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TECHNICAL PROGRAM

ORAL SESSIONS

Tuesday, September 13, 2005
10:10 - 17:15

SESSION 1
COMBUSTION TECHNOLOGIES-ADVANCED CYCLES, HYBRID SYSTEMS, HEAT TRANSFER, CONTROL
Arun C. Bose and Ashok K. Singh

1 - **2nd Generation PFB Plant with Super Critical Pressure Steam Turbine,** Archie Robertson, Zhen Fan, Foster Wheeler North America Corporation, USA; Harvey Goldstein, Parsons Infrastructure & Technology, USA; Richard Newby, Dennis Horazak, Siemens Westinghouse Power Corp., USA; Arun C. Bose, U.S. DOE/NETL, USA

17 - **Design Aspects of the Ultra-Supercritical CFB Boiler,** Song Wu, Stephen J. Goidich, Zhen Fan, Foster Wheeler North America Corp., USA; Arun C. Bose, U.S. DOE/NETL, USA

29 - **Hydrodynamics and Heat Transfer Studies in a Pressurized Circulating Fluidized Bed,** R. K. Saha, IIT Kharagpur, INDIA

43 - **Improved Combustion Control through Coal Flow Balancing,** Harun Bilirgen, Edward K. Levy, Lehigh University, USA

59 - **Operational and Environmental Benefits of Retrofitting a Low Rank Coal-Fired Power Plant with a Coal Drying System,** Edward Levy, Nenad Sarunac, Lehigh University Energy Research Center, USA

SESSION 2
GASIFICATION TECHNOLOGIES-APPLICATIONS & ECONOMICS 1
Charles D. McConnell and Stewart J. Clayton

71 - **The World Gasification Industry 2000-2004, 2005-2010 Major Factors & Trends Driving Growth,** James M. Childress, Gasification Technologies Council, USA

72 - **Gasification - A Technology Whose Time Has Come - Changing the Paradigm,** D.N. Lockwood, Global Energy Inc., USA

86 - **Market Potential of Coal-Based Integrated Gasification Combined Cycle: A Summary and Update,** Richard J. Aiken, Gary Leatherman, Booz Allen Hamilton, USA

99 - **Using a Risk Framework to Guide Federal Credit Support for IGCC,** Andrew Paterson, Environmental Business International, USA

100 - **Environmental Impact Comparisons, IGCC vs. PC Plants,** Sikander R. Kahn, Robert J. Wayland, Lorie J. Schmidt, U.S. EPA, USA

SESSION 3
COAL UTILIZATION BY-PRODUCTS 1
Tarunjit Butalia

117 - **The United States' Combustion Byproducts Recycling Consortium,** Tamara Vandivort, Paul F. Ziemkiewicz, West Virginia University, USA

150 - **Accelerated Load Testing Response of Full-Scale Pavements Constructed of Coal Combustion Products,** Behrad Zand, Wei Tu, Tarunjit S. Butalia, William E. Wolfe, The Ohio State University, USA; Sung-Hwan Kim, Korea Highway Corporation, KOREA

151 - **Ecologically Friendly Lightweight Concrete Based on Coal Ashes,** M. Nisnevich, G. Sirotin, Y. Eshel, T. Schlesinger, A. Koziashvili, The College of Judea and Samaria, ISRAEL

162 - **Bio-Reclamation of Coal Mining Subsided Lands/Abandoned Open Cast Mines vis-a-vis Utilization of Coal Ash,** Biswajit Paul, INDIA

173 - **Predicting the Effects of Placing CCB's in Contact with Mine Spoil,** Paul F. Ziemkiewicz, National Mine Land Reclamation Center, USA; Anna S. Knox, Savannah River National Laboratory, USA

SESSION 4
HYDROGEN FROM COAL-PROGRAMS, PROJECTS, AND ECONOMICS
John Winslow and Robert N. Miller

184 - **The U.S. Department of Energy's Hydrogen from Coal and Carbon Sequestration Activities,** Edward Schmetz, C. Lowell Miller, William Fernald, John Shen, U.S. DOE, USA; John Winslow, Sean Plasynski, U.S. DOE/NETL, USA; Mark Ackiewicz, John Anderson, Technology & Management Services, Inc., USA

217 - **Comparative Economics of Hydrogen and Electricity from Shell-IGCC using High-Sulfur and Low-Sulfur Coals with CO_2 Capture,** Richard D. Doctor, John C. Molburg, Argonne National Laboratory, USA

227 - **Commissioning of a Coal to Fuel Cell Grade Hydrogen Technology Package,** Tony Clemens, Ramon Brown, CRL Energy Limited, NEW ZEALAND; Steven Pearce, Solid Energy New Zealand Ltd., NEW ZEALAND

237 - **Processing Requirements and System-Level Issues for Utilizing Coal with Distributed Fuel Cell Power Systems,** Theodore Krause, Romesh Kumar, Argonne National Laboratory, USA

249 - **Sotacarbo R&D Project for Hydrogen Production from Coal and CO_2 Removal,** Alberto Pettinau, Carlo Amorino, Alessandro Orsini, SOTACARBO S.p.A., ITALY; Daniele Cocco, University of Caglieri, ITALY

SESSION 5
ENVIRONMENTAL CONTROL TECHNOLOGIES-MERCURY CONTROL 1
Evan Granite and A. Manivannan

261 - **The PCO Process for Removal of Mercury from Flue Gas,** Evan J. Granite, Henry W. Pennline, U.S. DOE/NETL, USA; Christopher R. McLarnon, Powerspan Corp., USA

275 - **The Thief Process for Mercury Removal from Flue Gas,** Evan J. Granite, Richard A. Hargis, Henry W. Pennline, William J. O'Dowd, Mark C. Freeman, U.S. DOE/NETL, USA

287 - **Mercury Emissions Control using Boiler Operations Modifications – With and Without Activated Carbon**, Carlos E. Romero, Harun Bilirgen, Nenad Sarunac, Edward Levy, Lehigh University Energy Research Center, USA

299 - **Options for Control of Mercury from Coal-Fired Electric Utility Boilers,** Nick Hutson, Ravi Srivastava, U.S. EPA, USA

307 - **On-Site Activated Carbon Production for Utility Power Plant Mercury Control,** Jurron Bradley, Lawrence Bool, Chien-Chung Chao, Praxair, Inc., USA

SESSION 6
GAS TURBINES AND FUEL CELLS FOR SYNTHESIS GAS AND HYDROGEN APPLICATIONS
Richard Dennis and James Ciesar

312 - **Development of Anode Catalysts for Coal-Based SOFCs,** Steven S. C. Chuang, Rajesh Khatri, Rahul Singh, Zhiqiang Yu, James Fisher II, Felipe Guzman-Montanez, Duane Miller, The University of Akron, USA

313 - **Blowout Measurements in a Syngas-Fired Gas Turbine Combustor,** Qingguo Zhang, David R. Noble, Time Liuwen, Georgia Institute of Technology, USA

319 - **Catalytic Combustion of Gasified Coal for Low-Emissions Gas Turbines,** Shahrokh Etemad, William C. Pfefferle, Lance L. Smith, Hasan Karim, Precision Combustion, Inc., USA

324 - **Gas Turbine Cycle Optimization for an IGCC Plant,** Ashok Anand, Patrick May, Greg Wotzak, Michael Jandrisevits, Ken Yackly, GE Energy, USA

338 - **Catalytic Combustor for Fuel Flexible Turbine,** Walter R. Laster, Siemens Westinghouse Power Corporation, USA

SESSION 7
COMBUSTION TECHNOLOGIES - MERCURY SPECIATION, KINETICS; PARTICULATE EMISSIONS, CONTROL
Jost O.L. Wendt and Mark D. D'Agostini

348 - **Detailed Kinetic Modeling of Homogeneous Mercury Oxidation Reactions in a 1000 BTU/hr Quartz Furnace,** Andrew Fry, JoAnn S. Lighty, Geoffrey D. Silcox, Brydger Cauch, University of Utah, USA

360 - **Hg Chlorination Kinetics Study Using Two Different Techniques,** Takahiro Yamada, Philip H. Taylor, Rajender K. Brahman, University of Dayton, USA

371 - **Evaluation of In-Situ Gasification of Coal/Biomass and Coal Slurries for Utilization as Fuel-Lean Reburn Fuels,** Robert A. Schrecengost, Bernard P. Breen, Breen Energy Solutions, USA; Scott MacAdam, Western Research Institute, USA, Ronald W. Breault, U.S. DOE/NETL, USA

TECHNICAL PROGRAM

378 - **Sieving Electrostatic Precipitator,** Hajrudin Pasic, Zahirul Hasan Khan, Ohio University, USA

388 - **Mercury Speciation in Pulverized Fuel Co-Combustion: Effect of Biomass Share and Combustor Temperature,** Shishir P. Sable, Ömer Ünal, Wiebren de Jong, Delft University Technology, THE NETHERLANDS; Hartmut Spliethoff, Technical University of Munich, GERMANY

SESSION 8
GASIFICATION-APPLICATIONS & ECONOMICS 2
Charles D. McConnell and Stewart J. Clayton

397 - **The Reliability of Integrated Gasification Combined Cycle (IGCC) Power Generation Units,** Robert Steele, Dale Paul, Salvatore DellaVilla, Strategic Power Systems, Inc., USA; Christopher Higman, Syngas Consultants Ltd, GERMANY

409 - **The Use of SASOL's Gasification and Fischer-Tropsch Technologies to Convert Coal to Liquids and Chemicals,** C.F. Reinecke, M. Coertzen, P. Gibson, M.J. Keyser, J.C. van Dayk, A.C. Vosloo, Sasol Technology, SOUTH AFRICA

410 - **Puertollano IGCC Plant – Present Position and Future Competitiveness,** Pedro Casero Cabezon, Francisco Garcia Pena, ELCOGAS, S.A., SPAIN

425 - **The Shell Coal Gasification Process,** H.T.P. Bos, F.G. van Dongen, Shell Global Solutions International, THE NETHERLANDS

435 - **American Electric Power's IGCC Project,** Michael J. Mudd, Monty Jasper, Michael W. Rencheck, American Electric Power, USA

