



TWENTY - SEVENTH ANNUAL INTERNATIONAL PITTSBURGH COAL CONFERENCE

FINAL TECHNICAL PROGRAM

COAL - ENERGY, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT



October 11 - 14, 2010
Hilton Istanbul
Istanbul, TURKEY

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WELCOME!

On behalf of the Conference Advisory Board, Conference Committees, and the University of Pittsburgh we welcome you to the Twenty-Seventh Annual International Pittsburgh Coal Conference held October 11 - 14, 2010 at the Hilton Istanbul in Istanbul, Turkey. The Conference is hosted by the University of Pittsburgh.

The theme of this year's conference is "Coal - Energy, Environment and Sustainable Development" which covers a wide spectrum of important topics on coal technology, synfuel and environmental issues. The topics cover energy and environmental issues and technologies related to coal and its byproducts. Over 300 technical papers and posters will be presented throughout the conference. The Poster Sessions will be held on Tuesday, October 12 from 18:20 - 20:20. For detailed information on technical sessions, papers and speakers, please turn to page 6 in the Technical Program.

The invited Plenary Speakers include: Charles Taylor, Director, Chemistry and Surface Science Division, U.S. Department of Energy, National Energy Technology Laboratory, USA; Carlos A. Cabrera, President and CEO, National Institute of Clean and Low Carbon Energy (NICE), CHINA; Selahaddin Anaç, General Director, Turkish Coal Enterprise (TKI), TURKEY; Richard Winschel, Director, Research Services, CONSOL Energy Inc., USA; John Topper, Managing Director, IEA Clean Coal Centre, UNITED KINGDOM; Ekrem Ekinçi, Rector, Isik University, TURKEY; John Wheeldon, Manager of Science and Technology, National Carbon Capture Center, EPRI, USA; Volkan Ediger, İzmir Technology Institute, TURKEY; and Robert Beck, Executive Vice President and Chief Operating Officer, The National Coal Council, Inc., USA.

We express our sincere gratitude to the contributors for their support and involvement, to all the authors and co-authors of the technical papers and to all the members of the Program Committee, Awards Committee, International Committee and Membership Committee. Special thanks go to our Turkish host and coordinator Dr. Güven ÖNAL, Technical Program Chairs, Evan Granite of NETL-DOE, USA, and Jim Hower of the University of Kentucky, CAER, USA as well as to all session chairs, speakers and international delegates for their contributions to the 2010 technical program.

As the chair and vice chair of the Advisory Board of the Conference, we deeply appreciate your participation and interest in this year's Conference and we invite you to join us next year for the Twenty-Eighth Annual International Pittsburgh Coal Conference, which will be held in Pittsburgh, PA, USA at the David L. Lawrence Convention Center.

Sincerely,



Robert Beck, Chair
The National Coal Council, Inc., Washington, DC, USA



Richard Winschel, Vice -Chair
CONSOL Energy Inc., Pittsburgh, PA, USA

CONFERENCE REGISTRATION

On-Site Registration will begin Monday, October 11, from 18:00 - 20:00 and continues Monday, Tuesday, and Wednesday from 08:00 until 17:00.

Please check in even if you have Pre-Registered!

The International Pittsburgh Coal Conference

EXECUTIVE DIRECTOR:
Dr. Badie I. Morsi

CONFERENCE ORGANIZER:
Ms. Heidi M. Aufdenkamp

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PITT AWARD

The Award for Innovation in Coal Conversion was founded by the Chemical and Petroleum Engineering Department, University of Pittsburgh in 1983 with industrial support. Since 1992, it has been fully funded by CONSOL Energy Inc.

CONFERENCE OVERVIEW

MONDAY, OCTOBER 11, 2010

Technical Tour	07:00 - 22:30
Registration	18:00 - 20:00
Reception	19:30 - 21:30

TUESDAY, OCTOBER 12, 2010

Registration	08:00 - 17:00
Opening Ceremony	09:00 - 09:30
Plenary Session – 1	09:30 - 11:15
Concurrent Tech. Sessions	11:30 - 13:10
Conference Luncheon	13:10 - 14:25
Concurrent Tech. Sessions	14:25 - 18:20
Poster Session	18:20 - 20:20
Dinner	20:20 - 22:20

WEDNESDAY, OCTOBER 13, 2010

Registration	08:00 - 17:00
Plenary Session – 2	09:00 - 10:45
Concurrent Tech. Sessions	11:00 - 12:40
Conference Luncheon	12:40 - 13:55
Concurrent Tech. Sessions	13:55 - 17:50
Gala Dinner	20:30 - 22:30

THURSDAY, OCTOBER 14, 2010

Registration	08:00 - 17:00
Plenary Session – 3	09:00 - 10:45
Concurrent Tech. Sessions	11:00 - 12:40
Awards Luncheon	12:40 - 13:55
Concurrent Tech. Sessions	13:55 - 17:50
Advisory Board Meeting	18:00 - 21:00

PLENARY SPEAKERS

TUESDAY, OCTOBER 12, 2010

Energy Production/Policy Speakers

Charles Taylor

Director, Chemistry and Surface Science Division
U.S. DOE/NETL, USA

“U.S. Department of Energy’s Carbon Capture and Storage Efforts and Results”

Carlos A. Cabrera

President and CEO
National Institute of Clean and Low Carbon Energy (NICE), CHINA
“A Refined Approach to Coal”

Selahaddin Anaç

General Director
Turkish Coal Enterprise (TKI), TURKEY
“Coal in Turkish Energy Policy and Clean Coal Technologies”

WEDNESDAY, OCTOBER 13, 2010

International Issues

Richard Winschel

Director, Research Services
CONSOL Energy Inc., USA
“FutureGen – the World’s First Near-Zero Emission Coal-Based Power Plant”

John Topper

Managing Director
IEA Clean Coal Centre, UNITED KINGDOM
“Sustainable Low Emissions Coal for our Grandchildren?”

Ekrem Ekinci

Rector
Isik University, TURKEY
“Realities and Constraints of Coal in Energy and Environmental Perspectives”

THURSDAY, OCTOBER 14, 2010

Environmental Issues

John Wheeldon

Manager of Science and Technology
National Carbon Capture Center, EPRI, USA
“CO₂ Capture and Storage for Coal-Based Power Generation”

Volkan Ediger

Izmir University of Economics, TURKEY
“Geopolitics of Coal and Global Climate”

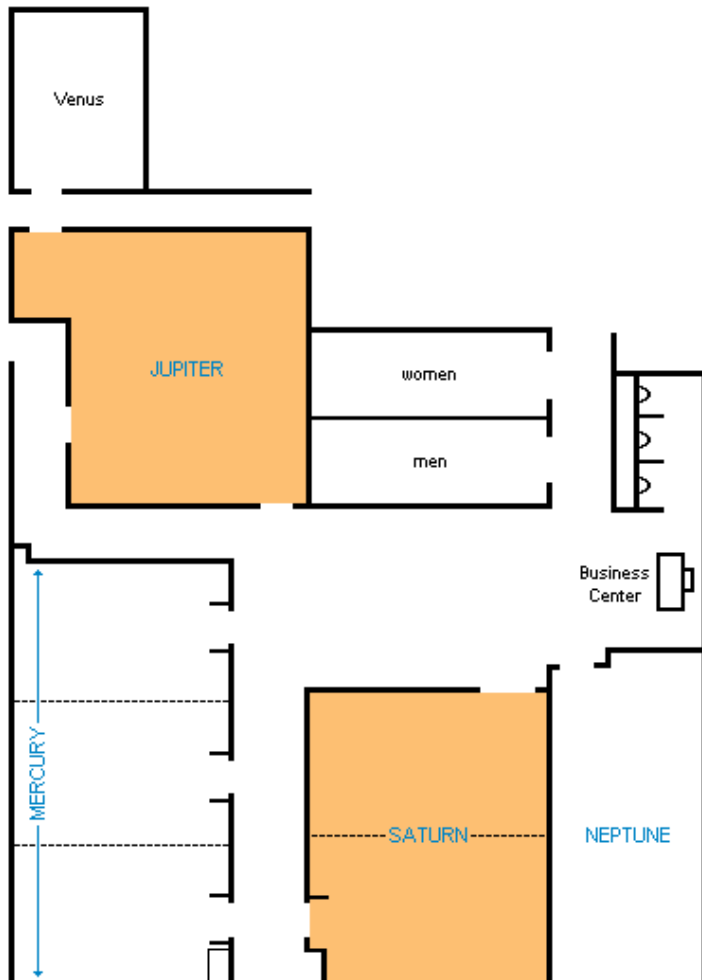
Robert Beck

Executive Vice President and Chief Operating Office
The National Coal Council, Inc., USA
“Low Carbon Coal: 21st Century Technologies and Policies”

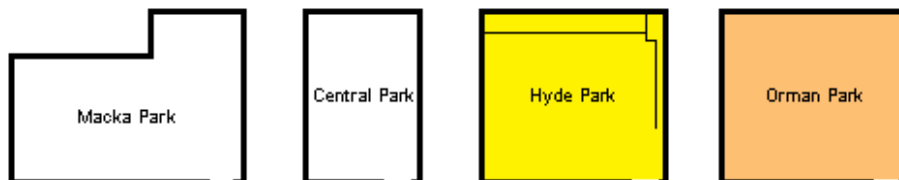
Monday, October 11, 2010						
7:00-22:30	Technical Tour					
18:00-20:00	Registration – Hyde Park					
19:30-21:30	Reception – Convention Center					
Tuesday, October 12, 2010						
8:00-17:00	Registration – Hyde Park					
9:00-9:30	Opening Ceremony – Convention Center					
9:30-11:15	Plenary Session – Convention Center					
11:15-11:30	Coffee Break – Ballroom Lobby					
ROOM	Convention Center	Convention Center	Convention Center	Saturn	Lalezar	Jupiter
	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
11:30-13:10	Combustion: Oxy-Coal Development – 1	Gasification: General Session – 1	Carbon Management: GHG Management Strategies & Economics – 1	Coal Science: Coal Chemistry – 1	Sustainability and Environment – 1	Coal-Derived Products: Chemicals/Materials
13:10-14:25	Conference Luncheon – Convention Center					
	Session 7	Session 8	Session 9	Session 10	Session 11	Session 12
14:25-16:05	Combustion: Chemical Looping Development – 1	Gasification: Underground Coal Gasification – 1	Carbon Management: GHG Management Strategies & Economics – 2	Coal Science: Coal Fires	Sustainability and Environment – 2	Coal-Derived Products: Activated Carbon Production – 1
16:05-16:20	Coffee Break – Ballroom Lobby					
	Session 13	Session 14	Session 15	Session 16	Session 17	Session 18
16:20-18:20	Combustion: Mercury and Trace Elements	Gasification: Underground Coal Gasification – 2	Carbon Management: CO ₂ Sequestration	Coal Science: Coking	Sustainability and Environment – 3	Coal-Derived Products: Activated Carbon Production – 2
18:20-20:20	Poster Presentations – Convention Center					
20:20-22:20	Dinner – Convention Center					
Wednesday, October 13, 2010						
8:00-17:00	Registration – Hyde Park					
9:00-10:45	Plenary Session – Convention Center					
10:45-11:00	Coffee Break – Ballroom Lobby					
ROOM	Convention Center	Convention Center	Convention Center	Saturn	Lalezar	Jupiter
	Session 19	Session 20	Session 21	Session 22	Session 23	Session 24
11:00-12:40	Combustion: Oxy-Coal Development – 2	Gasification: Fundamentals – 1	Carbon Management: Pre-Combustion CO ₂ Capture	Coal Science: CBM/Carbon Dioxide	Sustainability and Environment – 4	Coal-Derived Products: Direct Coal-to-Liquids
12:40-13:55	Conference Luncheon – Convention Center					
	Session 25	Session 26	Session 27	Session 28	Session 29	Session 30
13:55-15:35	Combustion: Chemical Looping Development – 2	Gasification: Fundamentals – 2	Carbon Management: Post-Combustion CO ₂ Capture – 1	Coal Science: Coal Chemistry – 2	Coal Science: Beneficiation – 1	Coal-Derived Products: Coal-to-Liquids/Fischer- Tropsch – 1
15:35-15:50	Coffee Break – Ballroom Lobby					
	Session 31	Session 32	Session 33	Session 34	Session 35	Session 36
15:50-17:50	Combustion: Fluidized-Bed Combustion and Co-Firing – 1	Gasification: Fundamentals – 3	Carbon Management: Post-Combustion CO ₂ Capture – 2	Coal Science: Coal Chemistry – 3	Coal Science: Beneficiation – 2	Coal-Derived Products: Coal-to-Liquids/Fischer- Tropsch – 2
20:30-22:30	Gala Dinner – Convention Center					
Thursday, October 14, 2010						
8:00-17:00	Registration – Hyde Park					
9:00-10:45	Plenary Session – Convention Center					
10:45-11:00	Coffee Break – Ballroom Lobby					
ROOM	Convention Center	Convention Center	Convention Center	Saturn	Lalezar	Jupiter
	Session 37	Session 38	Session 39	Session 40	Session 41	Session 42
11:00-12:40	Combustion: Oxy-Coal Development – 3	Gasification: Fundamentals – 4	Gasification: General Session – 2	Coal Science: Coal Chemistry – 4	Coal Science: Beneficiation – 3	Coal-Derived Products: H ₂ Production/SNG
12:40-13:55	Awards Luncheon – Convention Center					
	Session 43	Session 44	Session 45	Session 46	Session 47	Session 48
13:55-15:35	Combustion: Fluidized-Bed Combustion and Co-Firing – 2	Gasification: Fundamentals – 5	Gasification: Modeling – 1	Coal Science: Coal Chemistry – 5	Coal Science: Beneficiation – 4	Coal-Derived Products: General Session – 1
15:35-15:50	Coffee Break – Ballroom Lobby					
	Session 49	Session 50	Session 51	Session 52	Session 53	Session 54
15:50-17:50	Combustion: Ash Deposition and Heat Transfer	Gasification: Gas Cleanup	Gasification: Modeling – 2	Coal Science: Coal Chemistry – 6	Coal Science: Beneficiation – 5	Coal-Derived Products: General Session – 2
18:00-21:00	Advisory Board Meeting					

