7th International Freiberg/Inner Mongolia Conference

on IGCC & XtL Technologies

Coal Conversion and Syngas

7-11 June 2015

Huhhot, Inner Mongolia, China

Programme

Sunday 7 June 2015

18:00 – 20:00	Registration
18:00 – 20:00	**Welcome Evening, Shangri-La Hotel, Huhhot**

Monday 8 June 2015

09:00 – 10:10

Ballroom A & B – **Opening Ceremony**

Bernd Meyer, Institute of Energy Process Engineering and Chemical Engineering, TU Bergakademie Freiberg – Germany

Prof. Dr.-Ing. Bernd Meyer is Director of the Institute of Energy Process Engineering and Chemical Engineering (IEC) and Professor for Energy Process Engineering and Thermal Waste Treatment (EVT) at the TU Bergakademie Freiberg in Freiberg, Germany. Since 2008, he is also the elected Rector of the TU Bergakademie Freiberg. After receiving his Dr.-Ing. degree, Prof. Meyer gained extensive research as well as industry experience through his work in the Brennstoffinstitut Freiberg (also known as Deutsches Brennstoffinstitut – DBI) and in Rheinbraun AG. He was also personally involved in the technology improvement of fixed-bed gasification technologies implemented at Schwarze Pumpe. Research activities at his department EVT focus on diverse issues related to fuel conversion with emphasis on syngas generation technologies. These range from activities related to thermo-chemical conversion, CFD modelling of high temperature processes, syngas technologies, low carbon technologies, mineral matter, process chain development to technologies for solid fuels gasification. In addition to theoretical modelling-based research and experimental work, EVT also carries out process demonstration activities and operations up to pilot scale. Prof. Meyer received an honorary doctorate from the National Mining University Dnipropetrovsk/Ukraine in 2012 and was also awarded an honorary professorship from the Lomonossov Moscow State University/Russia in 2015. Since 2012, he is also the president of the World Forum of Universities of Resources on Sustainability (WFURS). Prof. Meyer is actively involved in diverse national and international research programs in the fields of gasification technologies, gas cleaning and ash/slag behaviour as advisory board member or speaker. Over the course of his career, he has published over 200 scientific papers and obtained more than 100 patents in the field of gasification, of which many relate to fixed-bed gasification technologies.

Ballroom A & B – **Plenary Speakers**

Yong Wang Li, Synfuels China Technology Co., Ltd. – China

Prof. Dr. Yong Wang Li holds the position of Founding Manager in Synfuels China Technology Company Limited. He also holds the positions of Director in the National Engineering Laboratory of Indirect Coal Liquefaction, Director in National Research Centre for Clean Fuels and Deputy Director in the State Key Laboratory of Coal Conversion. Prof. Li is engaged in fundamental research in the fields of quantum chemistry, molecular simulation, catalysis, kinetics and process simulation related to the coal conversion processes, process development of coal/gas to liquids and related unit operation and application of new technologies in process engineering. Around 100 researchers and scientists plus 60 degree students, and more than 400 engineers have been successfully integrated within Synfuels China's platform. All his personal efforts are on scientific and technology development through integrating the financial power of the market and guided by limited government support. Prof. Li has published more than 200 scientific papers, obtained more than 60 authorised patents and one software copyright for Fischer-Tropsch synthesis process analysis. He has been honoured with many awards including the Science and Technology Innovation Award, National Award in Technology Advances and Innovation, Outstanding Science and Technology Achievement Award etc.

Jian Guo Wang, Institute of Coal Chemistry, Chinese Academy of Sciences – China

Prof. Dr. Jian Guo Wang holds the positions of the Director of Institute of Coal Chemistry, Chinese Academy of Sciences and the Director of the State Key Laboratory of Coal Conversion. He is engaged in fundamental research in the fields of zeolite catalysis by combining theoretical computation, molecular simulation with experimental investigations, catalytic process development related to coal conversion, particularly in methanol selective conversion to olefins and aromatics. He received his Ph.D. degree from the Institute of Coal Chemistry, Chinese Academy of Sciences in 1995, studying the adsorption, diffusion and reaction in zeolites. In 1996, he was awarded with an Alexander von Humboldt fellowship and worked in the Institute of Technical Chemistry, University of Erlangen-Nuremberg, Germany, studying the shape selective reactions on zeolites by both continuum and Monte Carlo simulations. He joined the Institute of Coal Chemistry in 1998, and has published some 200 papers and obtained 20 authorised patents. He is the leader of 3 national key fundamental research and technical development projects.

