Thirty - First Annual International
Pittsburgh Coal Conference

FINAL PROGRAM

Coal - Energy, Environment and Sustainable Development

October 6 - 9, 2014
Pittsburgh, PA USA
The David L. Lawrence Convention Center

Hosted By:
University of Pittsburgh
Swanson School of Engineering

WELCOME!

On behalf of the Conference Advisory Board, Conference Committees, and the University of Pittsburgh we welcome you to the Thirty-First Annual International Pittsburgh Coal Conference held October 6 - 9, 2014 at the David L. Lawrence Convention Center in Pittsburgh PA. 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 Wednesday, October 8 from 18:00 - 21:00. For detailed information on technical sessions, papers and speakers, please turn to page 6 in the Technical Program.

The invited Plenary Speakers include: Janet Gellici, Executive Vice President & Chief Operating Officer, National Coal Council, Inc., USA; Ben Yamagata, Executive Director, Coal Utilization Research Council (CURC), USA; John Pippy, CEO, Pennsylvania Coal Alliance, USA; Gu Dazhao, General Manager, R&D Department of Shenhua Group, CHINA; Johan Brand, CEO, African Carbon Energy (Africary), SOUTH AFRICA; Rainer Reimert, Professor, Karlsruhe Institute of Technology (KTI), Engler-Bunte-Institut, Fuel Technology, GERMANY; L.-S. Fan, Distinguished University Professor, C. John Easton Professor in Engineering and Professor of Chemical Engineering, The Ohio State University, USA; Kenneth Nemeth, Executive Director, Southern States Energy Board, USA; and Ed Holland, President and CEO, Mississippi Power, 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 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 2014 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 Thirty-Second Annual International Pittsburgh Coal Conference, which will be held in Pittsburgh, PA from October 5 - 8, 2015.

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 6, from 15:00 - 19:00 and continues Tuesday, Wednesday, and Thursday from 7:00 until 17:00.

Please check in even if you have Pre-Registered!

Gateway Clipper Dinner Cruise
Tuesday, October 7

5:45 - Meet in Westin Hotel lobby for a short walk to the boarding dock

6:00 - 6:30 PM - Boarding at the dock by the David L. Lawrence Convention Center

6:30 PM - 9:00 PM - Dinner and cruising

9:00 PM - Return to dock

This cruise is complimentary for paid conference attendees, but there is a charge of $45 to bring a spouse or friend. Please RSVP to the conference secretary.

The International Pittsburgh Coal Conference

EXECUTIVE DIRECTOR:
Dr. Badie I. Morsi

CONFERENCE ORGANIZER:
Mrs. Heidi M. Peck

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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 6, 2014

Technical Tour	07:45 - 15:30
UCG Workshop	09:00 - 16:30
Registration	15:00 - 19:00
Reception	18:30 - 20:30

TUESDAY, OCTOBER 7, 2014

Registration	07:00 - 17:00
Opening Ceremony	08:00 - 08:20
Plenary Session – 1	08:20 - 10:05
Concurrent Tech. Sessions	10:20 - 12:00
Conference Luncheon	12:00 - 13:30
Concurrent Tech. Sessions	13:30 - 17:25
Gateway Clipper Dinner Cruise	18:00 - 21:00

WEDNESDAY, OCTOBER 8, 2014

Registration	07:00 - 17:00
Plenary Session – 2	08:20 - 10:05
Concurrent Tech. Sessions	10:20 - 12:00
Conference Luncheon	12:00 - 13:30
Concurrent Tech. Sessions	13:30 - 17:25
Poster Session	18:00 - 21:00

THURSDAY, OCTOBER 9, 2014

Registration	07:00 - 17:00
Plenary Session – 3	08:20 - 10:05
Concurrent Tech. Sessions	10:20 - 12:00
Awards Luncheon	12:00 - 13:30
Concurrent Tech. Sessions	13:30 - 17:25
Advisory Board Meeting	18:00 - 20:00

PLENARY SPEAKERS

TUESDAY, OCTOBER 7, 2014

Energy Production/Policy Speakers

Janet Gellici
Executive Vice President & Chief Operating Officer
National Coal Council, Inc., USA
"Reliable & Resilient: The Value of Our Existing Coal Fleet"

Ben Yamagata
Executive Director
Coal Utilization Research Council (CURC), USA
"Can We Develop Clean Coal Technologies and CCUS in Light of EPA's Proposed Carbon Regulations"

John Pippy
CEO
Pennsylvania Coal Alliance, USA
"Coal: The Energy Keystone of Pennsylvania Past, Present and Future"

WEDNESDAY, OCTOBER 8, 2014

International Issues

Gu Dazhao
General Manager, R&D Department
Shenhua Group, CHINA
"Water Resources Protection and Utilization Technology for Coal Mining in Western China"

Johan Brand and Johan van Dyk
African Carbon Energy (Africary), SOUTH AFRICA
"UCG – Bringing a Resource, Technology and Economics Together for a 50MW Power Station in South Africa"

Rainer Reimert
Professor
Karlsruhe Institute of Technology (KIT), GERMANY
"Coal in Europe: A Rich Past – What Future?"

THURSDAY, OCTOBER 9, 2014

Environmental Issues

L.-S. Fan
Distinguished University Professor
The Ohio State University, USA
"Chemical Looping Technology for Fossil Energy Conversions"

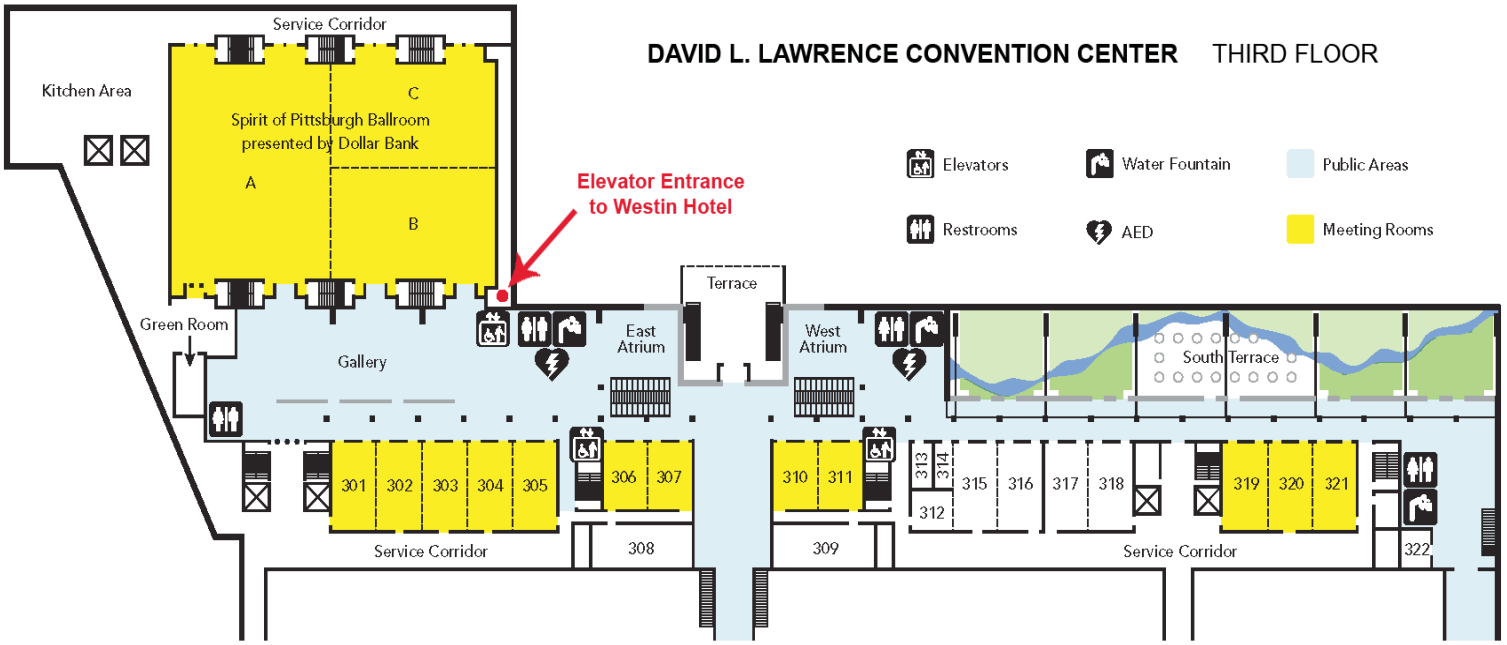
Kenneth Nemeth
Executive Director
Southern States Energy Board, USA
"Coal's 2014 Challenges and Opportunities"

Ed Holland
President and CEO
Mississippi Power, USA
"Energy & the Environment: A Way Forward for Coal -- the Kemper Project"