The Westin Convention Center

HILTON ISTANBUL - LOBBY LEVEL



HILTON ISTANBUL - SUB FLOOR 2



ROOM DIRECTORY

Registration
Hyde Park

Monday Evening Reception
Convention Center

Opening Ceremony
Convention Center

Plenary Sessions
Convention Center

Conference Luncheons
Convention Center

Poster Presentations
Convention Center

Exhibits
Convention Center

A/V & Speaker Preparation Room
Orman Park

SESSION MEETING ROOMS

Convention Center
Sessions 1, 7, 13, 19, 25, 31, 37, 43, 49

Convention Center
Sessions 2, 8, 14, 20, 26, 32, 38, 44, 50

Convention Center
Sessions 3, 9, 15, 21, 27, 33, 39, 45, 51

Saturn
Sessions 4, 10, 16, 22, 28,
34, 40, 46, 52

Lalezar
Sessions 5, 11, 17, 23, 29,
35, 41, 47, 53

Jupiter
Sessions 6, 12, 18, 24, 30,
36, 42, 48, 54

ORAL SESSIONS
Tuesday, October 12, 2010
11:30 - 18:20

SESSION 1
COMBUSTION:
OXY-COAL DEVELOPMENT – 1
John Wheeldon and Iskender Gokalp

11:30 - **Development of Oxycoal™ Technology Resulting from Testing Conducted at Doosan Power Systems' Clean Combustion Test Facility (CCTF)**, Peter Holland-Lloyd, David Fitzgerald, Doosan Power Systems, UNITED KINGDOM

11:50 - **Co-Firing of Coal and Wood Biomass in Oxy-Fuel Combustion**, Seong Yool Ahn, Jae woo An, Yon Mo Sung, Cheor Eon Moon, Gyung Min Choi, Duck Jool Kim, Pusan National University, SOUTH KOREA

12:10 - **NO_x Reburning in Oxy-Fuel Combustion - An Experimental Investigation**, Daniel Kühnemuth, Fredrik Normann, Klas Andersson, Filip Johnsson, Bo Leckner, Chalmers University of Technology, SWEDEN

12:30 - **Oxy-Combustion of Pulverized Coal: Modeling of Char-Combustion Kinetics**, M. Geier, C. R. Shaddix, Sandia National Labs, USA; B. S. Haynes, University of Sydney, AUSTRALIA

12:50 - **Study on Thermodynamic Calculation for O₂/CO₂ Flue Gases Recycled Combustion Boiler**, Li-Qi Zhang, Can-Zhi Li, Fang Huang, Ji-Hua Qiu, Chu-Guang Zheng, Huazhong University of Science and Technology, CHINA

SESSION 2
GASIFICATION:
GENERAL SESSION – 1
Ke Liu and Hasancan Okutan

11:30 - **Coal: Biomass Gasification - A Pathway for New Technology Development of Oxygen Blown Co-fired Gasification with Integrated Electrolysis**, Tana Levi, R. Witney, Y Iwasaki, Tony Clemens, CRL Energy Ltd.; S Pang, Q Xu, University of Canterbury; AI Gardiner, Industrial Research Limited, NEW ZEALAND

11:50 - **Hydrogen Generation from Water by Using Plasma**, Beycan İbrahimoglu, İbrahim İbrahimoglu, Anadolu Plazma Teknoloji Merkezi; Fırat Şen, Vestel Defence Industry R&D Department; Şahika Yürek, Türkiye Kömür İşletmeleri; Orhan Demirel, Turkish Coal Enterprises (TKI), TURKEY

12:10 - **Technology and Operational Experience – The Shell Perspective**, Jay Wang, Shell Global Solutions International BV, THE NETHERLANDS

12:30 - **Controlling the Synthesis Gas Composition from Catalytic Gasification of Hypercoal and Coal by Changing the Gasification Parameters**, Atul Sharma, Toshimasa Takanohashi, National Institute of Advanced Industrial Science and Technology, JAPAN

12:50 - **A Technico-Economical Feasibility Study of Plasma Assisted Coal Gasification Compared to a Reference Auto-Thermal Gasification Process**, Nazim Merlo, Iskender Gokalp, ICARE-CNRS, FRANCE

SESSION 3
CARBON MANAGEMENT:
GHG MANAGEMENT STRATEGIES AND ECONOMICS – 1
Leslie Ruppert and Ender Okandan

11:30 - **Processes to Produce Value Added Products from CO₂**, Belma Demirel, Deena Ferdous, Rentech, Inc., USA

11:50 - **Design and Operational Strategies for IGCC with CO₂ Capture**, Chris Higman, Higman Consulting GmbH, GERMANY; George Booras, Electric Power Research Institute; Dan Kubek, Gas Processing Solutions LLC; Jim Sorensen, Sorensenergy LLC; Doug Todd, Process Power Plants, LLC, USA

12:10 - **Envisioning CO₂ Distribution Networks for Carbon Capture and Storage (CCS) in the United States: Strategies for CO₂ Pipeline Deployment at a Regional Scale**, Nils Johnson, Joan Ogden, University of California, Davis, USA

12:30 - **Linking Economic and Technological Modeling of CCS and Legislative Policy for Coal Mining Companies**, Pratt Rogers, Sean Dessureault, University of Arizona, USA

SESSION 4
COAL SCIENCE:
COAL CHEMISTRY – 1
Ashok K. Singh and Karol Koster

11:30 - **Carbonaceous Emissions Reflected in Deposits on Building Stones: Case Study in Prague Castle**, Ivana Šýkorová, Martina Havelcová, Hana Trejtnarová, Petra Matysová, Alexandr Šulc, Institute of Rock Structure and Mechanics AS CR, v.v.i.; Antonín Zeman, Institute of Theoretical and Applied Mechanics, AS CR, v.v.i., CZECH REPUBLIC

11:50 - **Visualization of Coal Conversion Using X-Ray Computed Tomography**, QP Campbell, HWJP Neomagus, North-West University, SOUTH AFRICA

12:10 - **Organic Sulphur Functionality Changes in Biotreated Coals**, Lenia Gonsalvesh, Stefan Marinov, Maya Stefanova, Institute of Organic Chemistry, Bulgarian Academy of Sciences, BULGARIA; Robert Carleer, Jan Yperman, Hasselt University, BELGIUM

12:30 - **Surface Coal Mine Planning Against Large Landslides**, Celal Karpuz, Levent Tutluoglu, Arman Kocal, Middle East Technical University; Mustafa Ozdingis, Kivanc Het, Turkish Coal Enterprises (TKI), TURKEY

12:50 - **Clean Coal Strategies for Feed Coal for Power Plants: A Case Study of North Karanpura Coalfields (NKCF) Coal, India**, Uday Kumar, Ranchi University; R.P.Singh, RI-I.C.M.P.D.I.; Debashree P. Singh, Geological Survey of India, INDIA

SESSION 5
SUSTAINABILITY AND ENVIRONMENT – 1
Brenda Pierce and Fevzi İsbilir

11:30 - **A Solution to Water Crisis in Energy Production: Feasibility of Using Impaired Waters for Coal-Fired Power Plant Cooling**, Radisav D. Vidic, Heng Li, Shih-Hsiang Chien, Jason D. Monnell, University of Pittsburgh; David Dzombak, Ming-Kai Hsieh, Carnegie Mellon University, USA

11:50 - **Leaching Characteristics of Waste from PF Utilities and Transitional Technologies using Australian Coal**, D.H. French, K.W. Riley, CSIRO Energy Technology;

C.R. Ward, L.G. Stephenson, L.W. Gurba, University of New South Wales, AUSTRALIA

12:10 - **Borovac Coal Cleaning Process**, Branislav Grbovic, Borovac International Pty Ltd, AUSTRALIA; Miloljub Grbovic, Borovac International Pty Ltd; Jelenko Micic, Mining Basin Kolubara d.o.o.; Miroslav Spasojevic, "Nikola Tesla" Power Plants, SERBIA

12:30 - **Reducing Greenhouse Gas Emissions from Coal Combustion by Adding Micro-Algal Biomass**, Jaco Brink, Sanette Marx, North-West University, SOUTH AFRICA

12:50 - **The Creation of Georeactor Global Scientific Network**, Jan Rogut, Jozef Dubinski, Aleksandra Tokarz, GIG, Central Mining Institute, POLAND; Marc Steen, Institute for Energy, Joint Research Centre; Hans Bruining, Delft University of Technology, THE NETHERLANDS; Hema J. Siriwardane, West Virginia University; Tomasz Wiltowski, Southern Illinois University; Elizabeth Burton, Lawrence Livermore National Laboratory; Subhas K. Sikdar, US EPA, USA; Thomas Kempka, German Research Centre for Geosciences (GFZ), GERMANY; Sohei Shimada, University of Tokyo, JAPAN

SESSION 6
COAL-DERIVED PRODUCTS:
CHEMICALS/MATERIALS
Belma Demirel and Bekir Zühtü Uysal

11:30 - **Converting Brown Coal into Chemicals and Hydrogen by Steam Cracking and Gasification**, Nozomu Sonoyama, Idemitsu Kosan Co., Ltd; Kazunari Nobuta, Tokuji Kimura, Sou Hosokai, Teruoki Tago, Takao Masuda, Hokkaido University; Jun-ichiro Hayashi, Kyusyu University, JAPAN

11:50 - **A Peat-Based Natural Absorbent for Sewage Purification**, S.A. Aipshtein, O.V. Barabanova, D.L. Shirochin, V.G. Nesterova, Moscow State Mining University, RUSSIA

12:10 - **Pilot Scale Production of Humic Substances from Turkish Leonardites**, Bekir Zühtü Uysal, Ufuk Gündüz Zafer, Ö. Murat Dogan, Duygu Öztan, Gazi University; Zeki Olgun, Mustafa Ozdingis, Selahaddin Anac, Turkish Coal Enterprises (TKI), TURKEY

12:30 - **Heavy Metal Removal by Using Chemically Crosslinked Turkish Coal Based Humic Acid**, Tulay Inan, Hacer Dogan, Murat Koral, TUBITAK Marmara Research Center; Selahattin Anaç, Zeki Olgun, TKI(Turkish Coal Enterprises), TURKEY

12:50 - **Analysis of the Effect of Internal Defect on Coke Fracture Behavior by Rigid Bodies-Spring Model**, Kenichi Hiraki, Hayashizaki Hideyuki, Yoshiaki Yamazaki, Tetsuya Kanai, Xiaoqing Zhang, Masakazu Shoji, Hideyuki Aoki, Takatoshi Miura, TOHOKU University, JAPAN

SESSION 7
COMBUSTION:
CHEMICAL LOOPING DEVELOPMENT – 1
John Wheeldon and Mehmet Tombul

14:25 - **Ilmenite as an Oxygen Carrier in a Chemical Looping Combustion System: Reaction Kinetics and Fluidized Bed Performance**, Christopher K. Clayton, Gabor Konya, Edward M. Eyring, Kevin J. Whitty, The University of Utah, USA

14:45 - **Application of Inorganic Remains Originating from Water Purification and Sewage Sludge Ashes in Chemical Looping Combustion Process**, Ewelina Ksepko, Grzegorz Labojko, Marek Sciazko, Institute for Chemical Processing of Coal, POLAND

15:05 - **Chemical Looping with Oxygen Uncoupling: Design Calculations and Process Engineering Simulations Using Kinetic Data**, JoAnn S. Lighty, Adel F. Sarofim, Asad H. Sahir, Edward Eyring, Gabor Konya, University of Utah, USA

15:25 - **Chemical Looping Combustion and Gasification – A Novel Technique to Produce Concentrated Stream of Hydrogen and Carbon Dioxide from Victorian Lignites**, Chiranjib Saha, Ali Akhavan, Sankar Bhattacharya, Monash University, AUSTRALIA

**SESSION 8
GASIFICATION:
UNDERGROUND COAL GASIFICATION – 1**
Rohan Courtney and Ömer Sezgin

14:25 - **Bloodwood Creek UCG Pilot 2008 – 2010**, Cliff Mallet, Carbon Energy Pty. Ltd., AUSTRALIA; Burl E. Davis, Carbon Energy Pty Ltd, USA

14:45 - **Studies on Gasification of Turkish Lignite via Underground Coal Gasification**, Şahika Yürek, Kıvanç Het, Directorate of Turkish Coal Enterprises (TKİ), TURKEY

15:05 - **Underground Coal Gasification and Applicability to Thrace Basin Lignite in Turkey**, Ayşe Yildirim, Serdar Dogan, Turkish Petroleum Company, TURKEY

**SESSION 9
CARBON MANAGEMENT:
GHG MANAGEMENT STRATEGIES AND
ECONOMICS – 2**
Leslie Ruppert and Bahtiyar Ünver

14:25 - **CO₂-Reduction through Biomass Co-Firing in Coal Fired Power Plants**, Klaus-Dieter Tigges, Roland Jeschke, Alfred Gwosdz, Alfons Leisse, Hitachi Power Europe GmbH, GERMANY

14:45 - **Ventilation Air Methane Abatement at CONSOL Energy's Enlow Fork Mine**, Richard A. Winschel, Deborah A. Kosmack, William P. Fertall, CONSOL Energy Inc.; Jerry Gureghian, Green Holdings Corp., USA

15:05 - **Novel Methods of Coal Seam Gas Content Determination for Estimation of Greenhouse Gas Emissions from Mining**, Abouna Saghafi, CSIRO Energy Technology, AUSTRALIA

15:25 - **Swelling of Moist Coal in Carbon Dioxide and Methane**, Richard Sakurovs, Robyn Fry, Stuart Day, CSIRO Energy Technology, AUSTRALIA

15:45 - **Evaluation of Total Porosity and the Amount of Inaccessible Pores in Coal Using Small-Angle Neutron Scattering**, Yuri B. Melnichenko, L. He, Oak Ridge National Laboratory; M. Mastalerz, Indiana University, USA; R. Sakurovs, CSIRO Energy Technology; T. Blach, Griffith University, AUSTRALIA

**SESSION 10
COAL SCIENCE:
COAL FIRES**

Susan J. Tewalt and Levent Ergun

14:25 - **Early Stage Detection of Coal Spontaneous Combustion in View of Pretreatment of the Coal**, Boleslav Taraba, Zdenek Pavelek, Jiri Janek, Ostrava University, CZECH REPUBLIC

14:45 - **Scope of Using Fly Ash for Reclamation and Control of Fire in Coal Mines**, R. V. K. Singh, G. Sural, V. K. Singh, Central Institute of Mining & Fuel Research, INDIA

15:05 - **SEM Study of Some Indian Natural Cokes (Jhama)**, Ashok K. Singh, Nandita Choudhury, Central Institute of Mining & Fuel Research, CSIR; Mamta Sharma, National Metallurgical Laboratory, CSIR; Mahendra P. Singh, Banaras Hindu University, INDIA