SESSION 9
COAL UTILIZATION BY-PRODUCTS 2
John Daniel

436 - **The Release of Cations from Coal Gasification Residues,** Ann G. Kim, U.S. DOE/NETL, USA

449 - **An Application of Hydrogeochemical Modelling in Understanding Chemical Reactions in Fly Ash-Water Interaction during Batch Leaching Tests of Acidic Fly Ashes,** Jerzy Jankowski, Maria Dubikova, Colin R. Ward, University of New South Wales, AUSTRALIA; David French, CSIRO Division of Energy Technology, AUSTRALIA

471 - **Formation of Ettringite in Leaching Solutions from Alkaline Fly Ashes: Evaluation From Hydrogeochemical Modelling,** Jerzy Jankowski, Maria Dubikova, Colin R. Ward, University of New South Wales, AUSTRALIA; David French, CSIRO Division of Energy Technology, AUSTRALIA

494 - **The Need for Field-Relevant Leachability Mass Transfer Coefficients,** John L. Daniels, Gautham P. Das, University of North Carolina, USA

504 - **Leaching of FGD By-Products using a CSTX,** Karl Schroeder, Candace Kairies, Carol Cardone, U.S. DOE/NETL, USA

SESSION 10
HYDROGEN FROM COAL-NOVEL PRODUCTION APPROACHES
Ed Schmetz and Robert N. Miller

518 - **Hydrogen Production by Electrochemical Dissociation of Hydrogen Sulfide in IGCC Plants,** Burton Krakow, Eric P. Weaver, Lars Ecklund-Mitchell, Elias K. Stefanakos, George Moore, Matt Smith, University of South Florida Clean Energy Research Center, USA

526 - **Impedance Analysis of a Coal Electrolytic Cell for the Production of Hydrogen,** Gerardine G. Botte, Prashanth Patil, Yolanda De Abreu, Michael E. Prudich, Ohio University, USA

527 - **Synthetic Natural Gas Production from Coal using Reaction Sciences' Low Temperature Thermochemical Water Splitting Process,** Irven Miller, Steven Amendola, Reaction Sciences Corporation, USA

535 - **Direct Extraction of Hydrogen from Coal using a Membrane Reactor Integrated with a Gasifier,** Shain J. Doong, Estela Ong, Francis Lau, Gas Technology Institute, USA

548 - **Scale-Up of Microporous Inorganic Hydrogen-Separation Membranes,** Roddie R. Judkins, Brian L. Bischoff, Oak Ridge National Laboratory, USA

SESSION 11
ENVIRONMENTAL CONTROL TECHNOLOGIES-MERCURY CONTROL 2
Evan Granite and David A. Atwood

561 - **Mercury Removal from Warm Coal-Derived Syngas,** Michael Swanson, Edwin Olson, Ramesh Sharma, Grant Dunham, University of North Dakota Energy & Environmental Research Center; Ron Breault, U.S. DOE/NETL, USA

563 - **Non-Carbon Sorbents for Mercury Removal from Flue Gases,** Gokhan Alptekin, Margarita Dubovik, Michael Cesario, TDA Research, Inc., USA

568 - **Mercury Emissions from Coal-Fired Facilities with SCR-FGD Systems,** J.A. Withum, S.C. Tseng, J.E. Locke, CONSOL Energy Inc., USA

569 - **Irreversible Binding of Mercury with "MetX" a Synthetic Bis-Thiol Ligand,** David A. Atwood, Kamruz Zaman, University of Kentucky, USA

575 - **Evaluation of Nanocrystalline Sorbents for Mercury Removal from Fuel Gas,** Raja A. Jadhav, Howard S. Meyer, Gas Technology Institute, USA; Slawomir Winecki, NanoScale Materials, Inc., USA; Ronald W. Breault, U.S. DOE/NETL, USA

SESSION 12
CHEMICALS, MATERIALS & OTHER NON-FUEL USES OF COAL 1
Elliot B. Kennel

581 - **Coal to Corn,** John Diesch, Royster-Clark Nitrogen, Inc., USA; Richard Sheppard, Mark Ibsen, Rentech Development Corp., USA; Sharon Tucker, Tucker & Associates, USA

586 - **Effect of Coal Rank on the Coprocessing of Coal with Waste Tire,** Motoyuki Sugano, Hideyoshi Andoh, Masafumi Tsubosaka, Keiki Tanaka, Katsumi Hirano, Kiyoshi Mashimo, Nihon University, JAPAN

596 - **Effect of In-situ Solvent Soaking and Heating Pre-Treatment on Coal Conversion and Oil Yield during Liquefaction of Low Rank Malaysian Coal,** Mohd Aslan Mohd Ishak, Mohd Fauzi Abdullah, Khudzir Ismail, University Technology MARA, MALAYSIA; Mohd Omar Abd Kadir, Abd Rahman Mohamed, Universiti Sains Malaysia, MALAYSIA

607 - **The Special Technology for Liquid Fuels Production from Coal,** V. V. Zamanov, Tulaengoilgas Ltd., RUSSIA; A. M. Cyulmaliev, A. A. Krochko, Fossil Fuels Institute, RUSSIA

608 - **Study on Demulsification and Dewater of Coal-Tar Emulsified,** Shizhuang Shi, Wuhan University of Science and Technology, P.R. CHINA; Qibing Liu, Coking Corporation Ltd. of WISCO, P.R. CHINA

SESSION 13
COMBUSTION TECHNOLOGIES-KILN COMBUSTION, COMBUSTION OF SOLID FUELS, SULFUR REDUCTION, COAL ASH
Archie Robertson and Pavol Pranda

619 - **Indian Scenario of Coal with Particular Reference to Combustion Technology and Requirements of Coal in DRI Industry – Sponge Iron,** K.B. Tehran, Monnett Ispat Ltd, INDIA

620 - **Low Emissions of Sulfur Compounds under Substoichoimetric Fluidized Bed Combustion of Coals,** G.S. Golovin, E.G. Gorlov, L.A. Kost, L.N. Lebedeva, Fossil Fuels Institute, RUSSIA

628 - **Sulphur Reduction in the Combustion of Lignite by Lime Addition,** Guven Onal, Mustafa Ozer, Istanbul Technical University, TURKEY; Islam Mustafaev, Azerbaijan Academy of Sciences, AZERBAIJAN

632 - **Factors Influencing Fly Ash Formation and Slag Deposit Formation (Slagging) on Combusting a South African Pulverised Fuel in a 200MW$_e$ Boiler,** Chris van Alphen, Van Alphen Consultancy, SOUTH AFRICA

655 - **Effect of Coal Ash Constituents on Ash Fusion Behaviour of Indian Non-Coking Coals used in Thermal Power Stations,** Pradip K. Mandal, K. Meenakshi, National Thermal Power Corporation Ltd., NOIDA, INDIA

SESSION 14
GASIFICATION-APPLICATION & ECONOMICS 3
Charles D. McConnell and Stewart J. Clayton

679 - **Power from PRB – Six Conceptual IGCC Plant Designs Using the Transport Gasifier,** Luke H. Rogers, Alexander K. Bonsu, Benjamin F. Gardner, Joseph D. Eiland, Charles A. Powell, Southern

Company Services, USA; Ronald Breault, U.S. DOE/NETL, USA; George S. Booras, Electrical Power Research Insitute, USA; Nicola Salazar, Kellogg, Brown and Root, Inc., USA

696 - **A Site Specific Techno-Economic Analysis for the Production of Hydrogen, Electric Power, and Carbon Dioxide from Texas Lignite,** David Gray, Glen Tomlinson, Mitretek Systems, USA; John Marano, Consultant, USA; John Winslow, U.S. DOE/NETL, USA

701 - **Updated Market-Based Advanced Coal Power Systems Comparison Study,** Ronald L. Schoff, Pamela J. Barret, Parsons Corporation, USA; Jared P. Ciferno, U.S. DOE/NETL, USA; Vladimir Vaysman, WorleyParsons, USA

713 - **Ultra-Low Emissions IGCC that is Cost-Competitive with Pulverized Coal,** William S. Rollins, NovelEdge Technologies, LLC, USA

731 - **Current Status of Coal Gasification Technology In Taiwan,** Wei-Cheng Chen, Cheng-Hsien Shen, Min-Chain Lo, Heng-Wen Hsu, Ching-Lin Shieh, Industrial Technology Research Institute, P.R. CHINA

SESSION 15
COAL UTILIZATION BY-PRODUCTS 3
Ann Kim

733 - **Coal Utilization Byproducts: Characterization and Use of Coal Utilization Byproducts (Including Fly Ash, Bottom Ash, Boiler Slag, FGD Material, and Gasification Slag),** Saugata Datta, Georgia College and State University, USA; Nada Assaf-Anid, Manhattan College, USA; Nicholas Themelis, Columbia University, USA

735 - **Incorporation of Coal Gasification Slag into Foamed Glass Material,** O.P. Norton, Adriana Giordana, Ron Palmer, Mike McCarthy, Mississippi State University, USA; William G. Ramsey, Earth Stone International, USA

744 - **The Utilization of the Gypsum Product from the Flue Gas Desulfurization for the Sulfate-Reducing Bacteria Cultivation**, Alena Luptakova, Maria Kusnierova, Institute of Geotechnics of Slovak Academy of Sciences, SLOVAK REPUBLIC; Peter Fecko, VSB-TU Ostrava, CZECH REPUBLIC

750 - **The Main Principles of Producing Compounds of Rare Elements from Solid Fossil Fuels,** M.Ja. Shpirt, Fossil Fuel Institute, RUSSIA

758 - **Use of Fly Ash for the Production of Hard Scouring Cleaners,** Sunil K. Srivastava, Raja Sen, Debapriya Choudhury, Ujjal Bhattacharjee, Gora Ghosh, Central Fuel Research Institute, INDIA

SESSION 16
HYDROGEN FROM COAL-MEMBRANES FOR HYDROGEN SEPARATION & PURIFICATION
Balu Balachandran and Robert N. Miller

763 - **Membranes for the Purification of Hydrogen Produced from Coal-Derived Water-Gas Shift Mixtures,** Anthony F. Sammells, Michael V. Mundshau, Xiaobing Xie, Carl R. Evenson IV, Eltron Research Inc., USA