Technical Program Schedule

Monday, October 6, 2014						
7:45-15:30	Technical Tour – Mitchell Plant					
9:00-16:30	Underground Coal Workshop - Room 312					
15:00-19:00	Registration – Room 306					
18:30-20:30	Reception – Rooftop Terrace					
Tuesday, October 7, 2014						
7:00-17:00	Registration – Room 306					
8:00-8:20	Opening Ceremony – Ballroom					
8:20-10:05	Plenary Session – Ballroom					
10:05-10:20	**Coffee Break**					
ROOM	**301**	**302**	**303**	**304**	**305**	**310/311**
	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
10:20-12:00	Clean Coal Demonstration and Commercial Projects: Future of Coal	Coal Mining: Geological and Ground Control Issues	Gasification: General - 1	Combustion: Oxy-Combustion and Chemical Looping - 1	Clean Coal and Gas to Fuels: Syngas to Fuels - 1	Coal Science: General - 1
12:00-13:30	**Conference Luncheon - Ballroom**					
	Session 7	Session 8	Session 9	Session 10	Session 11	Session 12
13:30-15:10	Clean Coal Demonstration and Commercial Projects: Optimizing Clean Coal	Coal Mining: Monitoring and Managing Gas in Mines	Gasification: Gas Cleaning	Combustion: Oxy-Combustion and Chemical Looping - 2	Clean Coal and Gas to Fuels: Syngas to Fuels - 2	Coal Science: General - 2
15:10-15:25	**Coffee Break**					
	Session 13	Session 14	Session 15	Session 16	Session 17	Session 18
15:25-17:25	Clean Coal Demonstration and Commercial Projects: Gasification Projects	Coal Mining: Mine Reclamation and Mining Economics	Gasification: Underground Coal Gasification	Combustion: Oxy-Combustion and Chemical Looping - 3	Clean Coal and Gas to Fuels: Direct Liquefaction	Coal Science: General - 3
18:00-21:00	**Gateway Clipper Dinner Cruise**					
Wednesday, October 8, 2014						
7:00-17:00	Registration – Room 306					
8:20-10:05	Plenary Session – Ballroom					
10:05-10:20	**Coffee Break**					
ROOM	**301**	**302**	**303**	**304**	**305**	**310/311**
	Session 19	Session 20	Session 21	Session 22	Session 23	Session 24
10:20-12:00	Clean Coal Demonstration and Commercial Projects: Combustion Projects	Coal Mining: Safety and Mining Technology - 1	Gasification: Novel Technologies - 1	Combustion: Oxy-Combustion and Chemical Looping - 4	Clean Coal and Gas to Fuels: Catalysts	Coal Science: General - 4
12:00-13:30	**Conference Luncheon - Ballroom**					
	Session 25	Session 26	Session 27	Session 28	Session 29	Session 30
13:30-15:10	Clean Coal Demonstration and Commercial Projects: Oxy-combustion	Coal Mining: Safety and Mining Technology - 2	Gasification: Modeling - 1	Combustion: Co-Firing and Flames	Clean Coal and Gas to Fuels: Catalysts and Solvents	Coal Science: General - 5
15:10-15:25	**Coffee Break**					
	Session 31	Session 32	Session 33	Session 34	Session 35	Session 36
15:25-17:25	Carbon Management: Capture of Carbon Dioxide - 1	Combustion: Combustors	Gasification: Modeling - 2	Combustion: Power Plant Support Studies	Gasification: Low Rank Coal	Coal Science: General - 6
18:00-21:00	**Poster Session - East Atrium**					
Thursday, October 9, 2014						
7:00-17:00	Registration – Room 306					
8:20-10:05	Plenary Session – Ballroom					
10:05-10:20	**Coffee Break**					
ROOM	**301**	**302**	**303**	**304**	**305**	**310/311**
	Session 37	Session 38	Session 39	Session 40	Session 41	Session 42
10:20-12:00	Carbon Management: Capture of Carbon Dioxide - 2	Shale and Coal Bed Gas: General - 1	Gasification: General - 2	Combustion: Mercury Removal Research In China	Gasification: General - 3	Coal Science: General - 7
12:00-13:30	**Awards Luncheon - Ballroom**					
	Session 43	Session 44	Session 45	Session 46	Session 47	Session 48
13:30-15:10	Carbon Management: Storage of Carbon Dioxide - 1	Shale and Coal Bed Gas: General - 2	Gasification: Novel Technologies - 2	Sustainability and Environment: General - 1	Coal Science: General - 10	Coal Science: General - 8
15:10-15:25	**Coffee Break**					
	Session 49	Session 50	Session 51	Session 52	Session 53	Session 54
15:25-17:25	Carbon Management: Storage of Carbon Dioxide - 2	Shale and Coal Bed Gas: General - 3	Gasification: General - 4	Sustainability and Environment: General - 2	Coal Science: General - 11	Coal Science: General - 9
18:00-20:00	**Advisory Board Meeting**					

The David L. Lawrence Convention Center



Registration
Room 306

Monday Evening Reception
Rooftop Terrace

Opening Ceremony
Spirit of Pittsburgh Ballroom

Plenary Sessions
Spirit of Pittsburgh Ballroom

Conference Luncheons
Spirit of Pittsburgh Ballroom

Poster Presentations
East Atrium

Exhibits
Ballroom Gallery

A/V & Speaker Preparation Room
Room 307

SESSION MEETING ROOMS

Room 301
Sessions 1, 7, 13, 19, 25, 31, 37, 43, 49

Room 302
Sessions 2, 8, 14, 20, 26, 32, 38, 44, 50

Room 303
Sessions 3, 9, 15, 21, 27, 33, 39, 45, 51

Room 304
Sessions 4, 10, 16, 22, 28, 34, 40, 46, 52

Room 305
Sessions 5, 11, 17, 23, 29, 35, 41, 47, 53

Room 310/311
Sessions 6, 12, 18, 24, 30, 36, 42, 48, 54

ORAL SESSIONS
Tuesday, October 7, 2014

SESSION 1
CLEAN COAL DEMONSTRATION AND COMMERCIAL PRODUCTS: FUTURE OF COAL
Tom Sarkus and Tina Vital

The Evolving Role of Declining US Coal, James Stevenson, IHS Energy, USA

Outlook and Opportunities in the U.S. Coal Market, John Bridges, J.P. Morgan Securities LLC**,** USA

Making Room for Coal Generation Under the NSPS Rule, Joel Theis, DOE/NETL, USA

The Importance of Baseload Power Renewal, Peter C. Balash, DOE/NETL, USA

Coal's Future in a Carbon-Constrained World: How Did We Get Here, and Where Do We Go Now?, Eric Grol, DOE/NETL, USA

SESSION 2
COAL MINING: GEOLOGICAL AND GROUND CONTROL ISSUES IN MINING
Richard Bajura and Bruce Sass

Geotechnical Studies Related to Crossing a Geologic Fault Using a Longwall Mining Method, Yoginder P. Chugh, Harrold Gurley, Behrooz Abbasi, Southern Illinois University Carbondale; Joseph Hirschi, Illinois Clean Coal Institute, USA

Using Shield Leg Pressure Data to Assess Longwall Ground Control Performance in the Face Area, Yoginder P. Chugh, H. Gurley, Southern Illinois University Carbondale; Greg Smittle, Marco Corporation, USA

SESSION 3
GASIFICATION: GENERAL – 1
Massood Ramezan and Jenny Tennant

An Overview of U.S. DOE's Advanced Gasification Technologies Program, Jenny B. Tennant, DOE/NETL, USA

Dry Solids Pump Coal Feed Technologies Program, Alan Darby, Scott McVey, Aerojet Rocketdyne, USA

Intermediate-Scale Validation of ITM Oxygen Technology, Andrew W. Wang, Mark D. Hutcheon, Charles M. Woods, Lori L. Anderson, Phillip A. Armstrong, VanEric E. Stein, Air Products and Chemicals, Inc., USA

Simulation Research on the Fixed-bed Gasification Process in a Two-stage Combined Gasifier, Yifei Wang, Weilong Jin, Longchu Zhu, Guangsuo Yu, Fuchen Wang, Key Laboratory of Coal Gasification and Energy Chemical Engineering of Ministry of Education, CHINA

Syngas-Based Annex Concepts for Chemical Energy Storage within Pulverized Coal Power Plants, Christian Wolfersdorf, Kristin Boblenz, Robert Pardemann, Bernd Meyer, TU Bergakademie Freiberg, GERMANY

SESSION 4
COMBUSTION: OXY-COMBUSTION AND CHEMICAL LOOPING - 1
John Wheeldon and Miki Shimogori

Chemical Looping Combustion Reference Plant Designs and Sensitivity Studies, Robert Stevens, DOE/NETL; Richard Newby, Vasant Shah, Norma Kuehn, Dale Keairns, Booz Allen Hamilton, Inc. - NETL, USA

Process Design and Parametric Analysis of a Staged, Pressurized Oxy-Combustion Power Plant, Akshay Gopan, Benjamin M. Kumfer, Richard L. Axelbaum, Washington University in St Louis; Jeffrey Phillips, David Thimsen, Electric Power Research Institute, USA

Experimental Determination of the Kinetics of Pressurized Oxy-Fuel Char Combustion, Ethan S. Hecht, Christopher R. Shaddix, Manfred Geier, Sandia National Laboratories, USA

Impact of Oxygen Enrichment on Biomass Flame Stability, Emissions and Burnout, Dale Tree, Steven Owen, Daniel Ellis, Brigham Young University; Yuan Xue, Hwanho Kim, Kenneth Kaiser, Air Liquide, Delaware Research and Technology Center, USA

Experiments on Mercury Oxidation in an Oxy-Fuel Fluidized Bed Combustor, Hui Wang, Yufeng Duan, Qiang Zhou, Chun Zhu, Min She, Southeast University, CHINA

SESSION 5
CLEAN COAL AND GAS TO FUELS: SYNGAS TO FUELS - 1
Vann Bush and Wenhua Li

Pilot-Scale CTL Process Development in Korea, Heon Jung, Korea Institute of Energy Research, KOREA

Gasification, Warm-Gas Cleanup, and Liquid Fuel Production with Illinois Coal and Biomass Blends, Joshua J. Stanislowski, Scott G. Tolbert, Tyler J. Curran, Michael J. Holmes, University of North Dakota, Energy & Environmental Research Center; Jason K. Smith, Connecticut Center for Advanced Technology, Inc., USA

Production of SNG in a Slurry Bubble Column Reactor, Manuel Götz, Rainer Reimert, Siegfried Bajohr, Karlsruhe Institute of Technology (KIT), GERMANY

SESSION 6
COAL SCIENCE: GENERAL - 1
Jim Hower and Roy Nir Lieberman

Column Flotation of Hard-to-Float Subbituminous Coal Using the Blend of Trimethyl Pentanediol Derivatives as Surface Active Materials and Pico-Nano Bubbles as Secondary Collector, Felicia Peng, Yu Xiong, Jinxian Chen, West Virginia University, USA

Improving the Rail Car Unloading of Solid Fuels, George D. Dumbaugh, Kinergy Corporation, USA

Coal Ash as a Potential Scrubber for Quarry Fine Wastes, Roy Nir Lieberman, Yitzhak Mastai, Bar-Ilan University; Yaakov Anker, Samaria and the Jordan Rift Regional R&D Center; Haim Cohen, Ariel University, ISRAEL; Xavier Querol, Oriol Font, Institute of Environmental Assessment and Waster Research ((IDÆA) Consejo Superior de Investigaciones Científicas (CSIC), SPAIN

Study on Kinetics of Char Gasification with CO_2 and Steam by the Method of Shared Active Sites, Wei Huo, Zhijie Zhou, Yifei Wang, Zhenghua Dai, Yan Gong, Guangsuo Yu, Key Laboratory of Coal Gasification and Energy Chemical Engineering of Ministry of Education, CHINA

SESSION 7
CLEAN COAL DEMONSTRATION AND COMMERCIAL PROJECTS: OPTIMIZING CLEAN COAL TECHNOLOGIES
Marty Webler and Jason Lewis

Public Communication and Collaboration for Carbon Capture, Utilization, and Storage Technology: Acceptance, Education, and Outreach, Douglas C. Brauer, David Larrick, Richland Community College, USA

DryFining™ Begins its 5th Year of Commercial Operation, Charles Bullinger, Great River Energy, USA