15:25 - **Examination of Low Temperature Air Oxidation Mechanism of Brown Coal for Suppressing Self Ignition Tendency**, Kouichi Miura, Ryota Okajima, Mitsunori Makino, Ryuichi Ashida, Kyoto University, JAPAN

15:45 - **Beneficiation Prospects of Baked Coking Coals from Seam XV, Jharia Coalfield, Damodar Valley, India**, Ashok K Singh, N. K. Shukla, N. Choudhury, Central Institute of Mining & Fuel Research, CSIR; Mamta Sharma, National Metallurgical Laboratory, CSIR, INDIA

**SESSION 11
SUSTAINABILITY AND ENVIRONMENT – 2**
Brenda Pierce and Aysel Atımtay

14:25 - **Emissions from Cofiring Coal with Renewable Materials Such as Biomass and Sewage**, Lesley Sloss, IEA Clean Coal Centre, UNITED KINGDOM

14:45 - **Element Leaching from Coal Stockpiles – Case Studies from the Sydney and Collie Basins, Australia**, Colin R. Ward, Leanne Stephenson, Zhongsheng Li, University of New South Wales; David French, Ken Riley, Owen Farrell, CSIRO Energy Technology, AUSTRALIA

15:05 - **Economic Evaluation of Sulcis Coal Leaching Process**, Elisabetta Fois, Melis Francesco, Carbosulcis S.p.A.; Giampaolo Mura, Antonio Lallai, Agata Pistis, Università di Cagliari, ITALY

15:25 - **Coal Resource Estimation in Isiklar-Kisrakdere (Soma, Manisa, Turkey)**, A. Erhan Tercan, Bahtiyar Ünver, Mehmet Ali Hindistan, Hacettepe University; Perihan Çorbacı, Kıvanç Het, Turkish Coal Enterprises, TURKEY

15:45 - **Coal Explorations in Turkey: New Projects and New Reserves**, İlker Şengüler, MTA, TURKEY

**SESSION 12
COAL-DERIVED PRODUCTS:
ACTIVATED CARBON PRODUCTION – 1**
Belma Demirel and Hasan Heperkan

14:25 - **Activated Carbon from Brown Coal by Chemical Activation**, Luguang Chen, Sankar Bhattacharya, Monash University, AUSTRALIA

14:45 - **Low-Temperature Catalytic Graphitization of Carbon Material**, Ch. N. Barnakov, A.P. Kozlov, V.Yu. Malysheva, Institute of Coal and Coal Chemistry SB RAS; S.K. Seit-Ablaeva, Kemerovo Technological Institute of Food Industry; Z. R. Ismagilov, M.A. Kerzhentsev, Borekov Institute of Catalysis SB RAS, RUSSIA

15:05 - **Experimental Research on the Preparation of Activated Carbon With Higher Absorbability from Anthracite**, Jian Chang, Qiao-wen Yang, Zhen-hua Hou, Bin-bin Zhao, Dawei Zhao, China University of Mining and Technology, CHINA

15:25 - **Research on the Preparation of Highthermalconductivity Carbon Block by the Ordered Growth of Self-assembled Mesophase**, Ming-Lin Jin, Rong-Hua Liu, Qing-Zhong Cheng, Jingxia Hu, Shanghai Institute of Technology; Zong-Hong Bao, Nanjing University of Technology, CHINA

**SESSION 13
COMBUSTION:
MERCURY AND TRACE ELEMENTS**
John Wheeldon and Omer Ünver

16:20 - **UNEP Coal Combustion Partnership Area Activities Prior to 2013 Global Mercury Treaty**, Wojciech Jozewicz, ARCADIS, USA; Lesley Sloss, IEA Clean Coal Centre, UNITED KINGDOM; Gunnar Futsaeter, United Nations Environment Programme, SWITZERLAND

16:40 - **Direct Measurement of Mercury in Simulated Flue Gas**, Bihter Padak, Jennifer Wilcox, Stanford University, USA

17:00 - **Modeling Trace Element Release from Included and Excluded Pyrite during Pulverized Coal Combustion**, Wayne S. Seames, Esam I. Jassim, Steven A. Benson, University of North Dakota, USA

17:20 - **Online Monitoring of Boron in Flue Gas Desulfurization Effluents by Fully Automated Measuring Equipment**, Seiichi Ohyama, Keiko Abe, Hitoshi Ohsumi, Hirokazu Kobayashi, Central Research Institute of Electric Power Industry; Naotsugu Miyazaki, Koji Miyadera, Kin-ichi Akasaka, DKK-TOA Corporation, JAPAN

17:40 - **Mercury Sorption on Brominated Activated Carbon**, Erdem Sasmaz, Jennifer Wilcox, Stanford University, USA

18:00 - **Effect of Coal Volatile Matter on Emissions of Boiler Combustion**, Hasancan Okutan, Nalan Erdöl Aydın, Erhan Böke, İstanbul Technical University, TURKEY

**SESSION 14
GASIFICATION:
UNDERGROUND COAL GASIFICATION – 2**
Rohan Courtney and Sibel Özdoğan

16:20 - **The Improvement of UCG Processes**, Karol Kostur, Technical University of Košice, SLOVAK REPUBLIC

16:40 - **Modelling of Deep Lignite Seams for Conventional Production and Underground Coal Gasification in Turkey**, S. Anac, S. Yurek, M. Ozdingis, B.S. Halicioğlu, Turkish Coal Enterprises; B. Ünver, E. Tercan, M.A. Hindistan, G. Ertunc, E. Akcan, Hacettepe University, TURKEY

17:00 - **An Integrated 3-D UCG Model for Predicting Cavity Growth, Product Gas, and Interactions with the Host Environment**, John J. Nitao, David W. Camp, Souheil M. Ezzedine, Thomas A. Buscheck, S. Julio Friedmann, Lawrence Livermore National Laboratory, USA

17:20 - **Quantification of the Effects of Various Thermal Boundary Conditions in the Underground Coal Gasification Cavities Using a Compartment Model**, Sateesh Daggupati, Ramesh Naidu Mandapati, Sanjay M Mahajani, Anuradda Ganesh, Preeti Aghalayam, IIT Bombay; Sapru R.K., Sharma R.K., ONGC, INDIA

17:40 - **Estimation of Chemical Reaction Occurred in Underground Coal Gasification**, Osamu Yamada, Mamoru Kaiho, National Institute of Advanced Industrial Science and Technology (AIST); Sohei Shimada, The University of Tokyo; Shouji Fujioka, Japan Coal Energy Center; Jie Liang, China University of Mining and Technology, JAPAN

18:00 - **Computational Flow Modeling of Underground Coal Gasification (UCG) Process**, Sateesh Daggupati, Ramesh Naidu Mandapati, Sanjay M Mahajani, Preeti Aghalayam, Anuradda Ganesh, IIT Bombay; Sapru R.K., Sharma R.K., UCG Group, IRS, ONGC, INDIA

SESSION 15
CARBON MANAGEMENT:
CO₂ SEQUESTRATION

Leslie Ruppert and Hanzade Acma

16:20 - **CO₂ Sequestration in Unminable Coal with Enhanced Coal Bed Methane Recovery: The Marshall County Project**, Richard A. Winschel, James E. Locke, Ravi S. Srivastava, CONSOL Energy Inc.; Richard A. Bajura, Tom Wilson, Hema J. Siriwardane, Henry Rauch, Douglas Patchen, Brad D. Hega, Raj K. Gondle, West Virginia University; Arthur W. Wells, NETL/DOE, USA

16:40 - **A GIS-DSS for a CO₂-ECBM Project Feasibility Study: Case of Sulcis Coal Basin (Sardinia, Italy)**, Raimondo Ciccu, Alessandro Mazzella, Caterina Tilocca, University of Cagliari; Paolo Deiana, Sezione Impianti e Processi ENEA - Agenzia Nazionale per le Nuove Tecnologie, ITALY

17:00 - **Effect of Rock Composition on Mineralization in Sequestration**, Prashanth Mandalaparty, Milind Deo, Joseph Moore, University of Utah, USA

17:20 - **Geological CO₂ Storage in Coal-Bearing Formation**, Sohei Shimada, Zhenjie Chai, Naoto Sakimoto, The University of Tokyo, JAPAN

17:40 - **Experimental Study on Carbon Dioxide Sequestration by Mineral Carbonation**, Jun-Ying Zhang, Heng Yan, Yong-Chun Zhao, Chu-Guang Zheng, Huazhong University of Science and Technology, CHINA

18:00 - **CO₂ Sequestration for the Shenhua DCL Plant in China**, Qingyun Sun, Jerald J. Fletcher, US-China Energy Center, West Virginia University, USA

SESSION 16
COAL SCIENCE:
COKING

Susan J. Tewalt and Erdoğ an Yuzer

16:20 - **Clean Fuel Production Works from Canakkale-Can Coals**, Oguz Altun, Akan Gulmez, Ayşe Erdem, Selami Toprak, Mineral Research and Exploration Directorate in Turkey; Zeki Olgun, Turkish Coal Enterprises, TURKEY

16:40 - **Study on the Relation between Moisture of Coals and the Coking Process and the Quality of Cokes**, Junfang Bao, Gaifeng Xue, Hongbin Chang, Wuhan Iron and Steel (Group) Corporation, CHINA

17:00 - **Coke Quality Prediction Based on MATLAB Neural Network**, Lizhi Zhan, Zikui Song, Ru Xiang, Gaifeng Xue, Wuhan Iron and Steel (Group) Corporation, CHINA

17:20 - **Thermoplasticity Improvement of Coal Blends by Adding Solvent-Extracted Coal**, Noriyuki Okuyama, Hiroki Shishido, Koji Sakai, Maki Hamaguchi, Nobuyuki Komatsu, KOBELCO STEEL, Ltd.; Haruo Kumagai, Hokkaido University, JAPAN

17:40 - **Effect of Technical Property of Coking Coal on Optical Texture of Coke**, Ru Xiang, Gaifeng Xue, Peng Chen, Wuhan Iron and Steel Corp, CHINA

18:00 - **Research on Coke Microstructure Coked by High Metamorphism Coal of Different Grain Size**, Gaifeng Xue, Ru Xiang, Zikui Song, Wuhan Iron and Steel Corp, CHINA

SESSION 17
SUSTAINABILITY AND ENVIRONMENT – 3

Brenda Pierce and Mustafa Cetin

16:20 - **Carbon Capture and Integration: An Alternative Perspective to CO₂ Emissions and Carbon Capture**

and Sequestration, Catherine A. McGanity, University of Richmond, USA

16:40 - **Future Coal Production Outlooks in the IPCC Emission Scenarios: Are They Plausible?**, Mikael Höök, Uppsala University, SWEDEN

17:00 - **The European Coal Market, a Prosperous Future?**, Manfred Rumberger, ER-Consult GmbH, GERMANY

17:20 - **Trace Metals Mobility and Partitioning in Brine Irrigated Weathered Coal Fly Ashes from a Coal Burning Power Station in the Mpumalanga Province, South Africa**, S.A. Akinyemi, A. Akinlua, O.I. Ojo, W.M. Gitari, R.O. Akinyeye, L.F. Petrik, University of the Western Cape, SOUTH AFRICA

17:40 - **Methane Enrichment from Anaerobic Digestion Gas (ADG) Using Polymeric Hollow Fiber Membrane**, Hyung-Keun Lee, Dae-Hoon Kim, Ki-Hong Kim, Young-Mo An, Hang-Dae Jo, Korea Institute of Energy Research; Gang-Woo Lee, Yoo Sung Co. R&D Center, KOREA; Ki-Jun Baik, Yanbian University of Science and Technology, CHINA

18:00 - **Effect of Introduction of Clean Coal Technology on Future Asian Energy Supply**, Sohei Shimada, Yuta Koyama, The University of Tokyo, JAPAN

SESSION 18
COAL-DERIVED PRODUCTS:
ACTIVATED CARBON PRODUCTION – 2

Belma Demirel and Özcan Gulsoy

16:20 - **Investigation of Carbonization Kinetic of Tunçbilek Lignite Used for the Preparation of Activated Carbon**, Burcu Özdemir, Nilgün Karatepe, Reha Yavuz, Istanbul Technical University, TURKEY

16:40 - **Synthesis of Nitrogen-Doped Carbon Materials from Coal-Tar and Petroleum Pitches and Nitrogen Containing Organic Precursors**, Z. R. Ismagilov, M.A.Kerzhentsev, I.Z.Ismagilov, Boreskov Institute of Catalysis SB RAS; Ch. N. Barnakov, A.P. Kozlov, Institute of Coal and Coal Chemistry SB RAS; E.I.Andreikov, Institute of Organik Synthesis UB RAS, RUSSIA

17:00 - **Effect of Mineral Matter of Brown Coals on the Reactivity of Char Steam Gasification and on the Properties of Activated Carbons**, P.N.Kuznetsov, Kolesnikova S.M., L.I.Kuznetsova, Institute of Chemistry and Chemical Technology of Siberian Branch of Russian Academy of Sciences; Yu.F.Patrakov, Institute of Coal and Coal Chemistry of Siberian Branch of Russian Academy of Sciences, RUSSIA

17:20 - **Study of the Properties of Coal from Mongolian Saikhan-Ovoo Deposit and the Char and Carbons Produced**, B.Purevsuren, Ya.Davaajav, Kh.Serikjan, S.Batbileg, Institute of Chemistry and Chemical Technology, Mongolian Academy of Sciences, MONGOLIA; P.N Kutsnezov, Institute of Chemistry and Chemical Technology of Siberian Branch of Russian Academy of Sciences, RUSSIA

17:40 - **Research on the Preparation of Thermal Conductivity C/C Composites by One-step Hot Press Molding**, Jin Ming-Lin, Qingzhong Cheng, Shanghai Institute of Technology; Yan-Wen Zhang, Xiao-Long Zhou, East China University of Science and Technology, CHINA

18:00 - **Preparation and Characterization of New Adsorbents (AC-COPET)**, Zhi-yuan Yang, Peng Liu, Pan Ran, Xi'an University of Science and Technology, CHINA

ORAL SESSIONS
Wednesday, October 13, 2010
11:00 - 17:50

SESSION 19
COMBUSTION:
OXY-COAL DEVELOPMENT – 2

Steven Carpenter and Yucel Ozden

11:00 - **Comparative Study of Coal Ash and Deposits from Air and Oxy-Fuel Combustion**, Jost O.L. Wendt, Dunxi Yu, William J. Morris, University of Utah; Andrew Fry, Constance L. Senior, Reaction Engineering International, USA

11:20 - **Oxy-Fuel Combustion: A Technological Option for Retrofitting Existing Pulverized Lignite Fired Power Plants in Turkey**, İskender Gökalp, CNRS-ICARE, FRANCE; Mücella Ersoy, Turkish Coal Enterprises, TURKEY

