technology, Australia*

10:00

**Keynote Address: Impurity Inclusion in Crystal During Crystallization - Theory and Experiment** [117]

*Keisuke Fukui, University of Hyogo, Japan*

10:40

**Metastable Zone Width for Racemic Ibuprofen in Ethanol and Aqueous Ethanol Mixtures** [118]

*Abdur Rashid, The University of Queensland, Australia*

11:00

**Polymorphic Control of Calcium Carbonate in the Reactive Crystallization Between Na<sub>2</sub>CO<sub>3</sub> and Ca(OH)<sub>2</sub>** [119]

*Mitsutaka Kitamura, University of Hyogo, Japan*

11:20

**Mineral Characterization Using Micro X-ray Diffraction (micro XRD), a State-of-the-Art Non-Destructive Technique** [120]

*Muthukumaraswamy Pannirselvam, Royal Melbourne Institute of Technology, Australia*

11:40

**Experimental Kinetics Studies of Seeded Batch Crystallisation of Mono-Ammonium Phosphate** [121]

*Johan Utomo, Curtin University of Technology, Australia*

*Grand Ballroom 2*

**Environmental Session 1:**

*Chair: Shaobin Wang, Curtin University of Technology, Australia*

10:00

**Keynote Address: Environmental Challenges in the Energy (and Mining) Sector A Chemical Engineering Perspective** [107]

*Philippe A Tanguy, Total S.A, France*

10:40

**Oxidation of Organic Contaminants by Combined Adsorption and Oxidation on Cobalt Supported Activated Carbon** [108]

*Pradeep R Shukla, Curtin University of Technology, Australia*

11:00

**Tungsten Trioxide as a Visible Light Photocatalyst for Volatile Organic Compound Removal** [109]

*Yossy Wicaksana, The University of New South Wales, Australia*

11:20

**Use of Box-Behnken Design for Producing Mesoporous Carbon Coated Monolith** [110]

*Yaw Shean Choong, University Putra Malaysia, Malaysia*

11:40

**Carbon footprint accounting for water utilities: the process, complexities and challenges** [111]

*Debashis Raha, Engineers Australia, Australia*

*Swan Room*

**Fuels and Energy Session 1:**

*Chair: Chun-Zhu Li, Curtin University of Technology, Australia*

10:00

**Keynote Address: Delivering Energy For the Future**

*Russell Scott, Uhde Shedden, Australia*

10:40

**Steam Reforming of Biomass Tar over Charcoal in a Coke-Deposition/Steam-Gasification Sequence** [113]

*Jun-ichiro Hayashi, Kyushu University, Japan*

11:00

**Inter-influence of Heterogeneous and Homogeneous Radical Reactions During the Catalytic Oxidation of Ethane** [114]

*Syed Shatir Asghar Syed-Hassan, Curtin University of Technology, Australia*

11:20

**Use of High Temperature Rheometry to Study the Foaming Behaviour of Coal During Pyrolysis/Carbonisation in Order to Understand the Mechanisms Responsible for Coking Pressures** [115]