771 - **Current Status of Dense Cermet Membranes for Hydrogen Separation,** Balu Balachandran, T. H. Lee, L. Chen, S. J. Song, J. J. Picciolo, S. E. Dorris, Argonne National Laboratory, USA

778 - **Results from Bench and Pilot Scale Testing that Demonstrate the Superior Performance and Material Stability of Inorganic Membranes over Polymeric Membranes and Competing Inorganic Membranes; Applications in Hydrogen Recovery,** Paul Liu, Media & Process Technologies, Inc., USA

779 - **Synthesis and Permeation Properties of Sodalite Membranes,** Vadim V. Guliants, Zhenkun Zheng, University of Cincinnati, USA; Jerry Y. S. Lin, Arizona State University, USA

788 - **The Influence of Copper Concentration on the Permeability of Pd-Cu Alloy Membranes,** Bryan D. Morreale, Bret H. Howard, U.S. DOE/NETL, USA

SESSION 17
ENVIRONMENTAL CONTROL TECHNOLOGIES-MERCURY MEASUREMENT & FUNDAMENTAL STUDIES
Evan Granite and A. Manivannan

794 - **Trace Detection of Mercury using Diamond Rotating Disk Electrodes and Comparison with CVAA Technique,** A. Manivannan, L. Ramakrishnan, M. S. Seehra, West Virginia University, USA; E. Granite, U.S. DOE/NETL, USA; A. Fujishima, Kanagawa Academy of Science & Technology, JAPAN

795 - **Development of a Diode-Laser-Based Ultraviolet Absorption Sensor for Real-Time, In Situ Measurements of Atomic Mercury,** Thomas N. Anderson, Robert P. Lucht, Purdue University, USA

807 - **Can Mercury Oxidation Take Place Homogeneously in Combustion Flue Gases?** A Theoretical Investigation, Jennifer Wilcox, WPI, USA; Paul Blower, Jost Wendt, University of Arizona, USA

808 - **Mercury in Chinese Coals,** Harvey E. Belkin, Robert B. Finkelman, Martina S. Hopkins, U.S. Geological Survey, USA; Baoshan Zheng, Binbin Wang, Chinese Academy of Sciences, P.R. CHINA

812 - **Mercury Transformation Reactions on Ohio Coal Fly Ashes,** Sukh Sidhu, Patanjali Varanasi, University of Dayton Research Institute, USA

SESSION 18
CHEMICALS, MATERIALS & OTHER NON-FUEL USES OF COAL 2
Elliot B. Kennel

822 - **Fractionation of Coal by Utilizing Extraction in Flowing Non-Polar Solvent,** Hiroyuki Nakagawa, Kouichi Miura, Ryuichi Ashida, Kyosuke Nakagawa, Kyoto University, JAPAN

835 - **The Role of Gasified Coal in Carbon Nanofiber Synthesis,** Max L. Lake, Robert L. Alig, David J. Burton, Thomas W. Hughes, Applied Sciences Inc., USA

850 - **The New Concept of Recycling of the Liquid Fuels and Chemicals**, A. A. Ozerenko, S. B. Frosin, Carbonfuelchem Technology, Ltd., RUSSIA; A. A. Krichko, Fossil Fuels Institute, RUSSIA

854 - **New Process of Co-coking of Waste Plastics and Blend Coal,** Hong-qiang Liao, Peng Zhao, Ya-bin He, Sougang Technical Research Institute, P.R. CHINA; Guang-wei Yu, Jiu-jv Cai, Northeaster University, P.R. CHINA; Baoqing Li, Chinese Academy of Sciences, P.R. CHINA

Wednesday, September 14, 2005
10:10 - 17:15

SESSION 19
COMBUSTION TECHNOLOGIES - OXY-COMBUSTION OF COAL AND ADVANCED TECHNOLOGIES 1
Arun C. Bose & Ashok K.Singh

858 - **Using Oxygen Enrichment and Coal Fines to Diminish NOx Emissions from Pulverized Coal Axial Diffusion Flames,** Jost O.L. Wendt, Gregory E. Ogden, University of Arizona, USA

870 - **Demonstration of a New Combined NOx and SOx Removal Retrofit Technology for Coal-Fired Boilers,** R. Sangras, P. Pranda, N. Perrin, American Air Liquide, USA; F. Botha, Illinois Clean Coal Institute, USA; D. Cott, D. Rudberg, R. Schuller, PLASMA, Inc., USA

882 - **Oxygen-Enhanced Combustion of Slagging Cyclone Combustors,** Mark D. D'Agnostini, Kevin B. Fogash, Air Products and Chemicals, Inc., USA

892 - **Development of a High Temperature Oxygen Generation Process and its Application to Oxyfuel Combustion Power Plant with Carbon Dioxide Capture,** Krish R. Krishnamurthy, Divyanshu Acharya, Michael Leison, BOC Process Gas Solutions, USA; Marie Anheden, Kristin Jordal, Jinying Yan, Vattenfall Utveckling AB, SWEDEN; Scott MacAdam, Vijay K. Sethi, Western Research Institute, USA\

908 - **Some Thoughts and Observations on Oxy-Fuel Technology Developments,** Ligang Zheng, Yewen Tan, CANMET Energy Technology Center, CANADA; Terry Wall, University of Newcastle, AUSTRALIA

SESSION 20
GASIFICATION TECHNOLOGIES - FUNDAMENTALS & SIMULATIONS 1
Steve Zitney and Michael J. Bockelie

918 - **Simulation of Coal Gasification Inside a Two-Stage Gasifier,** Ting Wang, Armin Silaen, University of New Orleans, USA

932 - **Gasification CFD Modeling for Advanced Power Plant Simulations,** Stephen Zitney, Chris Guenther, U.S. DOE/NETL, USA

944 - **Chemistry Submodels for Simulations of Advanced Solid Fuel Gasifiers,** Stephen Niksa, Niksa Energy Associates, USA

TECHNICAL PROGRAM

957 - **Factors Influencing the Optimum Temperature in Entrained Flow Coal Gasifiers,** M. Bockelie, M. Denison, C. Senior, H. Shim, A. Sarofim, Reaction Engineering International, USA

959 - **Modeling the Transport Gasifier with a Hybrid CFD-Lumped Parameter Approach,** Charles White, EG&G Technical Services, Inc., USA; Ronald Breault, Chris Guenther, U.S. DOE/NETL, USA; Esmail Monazam, REM Engineering Services, USA

SESSION 21
GASIFICATION - ADVANCED SYNTHESIS GAS CLEAN UP 1
Raghubir Gupta and Daniel C. Cicero

961 - **Field Testing of a Warm-Gas Desulfurization Process using a Pilot-Scale Transport Reactor System with Coal-Based Syngas,** Jerry N. Schlather, Eastman Chemical Company, USA; Brian Turk, RTI International, USA

963 - **Slipstream Testing of Novel Sulfur Removal Processes for Gasification Application,** Albert Tsang, Joe Cross, Roland Schmidt, ConocoPhillips Company, USA; Clinton Summers, Nucon International, Inc., USA; Bob Kornosky, U.S. DOE/NETL, USA

964 - **Ultra-Clean Process for the Control of Sulfur, Halide, and Mercury Compounds in Coal Gasification Gases: PDU Testing,** Francis S. Lau, Rachid B. Slimane, P. Vann Bush, James L. Aderhold, Jr., Bruce Bryan, Gas Technology Institute, USA; Richard A. Newby, Harry T. Morehead, Siemens Westinghouse Corporation, USA; Suresh C. Jain, U.S. DOE/NETL, USA

987 - **Pilot Scale Demonstration of Direct Sulfur Recovery Process,** Paul Box, Andreas Weber, Gary Howe, Jeffrey Portzer, Santosh Gangwal, RTI International, USA; Jerry Schlather, Eastman Chemical Company, USA

988 - **Monitoring Particulate Mass and Size at High Pressure/Temperature in Cleaned Fuel Gas from Gasifiers,** W. E. Farthing, Gas Technology Institute, USA; D. J. Holve, Process Metrix, LLC, USA, Ruth Ann Martin, Southern Company Services, USA

SESSION 22
HYDROGEN FROM COAL - WATER GAS SHIFT CATALYSIS
Anthony Sammells and Robert N. Miller

996 - **Hydrogen Production via Redox Reaction of Syngas with Metal Oxide Composite Particles,** Luis G. Velazquez-Vargas, Puneet Gupta, Fanxing Li, Ted Thomas, L.S. Fan, The Ohio State University, USA

997 - **Hydrogen Production via the High-Temperature Water-Gas Shift Reaction over Chromium-Free Iron-Based Catalysts,** Lingzhi Zhang, Sittichai Natesakhawat, Xueqin Wang, Umit S. Ozkan, The Ohio State University, USA

999 - **Low-Content Gold-Ceria Catalysts for the Water-Gas Shift Reaction,** Howard Saltsburg, Weiling Deng, Qi Fu, Maria Flytzani-Stephanopoulos, Tufts University, USA

1000 - **Ceria-Supported Bimetallic Catalysts for the Oxygen-Assisted Water-Gas-Shift Reaction for Hydrogen Production,** Elise B. Fox, Subramani Velu, Chunshan Song, The Pennsylvania State University, USA

1004 - **Reformulation of Coal-Derived Transportation Fuels: Preferential Oxidation of Carbon Monoxide on Structured Supports,** Paul Chin, George W. Roberts, North Carolina State University, USA; Ronald Breault, U.S. DOE/NETL, USA; James J. Spivey, Louisiana State University, USA

SESSION 23
ENVIRONMENTAL CONTROL TECHNOLOGIES - FLUE GAS CLEAN UP 1
Evan Granite and David A. Atwood

1018 - **Experience with Twelve-Months-a-Year European Operation of SCR as Applied to System Design in U.S., High-Sulfur, Coal Service,** William Ellison, Power Magazine, USA; Helmut Weiler, Weiler Consultants, GERMANY

1031 - **Integrated Ammonia-Free NOx Control System,** Song Wu, Zhen Fan, Andrew H. Seltzer, Foster Wheeler North America Corp., USA; Richard G. Herman, Lehigh University, USA; Kamalendu Das, U.S. DOE/NETL, USA