11:40 - **Oxy-Fuel Combustion Chemistry – Implications on Corrosion Related Issues**, Klas Andersson, Daniel Fleig, Fredrik Normann, Filip Johnsson, Chalmers University of Technology, SWEDEN

SESSION 20
GASIFICATION:
FUNDAMENTALS – 1

Ke Liu and Hüsnü Atakul

11:00 - **Modeling of Coal Char Gasification in Coexistence of CO₂ and H₂O**, Satoshi Umemoto, Shiro Kajitani, Saburo Hara, Central Research Institute of Electric Power Industry (CRIEPI), JAPAN

11:20 - **Investigation of Component Release During Pressurized, High Heating Rate Devolatilization of Coal and Petroleum Coke**, David Wagner, Kevin J. Whitty, University of Utah; Glenn L Shoaf, Paul Fanning, Eastman Chemical Company, USA

11:40 - **High Pressure TGA Studies on German Brown Coal under Carbon Dioxide Atmosphere**, Abhishek Bhargava, Patrick J. Masset, Freiberg University of Mining and Technology, GERMANY

12:00 - **Studies on Gasification of Char in Fixed Bed Reactor**, Ramesh Naidu Mandapati, Preeti Aghalayam, Sateesh D, Narseh D, Sanjay M Mahajani, Anuradda Ganesh, IIT Bombay; Sharma R.K., IRS, ONGC, INDIA

SESSION 21
CARBON MANAGEMENT:
PRE-COMBUSTION CO₂ CAPTURE

Richard Sakurovs and Mustafa Ozdینگis

11:00- **Development of Dry Regenerable CO₂ Sorbent and WGS Catalyst for SEWGS Process**, Joong Beom Lee, Tae Hyoung Eom, Junggho Ryu, Jeom-In Baek, Dong-Hyeok Choi, Keun Woo Park, Seong Jegarl, Seug-Ran Yang, Korea Electric Power Research Institute, KOREA

11:20 - **High Capacity Regenerable Sorbent for Pre-Combustion CO₂ Capture**, Gökhan Alptekin, Ambal Jayaraman, Steve Dietz, Lauren Brickner, Ryon Tracy, TDA Research, Inc, USA

11:40 - **Development of Dry Regenerable CO₂ sorbent for Fluidized-Bed CO₂ Capture Process from Coal Power Plant**, Chong Kul Ryu, Joong Beom Lee, Tae Hyoung Eom, Bok Suk Oh, Jeom-In Baek, Kyeongsook

Kim, Young Ho Wi, Jegarl Seong, Won Sik Jeon, Korea Electric Power Research Institute, KOREA

**SESSION 22
COAL SCIENCE:
CBM/CARBON DIOXIDE**

Richard Winschel and Işık Özpeker

11:00 - **A Comparison of Experimental and Theoretical High Pressure CO₂ Isotherms on Coals from the Upper Silesian Basin, Czech Republic**, Zuzana Weishauptová, Oldřich Přibyl, Martina Švábová, Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, CZECH REPUBLIC

11:20 - **Conversion of Ukrainian Low Grade Solid Fuels with CO₂ Capture**, O.M. Dudnyk, I.S. Sokolovska, Coal Energy Technology Institute of National Academy of Sciences of Ukraine, UKRAINE

11:40 - **Coalbed Gas Potential in the Miocene Soma Basin (Western Turkey)**, Sedat İnan, Aynur Dikbaş, Semih Ergintav, Firat Duygun, TÜBİTAK Marmara Research Center; M.Namık Yalçın, Kübra Tırpan, Korhan Yaşar, İstanbul University; Ender Okandan, Mustafa Baysal, Middle East Technical University; Yuda Yürüm, Sabancı University; Ruhi Saatçılar, Sakarya University; Murat Yılmaz, Ali Rıza Toygar, Turkish Petroleum Corporation; Ayhan Kösebalaban, Selahaddin Anaç, Hakkı Duran, Mehmet Onbaşı, Mücella Ersoy, Mehmet Atasayar, İsmail Ergüder, Turkish Coal Enterprises, TURKEY

12:00 - **Underground Coal Determination by Integrated (Reflection & WVSP) Seismic in the Miocene Soma Basin (Western Turkey)**, Ruhi Saatçılar, Sedat İnan, Firat Duygun, Semih Ergintav, Aynur Dikbaş, TÜBİTAK Marmara Research Center; Murat Yılmaz, Ali Rıza Toygar, Turkish Petroleum Corporation; Ayhan Kösebalaban, Selahaddin Anaç, Hakkı Duran, Mehmet Onbaşı, Mücella Ersoy, Mehmet Atasayar, İsmail Ergüder, Turkish Coal Enterprises; M.Namık Yalçın, İstanbul University; Ender Okandan, Middle East Technical University; Yuda Yürüm, Sabancı University; Emin Demirbağ, İstanbul Technical University, TURKEY

12:20 - **Study on Gridding Technology of Weakly Caking Coal**, Gaifeng Xue, Peng Chen, Ru Xiang, Junfang Bao, Wuhan Iron and Steel Corp, CHINA

**SESSION 23
SUSTAINABILITY AND ENVIRONMENT – 4**

Brenda Pierce and Orhan Kural

11:00 - **Large Scale Use of Pond Ash for Reclamation of Waste/Alkaline Land for Agriculture and Forestry**, R.C. Tripathi, L.C. Ram, S.K. Jha, A.K. Sinha, N.K. Srivastava, R.E. Masto, Central Institute of Mining and Fuel Research, INDIA

11:20 - **The Thermal Treatment Study of Pyrite from South Brazil Coal Mining Industry**, Michael Peterson, Jussara P. Pizzolo, Morgana Bom, Deise Tramontin, Gabriela B. Vieira, Keli V.S. Damin, Universidade do Extremo Sul Catarinense; Adilson Oliveira, Formula Chemical Company, BRAZIL

11:40 - **Pyrolysis of the Various Types of Fuels - Credit Cards**, Dagmar Juchelkova, Helena Raclavská, Adela Cizkova, Vaclav Roubicek, VSB-Technical University of Ostrava, CZECH REPUBLIC

**SESSION 24
COAL-DERIVED PRODUCTS:
DIRECT COAL-TO-LIQUIDS**

Rachid Oukaci and Fatma Arslan

11:00 - **Alliance DCL Technology for Producing Ultra Clean Transportation Fuels**, Theo L.K. Lee, Headwaters CTL, LLC.; John Duddy, Axens North America, Inc., USA

11:20 - **Direct Coal to Liquids (DCL): High Quality Jet Fuels**, W. Weiss, H. Dulot, A. Quignard, N. Charon, M. Courtiade, IFP New Energy, FRANCE

11:40 - **Extraction of Brown and Sapropelitic Coals with Toluene and Water Containing Fluids under Supercritical Conditions**, P.N.Kuznetsov, S.M.Kolesnikova, L.I.Kuznetsova, E.S.Kamensky, Institute of Chemistry and Chemical Technology of Siberian Branch of Russian Academy of Sciences; V.A.Kashirtsev, Trofimuk Institute of Petroleum Geology and Geophysics SB RAS, RUSSIA

12:00 - **Research and Development of New Type Reactor for Direct Coal Liquefaction**, Hu Fating, Li Peilin, Shi Shidong, Liu Min, Beijing Research Institute of Coal Chemistry, China Coal Research Institute, CHINA

12:20 - **Characterization and Distribution of Phenolics in Direct Coal Liquefaction Oils**, Zhennan Gao, Xuefeng Mao, Beijing Research Institute of Coal Chemistry, China Coal Research Institute; Wenhua Li, GE China Technology Center, CHINA

**SESSION 25
CHEMICAL LOOPING DEVELOPMENT – 2**

Steven Carpenter and Murat Özbayoglu

13:55 - **Development of Real-Time Dynamic Simulation of Chemical Looping Process for Advanced Controls**, Xincheng Lou, Hao Lei, Abhinaya Joshi, Carl Neuschaefer, Alstom Power Inc., USA

14:15 - **Effect of H₂S on Chemical Looping Combustion of Coal-Derived Synthesis Gas over Fe₂O₃ - MnO₂ Supported on ZrO₂/Sepiolite/Al₂O₃**, Ewelina Ksepko, Marek Sciazko, Institute for Chemical Processing of Coal, POLAND; Ranjani V. Siriwardane, Hanjing Tian, Thomas Simonyi, James A. Poston Jr, U.S. DOE, USA

14:35 - **Effect of Coal Blending Method on Combustion Characteristics and NO_x Emission in a Drop Tube Furnace**, Song-gon Kim, Chun-sung Lee, Byoung-Hwa Lee, Ju-Hun Song, Young-June Chang, Chung-Hwan Jeon, Pusan National University, SOUTH KOREA

14:55 - **TGA and DTF Studies on Coal Blends to Assess Combustion Performance**, P. Sarkar, A. Mukherjee, S. G. Sahu, A. Choudhury, A. K. Adak, M. Kumar, N. Choudhury, S. Biswas, Central Institute of Mining and Fuel Research; S. Ghosal, Jadavpur University, INDIA

**SESSION 26
GASIFICATION:
FUNDAMENTALS – 2**

Ke Liu and Ayhan Sirkeci

13:55 - **Effect of Operation Parameters on Gasification for the Production of Synthesis Gas**, Atilla Biyikoğlu, Bekir Zühtü Uysal, Gazi University; Afşin Güngör, Niğde University; Coşku Kasnaoğlu, Murat Özbayoglu, TOBB University of Economics and Technology, TURKEY

14:15 - **High-Pressure and High-Temperature Gasification of Upgraded Brown Coal Char Using a**

Mini Direct Heating Reactor, Kouichi Miura, Ryuichi Ashida, Mitsunori Makino, Xian Li, Kyoto University, JAPAN

14:35 - **CFD Simulation of Process-driven Particle Fragmentation in a Coal Bed Gasifier**, Franz Holzleithner, Roland Eisl, Markus Haider, Institute for Energy Systems and Thermodynamics, Vienna University of Technology; Georg Aichinger, Siemens VAI Metals Technologies GmbH&Co, AUSTRIA

14:55 - **Experimental Investigation into Primary Fragmentation of Large Coal Particles**, Adam Luckos, Roelof L.J. Coetzer, Ed L. Koper, Sasol Technology R&D, SOUTH AFRICA; Monika Kosowska-Golachowska, Częstochowa University of Technology, POLAND

15:15 - **Investigation of the Pyrolysis and Gasification of a Turkish Coal Using Thermal Analysis Coupled with Mass Spectrometry**, Sibel Özdoğan, Ugur Özveren, Mehmet Beypinar, Marmara University; Aylin Boztepe, Yildiz Technical University, TURKEY

**SESSION 27
CARBON MANAGEMENT:
POST-COMBUSTION CO₂ CAPTURE – 1**

Richard Sakurovs and Mehmet Cagil

13:55 - **Development of Post Combustion Carbon Capture Technology**, Matthew Hunt, F. D. Fitzgerald, S. Black, R. A. Gardiner, Doosan Power Systems, UNITED KINGDOM

14:15 - **Lignite Derived Carbons for CO₂ Capture**, Alan L. Chaffee, Seamus Delaney, Gregory Knowles, Monash University, AUSTRALIA

14:35 - **Physical Properties and Reactivities of Mg-Based Dry Regenerable CO₂ Sorbents Prepared by Spray-Drying Method**, Jeom-In Baek, Tae Hyoung Eom, Joong Beom Lee, Won Sik Jeon, Chong Kul Ryu, Korea Electric Power Research Institute, KOREA

**SESSION 28
COAL SCIENCE:
COAL CHEMISTRY – 2**

Frans Waanders and Dündar Ergunalp

13:55 - **Carbonaceous Particles from the Incomplete Combustion**, Martina Havelcová, Ivana Šýkorová, Hana Trejtnarová, Alexandr Šulc, Institute of Rock Structure and Mechanics AS CR, v.v.i., CZECH REPUBLIC

14:15 - **Trace Element Partitioning and Leaching in Solids Derived from Gasification of Australian Coals**, Alexander Ilyushechkin, Daniel Roberts, David Harris, Ken Riley, CSIRO Energy Technology, AUSTRALIA

14:35 - **Effect of Coal Rank on Carbon Oxides Formation via the Low Temperature Atmospheric Oxidation Process**, Uri Green, Zeev Aizenstat, Hebrew University of Jerusalem; Haim Cohen, Ariel University Center at Samaria and Ben-Gurion University of the Negev, ISRAEL; Christoph Wiedner, Sven Stark, Ariel University Center at Samaria, ISRAEL and TU Bergakademie Freiberg, GERMANY

14:55 - **Quantitative Determination of Minerals in Coal by CQPAC Method**, Zdeněk Klika, VŠB-Technical University Ostrava, CZECH REPUBLIC

15:15 - **The Catalytic Effect of Added Sodium- and Potassium Carbonate to an Acid Treated Inertinite Rich South African Bituminous Coal Char**, Christien A Strydom, Lucinda Klopper, John R Bunt, North-West University, SOUTH AFRICA; Harold H Schobert, Penn State University, USA

**SESSION 29
COAL SCIENCE:
BENEFICIATION – 1**

B.K. Parekh and Selçuk Buyurgan

13:55 - **Pre-Combustion Cleaning of Pulverized Fine Coal at Power Plant Using Novel RTS Dry Separation Technology**, Daniel Tao, Ahmed Sobhy, Qin Li, Rick Honaker, University of Kentucky, USA

14:15 - **The Prediction of Caking Propensity of Gondwanaland Coals Using Petrography**, Daniel Van Niekerk, Johan Joubert, Trudie Brittz, Sasol Technology R&D, SOUTH AFRICA

14:35 - **Dry Coal Cleaning Using the FGX Separator**, Mehmet Saracoglu, Rick Q. Honaker, University of Kentucky, USA

14:55 - **Improving the Efficiency of Lignite Drying**, Wayne S. Seames, Carlos J. Bucaram, Steven A. Benson, University of North Dakota; Srivats Srinivasachar, Envergen, LLC, USA

15:15 - **Effect of Particle Size, Shape and Density on the Performance of the Air Fluidized Bed in Dry Coal Beneficiation**, Pheneas Chikerema, Michael Moys, University of the Witwatersrand, SOUTH AFRICA

**SESSION 30
COAL-DERIVED PRODUCTS:
COAL-TO-LIQUIDS/FISCHER-TROPSCH – 1**

Rachid Oukaci and Alp Gurkan

13:55 - **Deactivation of Iron Based Fischer-Tropsch Catalyst: A Critical Problem**, Belma Demirel, Deena Ferdous, Rentech, Inc., USA