Case Study of an Improved Online Coal Analysis System, Albert Klein, IPCI Indutech Process Controls Inc.; Anthony Garaventa, NRG, Conemaugh Power Plant; Mike Santucci, ECG Engineering Consulting Group, USA

Improving the Energy Efficiency of a Mid-Size Power Plant by Reduction in Auxiliary Power and Improved Heat Transfer, Jeffrey Green, Justin Harrell, James Mathias, Southern Illinois University, USA

SESSION 8
COAL MINING: MONITORING AND MANAGING GAS IN MINES
Richard Bajura and Bruce Sass

Coal Mine Methane Developments in the United States, Jayne Somers, United States Environmental Protection Agency, USA

The Technical and Economic Feasibility of Flaring to Reduce Greenhouse Gas Emissions from the Global Coal Mining Industry, Felicia Ruiz, Coalbed Methane Outreach Program, EPA; Clark Talkington, Advanced Resources International, Inc., USA

SESSION 9
GASIFICATION: GAS CLEANING
Jenny Tennant and Dan Duellman

Advanced Acid Gas Separation Technology for the Production of Syngas via Low Rank Coals, Fabrice Amy, Shubhra J. Bhadra, Jeffrey R. Hufton, Jeffrey W. Kloosterman, Ellen M. O'Connell, Air Products and Chemicals, USA

Sulfur Release Behavior during Pyrolysis of a Bituminous Coal Fractions: The Relationship with Sulfur Forms, Char Particle Size Distribution and Morphology, and Char Conversion, Vijayaragavan Krishnamoorthy, Sarma V. Pisupati, The Pennsylvania State University/ DOE/NETL; Aime H. Tchapda, The Pennsylvania State University, USA

Toward a Technology to Mitigate Syngas Cooler Plugging and Fouling, Mike Bockelie, Kevin Davis, Rand Pummill, Martin Denison, Tim Shurtz, Jost Wendt, Reaction Engineering International; Kevin Whitty, Mustafa Can Celebi, Andrew Fry, Cristina Jaramillo, Zhongua Zhan, University of Utah, USA

Pilot-Scale Capture of Mercury, Arsenic, and Selenium from Warm Syngas at Elevated Pressures by Palladium Sorbents, Karen J. Uffalussy, Evan J. Granite, Henry W. Pennline, DOE/NETL; Tony Wu, Subhash Datta, Robert C. Lambrecht, John M. Wheeldon, National Carbon Capture Center, Southern Company, USA; Hugh G. C. Hamilton, Stephen Poulston, Liz Rowsell, Wilson Chu, Andrew W.

J. Smith, Johnson Matthey Technology Centre, UNITED KINGDOM

Removal of Carbon Disulfide by CUO During Reactive Milling with Anthracite Carbon as Milling Aid, Tao Li, Haipeng Chen, Naifei Wang, Xiaoli Zhang, Shixue Zhou, Shandong University of Science and Technology, CHINA

SESSION 10
COMBUSTION: OXY-COMBUSTION AND CHEMICAL LOOPING - 2
John Wheeldon and Miki Shimogori

Techno-Economic Analysis of Coal-Direct Chemical Looping for Power Production, Tritti Siengchum, Luis G. Velazquez-Vargas, Douglas Devault, Tom Flynn, Babcock & Wilcox Power Generation Group, Inc.; Andrew Tong, Samuel Bayham, L.-S. Fan, The Ohio State University, USA

Kinetics of Redox CLC Reactions for Selected Carriers Based on Fe Pigments from Pigments Industry, Ewelina Ksepko, Piotr Babinski, Marek Sciazko, Institute for Chemical Processing of Coal, POLAND

SESSION 11
CLEAN COAL AND GAS TO FUELS: SYNGAS TO FUELS - 2
Vann Bush and Wenhua Li

High Hydrogen, Low Methane Syngas from Low-Rank Coals for Coal-to-Liquids Production, Andrew Lucero, Kevin McCabe, Amit Goyal, August Meng, Jonathon Carroll, Santosh Gangwal, Southern Research Institute, USA

ZnO/ZSM-5 Nanocatalysts for Methane Upgrading, Yungchieh Lai, Götz Veser, University of Pittsburgh and DOE/NETL, USA

Methane Reforming Strategies for the CO_2 Emission Reduction of Lignite to Liquid-Fuel Production System, Yang Fan, Wenying Li, Taiyuan University of Technology, CHINA

Economic Analysis of Gas to Liquid and Coal to Liquid Processes, Sara Mohajerani, Samane Ghandehariun, Amit Kumar, University of Alberta, CANADA

SESSION 12
COAL SCIENCE: GENERAL - 2
Roy Nir Lieberman and Haim Cohen

Measurement of Surface Tension of Coal Slags, Andre Horstenkamp, Michael Mueller, Forschungszentrum Jülich GmbH, GERMANY

Investigation of Coal Particle Fragmentation Behavior in a Drop-Tube Reactor, Jan Friedemann, Andreas Berndt, Felix Baitalow, Bernd Meyer, Institute of Energy of Energy Process Engineering and Chemical Engineering, GERMANY

Binding of SO_3 to Fly Ash Components: CaO, MgO, Na_2O and K_2O, Benjamin Galloway, Erdem Sasmaz, Bihter Padak, University of South Carolina, USA

Research of Fuxian Coal Desulfurization and Ash Reduction by the Flotation Method, Zhao Shiyong, Liu Meimei, Wu Peipei, Zhou Anning, Yang Zhiyuan, Xi'an University of Science and Technology, CHINA

SESSION 13
CLEAN COAL DEMONSTRATION AND COMMERCIAL PROJECTS: GASIFICATION PROJECTS
John Rockey and Greg O'Neil

Linc Energy: Advancing Underground Coal Gasification (UCG) Technology to a Commercial Reality, Paul Ludwig, Linc Energy Operations, Inc., USA

Update on the Kemper County IGCC Project, Diane Revay Madden, DOE/NETL; Matt Nelson, Tim Pinkston, Southern Company, USA

Pre-Commercial Demonstration of High-Efficiency, Low-Cost Syngas Cleanup Technology for Chemical, Fuel, and Power Applications, David L. Denton, Ben Gardner, Raghubir Gupta, Brian Turk, RTI International, USA

Texas Clean Energy Project Update, Karl E. Mattes, Summit Power Group, USA

Hydrogen Energy California: Project Update, Stefanie Korepin, James Croyle, Hydrogen Energy California, USA

SESSION 14
COAL MINING: MINE RECLAMATION AND MINING ECONOMICS
Richard Bajura and Bruce Sass

Use of Flue Gas Desulfurization By-Products for Coal Mine Reclamation: Laboratory, Pilot, and Full-Scale Studies, Tarunjit S. Butalia, William Wolfe, Jason Cheng, The Ohio State University, USA

Drillability Assessment of Rocks Based on Strength and Brittleness, Okan Su, Utku Sakiz, Ekin Koken, Bulent Ecevit University, TURKEY

GIS Analysis of Coal Values in Evaluation and Design of Model of Flexible Production at TKI Mines, Ebru Ilgaz, Ali Bora, Emre Soydemir, Turkish Coal Enterprises, TURKEY

Acid Mine Drainage (AMD) Treatment Options for an Abandoned Coal Mine, Bruce M Sass, John Seymour, Geosyntec Consultants; Alan R Wood, American Electric Power; J. Brady Gutta, National Mine Land Reclamation Center, West Virginia University, USA

SESSION 15
GASIFICATION: UNDERGROUND COAL GASIFICATION
Johan Brand and Johan van Dyk

Africary Under Ground Gasification Project: An In-Depth Coal Characterization Study of the Theunissen Coal Reserve in South-Africa, JC van Dyk, J Brand, African Carbon Energy, SOUTH AFRICA

Bloodwood Creek UCG Pilot 2011-2014, Burl E. Davis, Carbon Energy Pty. Ltd., USA; Cliff Mallet, Carbon Energy Pty. Ltd., AUSTRALIA

Underground Coal Gasification in China, Feng Chen, ENN Sci.& Tech. Co.Ltd., CHINA

Laboratory Studies of Coal Combustion Zone Evaluation Using AE Monitoring During Underground Coal Gasification (UCG), Faqiang Su, Ken-ichi Itakura, Muroran Institute of Technology; Gota Deguchi, Underground Resources Innovation Network; Kotaro Ohga, Junichi Kodamac, Hokkaido University, JAPAN

Underground Coal Gasification: Prospects for Carbon Capture and Storage, Alexey V Belov, Igor V. Grebenyuk, Far Eastern Federal University, RUSSIA; Nikolai N. Kinaev, Strategic Energy Consulting Pty. Ltd., AUSTRALIA

An In Situ Simulated Laboratory Tests Using MicGAS™ Approach for Bioconversion of Deep Unmineable Coals from the Tongue River Basin Between North of Sheridan, Wyoming and South of Ashland, Montana, Shaban Kotob, Robert Andrews, Shinwoo Lee, Daman Walia, ARCTECH, Inc.; William Orem, U.S. Geological Survey, USA

SESSION 16
COMBUSTION: OXY-COMBUSTION AND CHEMICAL LOOPING - 3
John Wheeldon and Miki Shimogori

Fe-Ni Bi-Metallic Carriers for Chemical Looping Dry Reforming of Methane, Amey More, Saurabh Bhavsar, Götz Veser, University of Pittsburgh, USA

Kinetics of Pressurized Oxycombustion of Coal Using Thermogravimetric Analysis, Piotr Babinski, Marek Sciazko, Martyna Tomaszewicz, Jaroslaw Zuwala, Institute for Chemical Processing of Coal, POLAND

Unsteady CFD Simulation of Hematite Reduction by Methane in a Bubbling Fluidized Bed, A. Konan, DOE/NETL/ West Virginia University; J. Fisher, Y. Liu, URS/DOE/NETL; J. Weber, E. David Huckaby, R. Breault, W. Rogers, DOE/NETL, USA

Effect of Oxyfuel Condition on Char Characteristics and Burnout, Kwanwuk Park, Sushil Gupta, Veena Sahajwalla, University of New South Wales, AUSTRALIA

Redox Reactions Kinetics Study for Natural High Concentrated Fe-Based Oxygen Carriers, Ewelina Ksepko, Piotr Babinski, Marek Sciazko, Institute for Chemical Processing of Coal, POLAND; Evdou Antigoni, Lori Nalbandian, Center for Research and Technology Hellas / Chemical Process Engineering Research Institute, GREECE

Slag Flow Modeling with Reactions in Oxy-Coal Combustors, Albio Gutierrez, Steven L. Rowan, Ismail Celik, West Virginia University, USA