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Exhibitors

Monday 8 June 2015

09:00 – 17:10	*Foyer* – Registration, Posters and Exhibition					
09:00 – 09:10	*Ballroom A & B* – **Opening Ceremony: Bernd Meyer**					
09:10 – 10:10	*Ballroom A & B* – **Plenary Session, Chair:** Hubert Hoewener					
09:10 – 09:30	Bernd Meyer, TU Bergakademie Freiberg – Germany					
09:30 – 09:50	Yong Wang Li, Synfuels China Technology Co., Ltd. – China					
09:50 – 10:10	Jian Guo Wang, Institute of Coal Chemistry, Chinese Academy of Sciences – China					
10:10 – 11:00	**Coffee Break + Poster Session**					
11:00 – 12:20	*Ballroom A* – **Session 1: Global status CtX,** Chair: Chris Higman		*Ballroom B* – **Session 2: Mineral matter I,** Chair: Johan van Dyk		*Ballroom C* – **Session 3: Fuel preparation & upgrading,** Chair: Raymond Everson	
11:00 – 11:20	01-1	Coal for fuels and chemicals: Worldwide challenges and opportunities (Andrew Minchener, IEA Clean Coal Centre – UK)	02-1	The internal and external factors on coal ash slag viscosity at high temperatures (Jin Bai, Institute of Coal Chemistry, Chinese Academy of Sciences – China)	03-1	Pre-gasification coal beneficiation by DryFining™ (Charles Bullinger, Great River Energy – USA)
11:20 – 11:40	01-2	Overview of drivers and status of coal-to-liquids developments in Australia (David Harris, CSIRO – Australia)	02-2	Effect of initial particle size on the transformations of mineral matter rich fractions of coal and various minerals during entrained flow gasification (Sarma Pisupati, Pennsylvania State University – USA)	03-2	Investigation of high-strength lump coke from lignite and sub-bituminous coals (Franz Fehse, TU Bergakademie Freiberg – Germany)
11:40 – 12:00	01-3	TBD (Samuel Tam, Department of Energy – USA)	02-3	Viscosity of partially crystalline slags (Daniel Schwitalla, TU Bergakademie Freiberg – Germany)	03-3	Effect of hydrothermal treatment on pyrolysis products of lignite (Peng Liu, ECUST – China)
12:00 – 12:20	01-4	Forces in and future of coal utilisation in the US (Qingyun Sun, US China Energy Centre, West Virginia University – USA)	02-4	Experimental and modelling studies on viscosity of typical Australian brown coal ashes (Alexander Ilyushechkin, CSIRO – Australia)	03-4	Effects of CO_2 on sulphur removal and its release behaviour of sulphur-containing compounds during coal pyrolysis (Fenrong Liu, Inner Mongolia University – China)
12:20 – 13:20	**Lunch**					
13:20 – 14:40	*Ballroom A* – **Session 4: Syngas treatment,** Chair: Jian Guo Wang		*Ballroom B* – **Session 5: Reactor simulation,** Chair: Andreas Richter		*Ballroom C* – **Session 6 Tar upgrading,** Chair: Steffen Krzack	
13:20 – 13:40	04-1	An overview of U.S. DOE's advanced gasification technologies programme (Nelson Rekos, U.S. DOE-National Energy Technology Laboratory – USA)	05-1	Dynamic simulation of coal-water slurry gasification with opposed multi-burner (Zhenghua Dai, ECUST – China)	06-1	Effect of addition zeolite catalyst on the tar quality from Shenmu coal pyrolysis (Dexiang Zhang, ECUST – China)
13:40 – 14:00	04-2	Gasification treatment solutions – UOP SeparAll™ process and Polybed™ PSA (Fangzhou Hu, UOP Honeywell – USA)	05-2	CPFD modelling of CO_2 enhanced coal gasification in circulating fluidised bed reactor (Joanna Bigda, Institute for Chemical Processing of Coal – Poland)	06-2	Integrated process of coal pyrolysis with tri-reforming of methane for improving tar yield (Haoquan Hu, Dalian University of Technology – China)