14:15 - **The Effects of La and K on Nano – Sized Iron Catalyst for Fischer – Tropsch Synthesis**, Yahya Zamani, A.Mohajeri, Research Institute of Petroleum Industry(RIPI), National Iranian Oil Company; M.Bakavoli, M.Rahimizadeh, Ferdowsi University of Mashhad, IRAN

14:35 - **Fe-Co/TiO₂-Catalysts for the Fischer-Tropsch Synthesis: Role of Fe**, Thierry Musanda, Diane Hildebrandt, David Glasser, University of the Witwatersrand, SOUTH AFRICA

14:55 - **Product Distribution and Reaction Pathways during Fischer-Tropsch Synthesis on an Iron Catalyst**, Dragomir B. Bukur, Texas A&M University at Qatar, QATAR; Lech Nowicki, Technical University of Lodz, POLAND

15:15 - **Simulation of Rate and Product in the Fischer-Tropsch Synthesis**, Yoshifumi Suehiro, Japan Oil, Gas and Metals National Corp.; Masato Murayama, Kaoru Fujimoto, The University of Kitakyushu, JAPAN

**SESSION 31
COMBUSTION:
FLUIDIZED-BED COMBUSTION
AND CO-FIRING – 1**

Steven Carpenter and Gündüz Atesok

15:50 - **Smartsheet Tool Applied to Boiler Performance Analysis and Economic Optimization of a Circulating Fluidized Bed Boiler**, Abhinaya Joshi, Xinsheng Lou, Carl Neuschaefer, Paul Panos, Alstom Power Inc.; Weikko Wirta, AES Thames, USA

16:10 - **A Model of Primary Fragmentation of Coal Particles in Fluidized-Bed Combustion**, Adam Luckos, Sasol Technology R&D, SOUTH AFRICA; Monika

Kosowska-Golachowska, Częstochowa University of Technology, POLAND

16:30 - **Main Problems Concerning Co-Firing Biomass Mixture with Hard Coal in Pulverized-Fuel Boilers**, Krzysztof Jesioneck, Henryk Karcz, Marcin Kantorek, Wrocław University of Technology, POLAND

16:50 - **Technical and Economic Evaluation of the Desulphurization Processes at Power Stations Using Lignite**, Hasancan Okutan, Bülent D. Çift, Istanbul Technical University, TURKEY

17:10 - **Desulfurization Characteristics of Powdered Hydrated Lime for Flue Gas Sorbent Injection Process**, Hyok Bo Kwon, Kyungnam University; Sang Whan Park, KIST; Hyung Taek Kim, Ajou University, KOREA

17:30 - **Status of Large Circulating Fluidized Bed Boiler Operation in China**, Jie Yu, Beijing Research Institute of Coal Chemistry, China Coal Research Institute, CHINA

**SESSION 32
GASIFICATION:
FUNDAMENTALS – 3**

Ke Liu and Gülhan Özbayoglu

15:50 - **An Updating of Coal Gasification Experimental Tests in a Pilot CO₂-Free Coal-to-Hydrogen Plant**, Alberto Pettinau, Caterina Frau, Francesca Ferrara, Sotacarbo S.p.A., ITALY

16:10 - **Performance of a 500 KWTH Pressurized Entrained-Flow Coal Gasifier**, Kevin J. Whitty, Randy Pummill, David R. Wagner, Travis Waind, David A. Wagner, The University of Utah, USA

16:30 - **Characterization of a Small Scale Slurry-Fed, Oxygen-Blown Entrained Flow Gasifier: How Injector Geometry Affects Flame Stability and Performance**, Travis Waind, Kevin Whitty, University of Utah, USA

16:50 - **Analysis of Fines Produced from Non-Slagging Coal Gasifier and Evaluation of Economic Usage**, Yongseung Yun, Seok Woo Chung, Na Rang Kim, Institute for Advanced Engineering, KOREA

17:10 - **Development of Gas, Power and Tar Co-Generation System with Circulating Fluidized Bed Technology**, Qinhui Wang, Mengxiang Fang, Zhongyang Luo, Mingjiang Ni, Kefa Cen, Zhejiang University, CHINA

17:30 - **Thermal Chemical Process Study on Chemical Reaction Network of Jet-Fluidized Bed Gasifier Reaction System**, Jie Feng, Xuecheng Hou, Wenyang Li, Xiao-Hui Chen, Taiyuan University of Technology, CHINA

**SESSION 33
CARBON MANAGEMENT:
POST-COMBUSTION CO₂ CAPTURE – 2**

Richard Sakurovs and Mustafa Tris

15:50 - **An Efficient Membrane Process to Capture Carbon Dioxide From Power Plant Flue Gas**, Bilgen Firat Sercinoglu, Tim Merkel, Xiaotong Wei, Haiqing Lin, Jenny He, Richard Baker, Karl Amo, Hans Wijmans, Membrane Technology and Research, Inc., USA

16:10 - **CO₂ Capture by Condensed Rotational Separation**, R.J. van Benthum, H.P. van Kemenade, J.J.H. Brouwers, M. Golombok, Eindhoven University of Technology, THE NETHERLANDS

16:30 - **Influence of Pressure on Dry Reforming of Methane over Carbonaceous Catalyst**, Bingmo Zhang, Yongfa Zhang, Guojie Zhang, Fengbo Guo, Taiyuan University of Technology, CHINA

**SESSION 34
COAL SCIENCE:
COAL CHEMISTRY – 3**

Frans Waanders and Neset Acarkan

15:50 - **Predetermination of the Fault Crossing the Underground Coal Mine Galleries by Seismic Reflection Method: An Application at a Longwall Coal Mine in Turkey**, G.G.U. Aldas, B. Kaypak, B. Ecevitoglu, Ankara University; A. Can, General Directorate of Mineral Research and Exploration, TURKEY

16:10 - **Alberta's 2 Trillion Tonnes of 'Unrecognized' Coal**, R.J. Richardson, CanZealand Geoscience Ltd., NEW ZEALAND

16:30 - **Temperature as a Factor Affecting Adsorption Behavior of Coal to Lead (II) Ions**, Boleslav Taraba, Petra Vesela, Roman Marsalek, Zuzana Navratilova, Ostrava University, CZECH REPUBLIC

16:50 - **Bioflotation of Coal**, Peter Fecko, Tana Kantorkova, Radomir Michniak, Lukas Koval, Alena Kasparkova, VSB - Technical University of Ostrava, CZECH REPUBLIC

**SESSION 35
COAL SCIENCE:
BENEFICIATION – 2**

B.K. Parekh and Ali Güneş

15:50 - **Suitability of the Sulcis Coal for CWS Preparation**, Raimondo Ciccu, Giovanni Mei, Caterina Tilocca, University of Cagliari; Paolo Deiana, Sezione Impianti e Processi ENEA - Agenzia Nazionale per le Nuove Tecnologie, ITALY

16:10 - **Comparative Study of Oil Agglomeration and Flotation of Low Grade Coals**, Feridun Boylu, Firat Karakas, Istanbul Technical University, TURKEY

16:30 - **Briquetting Studies of Canakkale-Can Coals**, Oguz Altun, Akan Gulmez, Ayşe Erdem, Zafer Gencer, Mineral Research and Exploration Directorate in Turkey; Zeki Olgun, Turkish Coal Enterprises, TURKEY

16:50 - **Drying Kinetics of Çanakkale – Çan Lignite**, Ufuk Gündüz Zafer, Ö. Murat Dogan, Duygu Öztan, Bekir Zühtü Uysal, Gazi University; Zeki Olgun, Mustafa Ozdingis, Ömer Sezgin, Selahaddin Anac, Turkish Coal Enterprises (TKI), TURKEY

17:10 - **Beneficiation of Lignites by Heat Treatment**, G. Onal, N. Acarkan, M. Özer, Istanbul Technical University; M. Özdingiş, Turkish Coal Enterprises, TURKEY

17:30 - **Innovative High Energy Efficiency Brown Coal Drying based on Self-Heat Recuperation Technology**, Muhammad Aziz, Chihiro Fushimi, Yasuki Kansha, Kazuhiro Mochidzuki, Shozo Kaneko, Atsushi Tsutsumi, The University of Tokyo, JAPAN

**SESSION 36
COAL-DERIVED PRODUCTS:
COAL-TO-LIQUIDS/FISCHER-TROPSCH – 2**

Rachid Oukaci and Ali İhsan Arol

15:50 - **Using Pyrolysis Tar to Meet Fuel Specifications in Coal-to-Liquids Plants**, Jaco Schieke, Foster Wheeler, UNITED KINGDOM

16:10 - **Overview of the Rentech Process**, Belma Demirel, Harold Wright, Rentech, Inc., USA

16:30 - **Graphical Methods for the Representation of the Fischer-Tropsch Reaction Systems: Method and Water Gas Shift Reaction**, Thierry Musanda, Diane Hildebrandt, David Glasser, University of the Witwatersrand, SOUTH AFRICA

16:50 - **Comparative Evaluation of Different Coal to Liquid Process Conditions via Fischer-Tropsch Synthesis**, Serhat Gul, Atilla Ersoz, Murat Baranak, Omer Faruk Gul, Fehmi Akgun, TUBITAK Marmara Research Centre, Energy Institute, TURKEY

17:10 - **Technoeconomic and Environmental Life Cycle Analysis of Coal and Coal/Biomass to Liquids Facilities**, Anastasia M Gandrik, Idaho National Laboratory; Vivek P. Utgikar, University of Idaho, USA

17:30 - **Conversion of Waste Biomass to Transportation Fuels: Energy for the Future**, S.K.Srivastava, S.R.K.Rao, Amlendu Sinha, Central Institute of Mining and Fuel Research, INDIA

ORAL SESSIONS

Thursday, October 14, 2010

11:00 - 17:50

SESSION 37

COMBUSTION:

OXY-COAL DEVELOPMENT – 3

John Wheeldon and Ersan Putun

11:00 - **The Effect of Coal Composition on Ignition and Flame Stability in Co-Axial Oxy-Fuel Turbulent Diffusion Flames**, Dadmehr M. Rezaei, Eric G. Eddings, Kerry E. Kelly, Jingwei Zhang, Jost O.L. Wendt, University Of Utah, USA; Yuegui Zhou, Shanghai Jiao Tong University, CHINA

11:20 - **Study on the In-Furnace Desulfurization in Oxy-Fuel Combustion using Drop Tube Furnace with Limestone**, Hyung-Keun Lee, Wook Choi, Hang-Dae Jo, Won-Kil Choi, Korea Institute of Energy Research; Sang-In Keel, Korea Institute of Machinery & Materials, KOREA

11:40 - **Ignition Loss and Ultrafine Particle and Soot Emissions From Air and Oxy-Coal Flames**, William J. Morris, Dunxi Yu, Jost O. L. Wendt, University of Utah, USA

12:00 - **High Speed Video Analysis of Oxycoal Combustion in 40kw Coaxial Turbulent Diffusion Flames**, Terry A. Ring, Jingwei Zhang, Husam el Gendy, Jost O.L. Wendt, Kerry Kelly, Eric G. Eddings, University of Utah, USA

12:20 - **Comparison of the Mathematical Model of Pulverized Coal Burnout with Results Gained from Experimental Tests on Drop Tube**, Radim Paluska, Marian Bojko, VSB – Technical University of Ostrava, CZECH REPUBLIC

SESSION 38

GASIFICATION:

FUNDAMENTALS – 4

Johan van Dyk and Mevlüt Kemal

11:00 - **Optimization of Canadian Petroleum Coke, Coal and Fluxing Agent Blends via Slag Viscosity Measurements and Models**, Marc A. Duchesne, Arturo Macchi, University of Ottawa; Ben Anthony, CanmetENERGY, CANADA; Alexander Y. Ilyushechkin, CSIRO Energy Technology, AUSTRALIA

11:20 - **Effect of Dense Medium Separation of a South African Coal Source on Slag-Liquid Formation: An Experimental and Factsage Approach**, JC van Dyk, SASOL Technology; FB Waanders, North West-University, SOUTH AFRICA

11:40 - **Compositional Variations in Pilot Gasifier and Laboratory-Produced Slags and their Impacts on Slag**

Viscosity and Coal Assessment, Alexander Ilyushechkin, D. Roberts, D. Harris, CSIRO, Energy Technology, AUSTRALIA

12:00 - **Shaping Slag Flow in an Entrained Flow Gasifier: Numerical Simulation and Physical Experiments**, Randy Pummill, Gabriel Hansen, Kevin Whitty, University of Utah, USA

12:20 - **Influence of Gasification Conditions on the Properties of Fly Ash in a Bench-Scale Opposed Multi-Burner Gasifier**, Qinghua Guo, Guangsu Yu, Fuchen Wang, Zhenghua Dai, East China University of Science and Technology, CHINA

SESSION 39

GASIFICATION:

GENERAL SESSION – 2

Ting Wang and Muammer Bulut

11:00 - **GTI's Sampling and Analysis Systems for Gas Streams of Gasification and Downstream Processes**, Osman M. Akpolat, Tanya S. Tickel, Rachid B. Slimane, Chun W. Choi, Gas Technology Institute (GTI), USA

11:20 - **Design of Communiton Unit for the Gasification Pilot Plant**, N. Acarkan, G. Onal, A. A. Sirkeci, G. Atesok, Istanbul Technical University, TURKEY

11:40 - **Preparation of Coal Water Mixture with High Concentration from Low Rank Coals and Lignite by Dry Fine Coal with Optimum Particle Distribution**, Baoqing Li, Institute of Coal Chemistry, Chinese Academy of Sciences; Feng He, Yulin Western Coal Technology Research Center, CHINA

12:00 - **Fluidised Bed Co-Gasification of Coal and Biomass Under Oxy-Fuel Conditions**, Marcos Millan, Nicolas Spiegl, Nigel Paterson, Cesar Berruoco, Imperial College London, UNITED KINGDOM

12:20 - **Co-Gasification of Footwear Leather Waste and High Ash Coal: A Thermodynamic Analysis**, Rodolfo Rodrigues, Nilson R. Marcílio, Jorge O. Trierweiler, Federal University of Rio Grande do Sul (FURG); Marcelo Godinho, University of Caxias do Sul (UCS); Adriene M. S. Pereira, Pontifical Catholic University of Rio Grande do Sul (PUC-RS), BRAZIL

SESSION 40

COAL SCIENCE:

