Day 1, Monday, 4 December 2017

15:30 - 18:30 Welcome Function (Freshwater Bay Room)

Day 2, Tuesday, 5 December 2017

08:30 - 09:00 Symposium Open (Freshwater Bay Room)

09:00 - 10:30 Keynote Session 1 [Freshwater Bay Room, Chair: Hongwei Wu, Australia]
- 09:00 - 09:45 Toward liquid fuels from wet biomass via hydrothermal processing (Phillip E. Savage, The Pennsylvania State University, USA)
- 09:45 - 10:30 Ash behaviour in oxy-coal combustion: What we know and what we have yet to learn (Durai Yu, Huazhong University of Science and Technology, China)

10:30 - 10:50 Coffee Break

10:50 - 12:30 Session 2A: Hydrothermal Processing (Plaza Ballroom 1, Chair: Phillip E. Savage, USA)
- 10:50 - 11:10 Comparison of fast pyrolysis and hot-compressed water for the production of fermentable carbohydrates from wood peps (Felix Buendia-Kandia, University of Lorraine, France)
- 11:10 - 11:30 Effect of hydrothermal carbonisation on the combustion behaviour of agricultural residues and macroalgae: devolutilisation characteristics and char reactivity (Philip J. van Eijk, The University of Adelaide, Australia)
- 11:30 - 11:50 Acid-catalysed ring opening of furan in aqueous solution (Xiao Liang, The University of Sydney, Australia)
- 11:50 - 12:10 Influence of Lewis acid and Brensted acid on the conversion of microcrystalline cellulose into 5-hydroxymethylfurful (Yuan Zhao, Zhejiang University, China)
- 12:10 - 12:30 Depreciative solvent extraction of low-rank coals by the mixture of low molecular weight extract and solvent as recycled solvent (Xianping Zhu, Huazhong University of Science and Technology, China)

Session 2B: PM and Ash Deposition (Plaza Ballroom 3, Chair: Hirotsuru Watanabe, Japan)
- 10:50 - 11:00 Investigation of ultrafine particulate matter in the early stage of conventional and oxy-fuel lignite combustion (Shuqing Li, Tsinghua University, China)
- 11:00 - 11:10 Simultaneous measurement of particle size and mass concentration of particulates from the angular distribution of scattered light by ensemble scattering method (Dong Chen, Huazhong University of Science and Technology, China)
- 11:10 - 11:30 Particle size distributions of fly ash arising from vaporized components of coal combustion - a comparison of theory and experiment (Jost O.L. Wendt, University of Utah, USA)
- 11:30 - 11:50 Impact of oxy-fuel combustion on ash properties and sintering strength development (Jianqun Wu, Huazhong University of Science and Technology, China)
- 11:50 - 12:10 In-situ diagnostics on the dynamic processes of ash deposit formation, shedding and heat transfer (Qian Huang, Tsinghua University, China)

12:30 - 13:30 Lunch

13:30 - 15:10 Session 3A: Chemical Looping (Plaza Ballroom 1, Chair: Haibo Zhao, China)
- 13:30 - 13:50 A compact continuous chemical looping reactor applied for Victoria brown coal utilisation (Jiangguang Tang, CSIRO, Australia)
- 13:50 - 14:10 Performance of petroleum coke in chemical looping process using iron-based oxygen carrier (Lulu Wang, Southeast University, China)
- 14:10 - 14:30 Thermodynamic assessment of heat recovery from a chemical looping ventilation air methane abatement unit (Francis Nadaraju, The University of Newcastle, Australia)
- 14:30 - 14:50 A unique phase change chemical looping system for energy storage in coal-fired power plants (Jike Wu, The University of Newcastle, Australia)
- 14:50 - 15:10 Life cycle assessment of hydrogen production via iron-based chemical looping technology using heavy fraction of bio-oil as fuel (Jiun Heng, Southeast University, China)

Session 3B: Ash Deposition (Plaza Ballroom 3, Chair: Mário Costa, Portugal)
- 13:30 - 13:50 Investigation into the stratification and chemistry evolutions of the ash deposits during combustion of Zhundong lignite and its blends in a drop tube furnace (Jianbo Li, Chongqing University, China)
- 13:50 - 14:10 Tensile adhesion strength of biomass ash deposits – effect of temperature gradient and ash chemistry (Fashawi Laminarayan, Technical University of Denmark, Denmark)
- 14:10 - 14:30 Slagging characteristics during combustion of straw and husk pellets and effect of additives (Hongwei Wu, Curtin University, Australia)
- 14:30 - 14:50 Investigate the slagging characteristics in a pilot-scale facility: influence of the deposition surface (Jiakai Zhang, Zhejiang University, China)
- 14:50 - 15:10 Ash aerosol and deposition mechanisms during air/oxy-combustion of rice husks in a 100kW combustor (Jost O.L. Wendt, University of Utah, USA)