*Karen M Steel, The University of Queensland, Australia*

11:40

**Thermal Decomposition of Red Gum Under Pyrolysis Conditions** [116]

*Cara J Mulligan, Macquarie University & The Crucible Group, Australia*

*Botanical One*

**Modelling Session 1:**

*Chair: Vishnu K Pareek, Curtin University of Technology, Australia*

10:00

*Co-Chair: Samantha C Burnham, CSIRO, Australia*

10:00

**Keynote Address: Meso-Scale Structure - the Common Challenge for Process Engineers**

*Wei Ge, Chinese Academy of Sciences, China*

10:40

**Viscosity Models for New Zealand Black Liquor at Low Solid Concentrations** [123]

*Sunday B Alabi, University of Canterbury, New Zealand*

11:00

**Computational Modeling of high solid flux riser flows** [124]

*Ranjeet P Utikar, Curtin University of Technology, Australia*

11:20

**Particle transport of non-Newtonian suspensions in self-formed open channel** [125]

*Sati Bhattacharya, Royal Melbourne Institute of Technology, Australia*

11:40

**Hydrodynamics Investigation of Bubble Column Reactors: Effect of Column Configuration** [126]

*Abid Akhtar, BHP Billiton Worsley Alumina, Australia*

*The Studio*

**Bioprocessing Session 1:**

*Chair: Thomas Rufford, The University of Queensland, Australia*

10:00

**Keynote Address: Self-Assembled Polymer Nanostructures for Delivery of Therapeutics** [102]

*Yi-Yan Yang, Institute of Bioengineering and Nanotechnology, Singapore*

10:40

**Role of the Interface in Polymeric Devices for Structural Health Monitoring** [103]

*Wei Ming Yek, Royal Melbourne Institute of Technology, Australia*

11:00

**Efficient Energy Transfer and Controlled Drug Release in Highly Stable Novel Nanoliposomes** [104]

*Zhifei Dai, Harbin Institute of Technology, China*

11:40

**Using DNA as a Drug: Challenges and Opportunities for Process Engineers** [106]

*Gareth M Forde, Monash University, Australia*

*Grand Ballroom 1*

*Grand Ballroom 1*

*Studio One*

**Oil and Gas Session 1**

*Chair: Mark Trebble, Curtin University, Australia*

10:00

**Cold Flow Technology and Gas Hydrates Dissociation** [127]

*Mohammad Mahdi Shabani, Norwegian University of Science and Technology, Norway*

10:20

**Surface Behaviour of Gas Hydrate Kinetic Inhibitors at the Air-Liquid Interface** [128]

*Yenny V Rojas, Curtin University of Technology, Australia*

10:40

**Concentration Effect on the Inhibition Efficiency of Low Dose Hydrate Inhibitors** [129]

*Ailin Ding, Curtin University of Technology, Australia*

11:00

**Liquid Slugging Control for Oil and Gas Pipeline Riser Systems** [130]

*Brent R Young, The University of Auckland, New Zealand*

11:20

**Pipeline Protection** [131]

*Abdollah Esmaeili, National Iranian Oil Company, Iran*

*Studio Two*

**Poster Session 1**

*Chair: Qin Li, Curtin University of Technology, Australia*

*Refer to page 13 for summary of posters on display*

## Monday, September 28

12:00-13:15 **Lunch**

13:15-14:55 **Concurrent Sessions**

*Grand Ballroom 1*

### **Particle Technology Session 2**

*Chair: Jonas Addai-Mensah, Ian Wark Research Institute, Australia*

13:15

### **A Mineralogical, Structural and Surface Chemical Investigation of Muscovite in Aqueous Media** [145]

*Terry Dermis, University of South Australia, Australia*

13:35

### **Investigation of the Structural and Interfacial Chemistry Of Pigmentary Titanium Dioxide Particles** [146]

*Wendy J Harrington, Ian Wark Research Institute, Australia*

13:55

### **Interfacial Chemistry Mediated Behaviour of Aqueous Chlorite Dispersions** [147]

*Hui Tan, Ian Wark Research Institute, Australia*

14:15

### **Influence of Hydrophobic Tail on the Adsorption Behaviour of Non-Ionic Surfactants at Air/Water Interface** [148]

*Thu N Le, Curtin University of Technology, Australia*

14:35

### **Application and Performance of Phase Change Material into Cold Storage Applications** [149]

*Mohammed M Farid, The University of Auckland, New Zealand*

*Grand Ballroom 2*

### **Environmental Session 2**

*Chair: Tushar Kanti Sen, Curtin University of Technology, Australia*

*Co-Chair: Leon Lorenzen, BHP Billiton Nickel West, Australia*

13:15

### **Adsorption of Anionic Dye Solution using Chemically Modified Barley Straw** [136]

*Shuy Zhi Wan, Curtin University of Technology, Australia*

13:35

### **Adsorption of O-Xylene from Gas Stream by Modified Granular Activated Carbon** [137]

*Xuesong Guo, Chinese Academy of Sciences, China*

13:55

### **Thermogravimetric Analysis of the Co-Pyrolysis of the Blends with Malaysian Bituminous Coal (Silantek Coal) and Waste Tyres** [138]

*Sharmeela Matali, Universiti Teknologi, Malaysia*

14:15

### **The Impact of Environmental Parameters On Toluene Degradation Using a Laboratory-Scale Reactor With Internal Recycle** [139]

*Peter A Gostomski, University of Canterbury, New Zealand*

14:35

### **Effect of Sparger Type And Aspect Ratio on Gas Hold-Up in Bubble Columns Via Electrical Resistance Tomography** [140]

*Cyrus G Cooper, Australia*

*Swan Room*

### **Fuels and Energy Session 2**

*Chair: Hongwei Wu, Curtin University of Technology, Australia*

13:15

### **Combustion Synthesis of Ceramic Nanoparticles For Solid Oxide Fuel Cells** [141]

*Huanting Wang, Monash University, Australia*

13:35

### **Chemistry of Formation of a Solid Oxide Fuel Cell Electrolyte (Yttria Stabilized Zirconia)** [142]

*James A Tardio, Royal Melbourne Institute of Technology, Australia*

13:55

### **Mechanical Activation of Combustion-Synthesized LaFeO<sub>3</sub> as Catalyst for Diesel Soot Oxidation** [143]

*Keita Taniguchi, Hokkaido University, Japan*

14:15

### **Temperature Dependence of Aluminum Nitride Hydrolysis in Alkaline Solution** [144]

*Atsushi Nosaka, Hokkaido University, Japan*

*Botanical One*

### **Modelling Session 2**

*Chair: Vishnu K Pareek, Curtin University of Technology, Australia*

*Co-Chair: Tonghua Zhang, Curtin University of Technology, Australia*

13:15

### **Optimization of a Volatile Organic Component Recovery Process for Multiple Economic and Environmental Objectives** [150]