SESSION 17
CLEAN COAL AND GAS TO FUELS: DIRECT LIQUEFACTION
Vann Bush and Wenhua Li

Effect of Reaction Temperature on Hydroprocessing of Medium and Low-Temperature Coal Tar to Clean Liquid Fuels, Rui Wang, Xiaofen Guo, Donghui Ci, Pengxiang Song, Xin Cui, National Institute of Clean-and-Low-Carbon Energy, CHINA

Direct Coal Liquefaction Technology and Economics, Eric Peer, John Duddy, Axens North America Inc., USA

Effect of Extract-Containing Solvent Recycling in Degradative Solvent Extraction of Low-Grade Carbonaceous Resources, Ryuichi Ashida, Ryo Takahashi, Motoaki Kawase, Kouichi Miura, Kyoto University, JAPAN; Janewit Wannapeera, Nakorn Worasuwannarak, King Mongkut's University of Technology, THAILAND

Catalytic Cracking of Coal Pyrolysis Product for Oil Upgrading over Char Solid Heat Carrier, Jiangshan Ma, Xiaohong Li, Jie Feng, Wenying Li, Key Laboratory of Coal Science and Technology (Taiyuan University of Technology), CHINA

Study on Co-pyrolysis Char Properties of Lignite and Shendong Coal Direct Liquefaction Residue, Lili Li,

Yanli Xue, Xiaohong Li, Wenying Li, Taiyuan University of Technology, CHINA

SESSION 18
COAL SCIENCE: GENERAL - 3
Jim Hower and Kouichi Miura

The Importance and State of Coal Industry in Turkey's Energy Policy, Bilgehan Kekeç, Niyazi Bilim, Selçuk University, TURKEY

Effect of Pretreatment Conditions on the Determination of Trace Elements in Coal by Use of Atomic Spectroscopy, Tsunenori Nakajima, Kosei Haraguchi, Misa Taira, Hirokazu Takanashi, Akira Ohki, Kagoshima University, JAPAN

ORAL SESSIONS
Wednesday, October 8, 2014

SESSION 19
CLEAN COAL DEMONSTRATION AND COMMERCIAL PROJECTS: COMBUSTION PROJECTS
Jeff Hoffmann and Nelson Rekos

Update to Cost and Performance Baselines for Fossil Energy Plants: Bituminous Coal and Natural Gas to Electricity, Timothy Fout, James Black, DOE/NETL; Marc Turner, Booz Allen Hamilton, USA

Four Years of Operating Experience with DryFining™ Fuel Enhancement Process at Coal Creek Generating Station, Charles Bullinger, Mark Ness, Michael Briggs, Great River Energy; Nenad Sarunac, University of North Carolina at Charlotte, USA

WA Parish Carbon Capture and Enhanced Oil Recovery Project, Anthony Armpriester, David Greeson, Petra Nova LLC, USA

Technical and Economic Analysis of Alstom's 550MWe Chemical Looping Combustion Steam Power Plant, Wei Zhang, Glen D. Jukkola, Iqbal F. Abdulally, Herbert E. Andrus, Shin G. Kang, Alstom Power Inc., USA

Flameless Pressurized Oxy-Coal: The Top of Power Cost Competition for CCS, and Along the Transition to Near Zero Emission, it Moves to 50 MWth Pilot for Fully Exploiting its Potential, Massimo P. Malavasi, ITEA Spa, ITALY

SESSION 20
COAL MINING: SAFETY AND MINING TECHNOLOGY - 1
Richard Bajura and Bruce Sass

Development and Participation in the American National Standards Institute (ANSI) Technical Advisory Group to ISO/TC 82 Committee – Coal Mining, Steven M. Carpenter, Advanced Resources International, Inc., USA

General Assessment and Estimations of Occupational Accidents and Disasters in Turkey Coal Mines, Niyazi Bilim, Bilgehan Kekeç, Sertaç Dündar, Selçuk University, TURKEY

Investigation of Spontaneous Combustion of Coal in Longwall, Hadi Ozdeniz, Selcuk University; Osman Sivrikaya, Adana Science and Technology University; Sezgin Berberoglu, Ozkar Mining Company, TURKEY

Development of Moisture Tolerant Rock Dust for Improved Mine Safety, Dave Anstine, Neil Doidge, Imerys, USA

SESSION 21
GASIFICATION: NOVEL TECHNOLOGIES – 1
Arun Bose and Ting Wang

Pilot-Plant Evaluation Gasification of Illinois No. 6 Coal with Aeroject Rocketdyne Compact Gasifier, with Syngas Upgrading by GTI Morphysorb Process, Jim Aderhold, Bruce Bryan, Andrew Kramer, Adam Burkhart, Gas Technology Institute; Steve Fusselman, Aerojet Rocketdyne, USA

Calcium Looping Catalytic Coal Gasification: Experiments and Systems Analysis, Nicholas Siefert, Hunaid Nulwala, DOE/NETL/Carnegie Mellon University; Dushyant Shekhawat, DOE/NETL, USA

Fuel-Flexible Hybrid Solar Coal Gasification Reactor, Matt Flannery, Tapan Desai, Advanced Cooling Technologies, Inc., USA

Catalytic Effect of Biomass Ash on Anthracite Coal Gasification, Weiping Ren, Zibing Zhao, Yuhong Qin, Jie Feng, Wenying Li, Taiyuan University of Technology, CHINA

SESSION 22
COMBUSTION: OXY-COMBUSTION AND CHEMICAL LOOPING - 4
Dan Duellman and Miki Shimogori

Improvements in Exergetic Efficiency in High-Temperature Oxyfuel Combined Cycle Systems, Thomas Ochs, Rigel Woodside, Danylo Oryshchyn, DOE/NETL; Lauren Kolczynski, ORISE/DOE/NETL,USA

Experimental Characterization of the Effect of Dry Recirculation on a Swirled Self-Stabilized Oxycoal Flame, Diego Zabrodiec, Anna Massmeyer, Johannes Hees, Tim Gronarz, Benjamin Gövert, Matthias Höfler, Andreas Ohliger, Martin Habermehl, Oliver Hatzfeld, Reinhold Kneer, Institute of Heat and Mass Transfer, RWTH Aachen University, GERMANY

An Experimental Investigation of Heat Transfer Behavior in Oxygen-Enriched Coal Combustion, Adewale Adeosun, Fei Xia, Akshay Gopan, Benjamin Kumfer, Richard Axelbaum, Washington University in St Louis, USA

A Reduced Order Model for the Design of Oxy-Coal Combustion Systems, Steven L. Rowan, Albio Gutierrez, Ismail B. Celik, West Virginia University, USA

Numerical Study on the Effect of High Content of Steam to Oxy-Fuel Combustion of Pulverized Coal in Vertical Pilot Facility, Liqi Zhang, Zhihui Mao, Baojun Yi, Chong Pan, Zheng Chuguang, Huazhong University of Science and Technology, CHINA

SESSION 23
CLEAN COAL AND GAS TO FUELS: CATALYSTS
Vann Bush and Mingsheng Luo

Preparation of Supported Mo-Based Catalyst and its Performance in Hydropyrolysis of Shenfu Coal, Anning Zhou, Yan-yan Lei, Na Liu, Xin-fu He, Hui-kuan Zhang, Jian-Guo Wei, Xi'an University of Science & Technology, CHINA

TGA Reactivity and Recyclability Studies of Fe_2O_3 and Co_3O_4 Based Oxygen Carriers Using Steam for Chemical Looping Gasification, Ankita Majumder, Liang-Shih Fan, Niranjani Deshpande, Mandar Kathe, The Ohio State University, USA

SESSION 24
COAL SCIENCE: GENERAL - 4
Jim Hower and Kouichi Miura

The Effect of Fixation of Acidic Wastes by Coal Fly Ash on the Properties of the Fly Ashes, Roy Nir Lieberman, Yitzhak Mastai, Bar-Ilan University; Nadya Teutsch, Geological Survey of Israel; Haim Cohen, Ariel University, ISRAEL; Xavier Querol, Oriol Font, Institute of Environmental Assessment and Waster Research ((IDÆA) Consejo Superior de Investigaciones Científicas (CSIC), SPAIN

Effects of Organic Liquids on Coking Properties of a High-Inert Western Canadian Coal, Tony MacPhee, Louis Giroux, CanmetENERGY – Ottawa; Maria Holuszko, Ross Leeder, Teck Coal Ltd.; Melanie Mackay, Trillium Geoscience, CANADA

Influence of the Mechanical Properties of Coals on the Fragmentation Behavior of Coal Particles Under High-Temperature Conditions, Felix Baitalow, Armin Heinze, Shan Zhong, Jan Friedemann, Bernd Meyer, TU Bergakademie Freiberg, GERMANY

Research on the Preparing of Coal Water Sully with Semi-Coke and Pulverized Coal, Zhao Shiyong, Wu Peipei, Liu Meimei, Zhou Anning, Yang Zhiyuan, Xi'an University of Science and Technology, CHINA

SESSION 25
CLEAN COAL DEMONSTRATION AND COMMERCIAL PROJECTS: OXY-COMBUSTION AND INDUSTRIAL PROJECTS
Anthony Zinn and Diane Madden

Port Arthur CCUS: Demonstration of CO_2 Capture and Sequestration of Steam Methane Reforming Process Gas Used for Large-Scale Hydrogen Production, Anthony Zinn, DOE/NETL; Nile R. Bolen, Bob Hutchison, Air Products and Chemicals, Inc., USA

Illinois Industrial Carbon Capture and Storage Project, Scott McDonald, Archer Daniels Midland Company, USA

FutureGen 2.0 - Project Update, Mark Williford, Ken Humphreys, Paul Wood, Chris Burger, FutureGen Alliance, USA

SESSION 26
COAL MINING: SAFETY AND MINING TECHNOLOGY - 2
Richard Bajura and Bruce Sass

Gas and Dust Explosion Model for Methane Accidents in Coal Mines, V'yacheslav Akkerman, West Virginia University; Ali S. Rangwala, Worcester Polytechnic Institute, USA

Design and Implementation of an Innovative Spray System for Continuous Miners for Dust Control in High Mining Areas, Yoginder P. Chugh, Harrold Gurley, Southern Illinois University Carbondale; Joseph Hirschi, Illinois Clean Coal Institute, USA

Development of a Novel Noise Measurement System for Coal Preparation Plants, Jun Qin, Manoj K. Mohanty, Pengfei Sun, Southern Illinois University; Joseph Hirschi, Illinois Clean Coal Institute, USA

Performance of Full Scale Welded Steel Mesh for Surface Control in Underground Coal Mines, Zhenjun Shan, Ian Porter, Jan Nemcik, University of Wollongong, AUSTRALIA