COAL CHEMISTRY – 4

Ashok K. Singh and Mustafa Ziyapak

11:00 - **Mineralogical, Petrographic and Geochemical Features of the Achlada and Mavropigi Lignite Deposits, NW Macedonia, Greece**, Colin R. Ward, Zhongsheng Li, University of New South Wales; Stavros P. Kalaitzidis, BHP Billiton Mitsubishi Alliance, AUSTRALIA; Nikolaos Koukouzas, Centre for Research and Technology Hellas, Institute for Solid Fuels Technology and Applications, GREECE

11:20 - **X-Ray Computer Tomography on Coal Particles**, Patrick J. Masset, Freiberg University of Mining and Technology, GERMANY; Heikki Suhonen, European Synchrotron Radiation Facility, FRANCE

11:40 - **Mineralogy, Geochemistry, and Petrography of Upper Permian Bituminous and Carboniferous Anthracite Coals from Xuanwei County, Eastern Yunnan Province, China**, Harvey E. Belkin, U.S. Geological Survey; James C. Hower, Jordan W. Drew, University of Kentucky, CAER, USA; Linwei Tian, Chinese University of Hong Kong, CHINA

12:00 - **Improvement, Afforestation Methods of the Residual Materials of Ağaçlı (Istanbul) Open Coal**

Companies, and Consequences of 22 Years, M. Doğan Kantarcı, Istanbul University, TURKEY

SESSION 41

COAL SCIENCE:

BENEFICIATION – 3

B.K. Parekh and Steven Carpenter

11:00 - **Pyrolysis Residue from Waste Materials in Black Coal Flotation**, Peter Fecko, Alena Kasparkova, Vlastimil Kriz, Josip Isek, Tien Pham Duc, VSB – Technical University of Ostrava, CZECH REPUBLIC

11:20 - **Studies of a Multi Gravity Separator (MGS) to Produce Clean Coal from Turkish Lignite and Hard Coal Fine Tailings**, Eyüp Sabah, Selçuk Özgen, M. Fatih Can, Afyon Kocatepe University, TURKEY

11:40 - **Petrographic Characterisation of Beneficiated Material of Tailings from Soma Işıklar Derekooy Coal Washing Plant (TURKEY), by Multi Gravity Separator (MGS)**, Selami Toprak, Ayşe Erdem, Akan Gulmez, Oguz Altun, Mineral Research and Exploration Directorate in Turkey; Sarper Alyildiz, Turkish Coal Enterprises, TURKEY

12:00 - **Soma Region's Coals Washing at Dereköy Washery with Working 800 TPH and it's Washing Performance Evaluation**, S.I. Alyildiz, S. Gurkan, S. Tuncer, Directorate of the Aegean Lignite Establishment, TURKEY

SESSION 42

COAL-DERIVED PRODUCTS:

H₂ PRODUCTION/SNG

Dragomir Bukur and Vedat Arslan

11:00 - **Development of Hydrogen Transport Membranes for Separating Hydrogen from Coal Gasification Stream**, U. (Balu) Balachandran, T. H. Lee, C. Y. Park, Y. Lu, S. E. Dorris, Argonne National Laboratory, UAA

11:20 - **HTGR-Integrated Coal to Liquids Production Analysis**, Anastasia M Gandrik, Rick A. Wood, Idaho National Laboratory, USA

11:40 - **Methane Production from Coal, Coal-Biomass Mixtures**, Arun SK Raju, Christophe Capelli, Viresco Energy LLC, USA

12:00 - **Methanation of Syngas over Coral Reef-Ni/Alumina Catalysts**, Yizhuo Han, Yisheng Tan, Institute of Coal Chemistry, Chinese Academy of Science; Shengli Ma, Graduate University of the Chinese Academy of Sciences, CHINA

SESSION 43

COMBUSTION:

FLUIDIZED-BED COMBUSTION AND CO-FIRING – 2

John Wheeldon and Daman Wallia

13:55 - **Sulphur Capture Under Fluidised Bed Combustion Conditions Using Coal Ashes as Sorbents**, Rufaro Kaitano, Dursman Mchabe, Raymond C Everson, Hein W J P Neomagus, North-West University, SOUTH AFRICA

14:15 - **CO₂ Reduction Potential and Co-Combustion Possibilities of the FBC-Boilers on the Czech Conditions**, Dagmar Juchelkova, Helena Raclavska, Jiri Bilik, Pavlina Pustějovská, VSB-Technical University of Ostrava, CZECH REPUBLIC

14:35 - **Co-Combustion of Various Biowastes with a High-Sulfur Turkish Lignite in a Circulating Fluidized Bed Combustor**, Aysel T. Atımtay, Murat Varol, Middle

East Technical University; Hayati Olgun, Alper Unlu, Berrin Bay, Ufuk Kayahan, TUBITAK-MRC, Energy Institute; Hüsnü Atakül, Mustafa C. Çelebi, Istanbul Technical University, TURKEY

14:55 - **Co-Combustion Performance of Oil Shale and Biomass Fuels**, Emre Özgür, Mustafa Verşan Kök, Middle East Technical University, TURKEY; Sharon Falcone Miller, Bruce G. Miller, Penn State University, USA

15:15 - **Study on NO_x Reduction and its Heterogeneous Mechanism during Biomass Reburning**, Ping Lu, Yongqiao Wang, Fei Lu, Yongsheng Liu, Nanjing Normal University, CHINA

**SESSION 44
GASIFICATION:
FUNDAMENTALS – 5**
Johan van Dyk and Deniz Üner

13:55 - **Influence of Steam on the Release of Alkali Metal, Chlorine, and Sulphur Species During High Temperature Gasification of Lignite**, Marc Bläsing, Michael Müller, Institute of Energy Research (IEF-2), GERMANY

14:15 - **Kinetics of Char and Catalyzed Char Gasification under High H₂ and Steam Partial Pressure**, Katsuhiro Nakayama, Yoshizo Suzuki, National Institute of Advanced Industrial Science and Technology; Shiyong Lin, Japan Coal Energy Center, JAPAN

14:35 - **Modeling of Steam Gasifier in Dual Fluidized Bed Gasification**, Toshiyuki Suda, Zhihong Liu, Makoto Takafuji, Masahiro Narukawa, IHI Corporation, JAPAN

14:55 - **Steam Gasification of Low Rank Coals with Ion-Exchanged Sodium Catalysts Prepared Using Natural Soda Ash**, Yasuo Ohtsuka, Yuu Hanaoka, Enkhsaruul Byambajav, Takemitsu Kikuchi, Naoto Tsubouchi, Tohoku University, JAPAN

15:15 - **Separation of Pyrolysis from Fluidized Bed Steam Gasification: Its Conception and Application**, Masahiro Narukawa, Makoto Takafuji, Toshiyuki Suda, IHI Corporation, JAPAN

**SESSION 45
GASIFICATION:
MODELING – 1**
Ting Wang and Ziya Cosar

13:55 - **Process Simulation - The Way from Pilot Plant to a Training-Centre for a 500 MW Gasifier System**, Friedemann Mehlhose, Julia Kittel, S. Stoye, H. Kotthaus, Siemens Fuel Gasification Technology GmbH & Co.KG, GERMANY

14:15 - **A Dynamic Simulator of a Commercial-Scale IGCC Plant**, Mi-Yeong Kim, Yong-Jin Joo, In-Kyu Choi, Joong-Won Lee, Si-Moon Kim, Min-Churl Lee, Korean Electrical Power Corporation, KOREA

14:35 - **Entrained Flow Slagging Slurry Gasification and the Development of Computational Fluid Dynamics Models at CanmetENERGY**, Robin Hughes, Dennis Lu, Adrian Majeski, Ben Anthony, CanmetENERGY; Andrew Corber, National Research Council, CANADA

14:55 - **Numerical Simulation Analyses of an Entrained-Bed Gasification Reactor**, Ming-Hong Chen, Tsung Leo Jiang, National Cheng Kung University; Yau-Pin Chyou, Chang-Bin Huang, Institute of Nuclear Energy Research Atomic Energy Council, TAIWAN, ROC

**SESSION 46
COAL SCIENCE:
COAL CHEMISTRY – 5**
Quentin Campbell and Frantisek Verbich

13:55 - **An Understanding of the Porosity of Residual Coal/Char/Ash Samples Dissected from a Pilot Scale Packed Bed Reactor Operating on Inertinite-Rich Lump Coal**, FB Waanders, J R Bunt, North West-University, SOUTH AFRICA

14:15 - **Comparison of Measured and Calculated Viscosities of German Lignite Based Slags**, Arne Bronsch, Patrick J. Masset, Freiberg University of Mining and Technology, GERMANY

14:35 - **Drying Mechanism of Low Rank Coal with Different Reacting Conditions: Fixed Bed vs. Fluidized Bed**, Hyungtaek Kim, Taejin Kang, Doman Jeon, Ajou University; Sihyun Lee, Sangdo Kim, Korea Institute of Energy Research, SOUTH KOREA

14:55 - **The Natural Technology for Pretreatment and Utilization of the Energetic Fly Ash**, Maria Kusnierova, Maria Pracakova, Institute of Geotechnics of Slovak Academy of Sciences, SLOVAK REPUBLIC; Peter Fecko, Rudolf Matysek, VSB-Technical University of Ostrava, CZECH REPUBLIC

15:15 - **Physical Structure and Chemical Properties of Organic Matter of Brown Coals from Different Fields in Relation to the Composition of Mineral Components**, P.N.Kuznetsov, L.I.Kuznetsova, Institute of Chemistry and Chemical Technology of Siberian Branch of Russian Academy of Sciences, RUSSIA

**SESSION 47
COAL SCIENCE:
BENEFICIATION – 4**
B.K. Parekh and Ekrem Yuce

13:55 - **A Study to Recover Coal from Turkish Lignite Fine Coal Tailings: Comparison of Falcon Concentrator and Multi Gravity Separator (MGS)**, Eyüp Sabah, M. Fatih Can, Selçuk Özgen, Afyon Kocatepe University, TURKEY

14:15 - **Evaluation of Dense Medium Separation Performance of Imbat Coal Preparation Plant**, G.Özbayoğlu, Atilim University; Ü. Atalay, Ali İ.Arol, O.Sivrikaya, Middle East Technical University, TURKEY

14:35 - **Aggloflotation of Coal**, İhsan Toroglu, Dilek Cuhadaroglu, Serdar Yılmaz, Zonguldak Karaelmas University, TURKEY

14:55 - **Effect of Shape Factor on Coal Flotation**, G. Bulut, O. Güven, K.T. Perek, Istanbul Technical University, TURKEY

15:15 - **Experiment and Research on Deep Cleaning by Selective Oil Agglomeration**, Binbin Zhao, Qiaowen Yang, Linlin Liu, Jian Chang, Huanling He, China University of Mining and Technology, CHINA

**SESSION 48
COAL-DERIVED PRODUCTS:
GENERAL SESSION – 1**
Dragomir Bukur and Hüseyin Özdag

13:55 - **Reforming of Low Rank Coal by Solvent Treatment at Around 350°C**, Xian Li, Ryuichi Ashida, Hiroyasu Fujitsuka, Kouichi Miura, Kyoto University, JAPAN

14:15 - **An Experimental Investigation of Factors Related to Coke Strength Degradation in Coke Mill-Structure**, Tetsuya Kanai, Yoshiaki Yamazaki, Kenichi Hiraki, Xiaoqing Zhang, Masakazu Shoji, Hideyuki Aoki, Takatoshi Miura, TOHOKU University, JAPAN

14:35 - **An Experimental Study on the Effect of Metallic Iron Particles on Strength Factors of Coke after CO₂ Gasification Reaction**, Yoshiaki Yamazaki, Kenichi Hiraki, Tetsuya Kanai, Xiaoqing Zhang, Masakazu Shoji, Hideyuki Aoki, Takatoshi Miura, Tohoku University, JAPAN

**SESSION 49
COMBUSTION:
ASH DEPOSITION AND HEAT TRANSFER**
John Wheelodon and Oktay Erbatur

15:50 - **Spectral Emissivities of Ni and Fe based Boiler Tube Materials with Varying Chromium Content at High Temperature Atmospheres**, Miki Shimogori, Babcock-Hitachi K.K. Kure Research Laboratory, JAPAN; Fabian Greffrath, Viktor Scherer, Ruhr University of Bochum; Alfred Gwosdz, Christian Bergins, Hitachi Power Europe GmbH, GERMANY

16:10 - **Effect of MGO Additive on the Reduction of Ash Deposition of Upgraded Brown Coal**, Katsuya Akiyama, Haeyang Pak, Kobe Steel, Ltd.; Yasuaki Ueki, Ryo Yoshiie, Ichiro Naruse, Nagoya University, JAPAN

16:30 - **Modeling and Optimization of NO_x Emission and Pulverized Coal Flame in Utility Scale Furnaces**, Srdjan Belosevic, Miroslav Sijercic, Branislav Stankovic, Nenad Crnomarkovic, Institute of Nuclear Sciences Vinca, Laboratory for Thermal Engineering and Energy; Slobodan Djekic, Electric Power Industry of Serbia, SERBIA

16:50 - **Observation of Heat Release Region as Functions of Coal Properties in Turbulent Jet Pulverized Coal Flames**, Yon Mo Sung, Cheor Eon Moon, Seong Yool Ahn, Jae Woo An, Gyung Min Choi, Duck Jool Kim, Pusan National University, SOUTH KOREA

17:10 - **Mathematical Model of the Low-Temperature Oxidation of Coal in Coal Stockpiles and Dumps**, Marian Bojko, Milada Kozubkova, VŠB-Technical University; Zdeněk Michalec, Institute of Geonics AS CR, v. v. i., CZECH REPUBLIC

**SESSION 50
GASIFICATION:
GAS CLEANUP**
Johan van Dyk and İsmail Boz

15:50 - **Slipstream Tests of Palladium Sorbents for High Temperature Capture of Mercury, Arsenic and Selenium from Fuel Gas**, Hugh G.C. Hamilton, Liz Rowsell, Stephen Poulston, Andrew Smith, Johnson Matthey Technology Centre, UNITED KINGDOM; Tony Wu, Subhash Datta, Robert C. Lambrecht, John Wheelodon, National Carbon Capture Center; Evan J. Granite, Henry W. Pennline, U.S. DOE/NETL, USA

16:10 - **Mercury Measurement and Removal from an Entrained Flow Slagging Coal Gasifier**, Dennis Lu, Robin Hughes, Ben Anthony, CanmetENERGY/Natural Resources Canada; Karl Abraham, Environment Canada, CANADA