*Gade P Rangaiah, National University of Singapore, Singapore*

13:35

### **H<sub>2</sub>/CO<sub>2</sub> Permeation through a Silicalite-1 Composite Membrane** [151]

*Sang Kompiang Wirawan, Gadjah Mada University, Indonesia*

13:55

### **Thermodynamic Modelling of High Temperature Systems** [152]

*Winnie Wulandari, Swinburne University of Technology, Australia*

14:15

### **A PDE Agglomeration Model for Bayer Precipitation** [153]

*Andrey V Bekker, CSIRO Minerals, Australia*

14:35

### **A Dynamic CSTR Model for SOFC** [154]

*Shahin Hosseini, Curtin University of Technology, Australia*

*The Studio*

### **Bioprocessing Session 2**

*Chair: Thomas E Rufford, The University of Queensland, Australia*

13:15

### **Flocculation of Yeast Suspensions By a Cationic Polymer** [132]

*S Ranil Wickramasinghe, Colorado State University, United States*

13:35

### **Mass Transfer of Photosynthetic Gases within a Multi-phase Microalgae Production System** [133]

*Annelie K Moberg, University of Newcastle, Australia*

13:55

### **Microbial Production of Xanthan Gum in a Stirred-tank Bioreactor** [134]

*Murthy VPS Veluri, Universiti Teknologi MARA, Malaysia*

14:15

### **Scale-Up of a Novel Protein Extraction Process** [135]

*Rachael L MacManus, AgReserach Limited, New Zealand*

*Studio One*

### **Oil and Gas Session 2**

*Chair: Allan Giumelli, BP Refinery (Kwinana), Australia*

13:15

### **Process Design Aspects of a Large Scale Onshore Gas Terminal** [155]

*John D Kenez, Aker Solutions Australia, Australia*

13:35

### **Enhancement of Pt on Reducibility and Catalytic Performance For Butane Hydrogenolysis of Co Supported on Nay Prepared with Rice Husk Silica** [156]

*Pongtanawat Khemthong, Suranaree University of Technology, Thailand*

13:55

### **Optimization of Epoxidation Reaction of Rice Bran Oil Using Response Surface Methodology** [157]

*Edy Purwanto, University of Adelaide, Australia*

14:15

### **Effect of Mo Loading on the Performance of Methane Aromatization Reactions** [158]

*Chandra M Sinnathambi, Universiti Teknologi, Malaysia*

14:35

### **Tracking Innovation Trends in Natural Gas Processing** [159]

*Mary L Turonek, Griffith Hack, Australia*

*Studio Two*

### **Poster Session 2**

*Chair: Hengte Ke, Harbin Institute of Technology, China*

*Refer to page 14 for summary of posters on display*

## Monday, September 28

14:55-15:20 **Afternoon Tea**

15:20-17:00 **Concurrent Sessions**

*Grand Ballroom 1*

### **Particle Technology Session 3**

*Chair: George V Franks, University of Melbourne, Australia*

15:20

#### **Interaction of Fine and Ultrafine Particles with Gas Bubbles** [174]

*Sin Ying Tan, University of South Australia, Australia*

15:40

#### **Can Nanobubbles Repel Hydrophobic Surfaces?** [175]

*Orhan Ozdemir, University of Queensland, Australia*

16:00

#### **Investigating the Flotation Recovery of Silica by Using Hydrogen Gas** [176]

*Shahjahan K A Sarkar, The University of Newcastle, Australia*

16:20

#### **Effects of Turbulence and Mineral Density on Flotation** [177]

*Yunyu Shi, University of South Australia, Australia*

16:40

#### **Effect of Water Chemistry on Froth Stability and Coal Flotation** [178]

*Orhan Ozdemir, University of Queensland, Australia*

*Grand Ballroom 2*

### **Environmental Session 3**

*Chair: Jon Langford, Altrum, Australia*

15:20

#### **Optimising Zinc Oxide Nanostructured Thin Films as a Photocatalyst for Industrial Wastewaters** [164]

*Darrell A Patterson, The University of Auckland, New Zealand*

15:40

#### **Evaluation of Ni-Co/Al<sub>2</sub>O<sub>3</sub> Supported Catalysts For Glycerol Steam Reforming: Solid-State Kinetic Analysis** [165]

*Chin K Cheng, The University of New South Wales, Australia*

16:00

#### **DC Magnetron Sputtered TiO<sub>2</sub>: Further Understanding the Effect of Micro Structure on its Application as a Photocatalyst** [166]

*Emma AC Emanuelsson, University of Auckland, New Zealand*

16:20

#### **Cost Evaluation of Different Advanced Oxidation Processes of Wastewater: A Comparison of Uv/TiO<sub>2</sub>, uv, O<sub>3</sub>, and uv/O<sub>3</sub>** [167]

*Tuty E Agustina, Sriwijaya University, Indonesia*

16:40

#### **Catalytic Oxidation of NO Over Activated Semi-Cokes by Different Preparation Methods** [168]

*Jian Gao, Chunhu Li, Lijuan Feng, Yingfei Hou, Yingmin Yu, Ocean University of China, China*

*Swan Room*

### **Fuels and Energy Session 3**

*Chair: Vladimir Strezov, Macquarie University, Australia*

15:20

#### **Application of Low Cost Ionic Liquids for the Separation of Glycerine from Palm Oil-Based Biodiesel** [169]

*Mohd Ali Hashim, University of Malaya, Malaysia*

15:40

#### **Improving the Economics of Biodiesel Production through Esterification of Free Fatty Acid with Waste Glycerol** [170]

*Mohammed M Farid, The University of Auckland, New Zealand*

16:00

#### **Life Cycle Energy Balance of Biodiesel Production from Canola in Western Australia** [171]

*Hongwei Wu, Curtin University of Technology, Australia*

16:20

#### **Esterification of Free Fatty acid in Crude Palm Oil by Continuous Microwave with Ethanol** [172]

*Kittiphoom Suppalakpanya, Chemical Engineering Dept., Thailand*

16:40

#### **Synthesis of Mo<sub>2</sub>C/Al<sub>2</sub>O<sub>3</sub> Via Propane Carburization For Fischer-Tropsch Reaction** [173]

*Cyrus G Cooper, Australia*

*Botanical One*

### **Modelling Session 3**

*Chair: Jie Bao, UNSW, Australia*  
*Co-Chair: Valery A Danilov, Curtin University of Technology, Australia*