SESSION 27
GASIFICATION: MODELING – 1
Briggs White and Ting Wang

Kinetics of Powder River Basin Coal Gasification in Carbon Dioxide Using a Modified Drop Tube Reactor, Ying Wang, David A. Bell, University of Wyoming, USA

Particle Deposition Studies for Modeling Syngas Cooler Fouling, Clinton R. Bedick, Nathan T. Weiland, West Virginia University/DOE/NETL, USA

Gasification Kinetics of Coal Liquefaction Residue and its Characterization, Nitya Iyer, Moshfiqur Rahman, Arno de Klerk, Rajender Gupta, University of Alberta, CANADA

Thermochemical Modeling of Coal Slag Formation and Related Corrosion of Various Refractory Materials Under Simulated Gasification Conditions, Markus Reinmöller, Enrico Thieme, Mathias Klinger, Marcus Schreiner, Bernd Meyer, TU Bergakademie Freiberg, GERMANY

SESSION 28
COMBUSTION: CO-FIRING AND FLAMES
Dan Duellman and John Wheeldon

Catalyst/Support Interactions between Pt Nanoparticles and Amorphous Silica: Impact on Structure and Catalytic Activity for CO Oxidation, Christopher S. Ewing, Michael J. Hartmann, Daniel S. Lambrecht, Joseph J. McCarthy, University of Pittsburgh; Götz Veser, J. Karl Johnson, University of Pittsburgh/DOE/NETL, USA

Pneumatic Transport of Torrefied Biomass, Carlos Vilela, Michiel Carbo, Mariusz Cieplik, Arnold Biesbroek, Energy Research Centre of the Netherlands (ECN), THE NETHERLANDS

Synergy Effect of Biomass Co-Firing on NO_x Reduction and Carbon Burnout with Air-Staged Combustion, Yonmo Sung, Sangmin Lee, Xing Wang, Cheoreon Moon, Gyungmin Choi, Duckjool Kim, Pusan National University, SOUTH KOREA

SESSION 29
CLEAN COAL AND GAS TO FUELS: CATALYSTS AND SOLVENTS
Vann Bush and Mingsheng Luo

Advances in the Study of Composite Catalysts in Direct Coal Liquefaction, Yuanyuan Zhang, China University of Mining and Technology (Beijing); Ke Liu, Shenhua Research Institute; Xiaofen Guo, National Institute of Clean-and-Low-Carbon Energy, CHINA

Cu/SiO_2 Based Catalyst For Industrial Ethylene Glycol Production: Synthesis Methods And Scaling Up, Tiberiu Popa, Maohong Fan, University of Wyoming, USA

Influence of Potassium-Doping on Activity of Ni_2Mo_3N Catalyst in the Presence of Thiophene, Lili Zhang, Jie Feng, Qi Chu, Kun Xu, Wenying Li, Taiyuan University of Technology, CHINA

The Study on Dewatering and Upgrading of Lignite Through Organic Solvent, Bingbing Huang, Meng Liu, Yufeng Duan, Guilin Ma, Jian Li, Southeast University, CHINA

Influence of Solvent Pretreatment on Pyrolysis of Hulunbeier Lignite, Huijun Huang, Huiling Rong, Xiaohong Li, Jie Feng, Wenying Li, Taiyuan University of Technology, CHINA

SESSION 30
COAL SCIENCE: GENERAL – 5
Jim Hower and Carlos Montes

Modeling Thermal Stress in Coal Particles During Heating-Up in a Drop-Tube Reactor and in a Graphite Furnace Atomizer, Armin Heinze, Jan Friedemann, Thomas Vogt, Felix Baitalow, Bernd Meyer, TU Bergakademie Freiberg, GERMANY

The Influence of K_2CO_3 on Powdered Coals with Varying Swelling Properties during Devolatilisation, Sansha Coetzee, Hein W.J.P Neomagus, John R. Bunt, Christien A. Strydom, North-West University, SOUTH AFRICA; Harold H. Schobert, Penn State University, USA

System Overview and Preliminary Characterization of the High-Temperature and Pressure Entrained-Flow Lab-Scale Gasifier at CSM, Madison Kelley, Jason Porter, Colorado School of Mines, USA

Determination of Coal Ash Sintering Characteristics by Compression Strength Test at Different Atmospheres, Ronny Schimpke, Steffen Krzack, Nico Bräutigam, Bernd Meyer, TU Bergakademie Freiberg, GERMANY

SESSION 31
CARBON MANAGEMENT: CAPTURE OF CARBON DIOXIDE - 1
Evan Granite and Venkat Venkataraman

Novel Sorbents for Oxygen Separation from Air, Elliot Roth, Sheila Hedges, Evan Granite, DOE/NETL, USA

Mixed Solid Sorbents for CO_2 Capture Technologies: Theoretical Predictions and Experimental Validations, Yuhua Duan, Dan C. Sorescu, David Luebke, Bryan Morreale, DOE/NETL; Keling Zhang, Xiaohong Shari Li, David King, Pacific Northwest National Laboratory; Xianfeng Wang, Bingyun Li, West Virginia University, USA; Jinling Chi, Lifeng Zhao, Yunhan Xiao, Chinese Academy of Sciences, CHINA

Discovery of System and Materials Requirements for Solid Sorbent-Based CO_2 Capture Using Reduced Order Modeling, Justin Glier, DOE/NETL, USA

Post-Combustion CO_2 Capture Using Metal Organic Frameworks - Performance and Cost Analysis, Wenqin You, Hari Chandan Mantripragada, Edward S. Rubin, John Kitchin, Carnegie Mellon University, USA

Effects of Coal Characteristics on Carbon Dioxide Ad/Desorption, Louis L.Y. Tsai, Y.R. Tseng, J.H. Shiao, National Central University, TAIWAN

SESSION 32
COMBUSTION: COMBUSTORS
Henry Pennline and John Wheeldon

Critical Factors in Understanding the Mechanism of Ash Agglomeration in Fluidized Bed Systems, Aditi B. Khadilkar, Sarma V. Pisupati, The Pennsylvania State University/DOE/NETL; Peter L. Rozelle, United States Department of Energy, Office of Fossil Energy,USA

Burning Uncleaned Solid Fuels, George D. Dumbaugh, Kinergy Corporation, USA

Anomalies When Burning Low Grade Coals in Bubbling Fludised Bed Combustion (BFBC), Rosemary Falcon, R L Taole, University of the Witwatersrand; D Brook, Babcock Engineering, SOUTH AFRICA

Numerical Study of Gas-Solid Fluidized Bed Dynamics with Distributor Design, A. Konan, DOE/NETL/West Virginia University; J. Fisher, Y. Liu, URS/DOE/NETL; J. Weber, E. David Huckaby, R. Breault, W. Rogers, DOE/NETL, USA

Design of a Cyclone Combustor for MILD Combustion, Sung-Hoon Shim, Sang-Hyun Jeong, Korea Institute of Machinery and Materials; Sang-Sup Lee, Chungbuk National University, KOREA

SESSION 33
GASIFICATION: MODELING – 2
Steve Markovich and Arun Bose

Numerical Simulations of Reacting Porous Char Particles Under Gasification Conditions, Matthias Kestel, Daniel Friese, Andreas Richter, CIC Virtuhcon, TU-Bergakademie Freiberg, GERMANY

A Reduced Order Model (ROM) of Entrained-Flow Gasifier Flyash and Slag Generation Rates, Ramalakshmi Krishnaswamy, John M. Kuhlman, West Virginia University, USA

Modeling High Viscosity Slag Flow in Coal Gasifiers Using a Volume of Fluid Approach, Konrad Uebel, TU Bergakademie Freiberg, GERMANY

Direct Numerical Simulation of Reacting Char Particles in Turbulent Environments, Andreas Richter, Michele Vascellari, Stefan Buhl, Christian Hasse, Bernd Meyer, TU Bergakademie Freiberg, GERMANY

Simulation of Coal Gasification in Fluidized Bed Coal Gasifier, Fengli Zhang, Wenying Li, Xuecheng Ho, Jie Feng, Taiyuan University of Technology, CHINA

SESSION 34
COMBUSTION: POWER PLANT SUPPORT STUDIES
Dan Duellman and Markus Reinmoller

Supercritical Carbon Dioxide (CO_2) Indirect Power Cycles Incorporating Fossil-Fuel Heat Sources, Arun Iyengar, Booz Allen Hamilton; Walter W. Shelton, Kristin Gerdes, DOE/NETL; Charles W. White, Noblis, Inc., USA

Elemental Mercury Absorption in Systems Employing Oxidized Mercury Absorbents, Nicholas R. Denny, Bruce Keiser, Wayne Carlson, Nalco Company, USA

Ash Removal Characteristics Evaluated by Fouling Tests Using 1.5MW_{TH} Pilot Plant, Miki Shimogori, Takahiro Marumoto, Mitsubishi Hitachi Power Systems, JAPAN

Research on Charging and Removal of PM2.5 in Both DC and Pulsed Electric Field, Jian-ping Jiang, Zhong-yang Luo, Dong Zhou, Hao Chen, Dong-hui Sha, Meng-xiang Fang, Ke-fa Cen, State Key Laboratory of Clean Energy Utilization (Zhejiang University), CHINA

SESSION 35
GASIFICATION: LOW RANK COAL
Ting Wang and Steve Markovich

I-MILENA Gasification Technology for (High Ash) Low Rank Coal, A.J. Grootjes, A. van der Drift, C.M. van der Meijden, B.J. Vreugdenhil, G. Aranda, Energy Research Centre of the Netherlands, THE NETHERLANDS

Hydropyrolysis of Tar-Rich Brown Coal Using a Pressurized Drop Tube Reactor, Stephan Siegl, Denise Reichel, Steffen Krzack, Bernd Meyer, TU Bergakademie Freiberg, GERMANY

Simulation of Ash Deposition Behavior in an Entrained Flow Coal Gasifier, Xijia Lu, Ting Wang, University of New Orleans, USA

SESSION 36
COAL SCIENCE: GENERAL – 6
Jim Hower and Carlos Montes

Review of Recent Industrial Applications of Fly Ash Geopolymer Concrete, Carlos Montes, Erez Allouche, Louisiana Tech University, USA

The Reduction of Swelling of Large Coal Particles through Impregnation with K_2CO_3, Sansha Coetzee, Hein W.J.P Neomagus, John R. Bunt, Christien A. Strydom, North-West University, SOUTH AFRICA; Harold H. Schobert, Penn State University, USA