14:00 – 14:20	04-3	Gasification, warm-gas cleanup, and liquid fuel production with coal and biomass blends (Jason Laumb, University of North Dakota Energy & Environmental Research Center – USA)	05-3	Integration of coal drying in a mathematical model for Lurgi FBDB™ gasification (Martin Gräbner, Air Liquide Research and Development GmbH – Germany)	06-3	Preparation and evaluation of Ni-Mo/Al_2O_3 catalysts for catalytic hydrogenation of low temperature coal tar (Jing Zhao, ECUST – China)
14:20 – 14:40	04-4	RTI warm syngas cleanup technology demonstration (David Denton, RTI International – USA)	05-4	Numerical modelling of the large-scale Virtuhcon Benchmark for non-catalytic natural gas reforming (Yury Voloshchuk, TU Bergakademie Freiberg – Germany)	06-4	Microwave-induced pyrolysis of coal and biomass (Jiefeng Yan, University of Nottingham Ningbo – China)
14:40 – 15:10	**Coffee Break + Poster Session**					
15:10 – 16:50	*Ballroom A* – **Session 7: Gasification technologies I,** Chair: Rob van den Berg		*Ballroom B* – **Session 8: Gasification kinetics & experiments,** Chair: Rajender Gupta		*Ballroom C* – **Session 9: Synthesis technologies,** Chair: Yong Wang Li	
15:10 – 15:30	07-1	Siemens fuel gasification technology: status and new developments (Frank Hannemann/Dehui Wang, Siemens Fuel Gasification Technology GmbH & Co. KG/Siemens Limited China – Germany/China)	08-1	Gasification of Athabascan asphaltenes in a drop tube furnace (André Bader, TU Bergakademie Freiberg/University of Alberta – Germany/Canada)	09-1	Present and future opportunities downstream gasifiers (Klas Andersson, Haldor Topsøe – Denmark)
15:30 – 15:50	07-2	Wison-Shell bottom quench coal gasification technology: Innovation and advantages (Fen He, Shell (China) Projects and Technology Limited – China)	08-2	Low temperature entrained flow gasification behaviour of Victorian brown coal (Sankar Bhattacharya, Monash University – Australia)	09-2	Advanced process intensification approaches for liquid production from coal (Andrew Lucero, Southern Research Institute – USA)
15:50 – 16:10	07-3	Integration of KBR's TRIG & ammonia technologies – low rank coal to ammonia (Manoj Nagvekar, KBR Technology – USA)	08-3	Influence of enhanced pressure on the initial structure of char and its CO_2 gasification reactivity (Kevin Günther, TU Bergakademie Freiberg – Germany)	09-3	Synthetic gasoline production in combination with carbon dioxide utilisation (Stephan Schmidt, Chemieanlagenbau Chemnitz GmbH – Germany)
16:10 – 16:30	07-4	Two-dimensional CFD simulation for industrial coal-water slurry entrained flow gasifier (Yu Zhang, Synfuels China Technology Co., Ltd. – China)	08-4	Pilot scale studies on coal gasification in a circulating fluidised bed reactor with CO_2 addition as a gasifying agent (Aleksander Sobolewski, Institute for Chemical Processing of Coal – Poland)	09-4	A stochastic simulation: understanding the CO activation mechanisms in Fischer-Tropsch synthesis on Fe(110) model surfaces (Xin Xu, Fudan University – China)
16:30 – 16:50	07-5	Considerations on the gasification technology selection (Jiansheng Zhang, Tsinghua University – China)	08-5	Determination of Langmuir-Hinshelwood gasification kinetics from integral drop tube experiments (Florian Keller, TU Bergakademie Freiberg – Germany)	09-5	Recent progress on methanol to olefins reaction and technology (Zhongmin Liu, Dalian Institute of Chemical Physics, Chinese Academy of Sciences – China)
18:30 – 21:30	*Ballroom A & B* – **Conference Dinner**					