1044 - **Acid Aerosol and Other Fine Particulate Control with Wet Laminar Electrostatic Precipitation,** David J. Bayless, Gregory G. Kremer, Ke Li, Liming Shi, Ohio University, USA

1056 - **Performance Analysis of SCR Installations on Coal-Fired Boilers,** Manuel J. Oliva, Sikander R. Khan, U.S. EPA, USA

1075 - **Ethanol-Treated Calcium Hydroxide for Desulphurization,** He Li-xin, China University of Mining & Technology, P.R. CHINA

SESSION 24
ADVANCED ENERGY SYSTEM DEMONSTRATIONS 1
Thomas Sarkus and Ron Cutright

1083 - **Strategies for Cooling Electric Generating Facilities Utilizing Mine Water: Technical and Economic Feasibility Project,** Tamara Vandivort, James Stiles, Joseph J. Donovan, Paul Ziemkiewicz, Brenden Duffy, West Virginia Research Institute, USA; Bruce R. Leavitt, Consulting Hydrologist, USA

1101 - **IGCC with CO_2 Separation and Maximum Availability,** Katrin Ogriseck, Bernd Meyer, Dmitry Korobov, Stefan Guhl, Sirko Ogriseck, Hardy Rauchfuss, Steffan Krzack, Technische Universität Bergakademie Freiberg, GERMANY

1112 - **Selective Catalytic Reduction (SCR) for NOx Control from Coal-Fired Boilers,** Alfred N. Mann, Parsons Corporation, USA; Thomas A. Sarkus, U.S. DOE/NETL, USA; James E. Staudt, Andover Technology Partners, USA

1124 - **Beneficial Options for the Pre-Combustion Thermally Treated Subbituminous Coal: Initial Findings,** Alan Bland, Lyle Johnson, Western Research Institute, USA; Kumar Sellakumar, Etaa Energy, Inc., USA; Gary Walling, Alliant Energy, USA; Duane Steen, Montana-Dakota Utilities, USA; Edgar Klunder, U.S. DOE, USA

1134 - **LAGISZA Power Plant – The Largest Supercritical CFB Unit in the World,** Andrzej Kowalski, Energoprojekt-Katowice SA, POLAND

SESSION 25
COMBUSTION TECHNOLOGIES - OXY-COMBUSTION OF COAL & ADVANCED CONCEPTS 2
Krish Krishnamurthy and G.S. Golovin

1139 - **Pilot-Scale Evaluation of Coal Combustion in an Oxygen-Enriched Recycled Flue Gas,** Hamid Farzan, Stanley J. Vecci, Babcock & Wilcox Company, USA; Fabienne Châtel-Pélage, Pavol Pranda, American Air Liquide, USA; Arun C. Bose, U.S. DOE/NETL, USA

1151 - **An Optimized Oxygen-Fired Pulverized Coal Power Plant for CO_2 Capture,** Andrew H. Seltzer, Zhen Fan, Foster Wheeler North America Corporation, USA; Timothy Fout, U.S. DOE/NETL, USA

1164 - **Pilot-Scale Test and Cycle Analyses of an Oxygen-Blown IFCC Power System,** John P. Hurley, Greg F. Weber, University of North Dakota Energy & Environmental Research Center, USA; Fred Robson, kraftWorks Systems, Inc., USA

1176 - **Oxy-fuel Combustion With and Without Carbon Capture: A Techno-Economic Assessment and Future Prospects,** Murlidhar Gupta, Kourosh E. Zanganeh, Yewen Tan, Bill Pearson, CANMET Energy Technology Center, CANADA

1188 - **Economics for Low, Mid, and High Sulfur Coals in PC-Boilers using Oxy-Fuels,** Richard D. Doctor, John C. Molburg, Argonne National Laboratory, USA

SESSION 26
GASIFICATION - FUNDAMENTALS & SIMULATIONS 2
Steve Zitney and Michael J. Bockelie

1189 - **Circulating Fluidized Bed Technology; Experimental and Modeling Activities at the National Energy Technology Laboratory,** Chris Guenther, Chris Ludlow, U.S. DOE/NETL, USA; Alain Lui, Parsons Technology, USA

1191 - **Mineral Matter Transformation During Sasol-Lurgi Fixed Bed Dry Bottom Gasification – Utilization of HT-XRD and Factsage Modelling,** JC van Dyk, S. Melzer, A. Sobiecki, Sasol Technology, SOUTH AFRICA

1207 - **Reactivity and Structural Change of Coal Char during Steam Gasification,** Yasushi Sekine, Kiyohiro Ishikawa, Eiichi Kikuchi, Masahiko Matsukata, Waseda University, JAPAN; Akemitsu Akimoto, Center for Coal Utilization, JAPAN

1214 - **Effect of Molar Fraction of CO_2 and Mild Oxidation of Coal on the Characteristic Parameter in a Random Pore Model,** Tatsuya Morimoto, Tetsuya Ochiai, Hirokazu Oda, Kansai University, JAPAN; Sadao Wasaka, NEDO, JAPAN

1223 - **Gasification Reactivity of Solid Carbon Produced Through the Pyrolysis of Coal using a Pressurized Drop-Tube-Furnace,** Kouichi Miura, Hiroyuki Nakagawa, Shinichi Nakai, Shiro Kajitani, Kyoto University, JAPAN

TECHNICAL PROGRAM

SESSION 27
GASIFICATION - ADVANCED SYNTHESIS GAS CLEANUP 2
Raghubir Gupta and Daniel C. Cicero

1238 - **Selective Catalytic Oxidation of Hydrogen Sulfide to Elemental Sulfur in the Presence of Coal-Derived Fuel Gas,** Robert W. Stevens, Jr., Todd H. Gardner, Dushyant Shekhawat, David A. Berry, U.S. DOE/NETL, USA; Adam D. Freed, REM Engineering Services, USA

1247 - **Desulfurization of High-Pressure Gasified Coal using UC Sulfur Recovery Process,** Howard S. Meyer, Dennis Leppin, Gas Technology Institute, USA; Scott Lynn, University of California, USA

1255 - **Novel Sorbents for Mercury Capture from Fuel Gas,** Evan J. Granite, Christina Myers, William P. King, Dennis Stanko, Henry W. Pennline, U.S. DOE/NETL, USA

1256 - **Development of Novel Sorbents for Removing Trace Metals from Coal-Derived Syngas at Elevated Temperatures,** John R. Albritton, Brian S. Turk, Jeffrey W. Portzer, Santosh Gangwal, Raghubir Gupta, RTI International, USA

1257 - **Sorbents for Mercury Removal from Coal-Derived Synthesis Gas,** Gokhan Alptekin, John Monroe, Robert Amalfitano, Robert Copeland, TDA Research, Inc., USA

SESSION 28
GLOBAL CLIMATE CHANGE: SCIENCE, SEQUESTRATION & UTILIZATION - CO_2 CAPTURE TECHNOLOGIES
Bill O'Connor

1271 - **PEI/MCM-48 Composite Membranes for Carbon Dioxide Separation,** Vadim V. Guliants, Junichi Ida, Sangil Kim, Parveen Kumar, University of Cincinnati, USA; Jerry Y.S. Lin, Arizona State University, USA

1289 - **Reproducibility of CO_2 Absorption and Emission for Lithium Silicate Pellets,** Kenji Essaki, Toshihiro Imada, Yasuhiro Kato, Yukishige Maezawa, Masahiro Kato, Toshiba Corporation, JAPAN

1296 - **The Effect of Flue Gas Contaminants on the Performance of Immobilized Amine Sorbents for CO_2 Capture,** Daniel J. Fauth, McMahan L. Gray, John P. Baltrus, Henry W. Pennline, U.S. DOE/NETL, USA; Thomas Filburn, University of Hartford, USA

1297 - **Separation of CO_2 from Flue Gas using Nanoporous MCM-41-PEI Adsorbent and Membrane,** Xiaochun Xu, Chunshan Song, The Pennsylvania State University, USA

1301 - **Ammonia-Based Scrubbing for the Capture of Carbon Dioxide from Power Generation Point Sources,** Kevin P. Resnik, James T. Yeh, Henry W. Pennline, U.S. DOE/NETL, USA

SESSION 29
ENVIRONMENTAL CONTROL TECHNOLOGIES - FLUE GAS CLEAN UP 2
Evan Granite and A. Manivannan

1302 - **Enhancing the Environmental Performance of Coal-Fired Power Plants – DOE's Innovations for Existing Plants Program,** Thomas J. Feeley, III, U.S. DOE/NETL, USA

1321 - **Pilot-Scale Optimization of In-Furnace Limestone and Trona Injection for Multi-Pollutant Control,** Scott MacAdam, Philip C. Martin, Western Research Institute, USA; Brian Higgins, Brian Smith,Mobotec USA, USA; Ronald W. Breault, U.S. DOE/NETL, USA

1322 - **Combustion Optimization of an Ultra-Low NOx Tangentially-Fired Boiler,** Nenad Sarunac, Carlos E. Romero, Harun Bilirgen, Lehigh University Energy Research Center, USA

1353 - **Low-Temperature Reduction of NO using Syngas as Reducing Agent,** Heon Jung, Jung-Il Yang, Korea Institute of Energy Research, KOREA

1354 - **Surface Selective Membranes for Carbon Dioxide Separation,** David R. Luebke, Henry W. Pennline, Christina R. Myers, U.S. DOE/NETL, USA

SESSION 30
ADVANCED ENERGY SYSTEM DEMONSTRATIONS 2
Thomas Sarkus and Ron Cutright

1366 - **Commercial Demonstration of the Manufactured Aggregates Processing Technology Utilizing Spray Dryer Ash,** Milton Wu, Roy Scandrol, Paul Yuran, Darrel Martin, Universal Aggregate LLC, USA

1372 - **History and Current Status of the Mesaba Energy Project,** Jim Milkovich, Excelsior Energy, Inc., USA

1373 - **Lignite Fuel Enhancement: Incremental Moisture Reduction,** Charles W. Bullinger, Mark A. Ness, Great River Energy, USA

1374 - **Transport Gasifier CCPI Gasification Project,** Tim Pinkston, Luke Rogers, Frank Morton, Southern Company, USA

1384 - **ELCHO Combined Heat and Power Project – The Most Up to Date Site with 100 Years' History,** Andrzej Kowalski, BSPiR Energoprojekt-Katowice SA, POLAND