Analysis of Hydrophobicity of Carbonaceous Solids and Their Effect on the Slurry Rheology, Amrita Mukherjee, Sarma V. Pisupati, The Pennsylvania State University, Peter Rozelle, US Department of Energy, USA

Fly Ash Geopolymer Concrete Mix Design Software, Carlos Montes, Sergio Gomez, Erez Allouche, Louisiana Tech University, USA

Mercury Contents in Various Low-Sulfur Bituminous Coals from Different Countries: Relationship to Coal Properties, Akira Ohki, Misa Taira, Shota Hirakawa, Tsunenori Nakajima, Hirokazu Takanashi, Kagoshima University, JAPAN

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SESSION 37
CARBON MANAGEMENT: CAPTURE OF CARBON DIOXIDE - 2
Evan Granite and Venkat Venkataraman

Hydrophobic Solvents for Precombustion CO_2 Capture: Experiments and Systems Analysis, Nicholas Siefert, Carnegie Mellon University and DOE/NETL; Sweta Agarwal, Elliot Roth, ORISE/DOE/NETL; Hunaid Nulwala, Carnegie Mellon University; Fan Shi, URS/DOE/NETL; David Luebke, DOE/NETL, USA

Analysis of CO_2 Market Possibilities for Power Plants with Carbon Capture Using CTUS-NEMS, Jose R. Benitez, DOE/NETL, USA

Capture of Carbon Dioxide with Magnesium by Reactive Milling, Naifei Wang, Xiaoli Zhang, Tao Li, Dexi Wang, Shixue Zhou, Shandong University of Science and Technology, CHINA

SESSION 38
SHALE AND COAL BED GAS: GENERAL - 1
Dick Winschel and Steve Carpenter

The Study on Reservoir Properties and Geological Factors of Deep Coalbed Methane, Wu Jian, Zhang Shouren, China United Coalbed Methane Corporation Ltd., CHINA

Use of Abandoned Mine Drainage in Flowback Water Reuse for Hydraulic Fracturing, Can He, Tieyuan Zhang, Radisav Vidic, University of Pittsburgh, USA

Comparison of Environmental Impacts of Coal Bed Methane and Shale Gas Energy Extraction Operations, Stephen C. Smith, Steptoe & Johnson PLLC, USA

Gas Processing & Risk Mitigation for CBM & Shale Gas, Joseph S. D'Amico, D'Amico Technologies Corp., USA

SESSION 39
GASIFICATION: GENERAL – 2
Evan Granite and Jenny Tennant

Cadmium, Phosphorus and Antimony Adsorption on Copper-Palladium Alloy Films, Evan Granite, Karen Uffalussy, James Miller, Bret Howard, Dennis Stanko, DOE/NETL, USA

Characterization of Coal and Biomass Chars from High Temperature Pyrolysis in CO_2 Atmosphere, Aime Hilaire Tchapda, Sarma Pisupati, The Pennsylvania State University, USA

Modeling and Experimental Investigation of Internally Circulating Gasifier for High Ash Coals, Alexander Laugwitz, Martin Schurz, Bernd Meyer, TU Bergakademie Freiberg, GERMANY

Poison Resistant Water-Gas-Shift Catalyst for Coal Biomass Gasification, Girish Srinivas, Steven C. Gebhard, Jeff Martin, Mike Looker, TDA Research Inc., USA

SESSION 40
COMBUSTION: MERCURY REMOVAL RESEARCH IN CHINA
Miki Shimogori and John Wheeldon

Capture and Oxidation of Elemental Mercury on Raw and Modified Mineral Sorbent in Low-Rank Coal Combustion Flue Gas, Yang Li, Lijun Jin, Dong Xiong, Haoquan Hu, Dalian University of Technology, CHINA

Elemental Mercury Adsorption Characteristics and its Kinetics Over Biomass Chars, Ping Lu, Nan He, Xiuming Zhu, Nanjing Normal University, CHINA

Experimental Study and Modeling for In-Duct Mercury Capture by Sorbent Injection, Qiang Zhou, Yufeng Duan, Yaguang Hong, Chun Zhu, Min She, Jun Zhang, Southeast University, CHINA

Investigation into Mercury Removal with Different Sorbents Injection in Simulated and Coal-Fired Flue Gas, Yufeng Duan, Chun Zhu, Qiang Zhou, Min She, Yaguang Hong, Jun Zhang, Southeast University, CHINA

Experiments on Mercury Removal by Plasma Enhanced Calcium-Based Sorbent, Jun Zhang, Yufeng Duan, Chun Zhu, Qiang Zhou, Min She, Weixin Zhao, Southeast University, CHINA

SESSION 41
GASIFICATION: GENERAL - 3
Johan Brand and Johan van Dyk

Influence of HCl, H_2S and H_2O on the Release and Condensation of Heavy Metals in Gasification Processes, Maria Benito Abascal, Marc Bläsing, Michael Müller, Forschungszentrum Jülich GmbH, GERMANY

The New HITECOM Reactor for Single-Particle Conversion: Numerical and Experimental Studies on the Interactions Between Measuring Unit and Reacting Particle, Matthias Kestel, Andreas Richter, Felix Küster, Stefan Guhl, Petr A. Nikrityuk, Bernd Meyer, TU-Bergakademie Freiberg, GERMANY

Results on Experimental Investigation and Modelling of Slag Viscosities with Consideration of Partial Crystallization, Arne M. Bronsch, Daniel H. Schwitalla, Stefan Guhl, CIC VIRTUHCON, Institute of Energy Process Engineering and Chemical Engineering, GERMANY

Effects of V_2O_3 Oxidation on the Viscosity of High Iron and Vanadium Slag, Myongsook S. Oh, Hongik University; Minkyong Kim, SK Innovation, KOREA

SAXS Measurements of Pore Development During Steam and CO_2 Gasification, Hennie Coetzee, Hein W.J.P Neomagus, North-West University; John R. Bunt, Raymond C. Everson, North-West University and Sasol Technology (PTY) Ltd, SOUTH AFRICA; Richard Sakurovs, Leigh Morpeth, CSIRO Energy, AUSTRALIA

SESSION 42
COAL SCIENCE: GENERAL – 7
Jim Hower and Nicola Wagner

Rare Element Systematics of Coal Ash from Major U.S. Sources, Allan Kolker, Amrika Deonarine, Harvey E. Belkin, U.S. Geological Survey; James C. Hower, University of Kentucky Center for Applied Energy Research, USA

Low-Cost Recovery of Rare Earth Elements From U.S. Coal Ash, Prakash B. Joshi, Dorin V. Preda, Michael A. Costolo, Physical Sciences Inc.; John Groppo, James Hower, University of Kentucky, USA

Lanthanide-Bearing Coals in the Central Appalachians: Resource or Illusion?, James C. Hower, University of Kentucky Center for Applied Energy Research; Cortland F. Eble, Kentucky Geological Survey, USA

Consideration of the Variability of Coals from the Botswana Karoo Basin Using Coal Petrography, NJ Wagner, University of the Witwatersrand, SOUTH AFRICA; M Johnston, University of Kentucky Center for Applied Energy Research, USA; A Golding, Analytika Holdings, BOTSWANA

Precious Metals in the Lincang Ge Ore Deposits, Yunnan, China, Shifeng Dai, China University of Mining and Technology, CHINA; Vladimir V. Seredin, Russian Academy of Sciences, RUSSIA; James C. Hower, University of Kentucky Center for Applied Energy Research, USA; Colin R. Ward, University of New South Wales, AUSTRALIA

SESSION 43
CARBON MANAGEMENT: STORAGE OF CARBON DIOXIDE - 1
Evan Granite and Manoj Mohanty

An Economic Evaluation of the Cost to Develop a Hypothetical Class VI Compliant Commercial Sequestration Site, Wayne Rowe, Schlumberger Carbon Services, USA

Project Assessment and Evaluation of the Area of Review (AOR) at the Citronelle SECARB Phase III Site, Alabama USA, Hunter Jonsson, George Koperna, Jr., Steven M. Carpenter, Robin Petrusak, Advanced Resources International, Inc.; Rob Trautz, Dick Rhudy, EPRI; Richard Esposito, Southern Company, USA

3 # Coal Seam Injection and Buried CO_2 Improve Coal-Bed Methane Recovery Test and Evaluate in Qinshui Basin Shizhuang North Block, Shanxi, Zhang Bing, Ye Jianping, China United Coalbed Methane Corporation Ltd., CHINA

SESSION 44
SHALE AND COAL BED GAS: GENERAL - 2
Steve Carpenter and Allan Kolker

Assessing Environmental Impacts of Unconventional Gas Development on Water Resources, Aubrey E. Harris, Daniel J. Soeder, DOE/NETL, USA

Health and Environmental Impacts of Naturally Occurring Radioactive Materials Produced by Unconventional Gas Extraction from Marcellus Shale, Tieyuan Zhang, Radisav Vidic, University of Pittsburgh, USA

SESSION 45
GASIFICATION: NOVEL TECHNOLOGIES – 2
Johan van Dyk and Mike Bockelie

Pressurized Pyrolysis and Gasification of Switchgrass-Lignite Char Blends, Pradeep K. Agrawal, Gautami M. Newalkar, Carsten Sievers, Georgia Institute of Technology; Kristiina Iisa, National Renewable Energy Laboratory, USA

Catalytic Fixed Bed Gasification for Remote Sites Power Generation and Industrial/Municipal Waste Utilisation, N. Kinaev, Strategic Energy Consulting, AUSTRALIA; V. Panfilov, MES Corporation; I. Grebenyuk, A. Babaev, Alexey Belov, Far Eastern Federal University, RUSSIA

Thiophene Hydrodesulfurization by Composites of Carbon and Magnesium, Xiaoli Zhang, Naifei Wang, Qianqian Zhang, Zongying Han, Shixue Zhou, Shandong University of Science and Technology, CHINA

Municipal Solid Waste Gasification for Coal Retrofit Applications, Nicholas Siefert, DOE/NETL/ Carnegie Mellon University; Marius Paul Balla, Carnegie Mellon University, USA

SESSION 46
SUSTAINABILITY AND ENVIRONMENT: GENERAL – 1
Jim Hower and Kimery Vories

Greenhouse Gas Mitigation from Underground Coal Gasification (UCG)-based Hydrogen with Carbon Capture and Sequestration (CCS) in Bitumen Upgrading from the Oil Sands, Aman Verma, Babatunde Olateju, Amit Kumar, Rajender Gupta, University of Alberta, CANADA

Common Sense Solutions for Management of Global Carbon Emissions, Kimery C. Vories, E-Ternion: Energy, Environment, & Economy; J. D. Vories, UA-Grafix, USA