15:20

#### **Online Analysis of Bubbling Phenomena** [179]

*Geoffrey A Brooks, Swinburne University of Technology, Australia*

15:40

#### **Prediction of Octane Number for Gasoline Blends using Artificial Neural Networks and Genetic Algorithms** [180]

*Mohammad Taghi Sadeghi, Iran University of Science and Technology (IUST), Iran*

16:00

#### **Application of Integrated Framework of Simulation and Heuristics for Plant-Wide Control of the Styrene Monomer Plant** [181]

*Rangaiah Gade Pandu, National University of Singapore, Singapore*

16:20

#### **Study of Gas-Fines in Decreasing Gas Velocity in a Packed Bed** [182]

*Govind S Gupta, Indian Institute of Science, India*

16:40

#### **Real Time Optimization and Control of Chemical Processes** [183]

*Nadeem R Chaudhary, Curtin University of Technology, Australia*

*The Studio*

### **Bioprocessing Session 3**

*Chair: Yi-Yan Yang, Institute of Bioengineering and Nanotechnology, Singapore*

15:20

#### **Biodegradation of Photo-Degraded Polyethylene Nanocomposites** [160]

*Torika O Kumanayaka, Royal Melbourne Institute of Technology, Australia*

15:40

#### **Understanding the Relationship Between Water Activity and Plasticized Biopolymer Type** [161]

*Huihua Liu, Curtin University of Technology, Australia*

16:00

#### **The Effect of Starch-Plasticizer(S) Interactions on the Moisture Migration Behaviour of Plasticized Low Amylose-Starch Films** [162]

*Benu P Adhikari, University of Ballarat, Australia*

16:20

#### **SEM Evaluation Of The Structure Of Dried Oat Starch Granules** [163]

*Rebecca J Macdonald, AgResearch Limited, New Zealand and University of Canterbury, New Zealand*

*Studio One*

### **Oil and Gas Session 3**

*Chair: Mark Trebble, Curtin University of Technology, Australia*

15:20

#### **The Effect of Clay in the Formulation of Non-Traditional Completion Fluid for Underbalance Perforation** [184]

*Munawar Khalil, University of Malaya, Malaysia*

15:40

#### **Application of Chemical Engineering Methods to Integrated Production Modelling** [185]

*Neil J Hawkes, FEESA, United Kingdom*

16:00

#### **Risk Matrix Fit for Purpose** [186]

*Raghava Nayak, Kellogg Brown & Root, Australia*

*Studio Two*

### **Poster Session 3**

*Chair: Hongwei Wu, Curtin University of Technology, Australia*

15:20

*Refer to page 15 for summary of posters on display*

Grand Ballroom 1

**Particle Technology Session 4:**

Chair: Kevin P Galvin, University of Newcastle, Australia  
10:00

**Keynote Address:**

**Embracing Reality: Dynamic Simulation of Metallurgical Processes**

Andrew Shook, Uranium CSG, BHP Billiton, United States  
10:40

**Effect of Self-Aggregation on Collectorless Fine Molybdenite Flotation** [217]

Lin Zhou, University of South Australia, Australia  
11:00

**A Study of Detachment of Coarse Particles from Bubbles Using Novel Electro-Acoustical Technique** [218]

Danfeng Xu, Ian Wark Research Institute, Australia  
11:20

**Processing Fine to Ultra-fine Particles in Narrow Inclined Channels of a Reflux Classifier** [219]

Kelly Walton, University of Newcastle, Australia  
11:40

**Hydrodynamic Study of Catalyst Lift Engager** [220]

Milinkumar T Shah, Curtin University of Technology, Australia

Grand Ballroom 2

**Environmental Session 4:**

Chair: Ming H Ang, Curtin University of Technology, Australia  
10:00

**Keynote Address:**

**Applications of the Unusual Properties of Water**

Richard Pashley, Murdoch University, Australia  
10:40

**A Critical Review of the Biochar Sequestration Process** [208]

Kerrie J Burns, University of Western Australia and The Crucible Group, Australia  
11:00

**Soil Washing and Bioremediation of Slime Dam Material** [209]

Leon Lorenzen, BHP Billiton, Australia  
11:20

**Establishment of Enhanced Biological Phosphorus Removal Process by Using Seed Sludge from A Conventional Activated Sludge Process** [210]

Hui Ying Ong, University of Malaya, Malaysia  
11:40

**An Aerobic Composting Process of Waste from a Palm Oil Mill** [211]

Florence Wong, Curtin University of Technology, Malaysia

Swan Room

**Fuels and Energy Session 4**

Chair: Geoffrey M Evans, Australia  
10:00

**A New Age in Bioenergy and Resource Recovery**

Prof Mike Dureau, The University of Sydney, Australia  
10:20

**Doping Copper-Zinc Oxide Catalyst with Lanthanum for the Low Temperature Water-Gas Shift Reaction** [212]

Rothman YF Kam, Monash University, Australia  
10:40

**Waste Materials as Precursors For Supercapacitor Electrodes** [213]

Thomas E Rufford, The University of Queensland, Australia  
11:00

**A Practical Application to Utilise Low Grade Waste Heat from Bayer Alumina Calciners** [214]

Peter S Hay, Alcoa World Alumina, Australia  
11:20

**Heat Transportation Container Using Phase Change Material to Recover Unused Thermal Energy** [215]

Takahiro Nomura, Hokkaido University, Japan

Botanical One

**Modelling Session 4:**

Chair: Ranjeet P Utikar, Curtin University of Technology, Australia  
10:00

Co-Chair: Iztok Livk, CSIRO Minerals, Australia  
10:00

**Keynote Address:**

**Learning to Deal with Complexity in Reaction Mechanisms**

Ravindra Datta, Worcester Polytechnic Institute, United States  
10:40

**PCA-based Method of Identification of Dominant Variables for Partial Control** [222]

Moses O Tade, Curtin University of Technology, Australia  
11:00

**The Effect of Parameter Uncertainty in Determining Reaction Networks** [223]

Mark J Willis, Newcastle University, United Kingdom  
11:20

**Effects of the Concentration Dependence of Diffusivity on Sorption Kinetics of Riboflavin Removal from Decalcified Whey Solutions in Batch Chromatography Columns** [224]

