

## ORAL SESSIONS

### 1-A3: Carbon Capture and Storage (CCS) (1)

Room: M1

Chairs: Hailong Li, Stefano Campanari

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|-------------|--------|---|
| 13:10-13:30 | 1-A3-1 | COMPARISON OF INTERNAL AND EXTERNAL REFORMING MCFC FOR CO <sub>2</sub> CAPTURE FROM NATURAL GAS COMBINED CYCLES<br><i>Stefano Campanari, Giampaolo Manzolini, Paolo Chiesa</i>            |
| 13:30-13:50 | 1-A3-2 | THERMODYNAMIC STUDY FOR GASES IN IONIC LIQUIDS AT INFINITE DILUTION FOR CO <sub>2</sub> CAPTURE/SEPARATION<br><i>Yujiao Xie, Xiaoyan Ji, Xin Feng, Xiaohua Lu</i>                         |
| 13:50-14:10 | 1-A3-3 | MULTI CRITERIA ANALYSIS TO IDENTIFY SUITABLE CO <sub>2</sub> CAPTURE FOR A COAL POWER PLANT<br><i>Rasel Mahamud, Masud K. Khan, Mohammad G. Rasul, Malcolm G. Leinster</i>                |
| 14:10-14:30 | 1-A3-4 | IDENTIFYING OPPORTUNITIES FOR SYNERGETIC INTEGRATION OF CO <sub>2</sub> CAPTURE WITH A COAL POWER PLANT<br><i>Rasel Mahamud, M. Masud K. Khan, Mohammad G. Rasul, Malcolm G. Leinster</i> |
| 14:30-14:50 | 1-A3-5 | CO-CAPTURE OF CO <sub>2</sub> AND SO <sub>2</sub> USING HOLLOW FIBER MEMBRANE CONTACTORS<br><i>Yang Jie, Yu Xinhai, Shan-Tung Tu, Yan Jinyue, Dahlquist Erik</i>                          |
| 14:50-15:10 | 1-A3-6 | CHEMICAL LOOPING COMBUSTION OF A SYNGAS WITH NANOSIZE NIO ON CHABAZITE<br><i>F.-C. Chang, C.-K. Tsai, H. Paul Wang, W.-K. Lin, M.-C. Hsiao, P.-H. Liao, C.-J.G. Jou</i>                   |

### 1-A4: Fuel Cells Modeling and Applications (1)

Room: M1

Chairs: Sungchui Yi, Jinkuk Kim

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| 15:30-15:50 | 1-A4-1 | LATTICE BOLTZMANN SIMULATION OF LIQUID WATER TRANSPORT IN THE SERPENTINE GAS CHANNEL OF A PEM FUEL CELL<br><i>Bo Han, Hua Meng</i>                                      |
| 16:10-16:30 | 1-A4-3 | GEOMETRIC DESIGN AND OPTIMIZATION FOR THE MANIFOLDS IN A PLANAR SOLID OXIDE FUEL CELL STACK<br><i>Shichuan Su, Qice Zeng, Wei Kong, Daifen Chen</i>                     |
| 16:30-16:50 | 1-A4-4 | COMPUTATIONAL MODELING OF PROTON EXCHANGE MEMBRANE FUEL CELLS INCLUDING GAS-CROSSOVER BEHAVIOR<br><i>Chiyoung Jung, Sungchul Yi</i>                                     |
| 16:50-17:10 | 1-A4-5 | A FACTORIAL STUDY TO INVESTIGATE THE PURGING EFFECT ON THE PERFORMANCE OF A PEM FUEL CELL STACK WITH A DEAD-END ANODE<br><i>Mohamed Ali, Agus Sasmito, Tariq Shamim</i> |