SESSION 47
COAL SCIENCE: GENERAL - 10
Carlos Montes and Sansha Coetzee

Upgrading Indian Thermal Coals Using Air-Table Dry Deshaling, Nikhil Gupta, Robert Bratton, Gerald Luttrell, Virginia Tech; Tathagata Ghosh, University of Alaska Fairbanks; Rick Honaker, University of Kentucky, USA

Site Selection for Coal Preparation Plant Using Analytic Hierarchy Process Method in Bursa, Turkey, Seçil Çolpan, Turkish Coal Enterprises; Mahmut Yavuz, Eskisehir Osmangazi University, TURKEY

Distribution of Sulphur Functional Groups in High Sulphur Bapung Coals of Assam, Amritanshu Kumar, Theem College of Engineering; S.K. Srivastava, Central Institute of Mining and Fuel Research, INDIA

Producing Urea Fertilizer from Thar Coal Deposits in Pakistan, Farid A Malik, FC College; Abid Aziz, Pak Motors Ltd, PAKISTAN

SESSION 48
COAL SCIENCE: GENERAL – 8
Nicola Wagner and Haim Cohen

Development of Internal Surface Area During Pyrolysis and Combustion of Lignite, Evan Granite, Elliot Roth, Sittichai Natesakhawat, Dennis Stanko, DOE/NETL, USA

Kinetic Model of Coking Coal Fluidity Development, Bartosz Mertas, Marek Sciazko, Aleksander Sobolewski, Institute for Chemical Processing of Coal, POLAND

Binder Briquetting of Hard Coal Fines for Use in Smelting Reduction Processes, Reinhard Lohmeier, Hans-Werner Schröder, Jens-Uwe Repke, TU Bergakademie Freiberg, GERMANY; Hado Heckmann, Siemens VAI Metals Technologies GmbH, AUSTRIA

SESSION 49
CARBON MANAGEMENT: STORAGE OF CARBON DIOXIDE - 2
Evan Granite and Manoj Mohanty

Influence of Monitoring Intensity on the Cost of CO_2 Storage, David Morgan, Timothy Grant, DOE/NETL; Andrea Poe, Booz Allen Hamilton/DOE/NETL, USA

Utilization of Fluorinated Tracers to Monitor CO_2 Sequestration in Unconventional Reservoirs in Central Appalachia – Results from a Small-Scale Test in Morgan County, Tennessee, A. Kyle Louk, Nino S. Ripepi, Kray D. Luxbacher, Virginia Polytechnic Institute and State University; Ellen S. Gilliland, Michael E. Karmis, Virginia Polytechnic Institute and State University and Virginia Center for Coal and Energy Research, USA

Pressure Data and Interference Testing at the Citronelle SECARB Phase III Site, Alabama USA, Hunter Jonsson, George Koperna, Jr., Advanced Resources International, Inc.; Rob Trautz, EPRI; Barry Friefeld, Lawrence Berkeley National Laboratory, USA

Nondestructively Determining the Microstructure Evolution of Central Appalachian Basin Coals Through Carbon Sequestration, Joseph Amante, Nino Ripepi, Virginia Polytechnic and State University, USA

SESSION 50
SHALE AND COAL BED GAS: GENERAL - 3
Allan Kolker and Dick Winschel

Development of the First Internationally Accepted Standard for Geologic Storage of Carbon Dioxide Utilizing Enhanced Oil Recovery (EOR) Under the International Standards Organization (ISO) Technical Committee TC-265, Steven M. Carpenter, George Koperna, Jr., Advanced Resources International, Inc., USA

Developing Porosity with a Neural Network Application for Geologic Modeling in an Active Oil Field (EOR), Hunter Jonsson, George Koperna, Jr., Advanced Resources International, Inc., USA

Variation in Mudrock (Shale) Geologic Parameters Across the Northern Appalachian Basin, USA, Timothy R. Carr, Shuvajit Bhattacharya, Liaosha Song, West Virginia University, USA; Guochang Wang, University of Chinese Academy of Sciences, CHINA

Sensitivity Analysis of Stimulated Reservoir Volume Parameters for Modeling CO_2 Injection into a Horizontal Shale Gas Well in Tennessee, Cigdem Keles, Nino Ripepi, Virginia Tech, USA

SESSION 51
GASIFICATION: GENERAL – 4
Massood Ramezan and Briggs White

Characterization of Fine Particulate Material from Syngas in a Pilot Scale Entrained Flow Oxygen Blown Coal Gasifier During Two Stage Gasification, Mustafa C. Celebi, Kevin J. Whitty, University of Utah, USA

The Analysis of Hybrid Scheme of Steam-Gas Technologies on IGCC Low-Calorie Gases, Tatyana Bogatova, Alexandr Ryzhkov, Sergey Gordeev, Nikolay Abaimov, Nikolay Valtsev, Ural Federal University, RUSSIA

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A Field Evaluation of Alternate Coal Processing Waste Management Technology, Liliana Lefticariu, Paul T. Behum, Yoginder P. Chugh, Southern Illinois University, USA

Design of Frustrated Lewis Pair Functionalized Metal Organic Frameworks for CO_2 Capture and Conversion, Jingyun Ye, Karl Johnson, University of Pittsburgh, USA

SESSION 53
COAL SCIENCE: GENERAL - 11
Carlos Montes and Sansha Coetzee

Effect of Rapid Heating Extraction of Coal in Hyper-Coal Production Process, Koji Sakai, Shigeru Kinoshita, Takuya Yoshida, Noriyuki Okuyama, Maki Hamaguchi, Naoki Kikuchi, KOBE STEEL, Ltd., JAPAN

Strength and Reactivity Control of Metallurgical Coke Using Coal Derived Caking Additive, Takuya Yoshida, Koji Sakai, Noriyuki Okuyama, Maki Hamaguchi, Naoki Kikuchi, KOBE STEEL, Ltd., JAPAN

Role of Water on Oxygen Consumption of Brown Coal at Low Temperature, Toshinori Inoue, Kobelco Research Institute Inc.; Maki Hamaguchi, Toru Higuchi, Naoki Kikuchi, Takuo Shigehisa, KOBE STEEL Ltd.; Haruo Kumagai, Hokkaido University; Takayuki Takarada, Gunma University, JAPAN

Production of Carbon Fiber from the Low-Molecular-Weight Compounds Prepared from Low Rank Coal and Biomass by the Degradative Solvent Extraction, Kouichi Miura, Ryuichi Ashida, Kensiro Okuda, Hideaki Ohgaki, Kyoto University; Osamu Kato, Kyushu University, JAPAN; Janewit Wannapeera, King Monkut's University of Science and Technology, THAILAND

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COAL SCIENCE: GENERAL – 9
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The Transient Swelling Behaviour of Large South African Coal Particles during Low-Temperature Devolatilisation, Sansha Coetzee, Hein W.J.P Neomagus, John R. Bunt, Christien A. Strydom, North-West University, SOUTH AFRICA; Harold H. Schobert, Penn State University, USA

Discussion of the Cross-Braced Briquette Plug Applicability for the Lock-Free Pressurized Gasifier Feeding, Alexander Rosin, Hans-Werner Schröder, Jens-Uwe Repke, Institute of Thermal, Environmental and natural Products Process Engineering, GERMANY

Influence of the Rapid Heating Process on Coal Extraction Yield and Properties, Noriyuki Okuyama, Koji Sakai, Shigeru Kinoshita, Takuya Yoshida, Maki Hamaguchi, Naoki Kikuchi, KOBE STEEL, Ltd., JAPAN

Steam Reforming of Dimethyl Ether Using Coal-Supported Nickel Catalyst, Jiho Yoo, Soohyun Kim, Sangdo Kim, Donghyuk Chun, Hokyung Choi, Youngjoon Rhim, Jeonghwan Lim, Sihyun Lee, Korea Institute of Energy Research, KOREA

A Study of China's Supply-Demand Gap of Coking Coal Resources and the Corresponding Strategies, Shuguang Ouyang, Guanghua Wang, Xuanming He, Xiaoqin Wu, Wuhan University of Science and Technology, CHINA; Di Gao, University of Pittsburgh, USA

POSTER SESSIONS
Wednesday, October 8, 2014

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GASIFICATION

Perovskite Sorbents for Oxygen Separation from Air, Ashley LeDonne, Elliot Roth, Sheila Hedges, Dennis Stanko, Jonathan Lekse, Evan Granite, DOE/NETL, USA

Steam Gasification of Tailored Ash-Free Coals at Mild Condition, Jiho Yoo, Yongjin Kong, Donghyuk Chun, Sangdo Kim, Hokyung Choi, Youngjoon Rhim, Junghwan Lim, Sihyun Lee, Korea Institute of Energy Research, KOREA

Numerical Analysis of an Entrained-Flow Coal-Slurry Gasifier with Separated Oxygen-Feeding Streams, Yin-Chu Chen, Tsung Leo Jiang, National Cheng Kung University; Yau-Pin Chyou, Po-Chuang Chen, Institute of Nuclear Energy Research Atomic Energy Council, TAIWAN

Evaluation of Palladium-Based Sorbents for Trace Mercury Removal in Electricity Generation, Christopher L. Munson, Pradeep Indrakanti, Massood Ramezan, Leonardo Technologies, Inc./DOE/NETL; Evan Granite, Jenny Tennant, DOE/NETL, USA

The Laboratory Research of Syngas Composition and its Calorific Value in UCG, Karol Kostúr, Technical University of Košice, SLOVAKIA

Utilization of Bituminous Coal as Adhesive in Caking Nanocrystalline Magnesium for Hydrogen Storage, Haipeng Chen, Dexi Wang, Naifei Wang, Qianqian Zhang, Shixue Zhou, Shandong University of Science and Technology, CHINA

The Effect of Drying Temperature on Surface Structure of Lignite, Li-hua Liu, Mo Chu, Zhi-bing Chang, Yang Qu, China University of Mining and Technology (Beijing), CHINA

Feasibility Study of Underground Coal Gasification in Western North Dakota, Peng Pei, Junior Nasah, Jarda Solc, Scott F. Korom, University of North Dakota, USA

POSTER SESSION 2
COMBUSTION

Behavior of Recirculation Zone as Functions of Swirl-Modes in Pulverized Coal Swirling Flames, Yonmo Sung, Sangmin Lee, Xing Wang, Cheoreon Moon, Gyungmin Choi, Duckjool Kim, Pusan National University, SOUTH KOREA

Factors in Mercury Oxidation for the Co-Combustion of Coal and Dried Sludge, Sang-Sup Lee, Chungbuk National University, KOREA