Linh T T Vu, University of Western Sydney, Australia  
11:40

**RAM Simulation for Process Plants** [225]

Raghava Nayak, Kellogg Brown & Root, Australia

The Studio

**Bioprocessing Session 4:**

Chair: Warren J Batchelor, Monash University, Australia  
10:00

Co-Chair: Xia Lou, Curtin University of Technology, Australia  
10:00

**Keynote Address:**

**The Role of Monte Carlo Molecular Simulation and Monte Carlo Integration in Adsorption Science and Characterization of Porous Media**

Duong Do, University of Queensland, Australia  
10:40

**Binary Colloidal Crystals and Hierarchical Macroporous Materials** [203]

Qin Li, Curtin University of Technology, Australia  
11:00

**Fabrication and Characterization of Hierarchically Ordered Porous Oxide and Metal Membranes** [204]

Xinyi Zhang, Monash University, Australia  
11:20

**Synthesis of Hierarchical Porous Zeolite Y Particles with Controllable Particle Size** [205]

Yi Huang, Monash University, Australia  
11:40

**Cellulose nanofibre nonwovens** [206]

Warren J Batchelor, Monash University, Australia  
Sally L Gras, University of Melbourne and The Bio21 Institute, Australia

Studio One

**Industrial Session 1:**

Chair: Peter Hay, Alcoa, Australia  
10:00

**Keynote Address:**

**Driving Sustainable Business Performance Through Business Improvement** [226]

Jenny Purdie, Rio Tinto Alcan, Australia  
10:40

**Knowledge Representation, Extraction and Generation for Supporting a Semi-Automatic Blended Hazard Identification Method** [227]

Erzsébet Németh, The University of Queensland, Australia  
11:00

**A Novel Hazard Identification Approach to Support Intelligent Diagnosis of Process Systems** [228]

Benjamin J Seligmann, University of Queensland, Australia  
11:20

**Safety in Design – the Aker Solutions Way** [229]

Damien J Twining, Aker Solutions Australia, Australia  
11:40

**Carbon Pollution Measurement and Control** [230]

Andrew Gunst, Carbon Intelligence, Australia

Studio Two

**Poster Session 4**

Chair: Deeptangshu Chaudhary, Curtin University of Technology, Australia

Refer to page 21 for summary of posters on display



## Tuesday, September 29

12:00-13:15 **Lunch**

13:15-14:55 **Concurrent Sessions**

*Grand Ballroom 1*

### **Particle Technology Session 5**

*Chair: Clive E Davies, Massey University, New Zealand  
Co-Chair: Ted White, The University of Queensland, Australia*

13:15

**Leaching and Rheological Behaviour of Chlorite with Fluoride in Sulphuric Acid** [245]

*Hui Tan, Ian Wark Research Institute, Australia*

13:35

**Modelling the Leaching of Copper From Two South Australian Ores** [246]

*Keith B Quast, University of South Australia, Australia*

13:55

**Adsorption of Polythionates and Thiosulfate on Strong Base Anion Exchange Resins** [247]

*Abrar Muslim, Curtin University of Technology, Australia*

14:15

**Thermal Degradation of Vitamin C during the Oven Drying Process** [248]

*Tim A Langrish, The University of Sydney, Australia*

*Grand Ballroom 2*

### **Environmental Session 5**

*Chair: Qin Li, Curtin University of Technology, Australia*

13:15

**Adsorption Characteristics of Cu (II) And Ni (II) on Iron Oxide and Kaolin: A Kinetic and Equilibrium Study** [236]

*Tushar Kanti Sen, Curtin University of Technology, Australia*

13:35

**Mercury Speciation Under Laboratory Scale Direct Iron Smelting Conditions** [237]

*Pushan Shah, Macquarie University, Australia*

13:55

**Mercury Leaching in Different Thiosulfate and Cyanide Solutions and its Effects on Gold Recovery** [238]

*Elsayed A Oraby, Curtin University of Technology, Australia*

14:15

**Environmental Assessment of Different Advanced Oxidation Processes Applied to Winery Wastewater Effluent** [239]

*Tuty E Agustina, Sriwijaya University, Indonesia*

14:35

**Freezing and Thawing Concentrate an Aqueous Solution** [240]

*Kyuya Nakagawa, University of Hyogo, Japan*

*Swan Room*

### **Fuels and Energy Session 5**

*Chair: Hari Babu Vuthaluru, Curtin University of Technology, Australia*

13:15

**Combined Effects of Temperature and Air Ratio on Vapor-Phase Cracking of Nascent Tar from the Rapid Pyrolysis of Cedar Sawdust** [241]