16:30 - **Performance Improvement of a Desulfurization Sorbent for Warm Synthesis Gas Cleanup**, Jeom-In Baek, Jung-ho Ryu, Tae Hyoung Eom, Joong Beom Lee, Yong-Ho Wi, Chong Kul Ryu, Korea Electric Power Research Institute, KOREA

16:50 - **Study on Sulfidation Performance of Zn-Mn Based Sorbent from Different Precursors**, Liping Chang,

Yingli Wang, Ying Zhang, Weiren Bao, Kechang Xie, Taiyuan University of Technology, CHINA

**SESSION 51
GASIFICATION:
MODELING – 2**

Ting Wang and Güngör Tuncer

15:50 - **Investigation of Coal Gasification Process under Various Operating Conditions Inside a Two-Stage Entrained Flow Gasifier**, Ting Wang, Armin Silaen, University of New Orleans, USA

16:10 - **Start-Up Behavior of a Fixed Bed Gasifier: One Dimensional Modeling**, Giampaolo Mura, Mariarosa Brundu, University of Cagliari, ITALY

16:30 - **Entrained Flow Coal Gasification: Modeling, Simulation & Experimental Uncertainty Quantification for a Laboratory Reactor**, Philip J. Smith, Charles Reid, Julien Pedel, Jeremy Thornock, Institute for Clean and Secure Energy, The University of Utah, USA

16:50 - **Numerical Simulation of the Hydrodynamics of a Fluidized Bed Combined with an Entrained Bed Gasifier**, Jiantao Zhao, Jiejie Huang, Yitian Fang, Yang Wang, Institute of Coal Chemistry, Chinese Academy of Sciences, CHINA

17:10 - **Numerical Simulation of the Gasification Process inside a Cross-Type Two-Stage Gasifier**, Yau-Pin Chyow, Chang-Bin Huang, Yan-Tsan Luan, Institute of Nuclear Research, Atomic Energy Council, TAIWAN, ROC; Ting Wang, University of New Orleans, USA

**SESSION 52
COAL SCIENCE:
COAL CHEMISTRY – 6**

Quentin Campbell and Mustafa Aktas

15:50 - **Uranium and Some Other Trace Metal Element Concentration of Some Turkish Coal Ashes**, Isik Ozpeker, Fikret Suner, Mehmet Maral, Tahsin Aykan Kepekli, Istanbul Technical University, TURKEY

16:10 - **Transformations of Karaman -Ermenek Lignites of Turkey under Accelerated Electrons Impact**, Islam Mustafayev, Fethullah Chichek, Azerbaijan National Academy of Sciences, AZERBAIJAN; Guven Onal, Istanbul Technical University, TURKEY

16:30 - **Co-Pyrolysis of Malaysian Bituminous Coal and Industrial Solid Waste (Tyre Waste and Wood Waste) Blends via Thermogravimetric Analysis (TGA)**, Sharmeela Matali, Norazah Abd Rahman, Siti Shawalliah Idris, Azil Bahari Alias, Universiti Teknologi MARA, MALAYSIA

16:50 - **Desulfurization and Kinetics of Removal of Sulfur from High Sulfur Coal under Hydrogen Atmosphere**, Guojie Zhang, Yongfa Zhang, Fengbo Guo, Bingmo Zhang, Taiyuan University of Technology, CHINA

**SESSION 53
COAL SCIENCE:
BENEFICIATION – 5**

B.K. Parekh and Mehmet S. Celik

15:50 - **Preparation of Alternative Fuel from Compost and Coal Slurries**, Dagmar Juchelkova, O. Zajonc, H. Skrobankova, H. Raclavska, K. Raclavsky, VSB – Technical University Ostrava, CZECH REPUBLIC

16:10 - **Investigation of Effect of Reagents on the Coal Recovery from Coal Washing Plant Tailings by Floatation**, Oktay Bayat, Huseyin Vapur, Cukurova University; Metin Ucurum, Nigde University, TURKEY

16:30 - **Coal Flotation Tests: Effect of Operatinal Errors**, Sait Kizgut, Dilek Cuhadaroglu, Ihsan Toroglu, Zonguldak Karaelmas University, TURKEY

16:50 - **Column Flotation of Fine and Coarse Coal using a Novel Approach**, B.K. Parekh, D.P. Patil, University of Kentucky CAER; Edgar B. Klunder, NETL, USA

17:10 - **Study of the Lignite Qualitative Parameters Modification, During its Storage**, Sanda Krausz, Nicolae Cristea, University of Petrosani; Ion Bacalu, Mihail Dafinoiu, Daniel Burlan, National Society of Lignite, Oltenia, ROMANIA

**SESSION 54
COAL-DERIVED PRODUCTS:
GENERAL SESSION – 2**

Dragomir Bukur and Mehmet Canbazoglu

15:50 - **Investigating the Yield and Distribution of Products Obtained from the Co-Pyrolysis of Biomass and Coal**, Akinwale Abovade, Johann Görgens, Marion Carrier, Stellenbosch University; Edson Meyer, University of Fort Hare, SOUTH AFRICA

16:10 - **Natural-Gas-Level Emissions when Burning Naphtha (without Water Injection) in a Commercial Gas Turbine using the LPP Technology, Creating a “Clean Power” Alternative for an Integrated Gasification Combined Cycle (IGCC) Polygen Plant**, Leo D. Eskin, LPP Combustion, LLC., USA

16:30 - **Laminar Flame Speed Study of Syngas Mixtures (H₂-CO) with Straight and Nozzle Burners**, Iskender Gökalp, Nicolas Bouvet, Christian Chauveau, CNRS-Institut de Combustion, FRANCE; Seong-Young Lee, Robert J. Santoro, The Pennsylvania State University, USA

16:50 - **Structural Changes in Bituminous Coal Fly Ash Due to Treatments with Aqueous Solutions**, Roy Nir Lieberman, Ariel Goldman, Ariel University Center of Samaria; Haim Cohen, Ariel University Center at Samaria and Ben-Gurion University of the Negev, ISRAEL; Roy Nitzsche, TU Bergakademie Freiberg, GERMANY

17:10 - **Influence Factors on Density and Specific Surface Area (Blaine Value) of Fly Ash from Pulverized Coal Combustion**, Hiromi Shirai, Michitaka Ikeda, Kenji Tanno, Central Research Institute of Electric Power Industry, JAPAN

**POSTER SESSIONS
Tuesday, October 12, 2010
18:20 - 20:20**

**POSTER SESSION 1
COMBUSTION**

P1-1 - **Alternative Sorbents for Desulphurization of Flue Gases**, Pavel Kolat, Vaclav Roubicek, Zbyszek Szeliga, Bohumir Čech, VŠB-Technical University Ostrava, CZECH REPUBLIC

P1-2 - **Operation of Large Fluidized Bed Boilers and Methods of Diagnostics**, Pavel Kolat, Zdenek Kadlec, Bohumir Čech, VŠB-Technical University Ostrava, CZECH REPUBLIC

P1-3 - **Additive Desulphurization by Sodium Bicarbonate in Pulverized-Fuel Furnaces**, Pavel Kolat, Zdenek Kadlec, Pilar Lukas, VŠB-Technical University Ostrava, CZECH REPUBLIC

P1-4 - **Ionic Liquids with Amine Functional Group: A Shortcut to Improve the Performance of Ionic Liquids for CO₂ Scrubbing**, Jelliarko Palgunadi, Jin Kyu Im, Antonius Indarto, Hoon Sik Kim, Minserk Cheong, Kyung Hee University, KOREA

P1-5 - **Absorption of Sulfur Dioxide in Task Specific Ionic Liquids Containing SO₂-Philic Groups on the Cation**, Sung Yun Hong, Jelliarko Palgunadi, Hoon Sik Kim, Minserk Cheong, Kyung Hee University, KOREA

P1-6 - **Reaction Characteristics of New Oxygen Carriers for Chemical Looping Combustion**, Ho-Jung Ryu, Jaehyeon Park, Gyoung-Tae Jin, Korea Institute of Energy Research; Moon-Hee Park, Hoseo University, KOREA

P1-7 - **Combustion Reactivity of Char Derived from Solvent Extracted Coal**, Sihyun Lee, Hokyung Choi, Sangdo Kim, Jeongwhan Lim, Youngjoon Rhim, Korea Institute of Energy Research (KIER); Woosik Park, Hanyang University, KOREA

P1-8 - **Flue Gas Desulfurization and Denitration by Activated Char Obtained from Anthracite**, Lan-ting Li, Da-ming Liang, Zhen-gang Xu, Peng Wang, Beijing Research Institute of Coal Chemistry, China Coal Research Institute, CHINA

P1-9 - **Forced Flame Response Measurement in a Gas Turbine Combustor with High Hydrogen Fuel**, Kyu Tae Kim, University of Cambridge, UNITED KINGDOM; Jong Guen Lee, Bryan D. Quay, Dom A. Santavicca, Pennsylvania State University, USA

P1-10 - **Development of Commercial CFBC Boiler for Refuse Derived Fuel**, Dowon Shun, Dal-Hee Bae, Jaehyeon Park, Seung Yong Lee, Korea Institute of Energy Research, KOREA

P1-11 - **Simplified Quantification of Tetrafluoroborate Ion in Flue Gas Desulfurization Effluent for Management of Fluorine Emission**, Seiichi Ohyama, Hiroyuki Masaki, Shinji Yasuike, Kazuo Sato, Central Research Institute of Electric Power Industry, JAPAN

P1-12 - **Enhancing Thermal Efficiencies in Steam Power Plants by Utilizing the “W2” Prime Mover as Auxiliary Equipment**, Jerry F. Willis, Admiral Air, Inc., USA

P1-13 - **Comparing Efficiencies of the Steam Turbine Versus the “W2” Prime Mover**, Jerry F. Willis, Admiral Air, Inc., USA

P1-14 - **Optimization of Fuel Properties with Utilization of Biodegradable Municipal Wastes for Combustion Units**, Dagmar Juchelkova, Martina Hajkova, Helena Raclavska, VSB – Technical University Ostrava; L. Tararik, Frydecka skládka, a.s., CZECH REPUBLIC

P1-15 - **Sulfur Retention in the Ash During Combustion of Tuncbilek Briquettes**, Ayfer Parlak, Mustafa Ozdingis, H. Köksal Mucuk, Selahaddin Anac, Turkish Coal Enterprises (TKI); Bekir Zühtü Uysal, Gazi University, TURKEY

P1-16 - **Experimental Study on Performance that Carbon Dioxide Inhibits Coal Oxidation and Spontaneous Combustion**, Deng Jun, Li Shirong, Zhang Yanni, Xi'an University of Science and Technology; Zhang Yang, China Coal Research Institute, CHINA

P1-17 - **Development of an Analytical Solution for Jet Diffusion Flame Equations**, F. N. Pereira, A. L. de Bortoli, N. R. Marcilio, UFRGS – Universidade Federal do Rio Grande do Sul, BRAZIL

**POSTER SESSION 2
GASIFICATION**

P2-1 - **Suitability of a South-African High Ash Content and High Ash Flow Temperature Coal Source for Entrained Flow Gasification**, JC van Dyk, SASOL Technology, SOUTH AFRICA; R Stemmer, Corus Technology, THE NETHERLANDS

P2-2 - **Continuous Experiments of Hot Gas Desulfurization Process Using Zn-Based Solid Sorbents in a Pressurized Condition**, Sung-Ho Jo, Young Cheol Park, Ho-Jung Ryu, Chang-Keun Yi, Korea Institute of Energy Research; Jeom-In Baek, Korea Electric Power Research Institute, KOREA

P2-3 - **Biomass Gasification in Dual Fluidized Reactors: Process Modeling Approach**, Thanh D. B. Nguyen, Young-Il Lim, Hankyong National University; Byung-Ho Song, Kunsan National University; Won Yang, Uendo Lee, Young-Tai Choi, Korean Institute of Industrial Technology; Jae-Hun Song, Gi-Chul Myoung, Yong-Soo Cho, SeenTec Co., Ltd., KOREA

P2-4 - **The Role of O₂/COG Ratio on Non-Catalytic Partial Oxidation Process of Coke Oven Gas**, Haizhu Cheng, Sufang Song, Yongfa Zhang, Taiyuan University of Technology, CHINA

P2-5 - **Effect of Alkaline Oxide on the Coal Ash Fusion Temperature**, Zuo Yongfei, Dong Jie, Li Fan, Taiyuan University of Technology, CHINA

P2-6 - **Numerical Simulation of Carbon Catalytic Reforming Reactor**, Haizhu Cheng, Yongfa Zhang, Sufang Song, Taiyuan University of Technology, CHINA

P2-7 - **A Study on the Temperature Profile and Heat Transfer Coefficients in Underground Coal Gasification Cavities**, Sateesh Daggupati, Ramesh Naidu Mandapati, Sanjay M Mahajani, Anuradda Ganesh, Preeti Aghalayam, IIT Bombay; Pal AK., Sharma R.K., UCG Group, IRS, ONGC, INDIA

P2-8 - **Some Results of UCG Ex-Situ Trials from HBP Company Point of View**, Peter Cicmanec, Frantisek Verbich, Jaroslav Belacek, Hornonitrianske bane Prievidza, a.s.; Karol Kostur, Technical University of Kosice, SLOVAK REPUBLIC

**POSTER SESSION 3
SUSTAINABILITY AND ENVIRONMENT**

P3-1 - **The Coagulation in Electric Field of the Argillaceous Suspensions from the Wastewater Resulted in Coal Processing**, Romulus Sarbu, Diana Marchis, University of Petrosani; Adrian Corui, SC AQUATIM SA Timisoara, ROMANIA

P3-2 - **Experimental Research on the CO Impact on the Explosion Characteristics of CH₄**, Wang Hua, Qufu Normal University; Jun Deng, Ling-mei Ge, Xi'an University of Science and Technology, CHINA

P3-3 - **Thar Coal Mining Challenges**, Farid A. Malik, EMR-Consult, PAKISTAN

P3-4 - **Submerged Sequencing-Batch Membrane Bioreactor to Treat the Coke Wastewater**, Wen-Ying Li, Jingwen Wu, Baojie Zhao, Jie Feng, Taiyuan University of Technology, CHINA

**POSTER SESSION 4
CARBON MANAGEMENT**

P4-1 - **Options of CO₂ Capture in Oxyfuel Coal Combustion Technologies**, C. Clemente-Jul, J. Rodrigo-Naharro, Universidad Politécnic de Madrid, SPAIN

P4-2 - **Installation and Operation of 0.5 MW-Scale Dry Sorbent CO₂ Capture Pilot Plant Integrated with Real Coal-Fired Power Plant**, Chang-Keun Yi, Sung-Ho Jo, Young Cheol Park, Korea Institute of Energy Research; Chong Kul Ryu, Korea Electric Power Research Institute, KOREA