POSTER SESSION 3
CLEAN COAL AND GAS TO FUELS

Effect of Carbon from Anthracite Coal on Decomposition Enthalpy Change and Heat Absorption of Magnesium Hydride, Xiaoli Zhang, Haipeng Chen, Bogu Liu, Dexi Wang, Shixue Zhou, Shandong University of Science and Technology, CHINA

Determination of Total Sulfur Content in Coal Pyrolysis Oil, Yinhua Long, Chengjing Qian, Deting Kong, Xiaofen Guo, National Institute of Clean-and-Low-Carbon Energy, CHINA

Calcination Temperature Influence on the Catalytic Performance of Ni/CeO_2-ZrO_2 for Low Temperature Steam Reforming of Methane, Kui Wu, Jieying Jing, Wenying Li, Key Laboratory of Coal Science and Technology (Taiyuan University of Technology), CHINA

The Study of CO_2/CH_4 Reforming on Ni(111) and NiCo(111) Surfaces by Using DFT Method, Hongxia Fan, Xiaohong Li, Yunpeng Guo, Jie Feng, Wenying Li, Taiyuan University of Technology, CHINA

Thermodynamic Analysis of the Magnesium-Carbon Composite Hydrogen Storage Materials, Qianqian Zhang, Haipeng Chen, Shixue Zhou, Xiaoli Zhang, Bogu Liu, Shandong University of Science and Technology, CHINA

Influencing Mechanism of ZnO Morphology on the Performances of Co/ZnO Catalysts for Fischer-Tropsch Synthesis, Wensheng Ning, Wanmin Di, Qianqian Liu, Yangfu Jin, Shoubin Yang, Xiazhen Yang, Zhejiang University of Technology, CHINA

Process of M-/P-Cresol Adsorption Separation by Zeolite X, Haitao Wu, Wei Huang, Taiyuan University of Technology, CHINA

Hydrodesulfurization of Carbon Disulfide by Solid Hydrogen in Magnesium-Carbon Composite, Haipeng Chen, Naifei Wang, Qianqian Zhang, Zongying Han, Shixue Zhou, Shandong University of Science and Technology, CHINA

Hydrocarbon Production of Middle Distillates Range from Syngas on the Extruded Cobalt-Based Hybrid Catalysts; Effect of Cobalt/ZSM-5 Ratio, Hyo-Sik Kim, Suk-Hwan Kang, Jae-Hong Ryu, Jin-Ho Kim, Institute for Advanced Engineering (IAE); Yun-Jo Lee, Ki-Won Jun, Korea Research Institute of Chemical Technology (KRICT), KOREA

Syngas Production from CO_2 Reforming on Plasma Enhanced Catalyst System, Jin-Ho Kim, Jae-Hong Ryu, Jung-Uk Shin, Seung Chun Oh, Suk-Hwan Kang, Hyo-Sik Kim, Ki-Jin Jung, Institute for Advanced Engineering (IAE); Yong-Cheol Hong, National Fusion Research Institute (NFRI), KOREA

Computational Fluid Dynamics Modeling of Slurry Bubble Columns for Fischer Tropsch Synthesis, Omar Basha, Laurent Sehabiague, Badie I. Morsi, University of Pittsburgh, USA; Haolin Jia, Li Weng, Zhuowu Men, Ke Liu, National Institute of Clean and Low-carbon Energy; Yi Cheng, Tsinghua University; Zhansheng Shi, National Institute of Clean and Low-carbon Energy and Tsinghua University, CHINA

Hydrodynamic and Mass-Transfer Parameters of Gases in NICE F-T Wax Using a Pilot-Scale Slurry Bubble Column Reactor, Laurent Sehabiague, Omar Basha, Yemin Hong, Badie I. Morsi, University of Pittsburgh, USA; Haolin Jia, Li Weng, Zhuowu Men, Ke Liu, National Institute of Clean and Low-carbon Energy; Yi Cheng, Tsinghua University; Zhansheng Shi, National Institute of Clean and Low-carbon Energy and Tsinghua University, CHINA

POSTER SESSION 4
SUSTAINABILITY AND ENVIRONMENT

Catalytic Pyrolysis of Sunflower Stalk with Ca-Fe-Ni-La Oxides and Coal Semi-Coke, Shaoli Zhang, Fuxin Chen, Huikuan Zhang, Shihua He, Yanyan Lei, Anning Zhou, Xi'an University of Science and Technology, CHINA

Effect of Ammonium Ions on Structure of Bentonite and Hg0 Removal Performance of Modified Bentonite, Min Li, Li Wang, Jiangyan Chen, Xiuli Liu, Jun Gao, Shandong University of Science and Technology, CHINA

Study on Surface Properties and Adsorption Performance of Acid Modified Semi-Coke for Gas-Phase Hg^0, Xiuli Liu, Jiangyan Chen, Min Li, Huawei Zhang, Li Wang, Shandong University of Science and Technology, CHINA

Preparation of Activated Carbons for Mercury Removal, Hyo-Ki Min, Sang-Sup Lee, Chungbuk National University, KOREA

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CARBON MANAGEMENT

Development of a New High Temperature Rechargeable Li/Mg Battery System, Huang Guo, Bruce Kang, West Virginia University; Sin Chien Siw, Minking Chyu, University of Pittsburgh, USA

POSTER SESSION 6
COAL SCIENCE

Investigation of Arsenic Poisoning on Novel SCR Catalysts, Benjamin Galloway, Bihter Padak, University of South Carolina, USA

Evaluation of Direct Carbon Fuel Cell Using Various Carbon Fuels, Jiho Yoo, Jongbae Lee, Muhammad Khan, Donghyuk Chun, Hokyung Choi, Youngjoon Rhim, Junghwan Lim, Sihyun Lee, Korea Institute of Energy Research, KOREA

Characteristics of Ash-Free Coal Produced by Dilution Crystallization from Solvent-Extracted Solution, Youngjoon Rhim, Hokyung Choi, Sangdo Kim, Jiho Yoo, Donghyuk Chun, Jeonghwan Lim, Sihyun Lee, Korea Institute of Energy Research, KOREA

A Theoretical Study on Bond Dissociation Enthalpies of Coal-Based Model Compounds, Lu Li, Lijun Jin, Yang Li, Hongjun Fan, Haoquan Hu, Dalian University of Technology, CHINA

In Situ Analysis of Volatile Products from Brown Coal Pyrolysis Using Electron Impact and Vacuum

Ultraviolet Photoionization Mass Spectrometry, Gang Li, Lijun Jin, Yang Li, Haoquan Hu, Shiyu Zhang, Zichao Tang, Dalian University of Technology, CHINA

An Investigation on the Fluidization Behaviour of Biomass-Coal Granular System, Zhiguo Guo, Xueli Chen, Yang Xu, Haifeng Liu, East China University of Science and Technology, CHINA

Integrated Process of Coal Pyrolysis with Methane Steam Reforming: The Influence of Pyrolysis Conditions, Chan Dong, Lijun Jin, Yang Li, Zheng Fu, Haoquan Hu, Dalian University of Technology, CHINA

Pyrolysis Reactivity and Kinetics of Coal and Coal Extract as well as Residue by Tetrahydrofuran, Liang Zou, Lijun Jin, Yang Li, Dechao Wang, Haoquan Hu, Dalian University of Technology, CHINA

Preparation of Briquette Binder from Sunflower Stalk Hydrolysis Residues, An-ning Zhou, Jian-guo Wei, Xin-fu He, Hui-kuan Zhang, Xi'an University of Science & Technology, CHINA

The Transformation of Mineral Matter During Coal Ash Heating in O_2/CO_2 Atmosphere, Fang Huang, Liqi Zhang, Baojun Yi, Zhihui Mao, Chuguang Zheng, Huazhong University of Science and Technology, CHINA

Role of Anthracite Coal in Reduction of Copper Oxide During Reactive Milling with Magnesium, Haipeng Chen, Bogu Liu, Qianqian Zhang, Naifei Wang, Shixue Zhou, Shandong University of Science and Technology, CHINA

Different Coal-Based Carbon for Preparation of Magnesium-Carbon Nanocomposites with High Hydrogen Storage Performance, Naifei Wang, Qianqian Zhang, Xiaoli Zhang, Tao Li, Haipeng Chen, Shandong University of Science and Technology, CHINA

Effectiveness of Crystallitic Carbon and Bituminous Coal in Milling Process to Prepare Magnesium-Based Material with Low Activation Energy for Hydrogen Desorption, Tao Li, Xiaoli Zhang, Bogu Liu, Naifei Wang, Shixue Zhou, Shandong University of Science and Technology, CHINA

Effect of Coking Coal Addition on Hydrogen Desorption Kinetics and Morphology of Magnesium-Based Materials, Bogu Liu, Tao Li, Haipeng Chen, Qianqian Zhang, Shixue Zhou, Shandong University of Science and Technology, CHINA

Distribution of Sulphur Functional Groups in High Sulphur Jeypore Coals of Assam, Amritanshu Kumar, Theem College of Engineering; S.K. Srivastava, Central Institute of Mining and Fuel Research, INDIA

Effect of Different Coal-Carbon on the Structure and Properties of the Magnesium-Carbon Nano-Composite Materials, Qianqian Zhang, Tao Li, Haipeng Chen, Naifei Wang, Shixue Zhou, Shandong University of Science and Technology, CHINA

Optimization of Parameters During the Milling Preparation and Properties Analysis of Magnesium-Carbon Composite Hydrogen Storage Materials, Qianqian Zhang, Bogu Liu, Dexi Wang, Xiaoli Zhang, Haipeng Chen, Shandong University of Science and Technology, CHINA

The Influence of Carbon Content on the Performance of Mg-Based Hydrogen Storage Material, Naifei Wang, Xiaoli Zhang, Qianqian Zhang, Tao Li, Haipeng Chen, Shandong University of Science and Technology, CHINA

Upgrading Illinois Bituminous Coal with Asphaltenes by Agglomeration, Junior N.D. Nasah, University of North Dakota, USA

POSTER SESSION 7
COAL MINING

Methodology for Managing Coal Dust for Underground Mining in Colombia, Rafael Emiro Fuentes Chica, Astrid Blandon Montes, Jorge Martin Molina Escobar, National University of Colombia; Eliecer Fernando Diaz Garcia, Carboconsult, COLOMBIA

Using the Geological, Tectonic, and Lithologic Structure Index to Predict Water Abundance in Sandstone Aquifers from Coal Deposits, Yin Huiyong, Wei Jiuchuan, Shandong University of Science and Technology; Wu Qiang, China University of Mining and Technology, CHINA; Liliana Lefticariu, Southern Illinois University, USA

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