### 1-B3: Photovoltaic Technologies and Applications

Room: M2

Chairs: Andrea de Pascale, Antonio Peretto

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| 13:10-13:30 | 1-B3-1 | THERMOPHOTOVOLTAIC ENERGY CONVERSION - PART 1: ANALYTICAL ASPECTS<br><i>Francesco Melino, Claudio Ferrari, Matteo Bosi, Pier Ruggero Spina, Michele Pinelli</i>                              |
| 13:30-13:50 | 1-B3-2 | THERMOPHOTOVOLTAIC ENERGY CONVERSION - PART 2: PROTOTYPES AND EXPERIENCES<br><i>Francesco Melino, Claudio Ferrari, Pier Ruggero Spina, Michele Pinelli, Mauro Venturini, Enrico Barbieri</i> |
| 13:50-14:10 | 1-B3-3 | PERFORMANCE EVALUATION OF DIFFERENT TYPES OF PHOTOVOLTAIC THERMAL COMBINED HEAT PUMP SYSTEMS USING TRNSYS<br><i>Qiang Si, Xiaosong Zhang, Guoying Xu</i>                                     |
| 14:10-14:30 | 1-B3-4 | OUTDOOR PERFORMANCE OF A LOW-CONCENTRATED PHOTOVOLTAIC-THERMAL HYBRID SYSTEM WITH CRYSTALLINE SILICON SOLAR CELL<br><i>Chengdong Kong, Zilin Xu, Qiang Yao</i>                               |

**14:10-14:30 1-B3-5 NANOPOROUS SiO<sub>2</sub>-TiO<sub>2</sub> COATINGS WITH ANTIREFLECTIVE AND SELF-CLEANING PROPERTIES IN A COST-EFFECTIVE WAY**  
*Lei Miao, Lifan Su, Sakae Tanemura, Gang Xu*

**14:50-15:10 1-B3-6 WO<sub>3</sub> MODIFICATION OF TiO<sub>2</sub> NANOTUBE ARRAY BY RE-ANODIZATION FOR ENHANCED SOLAR PHOTOELECTROCATALYTIC ACTIVITY**  
*Michael K.H. Leung, Hei Lok Tsai, Songling Wang, Guisheng Li*

### 1-B4: Waste-to-Energy: Processes and Systems Room: M2

Chairs: Eva Thorin, Ying She

**15:30-15:50 1-B4-1 WASTE TO ENERGY A REVIEW**  
*Eva Thorin, Emilia Den Boer, Olga Belous, Han Song*

**15:50-16:10 1-B4-2 WASTE-TO-ENERGY. POLISH PERSPECTIVE.**  
*Bozena Guziana, Han Song, Eva Thorin, Erik Dotzauer, Jinue Yan*

**16:10-16:30 1-B4-3 WASTE-TO-ENERGY SCENARIOS ANALYSIS BASED ON ENERGY SUPPLY AND DEMAND IN SWEDEN**  
*An Song, Bonzena Guziana, Guilnaz Mirmoshtaghi, Eva Thorin, Jinyue Yan,*

**16:30-16:50 1-B4-4 METHANOL PRODUCTION FROM STEEL-WORK OFF-GASES AND BIOMASS BASED SYNTHESIS GAS**  
*Joakim Lundgren, Tomas Ekbo, Christian Hultberg, Carl-Erik Grip, Mikael Larsson, Leif Nilsson, Per Tuna*

**16:50-17:10 1-B4-5 THE METHANE POTENTIAL OF THE SWEDISH PULP AND PAPER INDUSTRY – A SCREENING OF WASTEWATER EFFLUENTS**  
*Eva-Maria Ekstrand, Madeleine Larsson, Xu-Bin Truong, Lina Cardell, Ylva Borgstrom, Annika Bjorn, Jorgen Ejlertsson*

### 1-C3: Energy Policy in China Room: M3

Chairs: Yiming Wei, Xiliang Zhang

**13:10-13:30 1-C3-1 CHINA'S REGIONAL ENERGY AND ENVIRONMENT EFFICIENCY: A RANGE-ADJUSTED MEASURE BASED ANALYSIS**  
*Ke Wang, Yi-Ming Wei*