15:10 - 15:30 Coffee Break

15:30 - 17:10 Session 4A: Biofuels (Plaza Ballroom 1, Chair: Jost O.L. Wendt, USA)
- 15:30 - 15:50 Acid catalysis in the context of biodiesel manufacturing (Michael Stockenhuber, The University of Newcastle, Australia)
- 15:50 - 16:10 MLR combustion of renewable and non-renewable solid fuels (Manabendra Saha, The University of Adelaide, Australia)
- 16:10 - 16:30 Evolution of the bio-oil during its pyrolysis at different heating rates: Importance of the interactions among bio-oil components (Zhe Xiong, Huazhong University of Science and Technology, China)
- 16:30 - 16:50 An experimental investigation of a novel carbon arrestor process to produce functionalised biochars (Frances Wilson, The University of Newcastle, Australia)
- 16:50 - 17:10 Tailoring surface acidity of metal oxides for upgrading the biomass-derived compounds (Yijiao liang, Macquarie University, Australia)

Session 4B: Waste Utilisation (Plaza Ballroom 3, Chair: Changdong Sheng, China)
- 15:30 - 15:50 Some insights into the thermochemical conversion behaviour of biofuels urban waste streams (Daniel Roberts, CSIRO, Australia)
- 15:50 - 16:10 Behavior of alkali metals in fly ash during waste heat recovery for municipal solid waste incineration (Jing Zhao, Institute of Mechanics, Chinese Academy of Sciences, China)
- 16:10 - 16:30 Production of hydrogen and high value carbon nanomaterials from pyrolysis-catalysis of waste plastics (Dingling Yao, Huazhong University of Science and Technology, China)
- 16:30 - 16:50 Waste to energy conversion of chicken litter through solar-driven pyrolysis process (Haftom Asmelash Weldekidan, Macquarie University, Australia)
- 16:50 - 17:10 Justification of torrefied starkey kitchen waste based on nano- Ni/γ-Al2O3 catalyst (Jingchun Huang, Huazhong University of Science and Technology, China)

17:10 End of Day 2
<table>
<thead>
<tr>
<th>Time</th>
<th>Session/Activity</th>
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<tbody>
<tr>
<td>09:00-09:45</td>
<td>Keynote Session 5 (Freshwater Bay Room, Chair: Zongping Shao, Australia)</td>
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<tr>
<td>09:45-10:00</td>
<td>Renewable energy and fuel cells: opportunities and challenges (San Ping Jiang, Curtin University, Australia)</td>
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<td>10:00-10:50</td>
<td>Coffee Break</td>
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<td>10:50-11:10</td>
<td>Session 6A: Advanced Materials (Plaza Ballroom 1, Chair: Huanting Wang, Australia)</td>
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<td>11:10-11:30</td>
<td>Session 6B: Fuel Cell 1 (Plaza Ballroom 3, Chair: Francesco Ciucci, China)</td>
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<td>11:30-11:50</td>
<td>Session 7A: Environmental Issues (Plaza Ballroom 1, Chair: Philip van Eyk, Australia)</td>
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<td>11:50-12:00</td>
<td>Session 7B: Fuel Cell 2 (Plaza Ballroom 3, Chair:)</td>
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<td>12:30-13:30</td>
<td>Lunch</td>
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<td>13:30-13:50</td>
<td>Session 8A: Coke (Plaza Ballroom 1, Chair: Dunxi Yu, China)</td>
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<td>13:50-14:10</td>
<td>Session 8B: Ash (Plaza Ballroom 3, Chair: Jun-ichiro Hayashi, Japan)</td>
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<tr>
<td>15:10-15:50</td>
<td>Coffee Break</td>
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<td>15:50-16:10</td>
<td>Session 9A: Coke (Plaza Ballroom 1, Chair:)</td>
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<tr>
<td>16:10-16:50</td>
<td>Session 9B: Ash (Plaza Ballroom 3, Chair: Shinji Mochida, Japan)</td>
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<td>17:10</td>
<td>End of Day 3</td>
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<td>18:00-22:00</td>
<td>Symposium Dinner (South Ballroom)</td>
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10:50 - 12:30 Session 10A: Solid Fuel Combustion (Plaza Ballroom 1, Chair: Peter Glarborg, Denmark) Session 10B: Biomass Pyrolysis/Gasification (Plaza Ballroom 3, Chair: Yansong Shan, Australia)