SESSION 31
COMBUSTION TECHNOLOGIES - OXY-COMBUSTION OF COAL & ADVANCED CONCEPTS 3
K.B. Trehan and Ligang Zheng

1395 - **Effect of O_2/CO_2-Firing on Coal Particle Ignition,** Alejandro Molina, Christopher R. Shaddix, Sandia National Laboratories, USA

1404 - **Oxy-Combustion: Novel Strategies for Improving Combustion and Multi-Pollutant Control,** Richard L. Axelbaum, Ben Kumfer, Pratim Biswas, Washington University, USA

1410 - **Submicrometer Particle Formation and Mercury Speciation under Oxygen-Carbon Dioxide Coal Combustion,** Pratim Biswas, Achariya Suriyawong, Myong-Hwa Lee, Michael Gamble, Richard Axelbaum, Washington University in St. Louis, USA

1420 - **Research on Criteria's for By-Products the Energy Utilization,** Dagmar Juchelková, VSB-TU Ostrava, CZECH REPUBLIC

1426 - **Problems of Pulverization of Indian Non-Coking Coals used in Thermal Power Stations and Remedial Measures,** Pradip K. Mandal, K. Meenakshi, NOIDA, INDIA

SESSION 32
GASIFICATION - ADVANCED TECHNOLOGY DEVELOPMENT 1
Johan van Dyk and Gary J. Stiegel

1444 - **Advanced Gasification Systems Development at Boeing,** Steven P. Fusselman, Kenneth M. Sprouse, Alan K. Darby, Boeing, USA; Jenney Tennant, Gary J. Stiegel, U.S. DOE/NETL, USA

1455 -**ALSTOM's Hybrid Combustion-Gasification Chemical Looping Technology Development,** Paul R. Thibeault, Peter T. Stromberg, John H. Chiu, Herbert E. Andrus, Jr., John H. Chiu, Suresh C. Jain, ALSTOM Power Inc., USA

1475 - **Operation of the PSDF Transport Gasifier,** Brandon M. Davis, Roxann Leonard, Matt Nelson, Guohai Liu, P. Vimalchand, Southern Company, USA; Peter V. Smith, Kellogg Brown & Root, Inc., USA; Ron Breault, U.S. DOE/NETL, USA

1482 - **Clean Coal Without Compromise,** Robert E. Klepper, BioConversion Technology, LLC, USA; Laurence W. Stewart, Phoenix BioFuels, LLC, USA

1496 - **Investigation of New IGCC Concepts with High Efficiency,** Dmitry Korobov, Sirko Ogriseck, Bernd Meyer, Technische Universität Bergakademie Freiberg, GERMANY

SESSION 33
GASIFICATION - ADVANCED SYNTHESIS GAS CLEANUP 3
Raghubir Gupta and Daniel C. Cicero

1516 - **Modeling S-Sorbent Pore Closure and Sorption Kinetics for ZnO in a Hot Pressurized Transport Reactor,** Esmail R. Monazam, REM Engineering Services, PLLC, USA; Lawrence J Shadle, David A. Berry, U.S. DOE/NETL, USA

1524 - **High Temperature Carbon Dioxide Removal from Syngas using Lithium Silicate-Based Sorbents,** Weijiong Li, Brian S. Turk, Santosh K. Gangwal, Thomas O. Nelson, Raghubir P. Gupta, RTI International, USA; Seungdoo Park, Satish Tamhankar, The BOC Group, USA

1525 - **Removal of Ammonia Vapor from Coal Gas Streams,** Krishnan Gopala, Indira Jayaweera, E. Alvarez, A. Sanjurjo, SRI International, USA

1532 - **Hot Gas Cleanup using Electrostatic Separation,** Liming Shi, David J. Bayless, Gregory G. Kremer, Ohio University, USA

1546 - **The Catalytic Reduction of SO_2 Produced from Regeneration Process for Hot Gas Desulfurization,** Tae Jin Lee, No-Kuk Park, Min Kwan Kim, Gi Bo Han, Jong Dae Lee, Si Ok Ryu, Yeungnam University, KOREA; Chih Hung Chang, Oregon State University, USA

TECHNICAL PROGRAM

SESSION 34
GLOBAL CLIMATE CHANGE: SCIENCE, SEQUESTRATION & UTILIZATION - MULTI-POLLUTANT CAPTURE/OXY-FUEL COMBUSTION
Bill O'Connor

1555 - **Developments in Integrated Pollutant Removal for Low-Emission Oxy-Fuel Combustion,** S. Gerdemann, C. Summers, D. Oryshchyn, T. Ochs, U.S. DOE/Albany Research Center, USA; B. Patrick, Jupiter Oxygen Corporation, USA

1563 - **Survey of Potential Oxygen Carriers for Chemical Looping Combustion of Fuel Gas,** Evan J. Granite, U.S. DOE/NETL, USA

1564 - **Techno-Economic Study of Oxy-Combustion Process for CO_2 Capture from Coal-Fired Power Plants,** Yongqi Lu, Scott Chen, Massoud Rostam-Abadi, Illinois State Geological Survey, USA; Rajani K. Varagani, Fabienne Châtel-Pélage, Pavol Pranda, American Air Liquide, USA; Arun C. Bose, U.S. DOE/NETL, USA

1579 - **CO_2 Capture: Technology Pathways and Opportunities in Canada,** Murlidhar Gupta, Bill Pearson, Kourosh E. Zanganeh, CANMET Energy Technology Center, CANADA

1601 - **Investigation of Perflourinated Compounds as Physical Solvents for Selective CO_2 Capture at Elevated Pressures and Temperatures,** Yannick J. Heintz, Romain O. Lemoine, Laurent Sehabiague, Badie I. Morsi, University of Pittsburgh, USA; Kenneth L. Jones, Henry W. Pennline, U.S. DOE/NETL, USA

SESSION 35
ENVIRONMENTAL CONTROL TECHNOLOGIES - FLUE GAS CLEAN UP OTHER TOPICS
Evan Granite and David A. Atwood

1641 - **Indigo Agglomerators Reduce PM2.5 Emissions and Opacity on Three Coal Fired Boilers in the U.S.,** Robert Crynack, Indigo Technologies, USA; Rod Truce, Indigo Technologies, AUSTRALIA; Mark Berry, Southern Company Generation, USA

1654 - **Effects of H_2S and SO_2 in the Simulated Coal Combustion Flue Gas for Elementary Mercury Vapor Removal Over Activated Carbons,** Md. Azhar Uddin, Yuki Yamaji, Toru Yamada, Shengji Wu, Eiji Sasaoka, Okayama University, JAPAN

1662 - **Desulphurisation of Mae Moh Low-Rank Coal using Ultrasonic Waves with Mixture of Hydrogen Peroxide and Hydrochloric Acid as Desulphurising Agent,** Khudzir Ismail, Wan Izhan Nawawi Wan Ismail, Mohd Azlan Mohd Ishak, University Technology MARA, MALAYSIA

1671 - **The Simultaneous Removal of SO_2 and NOx by a Corona Radical Shower System,** Xiang Gao, Zuliang Wu, Zhongyang Luo, Mingjiang Ni, Kefa Cen, Zhejiang University, P.R. CHINA

1687 - **Possible Process Efficiency Improvements for a Coal-To-Liquids Plant to Reduce Carbon Dioxide and Other Emissions,** M Coertzen and MJ Keyser, Sasol Technology, SOUTH AFRICA

SESSION 36
COAL PRODUCTION & PREPARATION 1
B.K. Parekh

1689 - **Upgrading Coals using the Nu-Fuel Process,** Alfred N. Mann, Confluence Coal Combustion, USA

1696 - **Challenges before Indian Steel & Power Industries – Some Pragmatic Solutions,** Ashok K. Singh, Kaylan Sen, S. K. Hazra, CSIR, INDIA

1712 - **A Review of Computer Modeling in Underground Coal Mining and It's Application in Optimizing Continuous Miner Production Systems,** Joseph C. Hirschi, Illinois Clean Coal Institute, USA

1721 - **Evaluation of Lignite Coal in Waste Character as Coal-Water Slurry Fuel,** G. Atesok, M. Ozer, F. Boylu, Hayrunnisa Dincer, Istanbul Technical University, TURKEY

1733 - **Characteristics of Slime and the Host Rock from the Preparation of Pernik Coal, Bulgaria,** Mariana G. Yossifova, Bulgarian Academy of Sciences, BULGARIA

Thursday, September 15, 2005
10:10 - 17:15

SESSION 37
COMBUSTION TECHNOLOGIES - NOVEL COMBUSTION SYSTEMS & MECHANISTIC STUDIES
Guven Onal and R.K. Saha

1742 - **Some Experience from the Co-Combustion Process Diagnostic,** Václav Roubicek, Pavel Kolat, Bohumír Cech, Helena Raclavska, VSB-TU Ostrava, CZECH REPUBLIC

1751 - **NOx Emissions and Precursors Formation in Pulverized Biomass Co-Firing: Bench Scale Experiments,** Gianluca DiNola, Delft University of Technology, THE NETHERLANDS; Hartmut Spliethoff, Technical University of Munich, GERMANY

1766 - **Utilization of Energy Grasses for Combustion,** Dagmar Juchelkova, Helena Raclavska, Bohumir Cech, VSB – Technical University of Ostrava, CZECH REPUBLIC

1773 - **Prevention of Chlorine Deposition by Kaolinite in Co-Combustion of Coal with CO_2 - Neutral Fuels,** Jaani Silvennoinen, Juha Roppo, Riku-Ville Nurminen, Kvaerner Power Oy, FINLAND; Martti Aho, Pasi Vainikka, VTT Processes, FINLAND; Eduardo Ferrer, CIRCE Universidad de Zaragoza, SPAIN

1789 - **Perspectives of Using Alternative Fuels Obtained from Wastes and Biomass in Polish Power and Heat Generating Plants,** Alicja Uliasz-BocheDczyk, Eugeniusz Mokrzycki, Mineral and Energy Economy Research Institute of the Polish Academy of Sciences, POLAND

SESSION 38
GASIFICATION -ADVANCED TECHNOLOGY DEVELOPMENT 2
Johan van Dyk and Gary J. Stiegel