P4-3 - **Reaction Characteristics of Water Gas Shift Catalysts for SEWGS Process in a Bubbling Fluidized Bed**, Seung-Yong Lee, Ho-Jung Ryu, Dowon Shun, Dal-Hee Bae, Korea Institute of Energy Research, KOREA

P4-4 - **Carbon Dioxide Capture of Flue Gases from Coal-Fired Power Plant Using Enzymes Originated Marine Life**, Sihyun Lee, Soonkwan Jeong, Kyungsoo Lim, Jeonghwan Lim, Mari Vinoba, Korea Institute of Energy Research (KIER); Daehoon Kim, Korea University, KOREA

P4-5 - **Preparation and Characteristics of Formed Active Carbons for Natural Gas Storage**, Grzegorz Labojko, Aleksander Sobolewski, Institute for Chemical Processing of Coal; Leszek Czepirski, AGH – University of Science and Technology, POLAND

P4-6 - **The Kinetics of the CO₂ Reforming of CH₄ over Carbonaceous Catalyst**, Fengbo Guo, Yongfa Zhang, Guojie Zhang, Bingmo Zhang, Taiyuan University of Technology, CHINA

P4-7 - **A Study on the Absorption Characteristics of CO₂ with a Vortex Tube Type Absorber**, Keun-Hee Han, Woo-Jung Ryu, Jong-Ho Park, Won-Kil Choi, Jong-Sub Lee, Byoung-Moo Min, Korea Institute of Energy Research, KOREA

P4-8 - **Pd-Free Composite Membrane for Pre-Combustion Capture**, Jung Hoon Park, Sung Il Jeon, Korea Institute of Energy Research; Young Jong Choi, Innowill Corporation, KOREA

P4-9 - **Composite Ceramic Membrane for Oxygen Separation**, Jung Hoon Park, Soo Hwan Son, Korea Institute of Energy Research; Jong Pyo Kim, Chungnam National University, KOREA

P4-10 - **A Conceptual Process for Selective Capture of CO₂ from Fuel Gas Streams**, Yannick J. Heintz, Badie I. Morsi, University of Pittsburgh and U.S. DOE/NETL; Murphy J. Keller, David R. Luebke, Kevin P. Resnik, U.S. DOE/NETL, USA

P4-11 - **Fixed-Bed Adsorption of Carbon Dioxide-Nitrogen Mixtures onto Activated Carbon: Characteristics of CO₂ Adsorption and Modeling**, Regina F.P.M. Moreira, Tírzah L.P. Dantas, Federal University of Santa Catarina; Francisco Murilo T. Luna, Ivanildo J. Silva Jr., Diana C. S. de Azevedo, Federal University of Ceará, BRAZIL; Carlos A. Grande, Alírio E. Rodrigues, University of Porto, PORTUGAL

**POSTER SESSION 5
COAL-DERIVED PRODUCTS**

P5-1 - **Reactions of Coal Structures with Polymers Leading to Hydrogen Production**, Pavel Straka, Institute of Rock Structure and Mechanics, v.v.i, Academy of Sciences of the Czech Republic, CZECH REPUBLIC

P5-2 - **Catalytic Performance in Fixed-Bed and Bubbling Fluidized-Bed Reactor during Fischer-Tropsch**

Synthesis on the Iron-Based Catalysts, Jong Wook Bae, Ki-Won Jun, Yun-Jo Lee, Kyoung Su Ha, Korea Research Institute of Chemical Technology (KRICT), KOREA

P5-3 - **Operation of Slurry Reactor for Fischer-Tropsch Synthesis**, Ho-Tae Lee, Jung-Il Yang, Jung Hoon Yang, Dong-Hyun Chun, Hak-Joo Kim, Heon Jung, Korea Institute of Energy Research, KOREA

P5-4 - **Process Simulation of Steam Hydrogasification to Produce F-T Products and Electricity**, Xiaoming Lu, Chan S Park, Joseph M Norbeck, University of California, Riverside, USA

P5-5 - **Further development of the PSRK Model for the Prediction of the Vapor-Liquid-Equilibria of Direct Coal Liquefaction System at High Temperatures and High Pressures**, Xuefeng Mao, Shidong Shi, Wenbo Li, Zhennan Gao, China Coal Research Institute, CHINA

P5-6 - **Arsenic and Mercury Removal by Using Iron Humate Prepared from Turkish Coal Based Humic Acid**, Hacer Dogan, Murat Koral, Tulay Inan, TUBITAK Marmara Research Center; Selahattin Anaç, Zeki Olgun, TKI(Turkish Coal Enterprises), TURKEY

P5-7 - **Heavy Metal Adsorption of Turkish Coal Based Humic Acid/Epoxy Composites**, Emel Yildiz, Hacer Dogan, Murat Koral, Tulay Inan, TUBITAK Marmara Research Center; Selahattin Anaç, Zeki Olgun, TKI(Turkish Coal Enterprises), TURKEY

P5-8 - **Effect of Interface Modifier on Mechanical Properties of Lignite-SPI Composites**, Zhi-yuan Yang, Guangheng Wang, Pan Ran, Xi'an University of Science and Technology, CHINA

P5-9 - **Numerical Simulation of Syngas Production by Partial Oxidation of Coke Oven Gas under Non-Premixed Condition**, Honggang Chen, Kai Zhang, North China Electric Power University; Hui Zhao, China University of Petroleum; Yongfa Zhang, Taiyuan University of Technology, CHINA

P5-10 - **Coal Supply Agreements and Competition**, Değer Boden Akalın, Boden Law Office, TURKEY

P5-11 - **Chemicals from Turkish Lignites**, Vedat Mıhladı, Turkish Coal Enterprises, TURKEY

P5-12 - **Methane Cracking over De-ashed Coal Chars and the Effect of the De-ashing Conditions**, Yizhuo Han, Yisheng Tan, Jiantao Zhao, Hongjuan Xie, Institute of Coal Chemistry, Chinese Academy of Science; Ling Wei, Graduate School of the Chinese Academy of Sciences; Jinhu Wu, Qingdao Institute of Bioenergy and Bioprocessing Technology, Chinese Academy of Sciences, CHINA; Dongke Zhang, The University of Western Australia, AUSTRALIA

P5-13 - **CeO₂-K₂O Promoted Co-Mo Sulfur-Tolerant Shift Catalyst for the Shift Reaction of CO in Coke Oven Gas**, Yuqiong Zhao, Yongfa Zhang, Guojie Zhang, Taiyuan University of Technology, CHINA

P5-14 - **Effects of Preparation Conditions on Ru/Al₂O₃ Catalyst for Coal-Based Syngas Methanation Reaction**, Liping Wang, Yongfa Zhang, Yaling Sun, Xianglan Li, Taiyuan University of Technology, CHINA

P5-15 - **The Production of Organic Fertilizers from Göynük, Iğın and Elbistan Lignites with H₂SO₄ Oxidation**, M.Çöteli, A.Güntürk, A.Yavuz, A.Köker, G.Yıldırım, S.Atlıhan, General Directorate of Mineral Research and Exploration, TURKEY

P5-16 - **Modeling, Scaleup and Optimization of Slurry Bubble Column Reactors for Fischer-Tropsch Synthesis**, Laurent Sehabiague, Badie I. Morsi, University of Pittsburgh, USA

P5-17 - **Biogasification of Soma Lignite (A Preliminary Study)**, Mustafa Baysal, Yuda Yürüm, Sabanci University; Sedat Inan, TÜBİTAK Marmara Research Centre, TURKEY

**POSTER SESSION 6
COAL SCIENCE**

P6-1 - **Modeling of Coal Drying in a Pneumatic Dryer**, Sihyun Lee, Sangdo Kim, Kyoungsoo Lim, Soonkwan Jeong, Youngjoon Rhim, Korea Institute of Energy Research (KIER), KOREA

P6-2 - **Characterization of Chars Made of Solvent Extracted Coals**, Sihyun Lee, Jiho Yoo, Hokyung Choi, Sangdo Kim, Jeongwhan Lim, Thirupathi Raja, Korea Institute of Energy Research (KIER); Wantaek Jo, Yonsei University, KOREA

P6-3 - **Upgrading of Low Rank Coal by Hybrid Flash Dryer**, Sihyun Lee, Sangdo Kim, Hokyung Choi, Kyoungsoo Lim, Sangyoung Lee, Korea Institute of Energy Research (KIER), KOREA

P6-4 - **Drying Kinetics of Low Rank Coal in Multi-Chamber Fluidized Bed**, Jaehyeon Park, Dowon Shun, Dal-Hee Bae, Sihyun Lee, Jeong Hak Seo, Korea Institute of Energy Research; Jaehyeok Park, Hanyang University, KOREA

P6-5 - **The Influence of the Temperature on Adsorption of SDS on Coals**, Boleslav Taraba, Roman Marsalek, Ostrava University, CZECH REPUBLIC

P6-6 - **Assessment of Elemental Sulphur in Biodesulphurized Coals**, Lenia Gonsalvesh, Stefan Marinov, Maya Stefanova, Institute of Organic Chemistry, Bulgarian Academy of Sciences, BULGARIA; Robert Carleer, Jan Yperman, Hasselt University, BELGIUM

P6-7 - **Study of Biodesulphurized High Sulphur Coals from Bulgaria**, Stefan Marinov, Maya Stefanova, Lenia Gonsalvesh, Nadezda Kazakova, Institute of Organic Chemistry, Bulgarian Academy of Sciences; Veneta Groudeva, M.Iliev, University of Sofia; Petyo Gadjanov, Technical University of Sofia, BULGARIA; Robert Carleer, Jan Yperman, Hasselt University, BELGIUM

P6-8 - **Samples in the World Coal Quality Inventory - A USGS Compilation on Global Coal**, Susan J. Tewalt, Harvey E. Belkin, U.S. Geological Survey, USA

P6-9 - **Research on One Kind of High Volatile Matter 1/3 Coking Coal Used into Blending-Coking**, Ru Xiang, Gaifeng Xue, Xuehong Zhang, Wuhan Iron and Steel Corp, CHINA

P6-10 - **The Research on Meager Lean Coal Coking Compatibility with Different Coking Coal**, Ru Xiang, Gaifeng Xue, Junfang Bao, Zikui Song, Wuhan Iron and Steel Corp, CHINA

P6-11 - **Microwave-Assisted Extraction of Shenfu Coal by Fractional Method**, Hong Chen, Xiaotoni Guan, Shenyang University of Technology; Jianwei Li, Lingmei Ge, Xi'an University of Science and Technology, CHINA

P6-12 - **Use of Flicker Noise Spectroscopy for Analyzing the Morphological Characteristics of Coals**, D.L. Shirochin, S.A. Aipshtein, I.A. Nikitin, Moscow State Mining University, MOSCOW

P6-13 - **The Property and Utilization Trend of Low-Rank Bitumites in West China**, Yuanyuan Zhang, Yong Wang, Sijian Qu, China Coal Research Institute; Yonggang Wang, China University of Mining and Technology, CHINA

P6-14 - **Model Structure of High Sulphur N.E. Region Indian Coals**, Sunil Kumar Srivastava, Atma Ram Singh, Central Institute of Mining and Fuel Research, INDIA

P6-15 - **Research on Infra-Red Spectrum of Microcosmic Characteristics of Coal Oxidation at Low Temperature**, Zhang Yanni, Deng Jun, Li Shugang, Li Shirong, Wang Caiping, Xi'an University of Science and Technology, CHINA

P6-16 - **Research on the Deep Cleaning of Anthracite by Selective Oil Agglomeration**, Binbin Zhao, Qiaowen Yang, Linlin Liu, Jian Chang, Huanling He, China University of Mining and Technology, CHINA

P6-17 - **Influence of the Surface Treatment with O₃ And NH₃ on the Physical and Chemical Characteristics of Dried Low Rank Coal**, Gi Bo Han, Yongseung Yun, Changsik Choi, Institute of Advanced Engineering, KOREA

P6-18 - **Buried Cultural Assets and Archaeogeophysical Studies at TKI's Coal Fields**, İ. Ergüder, E. Babayigit, TKİ, TURKEY

P6-19 - **Energy, Natural Gas, Türkiye & Ankara**, İbrahim Halil Kirsan, Başkent Doğalgaz Dağıtım A.Ş., TURKEY

P6-20 - **An Alternative Application to the Centrifugal Dryer at a Coal Preparation Plant**, Ahmet Gitmez, Mustafa Yılmaz, Western Lignite Establishment (GLI), TURKEY

P6-21 - **The Evaluation of the Contributions to the Productivity of the Process Changes at Tunchilek Coal Preparation Plant**, Ahmet Gitmez, F. Zehra Taksuk, Fatih Albayrak, Western Lignite Establishment (GLI), TURKEY

P6-22 - **The Dump Truck Requirement Planning Studies of Turkish Coal Corporation**, Mustafa Ziyapak, Turkish Coal Corporation, TURKEY

P6-23 - **Estimation of the Risk-Adjusted Discount Rate for Hard Coal Projects Depending on Geological Factors at Various Stages of Exploration**, Piotr Saluga, Eugeniusz J. Sobczyk, POLAND

P6-24 - **Investigation of Radioactive Contents Soma Coals**, İsmail Demir, İlgin Kurşun, İstanbul University, TURKEY

P6-25 - **Effect of Triboelectrostatic Separation on Coal Desulfurization and Deashing**, Byoung-Gon Kim, Ho-Seok Jeon, Sang-Ho Back, Chong-Lyuck Park, Korea Institute of Geoscience and Mineral Resources (KIGAM), KOREA

P6-26 - **Remove of Ash and Sulfur Minerals from Coal by Triboelectrostatic Separation**, Ho-Seok Jeon, Byoung-Gon Kim, Korea Institute of Geoscience and Mineral Resources (KIGAM); Woo-Zin Choi, The University of Suwon, KOREA

P6-27 - **Recovery of Valuable Metallic and Non-Metallic Minerals from Coal Mine Wastes**, Sang-Bae Kim, Soo-Bok Jeong, Ho-Seok Jeon, Chong-Lyuck Park, Korea Institute of Geoscience and Mineral Resources (KIGAM), KOREA

P6-28 - **Manufacture of Fired Clay Brick from Coal-Preparation Refuse and its Characteristics**, Soo-Bok Jeong, Ho-Seok Jeon, Chong-Lyuck Park, Byoung-Gon Kim, Korea Institute of Geoscience and Mineral Resources (KIGAM), KOREA

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