10:50 - 11:10 An experimental study of ignition and combustion characteristics of single particles of Zhundong lignite (Jianbo Li, The University of Western Australia, Australia, and Chongqing University, China) Page 67 A mobile auto-thermal pyrolysis system for local biomass conversion: process simulation and techno-economic analysis (King Chen, Southeast University, China) Page 82

11:10 - 11:30 Effects of fuel species and types on smouldering combustion (Youzhi Wang, The University of Adelaide, Australia) Page 68 The effect of torrefaction on the structure and pyrolysis behavior of lignin (Gongxin Dai, Zhengjiang University, China) Page 83

11:30 - 11:50 Self-heating of agricultural residues and its impact on fuel properties (Changdong Sheng, Southeast University, China) Page 69 Agglomeration mechanism during steam gasification and combustion of wheat straw and grape marc (Zimeng He, The University of Adelaide, Australia) Page 84

11:50 - 12:10 Quantitative and kinetic thermogravimetric analysis of lignite char combustion at various fixed temperatures (Xiongwei Zeng, North China Electric Power University, China) Page 70 Solar-thermal pyrolysis of mallee wood (Daniel Gauthier, CNRS-PROMES, France) Page 85

12:10 - 12:30 Migration and emission of chlorine from a 410 t/h circulating fluidized bed boiler co-firing petroleum coke and coal (Jumbo Duan, Southeast University, China) Page 71 Composition, structural evolution and mechanism of reduction of iron ore-biochar pellets (Qiang Hu, Huazhong University of Science and Technology, China) Page 86

12:30 - 13:30 Lunch

13:30 - 15:10 Session 11A: Control of Pollutants (Plaza Ballroom 1, Chair: Xiangpeng Gao, Australia) Session 11B: Gasification 1 (Plaza Ballroom 3, Chair: Yun Yu, Australia)

13:30 - 13:50 Optimal equivalence ratio for the minimum NO emission of MILD combustion (Fan Hu, Huazhong University of Science and Technology, China) Page 72 Enhancement of gas production of low rank coal by downer-gasification reactor (Siti Norazian Ismail, Tokyo University of Agriculture and Technology, Japan) Page 87

13:50 - 14:10 Effect of pyrolysis conditions on char combustion and NOx reduction by pyrolysis products for adapting to a dual fluidized bed decoupling combustion system (Zhennan Han, Shenyang University of Chemical Technology, China) Page 73 Enhanced hydrogen production from biomass gasification under multi-cycle conditions in the presence of Ca-based CaO Sorbent Pellets (Yang Zhang, Huazhong University of Science and Technology, China) Page 88

14:10 - 14:30 Reactivity of raw and demineralized biomass chars towards the reduction of NO (Burak Ulusoy, Technical University of Denmark, Denmark) Page 74 A review on fundamentals and typical applications of micro fluidized bed for reaction analysis (Guangwen Xu, Chinese Academy of Sciences, China) Page 89

14:30 - 14:50 Experimental and DFT investigation on mercury surface interaction with biomass carbonaceous sorbent: effect of halogen modification (Chun Zhu, Southeast University, China) Page 75 Performance optimization of biochar catalytic reactivity for tar elimination (Shaoheng Sun, Harbin Institute of Technology, China) Page 90

14:50 - 15:10 Effect of acid gases on elemental mercury removal in oxy-fuel CO2 compression process (Xiaoshan Li, Huazhong University of Science and Technology, China) Page 76 Influence of char layer thickness on syngas composition in small-scale gasification (Thomas Kirch, The University of Adelaide, Australia) Page 91

15:10 - 15:30 Coffee Break

15:30 - 17:10 Session 12A: Coal Pyrolysis (Plaza Ballroom 1, Chair: Shuiping Li, China) Session 12B: Gasification 2 (Plaza Ballroom 3, Chair: Guangwen Xu, China)

15:30 - 15:50 Pyrolysis of lignite briquette – sensitivity of the reactivity and physical structure upon the variation in pyrolysis condition (Anthony De Girolamo, Monash University, Australia) Page 77 An experimental investigation of the catalytic activity of natural calcium rich minerals and a novel dual supported CaO-Ca3Al2O6/O2/Al2O3 catalyst for bio-tar steam reforming (Priscilla Tremain, The University of Newcastle, Australia) Page 92

15:50 - 16:10 Model study of pyrolysis of low rank coal ellipsoid briquettes (Yuting Zhuo, University of New South Wales, Australia) Page 78 Coal chemical looping gasification in a 10 kWth fluidized bed (Tianxun Shen, Southeast University, China) Page 93