Tuesday 9 June 2015

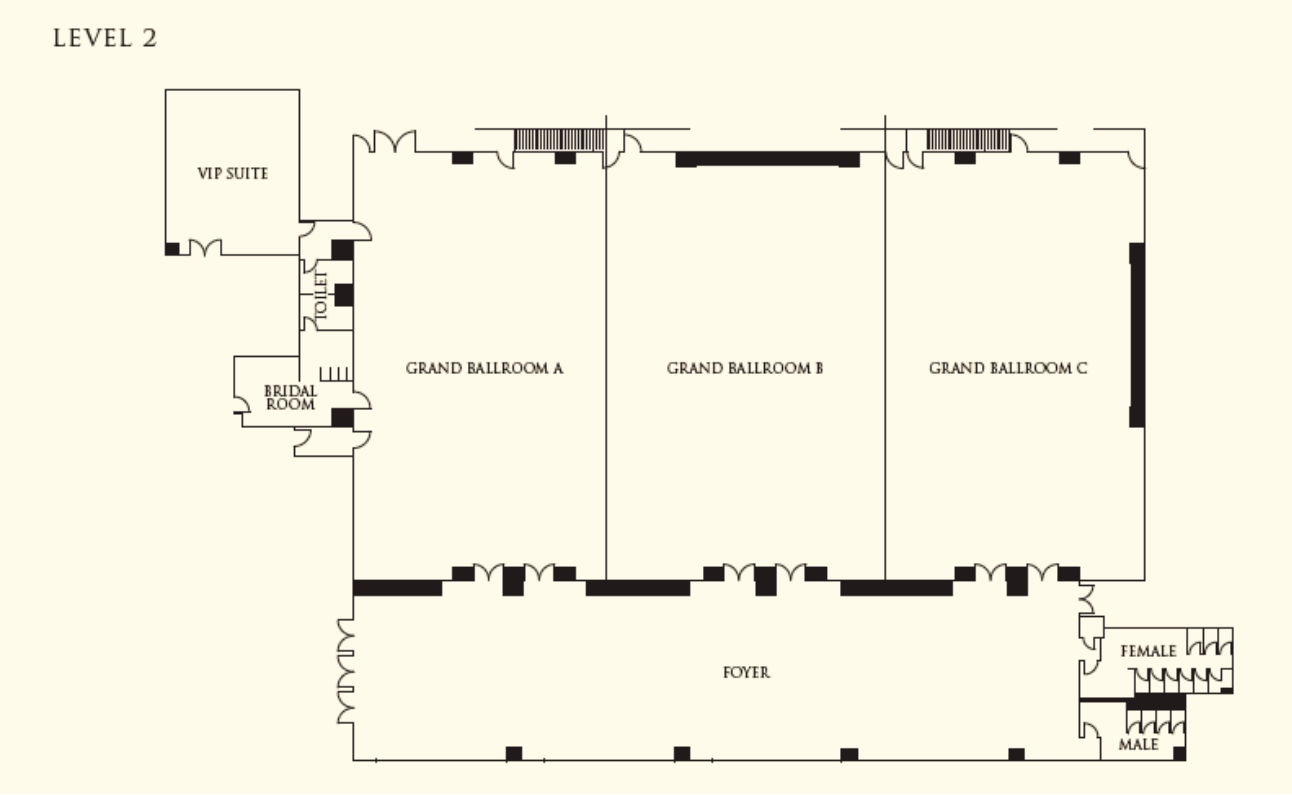
08:30 – 16:00	*Foyer* – Registration, Posters and Exhibition					
08:30 – 09:50	*Ballroom A* – **Session 10: Gasification technologies II,** Chair: Andrew Minchener		*Ballroom B* – **Session 11: New technologies,** Chair: Peter Seifert		*Ballroom C* – **Session 12: Mineral matter II,** Chair: Stefan Guhl	
08:30 – 08:50	10-1	Gasification characteristics of typical coal used in HT-L gasifier (Yan Zhang, Changzheng Engineering Co., Ltd. – China)	11-1	Stepwise liquefaction technology for fossil fuels (Qiang Guo, Synfuels China Technology Co., Ltd. – China)	12-1	Refractory developments for gasification (Patrick Stephan, Saint-Gobain Ceramics & Plastics, Inc. – USA)
08:50 – 09:10	10-2	Development and application of ECUST OMB gasification process (Zhijie Zhou, ECUST – China)	11-2	Comparison of iron-, nickel- and copper-based oxygen carriers for chemical-looping combustion (Yau Pin Chyou, Institute of Nuclear Energy Research – Taiwan)	12-2	Coal ash sintering characterisation by means of impedance spectroscopy (Ronny Schimpke, TU Bergakademie Freiberg – Germany)
09:10 – 09:30	10-3	Shell coal gasification technology: An integrated solution for efficient coal-to-products value chains (Rob van den Berg, Shell (China) Projects and Technology Limited – China)	11-3	CFD-simulation of a membrane module for carbon capture from coal derived syngas (Philipp Meysel, TU Munich – Germany)	12-3	Effect of Na on mineral transformation of coal ash at high temperatures and ash flow properties under reducing atmosphere (Jin Bai, Institute of Coal Chemistry, Chinese Academy of Sciences – China)
09:30 – 09:50	10-4	Air Liquide gasification development update (Daniel van der Merwe, Air Liquide Global E&C Solutions Shanghai Co., Ltd. – China)	11-4		12-4	Slag-induced corrosion of refractory materials under simulated gasification conditions (Markus Reinmöller, TU Bergakademie Freiberg – Germany)
09:50 – 10:20	**Coffee Break + Poster Session**					
10:20 – 11:40	*Ballroom A* – **Session 13: Gasification technologies & plants,** Chair: Martin Gräbner		*Ballroom B* – **Session 14: Entire concepts I,** Chair: Martin Gall		*Ballroom C* – **Session 15: Gasification kinetics,** Chair: Sankar Bhattacharya	
10:20 – 10:40	13-1	TKIS's proprietary gasification technology HTW™, an optimal solution for brown coal and low rank coal in China (Vincent Liu, ThyssenKrupp Industrial Solutions AG – Germany)	14-1	Increasing the flexibility of IGCC power plant (Chris Higman, Higman Consulting GmbH – Germany)	15-1	High pressure entrained flow studies of gasification of Rhenish lignite (David Harris, CSIRO Energy – Australia)
10:40 – 11:00	13-2	BGL-Technology (André Schmidt, ZEMAG Clean Energy Technology GmbH – Germany)	14-2	Syngas-based annex concepts for chemical energy storage and improving flexibility of pulverised coal combustion power plants (Christian Wolfersdorf, TU Bergakademie Freiberg – Germany)	15-2	Brown coal char CO_2-gasification kinetics with respect to the char structure (Evgeniia Komarova, TU Bergakademie Freiberg – Germany)
11:00 – 11:20	13-3	The present and future development plan for coal to chemicals of Yitai Group (Juncheng Li, Inner Mongolia Yitai Group Co., Ltd. – China)	14-3	The potential of water-gas shift membrane reactors for CtX and flexible polygeneration processes (Alexander Buttler, TU Munich, Germany)	15-3	Effects of processing conditions on gasification of brown coal and kinetics (Lingmei Zhou, China University of Mining and Technology – China)