*Sou Hosokai, Hokkaido University, Japan*

13:35

**Investigation of Chlorine Transformation During the Pyrolysis of NaCl-Loaded Victorian Brown Coal Using XANES** [242]

*Shu Zhang, Monash University, Australia*

13:55

**Catalysts for Water Gas Shift Processing of Coal-Derived Syngases** [243]

*Leigh D Morpeth, CSIRO Energy Technology, Australia*

14:15

**FT-IR Investigation of the Functional Group Effects on Amine Activity towards Carbon Dioxide** [244]

*Kelly M Robinson, CSIRO Division of Energy Technology, Australia*

*Botanical One*

### **Modelling Session 5**

*Chair: Vincent G Gomes, The University of Sydney, Australia*

13:15

**Investigation of Impeller Type And Baffle Effects on Isolated Mixing Regions in a Laminar Stirred Tank** [249]

*Wei Ming Yek, Royal Melbourne Institute of Technology, Australia*

13:35

**CFD modeling of Brown Coal Liquefaction Reactor** [250]

*Novia Novia, University of Sriwijaya, Indonesia*

13:55

**Concentration Dependent Viscosity in Milk Evaporation Process** [251]

*Xiao Dong Chen, Monash University, Australia*

14:15

**Investigations on sonocrystallization** [413]

*Hussein Oubani, University of Sydney, Australia*

*The Studio*

### **Bioprocessing Session 5**

*Chair: Brent R Young, The University of Auckland, New Zealand*

13:15

**Effect of Sodium Chloride on the Formation and Stability of n-Dodecane/water Nanoemulsions by the PIT Method** [231]

*Jeffery C Liew, University of Adelaide, Australia*

13:35

**Effect of Salt Concentration on N-Dodecane-In-Brine Nano-Emulsions Produced By Phase Inversion Temperature Method** [232]

*Firoozeh Pourjavaheri-Jad, Royal Melbourne Institute of Technology, Australia*

13:55

**Mutual Solubility Study in Supercritical Extraction of Monoolein Using Carbon Dioxide Solvent: Regular Solution Equations** [233]

*R Davarnejad, Universiti Sains Malaysia, Malaysia*

14:15

**Investigation of the Effect of Processing Conditions on the Rheology of Sheeted Oat/Gluten Dough** [234]

*Rebecca J Macdonald, University of Canterbury, New Zealand*

14:35

**Synthesis and Characterization of Amino-Functionalized MWNT /Poly (methyl methacrylate) Nanocomposite** [235]

*Hyoung Jin Choi, Inha University, Korea*

*Studio One*

### **Industrial Session 2**

*Chair: Claire E. Butler, Woodside Energy, Energy Australia*

13:15

**Replacement Hydrogen Sulphide Plant Project for Kwinana Nickel Refinery** [252]

*Michael P Warren, Lycopodium Minerals, Australia*

13:35

**Supply Chain Integration - A Different Perspective to Managing Projects** [253]

*Zvonko Pregelj, Pregelj Process Engineers (Aust.), Australia*

13:55

**Soda Control - A New Approach Towards Increasing Alumina Precipitation Yield** [254]

*John Besida, Alcoa World Alumina, Australia*

14:15

**Multinational Expansion to China: Challenges and Opportunities** [255]

*Jonathan A Brinson, Dow Corning Corporation, United States*

14:35

**Evaluation of a Statistical Process Control System in a Causticisation Facility** [256]

*David Caffin, BHP Worsley Alumina, Australia  
Andrew R Brown, Motherwell Automation, Australia*

*Studio Two*

### **Poster Session 5**

*Chair: Nicoleta Maynard, Curtin University of Technology, Australia*

*Refer to page 22 for summary of posters on display*

## Tuesday, September 29

14:55-15:20 **Afternoon Tea**

15:20-17:00 **Concurrent Sessions**

*Grand Ballroom 1*

### **Particle Technology Session 6**

*Chair: Yee-Kwong Leong, The University of Western Australia, Australia*

15:20

**Development of Nano-Colloidal Diatomaceous Earth Particles into Advanced Material for Water Treatment Applications** [272]

*Yang Yu, Unisa, China*

15:40

**Unusual Yield Stress Behavior of Kaolin Clay Slurries** [273]

*Yee-Kwong Leong, The University of Western Australia, Australia*

16:00

**The Role of Pulp Chemistry and Particle Interaction Forces in Aqueous Muscovite Dispersions** [274]

*Ataollah Nosrati, Ian Wark Research Institute, Australia*

16:20

**Relationship Between Aggregate and Sediment Bed Properties** [275]

*George V Franks, University of Melbourne, Australia*

16:40

**The Influence of Interfacial Chemistry, PEO Adsorption Behaviour And Orthokinetic Flocculation Conditions in Enhanced Dewatering of Talc Suspensions** [276]

*Kai Ying Yeap, University of South Australia, Australia*

*Grand Ballroom 2*

### **Environmental Session 6**

*Chair: Shaomin Liu, Curtin University of Technology, Australia*

*Co-Chair: Darrell A Patterson, University of Auckland, New Zealand*

15:20

**Effect of Inorganic Electrolytes on the Zeta Potential of RO Membranes** [262]

*Tung A Hoang, University of Melbourne, Australia*

15:40

**Temporary Protective Coating for Stainless Steel Slab Reheating Against High-Temperature Oxidation** [263]

*Peng Liu, Chinese Academy of Sciences, China*

16:00

**Membrane Separation for Produced Water** [264]

*Ee-Huey Khor, Curtin University of Technology, Malaysia*

16:20

**Pore-Filling PDMS/PMHS Membranes for Recovery of Ethylacetate from Aqueous Solution by Pervaporation** [265]

*Shunsuke Tanaka, Kansai University, Japan*

16:40

**Preparation of Ceramic Membranes Using Industrial Waste as the Main Raw Materials: Effect of Particle Size and Sintering Temperature on the Porosity** [266]