16:10 - 16:30 The thermal extrusion behaviour of an Australian coking coal for high value carbon products (Rohan Stanger, The University of Newcastle, Australia) Page 79 CO2 gasification of sugarcane bagasse: Understanding of kinetics and catalytic roles of inherent metallic species (Jun-ichi Hayachi, Kyushu University, Japan) Page 94

16:30 - 16:50 Investigation on the pyrolysis behaviour of isolated coal intermediates (Guang Anh Tran, The University of Newcastle, Australia) Page 80 Optimising the sustainability of the thermal reforming via the catalyt innovation (Jun Huang, The University of Sydney, Australia) Page 95

16:50 - 17:10 A greenhouse gas and energy assessment of the lifecycle of ‘challings’, a char created from coal tailings (Priscilla Tremain, The University of Newcastle, Australia) Page 81 X-ray CT visualization of intra-particle structure of chars derived from softwood and hardwood and its role on gasification (Hirotatsu Watanabe, Tokyo Institute of Technology, Japan) Page 96

17:10 - 17:30 Symposium Close End of Day 4

Day 5, Friday, 8 December 2017

09:00 - 11:00 Laboratory Tour End of Symposium
Poster Session

1. The consecutive calcination/sulfation in calcium looping for CO₂ capture: particle modeling and behaviour investigation
   Changlei Qin, Chongqing University, China
   Page 97

2. Interaction between InP and SnO₂ on TiO₂ NTs for photoelectrocatalytic reduction of CO₂
   Shaobin Wang, Curtin University, Australia
   Page 98

3. Modelling of product yields of hydrothermal liquefaction of biomass using model compounds
   Reem Obeid, The University of Adelaide, Australia
   Page 99

4. The influence of HCl on CO and NO formation during CO/NH₃ combustion in an entrained flow reactor (EFR) at 1273–1673 K
   Jing Zhao, Chinese Academy of Sciences, China
   Page 100

5. Behavior of slagging deposits during coal and biomass co-combustion in a 300 kW downfired furnace
   Jiakai Zhang, Zhejiang University, China
   Page 101

6. CFD study of biomass combustion in a simulated blast furnace: effect of particle shape
   Yiran Liu, University of New South Wales, Australia
   Page 102

7. Intrinsically catalyzed Boudouard reaction of bamboo biochar for solid oxide electrolyte carbon fuel cells
   Wenting An, Shanxi University, China
   Page 103

8. 3D ordered macroporous SmCoO₃ perovskite for highly active and selective hydrogen peroxide detection
   Juan He, Nanjing Tech University, China
   Page 104

9. A high-performance electrode for supercapacitors: silver nanoparticles grown on a porous perovskite-type material La₀.₅Sr₀.₅CoO₃₋δ substrate
   Peipei Liu, South China University of Technology, China
   Page 105

10. Direct operation of solid oxide fuel cells with anode functional layer on low-concentration oxygen-bearing coal-bed methane
    Yong Jiao, Shanxi University, China
    Page 106

11. Utilisation of purified high-sulphur coal as fuel for solid oxide fuel cells
    Yong Jiao, Shanxi University, China
    Page 107

12. Organic acid modified microalgae residual based adsorbents for selective Hg(III) adsorption
    Yang Peng, Huazhong University of Science and Technology, China
    Page 108

13. Emissions of particulate matter and partitioning of vanadium during co-combustion of petroleum coke and coal
    Xin Yu, Huazhong University of Science and Technology, China
    Page 109

    Xiaqing Zhu, Huazhong University of Science and Technology, China
    Page 110

15. Study of the characteristics of petroleum coke catalytic gasification in fluidized bed
    Xiaqing Zhu, Huazhong University of Science and Technology, China
    Page 111

16. Surface activation characteristics of coal char conversion in O₂/CO₂ and O₂/N₂ atmospheres
    Yang Liu, Huazhong University of Science and Technology, China
    Page 112

17. Particulate matter emission from bio-oil combustion for stationary combustion applications
    Chao Feng, Curtin University, Australia
    Page 113

18. Water management in a proton exchange membrane fuel cell with dead-ended anode and cathode
    Zhengkai Tu, Huazhong University of Science and Technology, China
    Page 114

19. Recent advances on plasma-assisted thermochemical processing of solid wastes
    Yun Yu, Curtin University, Australia
    Page 115

20. Worm-like FeS₂/TiO₂ NTs for photoelectrocatalytic reduction CO₂ into methanol
    Shaobin Wang, Curtin University, Australia
    Page 116