1790 - **Successful Continuous Injection of Coal into Gasification and PFBC System Operating Pressures Exceeding 500 PSI – DOE Funded Program Results,** Derek Aldred, Timothy Saunders, Stamet Inc., USA

1805 - **Development of Improved Performance Refractory Liner Materials for Slagging Gasifiers,** James P. Bennett, Kyei-Sing Kwong, Cynthia Powell, Rick Krabbe, Hugh Thomas, U.S. DOE/Albany Research Center, USA

1815 - **Ceramic and Coal: ITM Oxygen for IGCC,** Phillip A. Armstrong, E.P. Foster, VanEric E. Stein, Air Products and Chemicals, Inc., USA; Dennis A. Horazak, Harry T. Morehead, Siemens Westinghouse Power Corporation, USA

1828 - **Underground Coal Gasification-Comparison of European & U.S. Technologies,** Alan H. Singleton, Energy Technology Partners, LLC, USA; Michael Green, UCG Engineering Ltd, UNITED KINGDOM

1817 - **Underground Coal Gasification in Deep Coal Seams with Carbon Capture and Storage,** Michael Green, UCG Engineering Ltd, UNITED KINGDOM; Brian Smart, John Rippon, Robin Westerman, Jim Somerville, Heriot-Watt University, UNITED KINGDOM; Peter Sage, Future Energy Solutions, UNITED KINGDOM

SESSION 39
MATERIALS, INSTRUMENTATION & CONTROLS 1
Udaya S. Rao, Susan Maley and R. R. Judkins

1829 - **U.S. Program on Materials Technology for Ultrasupercritical Coal Power Plants,** R. Viswanathan, EPRI, USA; J. F. Henry, ALSTOM, USA; J. Tanzosh, Babcock & Wilcox, USA; G. Stanko, Foster Wheeler North American Corp., USA; J. Shingledecker, Oak Ridge National Laboratory, USA; B. Vitalis, Riley Power, USA

1830 - **Y- and La-Containing Ln_3MO_7 (M=Nb or Ta) Pyrochlores as Corrosion-Resistant Coatings for High-Temperature Combustion Applications,** Vadim V. Guliants, Parveen Kumar, University of Cincinnati, USA

1839 - **Fireside Corrosion Resistance of Advanced Materials for Ultra-Supercritical Coal-Fired Power Plants,** Horst Hack, Greg Stanko, Foster Wheeler North America Corp., USA

1855 - **Update on the Coal Ash Corrosion Resistant Materials Testing Program Evaluation of the First Two Sections and Status of the Third,** Dennis K. McDonald, Edward S. Robitz, Babcock & Wilcox, USA

1865 - **High Temperature Electrochemical Corrosion Rate Probes,** Sophie J. Bullard, Bernard S. Covino, Jr., Gordon R. Holcomb, Margret Ziomek-Moroz, U.S. DOE/Albany Research Center

TECHNICAL PROGRAM

SESSION 40
GLOBAL CLIMATE CHANGE: SCIENCE, SEQUESTRATION & UTILIZATION - CO_2 SEQUESTRATION
Bill O'Connor

1874 - **Characteristic Study of Korean Magnesium Silicates for CO_2 Mineral Carbonation,** Jae K. Lee, Dong W. Kim, Korea Electric Power Research Institute, KOREA

1884 - **Preliminary Estimation of Possibilities of using Polish Fly Ashes for CO_2 Utilization,** Alicja Uliasz-BocheDczyk, Eugeniusz Mokrzycki, Mineral and Energy Economy Research Institute of the Polish Academy of Sciences, POLAND

1885 - **Chemical and Physical Activation in Aqueous Carbonation of Serpentine for CO_2 Sequestration,** Ah-Hyung Alissa Park, L.S. Fan, The Ohio State University, USA

1886 - **Modeling Flow of Mineralized Carbon Dioxide Slurry,** Larry Penner, David C. Dahlin, Steve Gerdemann, U.S. DOE/Albany Research Center, USA; Kringan K. Saha, Arizona State University, USA

SESSION 41
ENVIRONMENTAL CONTROL TECHNOLOGIES - MERCURY OTHER TOPICS
Evan Granite and A. Manivannan

1896 - **Mechanism of Mercury Oxidation during Coal Combustion,** Vitali Lissianski, GE Energy, USA; D.L. Tsyganov, A. Yu. Starikovskii, Moscow Institute of Physics and Technology, RUSSIA

1904 - **Speciation and Fate of Mercury Emissions from Coal Fired Utilities,** Joram Kibuthu, Nada Assaf-Anid, Manhattan College, USA; Nickolas J. Themelis, Columbia University, USA

1905 - **Transmission Electron Microscopy Study of the Sites of Mercury, Selenium, and Arsenic in a Kentucky Fly Ash,** James C. Hower, Uschi M. Graham, Alan Dozier, University of Kentucky, USA

1913 - **Economic Impact of Retrofit Air Pollution Control on Old, Small Units,** Thomas L. Wright, Richard L. Brooks, Parsons, USA

SESSION 42
COAL PRODUCTION & PREPARATION 2
B. K. Parekh

1926 - **Premium Fuel Production from Coal and Timber Waste,** R. Q. Honaker, D. Taulbee, B. K. Parekh, D. Patil, University of Kentucky, USA

1938 - **Applying Froth Imaging Techniques to Ashes Fine Coal Dewatering Behaviour,** A. Vathavooran, S. Kingman, N. Miles, A. Batchelor, University of Nottingham, UNITED KINGDOM

1940 - **Lignite Fuel Enhancement via Air Jigging Technology,** Jason D. Laumb, Steven A. Benson, University of North Dakota Energy & Environmental Research Center, USA; Richard Weinstein, The Falkirk Mining Company, USA

1951 - **Utilisation of Industrial Wastes for Control of Slag Muck Dump Fire,** R.V.K. Singh, D.D. Tripathi, N.K. Mohalik, G. Sural, R.P. Barnwal, J. Pandey, V. K. Singh, Central Mining Research Institute, INDIA

1963 - **Bacterial Desulphurization of Coal from Locality Most,** Peter Fecko, Marcela Safarova, Vladimir Skorka, Nikolas Mucha, VSB-TU Ostrava, CZECH REPUBLIC

SESSION 43
COMBUSTION TECHNOLOGIES - NOVEL COMBUSTION SYSTEMS & MECHANISTIC STUDIES 2
Ashok K. Singh and Arun C. Bose

1970 - **Optimisation of Coal Fineness Based on Coal Reactivity for Energy Conservation in Power Stations,** Pradip K. Mandal, K. Meenakshi, NOIDA, INDIA

1990 - **Thermal Behaviour Study of Mukah Balingian Coal and Biomass Blends during Pyrolysis via Thermogravimetric Analysis,** Khudzir Ismail, Zubri Zakaria, Mohd Azlan Mohd Ishak, University Technology MARA, Malaysia

2002 - **Importance of the Lignite for Energy in Turkey,** Ilker Senguler, Ismail Ozdemir, General Directorate of Mineral Research and Exploration, TURKEY

2003 - **Explosion Characteristics of Blended Coal Dust,** Jiahu Li, Weiping Yan, Xiujun Liang, Chunyan Li, North China Electric Power University, P.R. CHINA

SESSION 44
GASIFICATION - FEEDSTOCKS 1
Massood Ramezan and Stewart J. Clayton

2004 - **High-Sodium Lignite Gasification with the PSDF Transport Gasifier,** Wan Wang Peng, Matt Nelson, Roxann Leonard, Guohai Liu, P. Vimalchand, Southern Company, USA; Robert S. Dahlin, Southern Research Institute, USA

2010 - **Gasification of Low-Rank Coals in a Transport Reactor,** Michael Swanson, Doug Hajicek, Michael Collings, Ann Henderson, Mark Musich, University of North Dakota Energy & Environmental Research Center, USA

2011 - **Centralized Lignite Gasification with Decentralized Power Generation,** Katrin Ogriseck, Bernd Meyer, Technische Universität Bergakademie Freiberg, GERMANY

2021 - **Lignite Fueled IGCC Power Plant,** Alan J. Nizamoff, Sheldon Kramer, Scott Olson, Sam Tam, Nexant, Inc., USA; Francis S. Lau, Mike Roberts, Robert Zabransky, Gas Technology Institute, USA

2039 - **Gasification Alternatives for Industrial Applications – Industrial Application for Eastern Coal,** Francis S. Lau, Mike Roberts, Robert Zabransky, Gas Technology Institute, USA; Alan J. Nizamoff, Sheldon Kramer, Scott Olson, Sam Tam, Nexant, Inc., USA

SESSION 45
MATERIALS, INSTRUMENTATION & CONTROLS 2
Udaya S. Rao, Susan Maley and R. R. Judkins

2056 - **A Fiber Optic Sensor for In Situ Real-Time Monitoring H_2O_2 in a PEM Fuel Cell during Fuel Cell Operation,** Shinquan Tao, Xiemei Hu, Qiangu Yan, Mississippi State University, USA

2070 - **Spectroscopic Sensor for Monitoring Pulverized Coal Flames,** Serguei A. Zelepouga, David Rue, Vasilios Soupos, Gas Technology Institute, USA; Alexei V. Saveliev, University of Illinois at Chicago, USA

2077 - **Improving Thermocouple Service Life in Slagging Gasifiers,** James P. Bennet, Kyei-Sing Kwong, Cynthia Powell, Hugh Thomas, Rick Krabbe, U.S. DOE/Albany Research Center, USA

2089 - **A Highly Sensitive Sol-Gel Silica Optical Fiber Sensor for Monitoring of Trace Ammonia in High Temperature Gas Samples,** Shiquan Tao, Joseph Fanguy, Mississippi State University, USA

2108 - **Development of an Acoustic Sensor for On-Line Gas Temperature Measurement in Gasifiers,** Peter Ariessohn, Noel Fitzgerald, Enertechnix, Inc., USA; Kamalendu Das, U.S. DOE, USA; Hans G. Hornung, California Institute of Technology, USA

