ILLINOIS CLEAN COAL INSTITUTE

Energy Research for a Cleaner Environment

2008 Program

Discover the Power
Program Areas

- Advanced Coal Mining Technologies
- Coal Preparation
- Power Generation
- Flue Gas Cleaning
- Coal Chemistry
- Coal Gasification
  - Gasification Economics
  - Coal Liquids
  - Syngas Cleanup
  - Gasification Byproducts
- Carbon Management
- Coal Residuals Management
- Exploratory Research
A System to Evaluate Prime Farmland Reclamation Success Based on Spatial Soil Properties
Robert Dunker, UIUC Crop Sciences

Advanced Mining Technologies to Reduce Underground Production Costs
Paul Chugh, SIUC Mining Engineering

IBD Mine Tool Prototype Development and Demonstration
Peter Filip, SIUC Center for Advanced Friction Studies

Remote Underground Coal Mining – Phase 2
Bane Kroeger, SIUC Mining Engineering
Development and Demonstration of Alternate Room and Pillar Mining Geometry in Illinois – Phase 2
Paul Chugh, SIUC Mining Engineering

Effective Noise Control for Improved Health and Safety in Coal Mines
Farzad Pourboghrat, SIUC Electrical & Computer Engineering

Assessment of a Geophysical Coal Exploration Method in a Faulted Terrene
Brett Denny, Illinois State Geological Survey
Development of Improved Roof Support Systems for Illinois Underground Coal Mines

Paul Chugh, SIUC Mining Engineering

Respirable Dust Control in Room-and-Pillar and Longwall Mining Operations

Paul Chugh, SIUC Mining Engineering

Underground Mine Productivity Program

John Mead, SIUC Coal Research Center
Coal Preparation
Recent Projects

Best Management Practices to Minimize Sulfate and Chloride Discharges
Paul Chugh, SIUC Mining Engineering

Fluidized Bed Drying of High Moisture Illinois Coals Using Power Plant Waste Heat: Phase 1
Edward Levy, Lehigh University Energy Research Center

Application of Pulsewave Disintegration to Comminution, Drying and Cleaning of IL Coal
Richard Sumner, Pulsewave, LLC

Integrated Pressure Modulation for Fine Coal Cleaning and Dewatering
Vik Malhotra, SIUC Physics

Automation and Performance Improvement of Spiral Concentrator
Manoj Mohanty, SIUC Mining Engineering

Motorless-Rotorless Cell Advanced Development
Chris Manrique, Dynamic Separations
Recovery of High Grade Magnetite from Illinois Coal Flyash
Manoj Mohanty, SIUC Mining Engineering

Onsite Evaluation of the MST Separator
Manoj Mohanty, SIUC Mining Engineering
Feasibility Evaluation of a Direct Carbon Fuel Cell (DCFC) Operation on Illinois Coal
Chuck Sishtla, Gas Technology Institute

Feasibility of a Commercial Demonstration PFBC Combined Heat and Power Facility
Calvin Hartman, Worley-Parsons, Inc.
Increasing Efficiency and Reducing Emissions of Existing Pulverized Coal-Fired Units

Nenac Sarunac, Lehigh University Energy Research Center
Economic Evaluation of Illinois Coal and Western PRB Coal Under Different Pollution Control Scenarios
Scott Chen, Illinois State Geological Survey

Long-Term Evaluation of Mercury Monitoring Systems at Illinois Coal Fired Boilers
Wei-Ping Pan, Western Kentucky University

Life Cycle Assessment of Mercury in Illinois Coals
Vinodkumar Patel, Illinois State Geological Survey
Limestone Fines - an Economically Viable Source of Sorbents for Desulfurization?
Zak Lasemi, Illinois State Geological Survey

Understanding Multi-Interactions of SO3, Mercury, Selenium, and Arsenic in Illinois Coal Flue Gas
Ye Zhuang, University of North Dakota EERC

Mercury Control Technologies for Electric Utilities Burning Bituminous Coal
Jason Laumb, University of North Dakota EERC

Mercury Measurement: Methods and Hands-On Training
Denny Laudal, University of North Dakota EERC