*Norliza Binti Ibrahim, Universiti Teknologi MARA, Malaysia*

*Swan Room*

### **Particle Technology Session 6**

*Chair: David AV Morton, Monash University, Australia*  
*Co-Chair: Peter S Hay, Alcoa World Alumina, Australia*

15:20

**Measurement of the Fines Concentration in a Milk Powder Spray Dryer Using Optical Scintillation** [277]

*John R Gabites, BHP Billiton, Australia*

15:40

**Influence of Moisture on Surface Energy Determination by Inverse Gas Chromatography** [278]

*Shyamal C Das, Monash University, Australia*

16:00

**The Use of Helmholtz Resonance to Measure Volume: Application to Solid, Liquid and Particulate Systems** [279]

*Emile S Webster, Massey University, New Zealand*

16:20

**Particle Size Measurement of Silica Nano-Particles By Interactive Force Apparatus Under the Electric Field** [280]

*Akira Otsuki, University of South Australia, Japan*

16:40

**Stick Slip Behaviour of Agricultural Limestone During Wall Friction Tests in an Annular Shear Cell** [281]

*Clive E Davies, Massey University, New Zealand*

*Botanical One*

### **Bioprocessing Session 6**

*Chair: Emma AC Emanuelsson-Patterson, University of Auckland, New Zealand*

15:20

**Process Modeling and Debottlenecking Study of a Vaccine Production** [257]

*Maizirwan M Mel, IUM, Malaysia*

15:40

**Block Copolymers and Living Emulsion Polymerisation** [258]

*Vincent Gomes, University of Sydney, Australia*

16:00

**Microwave Radiation Effect on Ultra Film Formation of Polyisoprene inside Admicelle Adsorbed on Silica Surface** [259]

*Thirawudh Pongprayoon, King Mongkut's University of Technology, Thailand*

16:20

**Toward Production of the Micro- And Mesoporous Activated Carbon From Oil Palm Shell by Chemical Activation Process with ZnCl<sub>2</sub>, H<sub>3</sub>PO<sub>4</sub> and KOH Under Nitrogen and Carbon Dioxide Condition** [260]

*Allwar Allwar, University Sains Malaysia, Malaysia*

16:40

**Polymorphic Design of TiO<sub>2</sub> Nanoparticles by Flame Engineering: Implications to Light-Induced Processes** [261]

*Yung Kent Kho, The University of New South Wales, Australia*

*The Studio*

### **Fuels and Energy Session 6**

*Chair: Victor Rudolph, The University of Queensland, Australia*

15:20

**Performance of Remote Solar Thermal Power Plants** [267]

*Jeffrey Claffin, Lycopodium Minerals Ptyu, Australia*

15:40

**Fast Pyrolysis of Mallee Wood: Effects of Alkali And Alkaline Earth Metallic Species Removal on Yields And Bio-Oil Quality** [268]

*Daniel Mourant, Curtin University of Technology / Monash University, Australia*

16:00

**Vapour-Liquid Equilibria Data for a Range of New Carbon Dioxide Absorbents** [269]

*Andrew W Allport, CSIRO Energy Technology, Australia*

16:20

**Strategies for Characterisation of Fine Mineral Matter in Collie Coal** [270]

*Hongwei Wu, Curtin University of Technology, Australia*

16:40

**Optimization of Sintering Temperature for Producing Thermoelectric device of La-doped SrTiO<sub>3</sub>** [271]

*Asami Kikuchi, Hokkaido University, Japan*

*Studio One*

### **Industrial Session 3**

*Chair: David Udy, Kelly Services, Australia*

15:20

**Assessing the Potential for Industrial Chemicals Production from the Sugarcane Industry** [282]

*Ridwan M Doba, Curtin University of Technology, Australia*

15:40

**Supercritical Fluid Extraction and its Applications** [283]

*Suwei Zhao, The University of Western Australia, Australia*

16:00

**From Rheology to Tribology: Multi-scale Dynamics of Microgels, Food and other Soft Matter Systems** [284]

*Jason R Stokes, University of Queensland, Australia*

16:20

**Numerical prediction of the surface temperature of polyoxymethylene with various sliding geometry** [285]

*Youhei Takagi, Shizuoka University, Japan*

16:40

**Close-to-streamline numerical study on gas velocity distribution in the industrial-scale electrostatic precipitator gas inlet hood** [286]

*Jie Zhang, Curtin University of Technology, Australia*

*Studio Two*

### **Poster Session 6**

*Chair: Shaobin Wang, Curtin University of Technology, Australia*

*Co-Chair: Tushar Kanti Sen, Curtin University of Technology, Australia*

*Refer to page 23 for summary of posters on display*

08:30-09:30 **Plenary Session 3**  
**Building on a Solid Base - The Requirements for a Successful Best Practice Transfer Programme**  
*Laurence Stonehouse, Manufacturing Excellence and Global Refining Support Aloca World Alumina, Australia*  
*Chair: Roger Kelson, WA Joint Chemical Engineering Committee, Australia*

09:30-10:00 **Morning Tea**

10:00-11:40 **Concurrent Sessions**

*Grand Ballroom 1*

**Fuels and Energy Session 7**

10:00

**Catalytic Co-Pyrolysis of Waste Tyres with Oil Palm Empty Fruit Bunches** [318]

*Rusmi Alias, UiTM, Malaysia*  
*Shah Alam, Selangor, Malaysia*

10:20

**Study effect of Colocasia Esculenta leaf as electrolyte to hydrogen production on electrochemical reaction by using electrochemical reactor** [319]