SESSION 46
GLOBAL CLIMATE CHANGE: SCIENCE, SEQUESTRATION & UTILIZATION - SEQUESTRATION IN GEOLOGICAL SINKS
Bill O'Connor

2130 - **Sequestration of CO_2 in Combustion Byproduct-Augmented Brine Solutions,** Y. Soong, R. M. Dilmore, S. W. Hedges, P. J. Pique, U.S. DOE/NETL, USA

2154 - **Feasibility Study of Seismic Imaging for Site Selection and Monitoring of CO_2 Sequestration in Illinois Coal Seams,** Iraj A. Salehi, Sherif Gowelly, Gas Technology Institute, USA

2172 - **CO_2 Sequestration in Unmineable Coal Seams: Potential Environmental Impacts,** Sheila W. Hedges, Yee Soong, J.R. McCarthy Jones, D. K. Harrison, G.A. Irdi, E.A. Frommell, R.M. Dilmore, P.J. Pique, T.B. Brown, U.S. DOE/NETL, USA

2190 - **International Collaboration Project on CO_2 Ocean Sequestration: Summary of Results,** Perry D. Bergman, PDB Consulting, USA; E. Eric Adams, Massachusetts Institute of Technology, USA; Jeffrey Summers, U.S. DOE, USA; Craig Smith, University of Hawaii, USA; Eric Vetter, Hawaii Pacific University, USA

2199 - **CO_2 Flood Tests on Whole Core Samples of the Mt. Simon Sandstone, Illinois Basin,** W.K. O'Connor, G.E. Rush, U.S. DOE/Albany Research Center, USA

SESSION 47
COAL CHEMISTRY, GEOSCIENCES & RESOURCES 1
Allan Kolker and Sharon Diehl

2209 - **Geochemistry of Coals in Panian Coalfield, Semirara Island, Philippines,** Stella Marris Limos-Martinez, Koichiro Watanabe, Kyushu University, JAPAN

2226 - **A Comparison between Concentrations of Arsenic, Selenium, and Other Trace Elements in Pyrite-Filled Structures in Appalachian Coal Basins in Alabama and Kentucky,** S.F. Diehl, M.B. Goldhaber, M.L.W. Tuttle, L.F. Ruppert, A.E. Koenig, U.S. Geological Survey, USA

TECHNICAL PROGRAM

2250 - **Comprehensive Identification of Coal Characteristics Based on Pressure Measurement during Oxygen Bomb Combustion,** Xiong Youhui, Xia Liming, Huazhong University of Science and Technology, P.R. CHINA

2256 - **Paleozoic Stone Coal in the South China Block: Mineralogy, Chemistry, and Environmental Consequences,** Harvey E. Belkin, U.S. Geological Survey, USA; Kunli Luo, Chinese Academy of Sciences, P.R. CHINA

2268 - **Niobium and Tantalum Content at Kuzbass Coals,** Boris F. Nifantov, Vadim P. Potapov, Anatoliy N. Zaostrovskiy, Olga P. Zanina, The Institute of the Coal Chemistry SB RAS, RUSSIA

SESSION 48
COAL PRODUCTION & PREPARATION 3
B.K. Parekh

2270 - **A Study of the Moisture Adsorption and Desorption Characteristics of Various South African Coals,** Q.P. Campbell, M.D. Barnardo, North West University, SOUTH AFRICA

2280 - **Improving Densification of Fine Coal Refuse Slurries to Eliminate Slurry Ponds,** B.K. Parekh, D. P. Patil, Rick Honaker, University of Kentucky, USA; Frank Baczek, Dorr-Oliver Eimco, USA

2281 - **Predicting Element Partitioning during Coal Cleaning using Washability Analysis,** Curtis A. Palmer, James A. Luppens, Robert B. Finkelman, John H. Bullock, Jr., U.S. Geological Survey, USA; Gerald H. Luttrell, Virginia Polytechnic Institute and State University, USA

2302 - **Flotoflocculation of Black Coal Slurries,** Peter Fecko, Silvie Riedlova, Gordan Bedekovic, Iva Pectova, VSB-TU Ostrava, CZECH REPUBLIC

2309 - **Research on the Experiment Method about the Quick Determination of Concentration of Coal-Water-Slurry,** Yang Qiaowen, Lei Zhengyu, Wu Huixiang, Liren Cao, Chu Zhuwei, Wang Zuna, CUMT, P.R. CHINA

SESSION 49
SYNTHESIS OF LIQUID FUELS & CHEMICALS
C.F. Reinecke and Ari Geertsema

2318 - **Ethene Re-Adsorption Pathways over Fe Catalyst for Fischer-Tropsch Synthesis,** Rongle Zhang, Jie Chang, Liang Bai, Yuanyuan Xu, Hongwei Xiang, Yongwang Li, Jinglai Zhou, Chinese Academy of Sciences, P.R. CHINA

2336 - **Should There be a Role for Clean Liquid Transportation Fuels from Domestic Coal in the Nation's Energy Future?,** Edward Schmetz, C. Lowell Miller, U.S. DOE, USA; John Winslow, U.S. DOE/NETL, USA; David Gray, Mitretek Systems, USA

2352 - **A Novel Method to Prepare Slurry Catalysts for Direct Synthesis of Dimethyl Ether from Syngas,** Zhi-hua Gao, Wei Huang, Li-Hua Yin, Ke-chang Xie, Taiyuan University of Technology, P.R. CHINA

2353 - **Investigation of Catalytic Hydrocracking of Fischer-Tropsch Wax for Production of Transportation Fuels,** Mathias Olschar, Thomas Dimmig, Thomas Kuchling, Technical University Bergakademie Freiberg, GERMANY

2363 - **Scale Up and Operation of the Catoosa Demonstration Facility, a GTL Demonstration Plant,** Juan Inga, Abigail E. Wade, Syntroleum, USA

SESSION 50
GASIFICATION - FEEDSTOCKS 2
Massood Ramezan and Stewart J. Clayton

2370 - **Gasification of Pellets – An Environmental and Renewable Approach to Fine Coal and Biomass,** JC van Dyk, Roelof Coetzer, Sasol Technology, SOUTH AFRICA

2383 - **Flex-Fuel Test Facility: Evaluation of Fluidized-Bed Gasification for IGCC Power Production with High-Ash Indian Coal,** Bruce G. Bryan, Rene M. Laurens, Andrew L. Kramer, Joseph Hudziak, Francis S. Lau, Gas Technology Institute, USA; Tan-Ping Chen, Nexant, USA; R.R. Sonde, D.K. Dubey, National Thermal Power Corporation Ltd., INDIA

2401 - **Studies on Kinetics of Hydrogasification of Low Grade Indian Coals for High-Calorific Gas,** R.K. Saha, P. Mukhopadhyay, B.R. Maity, IIT Kharagpur, INDIA

2414 - **Syngas Production through Methane and Coal Co-Conversion,** Zhiqiang Sun, Jinhu Wu, Yang Wang, Chinese Academy of Sciences, P.R. CHINA; Dongke Zhang, Curtin University of Technology, AUSTRALIA

2422 - **Gasification Behavior of Residues from Direct Coal Liquefaction in TG and Fluidized Bed,** Zhijie Wang, Qingfeng Li, Yitian Fang, Yang Wang, Chinese Academy of Sciences, P.R. CHINA

SESSION 51
MATERIALS, INSTRUMENTATION & CONTROLS 3
Udaya S. Rao, Susan Maley and R. R. Judkins

2423 - **A Study of Steel Alloys for Potential Use in CO_2 Sequestration,** J. Tylczak, J. Rawers, Daniel Blankenship, U.S. DOE/Albany Research Center, USA

2435 - **Activated Carbon Production from Subbituminous Coal in Fluidized Bed Reactors by Autothermal Process,** Zulamita Zapata Benabithe, Diego Alejandro Rojas Rodriguez, Pontificia Bolivariana University, COLOMBIA; Erika Arena Castiblanco, Farid Chejne Janna, Juan David Perez Schile, Carlos Londono Giraldo, National of Colombia University – Sede Medllin, COLOMBIA

2444 - **Development of Improved Iron-Aluminide Filter Tubes and Elements,** P.F. Tortorelli, T.G. Sutton, R.R. Judkins, Oak Ridge National Laboratory, USA

SESSION 52
GLOBAL CLIMATE CHANGE: SCIENCE, SEQUESTRATION & UTILIZATION - COAL SORPTION-METHANE UTILIZATION
Bill O'Connor

2447 - **Effects of Moisture and Pressure Cycling on Sorption Capacity of Coals,** Vyacheslav Romanov, Angela Goodman, Yee Soong, U.S. DOE/NETL, USA

2468 - **Sorption of Carbon Dioxide by Australian Coals at Supercritical Pressures,** Richard Sakurovs, Stuart Day, Greg Duffy, CSIRO Energy Technology, AUSTRALIA

2474 - **Coal Mine Methane Utilization Options,** Peet M. Soot, Dale R. Jesse, Michael E. Smith, Northwest Fuel Development, Inc., USA

2484 - **CO_2 Reduction Potential on the Czech Condition,** Václav Roubicek, Pavel Kolat, Helena Raclavska, Jiri Bilík, VSB-TU Ostrava, CZECH REPUBLIC

SESSION 53
COAL CHEMISTRY, GEOSCIENCES & RESOURCES 2
Allan Kolker and Sharon Diehl

2490 - **Methane and Carbon Dioxide Sorption in Gasbearing Coals from the Upper Silesian Coal Basin,** Zuzana Weishauptová, Jirí Medek, Institute of Rock Structure and Mechanics Academy of Sciences of the Czech Republic, CZECH REPUBLIC

2496 - **Coalbed Methane Resources and Activity in Pennsylvania,** Antonette K. Markowski, Pennsylvania Geological Survey, USA

2507 - **Characteristics and Reaction Kinetics of High-Ash Coal-Char Particles Suitable for Bubbling Fluidised Bed Combustion and Gasification,** Raymond C. Everson, Hein W.J.P. Neomagus, Rufaro Kaitano, North-West University, SOUTH AFRICA; Rosemary Falcon, Vivien du Cann, University of the Witwatersrand, SOUTH AFRICA

2525 - **Study on Upgrading Low Rank Coal for Higher Quality of Metallurgical Coke,** Shizhuang Shi, Wuhan University of Science and Technology, P.R. CHINA; Qun Zhang, Shanghai Baoshan Iron & Steel Co., LTD, P.R. CHINA