On-Site Production of Activated Carbon for Removal of Mercury from Coal Flue Gas
Massoud Rostam-Abadi, Illinois State Geological Survey
Oxidative Hydrothermal Dissolution of Illinois Coal

Ken Anderson, SIUC Geology
Environmentally Benign Production of High Yield Value Chemicals from Illinois Coal

Ken Anderson, SIUC Geology
Coal Gasification Reforming Using Low-Temperature Plasma
*Mike Roberts, Gas Technology Institute*

Preparation of NEPA Documents for the Mattoon and Tuscola Sites for the FutureGen Project
*Chris Burger, Patrick Engineering*

400 Million BTU/Hour Fuel Gas Production Plant for the Gateway Ethanol Project
*Dennis d’Ambrosi, Econo Power International Corp. (EPIC)*
Analysis of Coal Gasification Permitting Issues in Illinois

Steffen Mueller, University of Illinois at Chicago
State of Illinois 2006 Participation in Coal Fuels Alliance
Tomasz Wiltowski, SIUC Coal Research

Multifunctional Catalyst/Reactor Development for Product Defined Fischer-Tropsch Synthesis
Tomasz Wiltowski, SIUC Coal Research

No new projects were funded in this area for FY08.
Single Membrane Configuration for Separation of Hydrogen, Carbon Dioxide, and Hydrogen Sulfide
*Mike Roberts, Gas Technology Institute*

Development of an Integrated Multi-Contaminant Removal Process for Syngas Cleanup
*Howard Meyer, Gas Technology Institute*
Integrated Multi-Contaminant Removal Process for Syngas Cleanup – Phase 2

Howard Meyer, Gas Technology Institute
An Assessment of Geological Carbon Sequestration Options in the Illinois Basin: Phase II
Robert Finley, Illinois State Geological Survey

Satya Harpalani, SIUC Mining Engineering
An Assessment of Geological Carbon Sequestration Options in the Illinois Basin: Phase II
Robert Finley, Illinois State Geological Survey

Assessment of Gas in Place and Production in Illinois CBM Reservoirs
Satya Harpalani, SIUC Mining Engineering
Development of Concrete Composites made with Illinois CCBs Having Potential for Commercial Use
Sanjeev Kumar, SIUC Civil Engineering

Evaluation of Sulphate Attack from Illinois Fly Ash on Concrete Structures
Sanjeev Kumar, SIUC Civil Engineering

Value-Added Products from FGD Sulfite-Rich Scrubber Material
Vik Malhotra, SIUC Physics
No new projects were funded for FY08
Dynamic Modeling of a Fluidized-Bed Fischer-Tropsch Reactor
Kanchan Mondal, SIUC – Mechanical Engineering

Cost and Environmental Impacts on Out-of-Seam Dilution on Illinois Clean Coal
Amit Patwardhan, SIUC – Mining Engineering
Effect of Preparation Plant Water Recycling on As-Shipped Mercury Content
Chris Manrique, Dynamic Separations Inc.

A Novel Photocatalytic Process for the Conversion of Carbon Dioxide to Methanol
Tomasz Wiltowski, SIU Coal Research Center

Suitability of Illinois Coal for a Multipurpose Coke Facility
Robert Kramer, Purdue University

A Novel Process for De-Sulfurizing and De-Ashing Illinois Coal
Joseph Pomykala, Argonne National Laboratory

A Synergistic Analysis of Coal Based IGCC and Corn Based Ethanol Production
Donald Chmielewski, Illinois Institute of Technology
Electrochemical Method for Chloride Removal from Wet FGD Liquids  
*Chris Martin, University of North Dakota EERC*

Distribution and Mode of Occurrence of Sulfur and Trace Elements in Illinois Coal  
*Lilly Lefticariu, SIUC Geology*

**Fundamental Studies of Electro-Separation**  
*Asghar Esmaaeli, SIUC Mechanical Engineering*

Bamboo Derived Sorbent Cartridge (BDSC) for Mercury Removal from Flue Gases and Water  
*Jarlen Don, SIUC Mechanical Engineering*

Environmental Analysis of Illinois Coal Entry into the Transportation Market  
*James Mathias, SIUC Mechanical Engineering*