11:20 – 11:40	13-4	The feature extraction and prediction during the coal gasification process (Wenbin Zhang, Changzheng Engineering Co., Ltd. – China)	14-4	Flexible operation and control of methanol production from fluctuating syngas feed (Matthias Gootz, TU Bergakademie Freiberg – Germany)	15-4	Investigations on char gasification kinetics under CO_2 atmosphere at mid pressures (Victor Gonzalez, TU Bergakademie Freiberg – Germany)
11:40 – 12:40	**Lunch**					
12:40 – 14:00	*Ballroom A* – **Session 16: Microscopic phenomena in gasification,** Chair: David Harris		*Ballroom B* – **Session 17: Entire concepts II,** Chair: Manfred Wirsum		*Ballroom C* – **Session 18: CFD modelling,** Chair: Jason Laumb	
12:40 – 13:00	16-1	Fragmentation behaviour of several coals and its chars in a drop-tube reactor (Jan Friedemann, TU Bergakademie Freiberg – Germany)	17-1	Development status of dynamic modelling of Taean IGCC gasifier (Youseok Kim, Doosan Heavy Industries & Construction – Korea)	18-1	Multi-scale simulation of multiphase systems with petaflops supercomputing (Wei Ge, Institute of Process Engineering, Chinese Academy of Sciences – China)
13:00 – 13:20	16-2	Fragmentation initiation prediction of coal particles in a drop tube furnace according to tensile strength and porosity (Shan Zhong, TU Bergakademie Freiberg – Germany)	17-2	Tech-economic assessment of a coproduction system integrated with lignite pyrolysis and Fischer-Tropsch synthesis (Wenying Li, Taiyuan University of Technology – China)	18-2	Numerical simulation of a new reactor for the in-situ measurement of char particle conversion (Fengbo An, TU Bergakademie Freiberg – Germany)
13:20 – 13:40	16-3	Effect of temperature and residence time on soot formation during pyrolysis and gasification of asphaltene (Rajender Gupta, University of Alberta – Canada)	17-3	Concept of demonstration plant for methanol synthesis by CO_2 enhanced gasification of coal in fluidised bed reactor (Tomasz Chmielniak, Institute for Chemical Processing of Coal – Poland)	18-3	Comparison of numerical simulation method of coal gasification (Yan Zhang, Changzheng Engineering Co., Ltd. – China)
13:40 – 14:00	16-4	The DFT molecular modelling and particle kinetics studies of the mechanism for CO_2-char gasification (Raymond Everson, North West University – South Africa)	17-4		18-4	Interface and porosity tracking of a reacting char particle in CO_2 atmosphere (Frank Dierich, TU Bergakademie Freiberg – Germany)
14:00 – 14:30	**Coffee Break + Poster Session**					
14:30 – 15:30	*Ballroom A* – **Session 19: New technologies & components,** Chair: Patrick Stephan			*Ballroom B* – **Session 20: Underground coal gasification,** Chair: Aleksander Sobolewski		
14:30 – 14:50	19-1	A novel method to upgrade heavy oil using non-thermal plasma technology (Haigang Hao, Synfuels China Technology Co., Ltd. – China)		20-1	Coal seam surrounding strata in terms of UCG process contaminants migration (Krzysztof Lis, KGHM Cuprum Ltd. – Poland)	
14:50 – 15:10	19-2	Supercritical water gasification: carbon gasification efficiency (Eliška Purkarová, University of Chemistry and Technology Prague – Czech Republic)		20-2	Spontaneous combustion assessment of a coal reserve planned for underground coal gasification (Johan van Dyk, African Carbon Energy – South Africa)	
15:10 – 15:30	19-3	Custom tailored gasifier feed pumps (Daniel Nägel, FELUWA Pumpen GmbH – Germany)		20-3	Evolution of tar compounds in raw gas from a pilot-scale underground coal gasification (UCG) trial (Krzysztof Kapusta, Central Mining Institute – Poland)	
15:30 – 16:00	*Ballroom C* – **Closing Ceremony**					
17:00 – 19:00	**Visit to Dazhao Temple**					