2532 **Interpretation of Helicopter Electromagnetic Survey Data for the Davis Kempton Mine Complex,** Joseph F. Giacinto, ERM, USA; Gary Reeves, Western Maryland Resources Conservation and Development Council, Inc., USA; Richard W. Hammack, U.S. DOE/NETL, USA

SESSION 54
COAL PRODUCTION & PREPARATION 4
B.K. Parekh

2558 - **A Study of the Influence of Thermal Drying on Physical Coal Properties,** Mathys J. G. Badenhorst, Quentin P. Campbell, North-West University, SOUTH AFRICA

2566 - **Biological Processes in Connection with Brown Coal Combustion,** Peter Fecko, Pavla Ovcari, VSB- TU Ostrava, CZECH REPUBLIC; Maria Prascakova, Maria Kusnierova, Institute of Geotechnics of Slovak Academy of Sciences, SLOVAK REPUBLIC; Alexandra Simonovicova, Comenius University, SLOVAK REPUBLIC

2567 - **Adapting Personnel Alerting and Security for Highwall Coal Mining Operations,** Carl D. Wilson, Mine Guard, LLC, USA

2568 - **The Preparation of the Alcohol-Water-Coal Suspensions based on Brown Coals,** D.S. Khudyakov, Russian Federation, RUSSIA

2569 - **The Properties of Coal-Tar Residue and its Utilization Techniques,** Shizhuang Shi, Guoqiang Qiao, Wuhan University of Science and Technology, P.R. CHINA; Xueying Zhou, Wuhan Iron and Steel Company, P.R. CHINA

POSTER SESSIONS

Bob Brown

Wednesday September 14, 2005
18:00 - 21:00

POSTER SESSION 1
COMBUSTION & GASIFICATION TECHNOLOGIES

2579
The Mechanism at the Initial Stage of the Room-Temperature Oxidation of Coal, Jun Deng, Ying Yang, Xi'an Science and Technology University, P.R. CHINA; Ting Shi, Zhenyi Wen, Northwest University, P.R. CHINA

2580
Co-Combustion of Coal and Chicken Waste in a Lab-Scale Fluidized Bed Combustor, Wei-Ping Pan, Songgeng Li, Boshu He, Hong Cui, Wenyuan Wu, Western Kentucky University, USA

2590
Thermodynamics of Transition into a Gas Phase Hg, Cd, Zn, Pb, Se under Combustion and Gasification of Some Coals, L.N. Lebedeva, L.A. Kost, E.G. Gorlov, Fossil Fuels Institute, RUSSIA

2592
Reduction of SO_2 using Coal Gas over SnO_2-ZrO_2 Catalysts for DSRP in IGCC System, Si-Ok Ryu, Gi Bo Han, No-Kuk Park, Jong Dae Lee, Tae Jin Lee, Yeungnam University, KOREA; Chih Hung Chang, Oregon State University, USA

2602
Economic Analysis and Comparison of IGCC using Different Gasifiers in China and Thought about Operation Oriented Cost Estimation Approach, Liu Yu, Li Zheng, Ni Weidou, Wang Dehui, Tsinghua University, P.R. CHINA

2610
Numerical Simulation of a Novel Pressurized Two-Stage Entrained Flow Coal Gasifiers, Jinhu Wu, Yang Wang, Jiantao Zhao, Min Chang, Chinese Academy of Science, P.R. CHINA

2621
Assessment of Technologies for Gasification of Municipal Solid Waste, Wojciech Jozewicz, Yuanji Dong, ARCADIS, USA; Deborah Mott, Team Systems International, LLC, USA

2622
Syngas Production Through Methane and Coal Co-Conversion, Jinhu Wu, Zhiqiang Sun, Yang Wang, Chinese Academy of Science, P.R. CHINA; Dong-ke Zhang, Curtin University of Technology, AUSTRALIA

2630
Obtaining of Synthesis Gas for Production Petrol from Coal, S. A. Slobodskoy, National Technical University Kharkiv Polytechnic Institute, UKRAINE

2631
A Research into the Blending of Sulfur Fixing Additives during Burning of Slurry-Making Coal, Wu Lijun, Taiyuan University of Technology, P.R. CHINA

POSTER SESSION 2
HYDROGEN & CHEMICALS FROM COAL

2638
Hydrogen Production using Low Grade Coal in a Fluidized Bed Gasifier, R.K. Saha, B.R. Gupta, IIT Khargpur, INDIA

2639
Catalytic Decomposition of Methane over Carbonaceous Material: Effects of Ash and the Presence of H_2 in the Feed, Baoqing Li, Zongqing Bai, Haokan Chen, Wen Li, Chinese Academy of Sciences, P.R. CHINA

2652
An Algorithm for Predicting the Hydrodynamic and Mass Transfer Parameters in Slurry Bubble Column Reactors for Fischer-Tropsch Synthesis, Romain Lemoine, Arsam Behkish, Laurent Sehabiague, Yannick Heintz, Badie I. Morsi, University of Pittsburgh, USA; Rachid Oukaci, Energy Technology Partners, USA

2687
Evaluation of Concepts for the Production of Fischer-Tropsch Transportation Fuels from Biomass, Mathias Olschar, Thomas Dimmig, Thomas Kuchling, Technical University Bergakademie Freiberg, GERMANY

POSTER SESSION 3
ENVIRONMENTAL CONTROL TECHNOLOGIES

2696
Methane and Carbon Dioxide Coal Reservoir Properties of Australian Coals and Implication on CO_2 Enhanced Coal Seam Methane Recovery (ECBM), A. Saghafi, D. Roberts, CSIRO Energy Technology, AUSTRALIA

2697
CFD Modelling of CO_2 Injection in Deep Coal Seams for Greenhouse Gas Mitigation, Abouna Saghafi, CSIRO Energy Technology, AUSTRALIA

2698
Adsorption of Carbon Dioxide on Activated Carbon, Bo Guo, Chunhu Li, Kechang Xie, Taiyuan University of Technology, P.R. CHINA

2699
Relation Between Sulfurization Behavior and Mercury Vapor Capture Performance of Iron Oxide in Coal Derived Fuel Gas, Shengnji Wu, Junichi Kawakami, Eiji Sasaoka, Md. Azhar Uddin, Naoki Oya, Masaki Ozaki, Okayama University, JAPAN

2706
Tests on the Vapor-Phase Mercury Removal by Chemically Modified Heavy-oil Fly Ashes in Fixed Bed and Entrained Flow Reactor, Jeom-In Baek, KEPRI, KOREA; Si Huyn Lee, Korea Institute of Energy Research, KOREA

2730
Potential Revenues from Terrestrial Carbon Sequestration and Reduced CO2 Emissions Achieved by Co-Firing Biomass Fuels with Coal, John Kadyszewski, Nick Martin, Sean Grimland, Ian Morrison, Winrock International, USA

POSTER SESSION 4
COAL CHEMISTRY, GEOSCIENCES & RESOURCES

2733
Brown Coal Maceral Composition Changes caused by Activity of Selected Microorganisms, Maria Prascakova, Institute of Geotechnics of Slovak Academy of Sciences, SLOVAK REPUBLIC; Pavla Ovcari, Peter Fecko, VSB-TU Ostrava, CZECH REPUBLIC; Alexandra Simonovicova, Comenius University, SLOVAK REPUBLIC

2736
About Colloidal Structure and Peptization of Coals with Melted Waste Plastics, A.V. Madatov, V.D. Barsky, Ukrainian State University of Chemical Engineers, UKRAINE; G.A. Vlasoc, G. G. Kleshnya, Avdeyevsky Coke Plant, UKRAINE

2737
Low Temperature SOFC Cathodes based on Doped Lanthanum Ferrite Perovskite-Type Materials, John N. Kuhn, Umit S. Ozkan, The Ohio State University, USA

2738
Stratigraphic Distribution of Selenium in Upper Kanawha-Lower Allegheny Formation Strata at a Location in Southwestern West Virginia, Ron Mullennex, Marshal Miller & Associates, USA

POSTER SESSION 5
COAL PRODUCTION & PREPARATION

2739
Influence of Ash Content and Composition on the Coal-Water-Slurry Properties, Xu Dongyao, Wang Yabao, Ma Nini, Wu Huixiang, Chu Zhuwei, China University of Mining and Technology, P.R. CHINA

2740
Mixed Brown Coal and Waste Rubber Based Fuel, Josef Vales, Marcela Safarova, Pavel Selacek, Jaroslav Kusy, Brown Coal Research Institute, CZECH REPUBLIC

2751
The Application of TG-FTIR in the Study of Raw Material Composition of Foundry Formed Coke, Jianjun Wu, Jiaye Han, Tianbing Chen, Feiming Li, China University of Mining and Technology, P.R. CHINA

2758
Modification of Ashes Sorption Properties by Hydrothermal Alternation, Maria Kusnierova, Maria Prascakova, Institute of Geotechnics of Slovak Academy of Sciences, SLOVAK REPUBLIC; Peter Fecko, VSB-TU Ostrava, CZECH REPUBLIC

2763
The Application of Coal-Water Slurry Technology to Turkish Bituminous Coal, G. Atesok, F. Boylu, M. Ozer, Istanbul Technical University, TURKEY

2773
Shenhua Direct Coal Liquefaction Projects, Qingyun Sun, Jerald Fletcher, Richard A. Bajura, West Virginia University, USA; Yuzhuuo Zhang, Xiangkun Ren, Shenhua Group Corporation, P.R. CHINA

2778
Impact of Fossil Energy Prices on the Cost Competitiveness of Direct Coal Liquefaction Technologies, Qingyun Sun, Jerald Fletcher, West Virginia University, USA; Yuzhuo Zhang, Xiangkun Ren, Shenhua Group Corporation, P.R. CHINA

Additional Papers

2779
Characteristics of the Slime and the Host Rock from the Preparation of Pernik Coal, Bulgaria
QDr. Mariana G. Yossifova

2788
Investigation of Perfluorinated Compounds as Physical Solvents for Selective CO2 Capture at Elevated Pressures and Temperatures
Yannick J. Heintz, Romain O Lemoine, Laurent Sehabiague, Badie I Morsi

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