**13:30-13:50 1-C3-2 HOW TO INCENTIVIZE THE SUSTAINABLE DEVELOPMENT OF CHINA'S THERMAL POWER INDUSTRY?**  
*Bai-Chen Xie, Yi-Shu Wang, Li-Feng Shang, Wen-Hua Li*

**13:50-14:10 1-C3-3 CHINESE TOTAL FACTOR ENERGY EFFICIENCY OF PROVINCIAL SECTORS**  
*Xiaoli Zhao, Qian Ma, Rui Yang*

**09:10-09:30 1-C3-4 DECIDING THE ECONOMICAL AMOUNT OF GOVERNMENT INVESTMENT ON RENEWABLE POWER – INTEGRATED RENEWABLE POWER PLANNING (IRPP) TOOL AND ITS APPLICATION IN FUJIAN, CHINA**  
*Zhang Da, Xiong Weiming, Tang Chun, Liu Zhen, Gao Hu, Zhang Xiliang*

**14:30-14:50 1-C3-5 RESEARCH ON THE STAGE OF CHANGE OF THE RELATIONSHIP BETWEEN OIL CONSUMPTION AND LABOR INCOME IN CHINA**  
*Lingdi Zhao, Yaru Hao*

**14:50-15:10 1-C3-6 IMPLICATIONS OF CARBON MARKETS FOR IMPLEMENTING CIRCULAR ECONOMY MODELS**  
*Anne Arquit Niederberger, Samuel Shiroff, Lars Raahauge*

### 1-C4: Social and Economic Impacts of Energy Systems Room: M3

Chairs: GP Hammond, ZH Wang

**15:30-15:50 1-C4-1 EFFECTIVE VISUALIZATION OF TAILORED INFORMATION FOR HOME ENERGY MANAGEMENT : SOCIAL EXPERIMENT IN A LOCAL VILLAGE**  
*Kanae Matsui, Yoshiki Yamagata, Hideya Ochiai*

**15:50-16:10 1-C4-2 IMPACT OF IMPROVED ENERGY STRUCTURE ON GENDER IN RURAL COMMUNITIES IN NORTHWEST CHINA**  
*Wenguang Ding, Lijun Wang, Yunrang Xian, Baoyu Chen, Haoxu Li*

**16:10-16:30 1-C4-3 BIOFUEL POTENTIAL AND ITS IMPACT IN CHINA: A CASE OF CROP STRAW**  
*Henryun Ma, Jun Yang, Xiaobin Wang, Ye Jiang, Junfei Bai*

**16:30-16:50 1-C4-4 GERMANY'S WATER FOOTPRINT OF TRANSPORT FUELS**  
*Andrew Ayres, Aristide F. Massardo*

**16:50-17:10 1-C4-5 BIOENERGY BUSINESS MODELS IN IRAN: THE ROLE OF INNOVATIONS**  
*Mehrdad Adl, Javad Nasiri, Mehrdad Motamedi, Arash Haghparsast-Kashani*

**1-D3: Sepcial Lecture****Room: M7**

Chair: SK Chou

**1-D4: Wind Energy and Battery****Room: M7**

Chairs: Francesco Castellani, Meng Ni

**15:30-15:50 1-D4-1 EMERGY BASED SUSTAINABILITY EVALUATION OF WIND POWER GENERATION SYSTEM**

*Jin Yang, Bin Chen*

**15:50-16:10 1-D4-2 ANALYSIS OF VEHICLE ELECTRIFICATION IMPACT ON GRID INFRASTRUCTURE AND ROAD-TRAFFIC GREENHOUSE EMISSIONS**