Technical Tours	
Wednesday 10 June 2015	
08:30 – 17:00	**Technical Tour 1 – Yitai Dalu Coal-to-Liquids Plant**
Thursday 11 June 2015	
08:30 – 17:00	**Technical Tour 2 – OMB Plant in Inner Mongolia Rongxin Chemical Industry Co., Ltd.**

All tours (Dazhao Temple and technical tours) will depart from and return to the Shangri-La Hotel. For conference participants who have registered to take part in these events, please meet at the front entrance of the hotel 10min before the official time whereby the tour is starting. Please note that the duration of the tour and the time we will return to the hotel may change slightly depending on traffic conditions.

Poster Session Programme	
P 01	Reduction of sulphur amount by electrochemical method in lignite coal of Shivee Ovoo mining in Mongolia (Battsengel Baatar, German-Mongolian Institute for Resources and Technology – Mongolia)
P 02	Mathematical model for coal gasification in circulating fluidised bed reactor (Joanna Bigda, Institute for Chemical Processing of Coal – Poland)
P 03	MnOx-loaded non-carbon based sorbent derived from waste paper recycling for mercury capture from fuel gas with application to gasification systems (Haoquan Hu, Dalian University of Technology – China)
P 04	Condition dependency of direct coal liquefaction process (Xingjia Jiang, Institute of Coal Chemistry, Chinese Academy of Sciences – China)
P 05	Effect of temperature and pressure on direct coal liquefaction using Ni-Mo/macro, mesoSBA-15 catalysis (Tae Hoon Lee, Yeungnam University – Republic of Korea)
P 06	Reduction of SO_2 under oxygen and moisture condition over Cu-Sn-Zr based catalyst including a noble-metal (Tae Hoon Lee, Yuengnam University – Republic of Korea)
P 07	Study of hydrogen donation ability of solvents in DCL from a free radical viewpoint (Muxin Liu, Institute of Coal Chemistry, Chinese Academy of Sciences – China)
P 08	Sulfation mechanism in limestone and dolomite under high pressure oxy-fuel combustion atmosphere (Sarma Pisupati, Pennsylvania State University – USA)
P 09	Detailed analysis of the mass balance of a pressurised pyrolysis (Gerrit Surup, Air Liquide Research and Development GmbH – Germany)
P 10	Pilot-scale tests of supercritical water gasification (Marek Svab, Dekonta, a.s. – Czech Republic)
P 11	Mineral matter behaviour of brown coal ash in oxidising and reducing atmosphere (Guanjun Zhang – China)
P 12	The 3D visualisation and quantitative analysis of pore microstructure of coals (Jun Zhang, Institute of Coal Chemistry, Chinese Academy of Sciences – China)
P 13	Modelling of three-dimensional thermal transient reacting flow in an entrained-flow bed gasifier based on computational particle fluid dynamics method (Yan Zhang, Changzheng Engineering Co., Ltd. – China)

Floor Plan (Shangri-La Hotel, Huhhot)



Please note that the programme is prepared in British English. Presentation titles in American English are therefore edited to ensure consistency in the language used in the conference abstract book.