*Sri Haryati, University of Sriwijaya, Indonesia*

10:40

**A Comparison of Carbon Dioxide Absorption Rates Between Monoethanolamine and Ammonia** [320]

*Robert C Rowland, CSIRO Energy Technology, Australia*

11:00

**Isomerization of n-Hexane Over Pt Supported on Zeolite Y Synthesized from Rice Husk Silica** [321]

*Pongtanawat Khemthong, Suranaree University of Technology, Thailand*

*Grand Ballroom 2*

**Environmental Session 7**

*Chair: Tung A Hoang, University of Melbourne, Australia*

10:00

**Effective and Safe Melting Treatment Process of Asbestos Wastes** [304]

*Eiki Kasai, IMRAM, Tohoku University, Japan*

10:20

**Removal of Sodium Sulfide from Waste Water By Oxidation Process in the Presence of Nano Ferric Oxide Catalyst** [305]

*Saikat Maitra, Universiti Teknologi Petronas, Malaysia*

10:40

**Treatment of Anaerobically Digested Palm Oil Mill Effluent (POME) using Sequencing Batch Reactor (SBR)** [306]

*Yi Jing Chan, University of Nottingham Malaysia Campus, Malaysia*

11:00

**NO<sub>x</sub> Reduction by V<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> Catalyst in the Flue Gas of Municipal Solid Waste Incinerator** [307]

*Kamariah Noor Ismail, Universiti Teknologi MARA (UiTM), Malaysia*

11:20

**A Comparison of Sobek and Lawrence Test Methods for the Determination of Neutralisation Potential and the Influence of Sample Properties** [308]

*Meining Song, The University of Western Australia, Australia*

*Swan Room*

**Fuels and Energy Session 8**

10:00

**The Effect of Minor Components on the Ignition of Lean Mixtures of Methane in Air** [309]

*Yii Leng Chan, The University of Western Australia, Australia*

10:20

**Multi-Objective Optimisation of Single Mixed Refrigerant Natural Gas Liquefaction** [310]

*Nipen M Shah, Jord International, Australia*

10:40

**Multiobjective Multifunctional Reactor for Steam Reforming** [311]

*Vincent Gomes, The University of Sydney, Australia*

11:00

**The Role of NO and NO<sub>2</sub> in Partial Oxidation of Methane** [312]

*Yii Leng Chan, The University of Western Australia, Australia*

*Botanical One*

**Particle Technology Session 7**

10:00

**Chair: Karen P Hapgood, Monash University, Australia**

10:00

**The Effect of Spray Drying Conditions on Yields for Bioactive Extracts** [313]

*Roshan Premarajah, The University of Sydney, Australia*

10:20

**Constraints on Agglomeration in Spray Drying** [314]

*Tim A Langrish, The University of Sydney, Australia*

10:40

**Improving Liquid Distribution in Pharmaceutical Wet Granulation: A Case Study** [315]

*Karen P Hapgood, Monash University, Australia*

11:00

**Influence of Mixing and Formulation on Agglomeration And Functionality Of Micronised Drug Powders** [316]

*Peter J Stewart, Monash University, Australia*

11:20

**Energy Dissipation During Agglomerate Impact** [317]

*Roberto Moreno-Atanasio, University of Newcastle, Australia*

*The Studio*

**Bioprocessing Session 7**

10:00

**Chair: Emma Emanuelsson-Patterson, University of Auckland, New Zealand**

10:00

**Mesoporous Supported Catalysts for NO<sub>x</sub> Removal** [302]

*Thomas E Rufford, The University of Queensland, Australia*

10:20

**Effect of Initial hydrothermal Temperatures on the Synthesis of Zeolites from Coal Fly Ash** [303]

*Hamzah Fansuri, Institute Technology Sepuluh Nopember, Indonesia*

10:40

**Preparation and Characterisation of Polyamide-Tio, Membranes** [323]

*Robert Burford, University of New South Wales, Australia*

10:40

**Structural Investigation of Titanyl Sulfate Dihydrate and Intermediates Formed During Thermal Decomposition** [324]

*Hailey Reynolds, Royal Melbourne Institute of Technology University, Australia*

11:00

**Formation of Polymer Blends using Click Chemistry Aspects of Grubb's Catalysed Polymerization** [325]

*Robert Burford, University of New South Wales, Australia*

*Studio One*

**Industrial Session 4**

10:00

**Chair: David Montgomery, BP Refinery, Australia**

10:00

**Solid-Liquid Separations Mediated By A Binary Surfactant System** [322]

*John-Paul O'Shea, University of Melbourne, Australia*

10:20

**Preparation and Characterisation of Polyamide-Tio, Membranes** [323]

*Robert Burford, University of New South Wales, Australia*

10:40

**Structural Investigation of Titanyl Sulfate Dihydrate and Intermediates Formed During Thermal Decomposition** [324]

*Hailey Reynolds, Royal Melbourne Institute of Technology University, Australia*

11:00

**Formation of Polymer Blends using Click Chemistry Aspects of Grubb's Catalysed Polymerization** [325]

*Robert Burford, University of New South Wales, Australia*

*Studio Two*

**Poster Session 7**

*Chair: Chi M Phan, Curtin University of Technology, Australia*

*Refer to page 27 for summary of posters on display*

11:40-12:10 **Closing Ceremony**

Grand Ballroom 1