*Marco Sorrentino, Luca Sorrentino, Gianfranco Rizzo*

**16:10-16:30 1-D4-3 RECHARGEABLE DUAL-ELECTROLYTE HYBRID LI-AIR BATTERY**

*Yangchuan Xing, Yunfeng Li, Kan Huang*

**16:30-16:50 1-D4-4 OPERATING CHARACTERISTICS OF A HYBRID HYDRAULIC PASSENGER CAR WITH A POWER-SPLIT CONTINUOUSLY VARIABLE TRANSMISSION**

*Yongming Zhu, Changwei Ji, Binbin Gao***1-E3: Advanced Power and Polygeneration Systems****Room: M8**

Chairs: HG Jin, XS Zhang

**13:10-13:30 1-E3-1 A NEW POWER AND COOLING COGENERATION SYSTEM USING MID-TEMPERATURE WASTE HEAT**

*Liuli Sun, Wei Han, Xuye Jing, Danxing Zheng, Hongguang Jin*

**13:30-13:50 1-E3-2 ENTROPY AND ENTHALPY ANALYSIS FOR SUB-CYCLE ENERGY COUPLING IN POWER AND COOLING COGENERATION CYCLE**

*Xuye Jing, Danxing Zheng, Sijun Ma, Guangming Sun, Wei Han, Liuli Sun*

**13:50-14:10 1-E3-3 SIMULTANEOUS DYNAMIC AND QUASI-STEADY STATE SIMULATIONS TO OPTIMIZE COMBINED HEAT AND POWER PLANT OPERATION**

*Fredrik Starfelt, Hailong Li, Han Song*

**14:10-14:30 1-E3-4 ADVANCED WASTE-TO-ENERGY POWER PLANT: INTEGRATION WITH GAS TURBINE**

*Lisa Branchini, Michele Bianchi*

**14:30-14:50 1-E3-5 TRIGENERATION BASED ON COMPRESSED AIR AND THERMAL ENERGY STORAGE TECHNOLOGIES**

*Yongliang Li, Xiang Wang, Peilun Wang, Zhenying Mu, Yulong Ding*

**14:50-15:10 1-E3-6 ANALYSIS OF A COMBINED POWER AND COOLING CYCLE**

*Bao Junjiang, Zhao Li***1-E4: Performances Improvement of Advanced Power Generation****Room: M8**

Chairs: Xiaohua Xia, F. Wahllin

**15:30-15:50 1-E4-1 APPLICATION OF INLET AIR COOLING SYSTEMS FOR IGCC POWER AUGMENTATION TO DIFFERENT CLIMATIC SCENARIOS**

*Andrea De Pascale, Francesco Melino, Mirko Morini*

**15:50-16:10 1-E4-2 ANALYSIS OF NON-SYMMETRICAL BEHAVIOUR OF TWO PARALLEL GAS TURBINE RECUPERATORS**

*Alessio Martini, Alberto Traverso, David Tucker, Aristide Massardo*

**16:10-16:30 1-E4-3 A MODEL PREDICTIVE CONTROL APPROACH TO OPERATION EFFICIENCY OF BELT CONVEYORS IN A COAL-FIRED POWER PLANT**

*Yuling Tang, Shirong Zhang*

**16:30-16:50 1-E4-4 EXERGY ANALYSIS AND PARAMETER STUDY OF A LARGE SCALE COAL-FIRED SUPERCRITICAL POWER GENERATION UNIT**

*Yongping Yang, Ligang Wang, Changqing Dong, Gang Xu*

**16:50-17:10 1-E4-5 OPERATIONAL PLANNING OPTIMIZATION CONSIDERING EQUIPMENT FAILURE FOR STEAM POWER SYSTEM IN PETROCHEMICAL COMPLEX**

*Xianglong Luo, Ying Chen, Songping Mo*

**1-F3: Thermal Energy Management(1)****Room: M4****Chairs: Tony Roskilly, Rikard Mikalsen**

<b>13:10-13:30</b>	<b>1-F3-1</b>	<b>FUZZY LOGIC BASED MELT QUALITY CONTROL OF A SINGLE SCREW EXTRUDER</b> <i>Jing Deng, Kang Li, Eileen Harkin-Jones, Minrui Fei</i>
<b>13:30-13:50</b>	<b>1-F3-2</b>	<b>DEPENDENCY OF PRODUCTION PLANNING ON AVAILABILITY OF THERMAL ENERGY IN COMMERCIAL GREENHOUSES</b> <i>Barbara Sturm, Mohammad Royapoor, Marina Maier, Sharon Joyce, Yaodong Wang, Anthony P. Roskilly</i>
<b>15:50-16:10</b>	<b>1-F3-3</b>	<b>INVESTIGATION OF THE PERFORMANCE OF TRIGENERATION AND CO2 REFRIGERATION SYSTEMS IN SUPERMARKET APPLICATIONS</b> <i>Yunting Ge, Savvas Tassou, I Nyoman Suamir</i>
<b>14:10-14:30</b>	<b>1-F3-4</b>	<b>THERMAL PERFORMANCE OF A VERTICAL CLOSED-LOOP OSCILLATING HEAT PIPE USING DIFFERENT WORKING FLUIDS AND A PROPOSED CORRELATION</b> <i>Jian Qu, Qian Wang</i>
<b>14:30-14:50</b>	<b>1-F3-5</b>	<b>IMPLEMENTATION OF ENERGY SAVING AND GHGS EMISSION REDUCTION IN INVESTMENT CASTING PROCESS BY PRACTICAL APPLICATION OF A NEW CASTING METHOD</b> <i>Xiaojun Dai, Mark Jolly, Binxu Zeng</i>
<b>14:50-15:10</b>	<b>1-F3-6</b>	<b>CONCEPTS FOR DYNAMIC MODELING OF ENERGY-RELATED FLOWS IN MANUFACTURING</b> <i>Andrew Wright, Michael Oates, Rick Greenough</i>

**1-F4: Thermal Energy Management (2)****Room: M4****Chairs: Tony Roskilly, Rikard Mikalsen**

<b>15:30-15:50</b>	<b>1-F4-1</b>	<b>HEAT RECOVERY OPPORTUNITIES IN UK MANUFACTURING</b> <i>Geoffrey Hammond, Jonathan Norman</i>
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<b>15:50-16:10</b>	<b>1-F4-2</b>	<b>INCORPORATING HONEYCOMB INSERTS IN PHASE CHANGING MATERIAL-BASED HEAT SINKS FOR COOLING OF PORTABLE ELECTRONIC DEVICES</b> <i>Saad Mahmoud, Aaron Tang, Chin Toh, Raya AL-Dadah, Baoshing Shi and Leung Soo</i>
<b>16:10-16:30</b>	<b>1-F4-3</b>	<b>TECHNO-ECONOMIC FEASIBILITY OF SORPTION CHILLERS COUPLED TO HUMIDIFICATION DEHUMIDIFICATION DESALINATION PROCESS FOR LOW GRADE HEAT RECOVERY</b> <i>Hanning Li, Yasmine Ammar, Yaodong Wang, Vinol Rego, David Swailes, Tony Roskilly</i>
<b>16:30-16:50</b>	<b>1-F4-4</b>	<b>NUMERICAL AND EXPERIMENTAL STUDY OF ENERGY EFFICIENCY IN HIGH-SPEED AIR IMPINGEMENT BREAD-BAKING OVENS</b> <i>Zinedine Khatir, Joe Paton, Harvey Thompson, Nik Kapur, Vassili Toropov, Vassili Toropov</i>
<b>16:50-17:10</b>	<b>1-F4-5</b>	<b>PRIMARY ENERGY IMPLICATIONS OF HEAT SAVINGS IN DISTRICT HEATED BUILDINGS</b> <i>Ambrose Dodoo, Leif Gustavsson</i>