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Fortieth Annual INTERNATIONAL PITTSBURGH COAL CONFERENCE October 4-6, 2023

Final Abstracts Deadline: September 1, 2023

**Technology Innovation and Solutions for
Clean Energy**



TÜYAP Exhibition and Convention Center, Istanbul, Turkey



REPUBLIC OF TÜRKİYE
MINISTRY OF ENERGY AND
NATURAL RESOURCES



University of
Pittsburgh



Turkish Mining
Development Foundation

İTÜ



Call-for-Papers

40th Annual International Pittsburgh Coal Conference

The 40th Annual International Pittsburgh Coal Conference (PCC) will be held on October 4-6, 2023, at the TÜYAP Exhibition and convention center, Istanbul, Turkey. The PCC is the "premier" annual event focusing on all aspects of coal, energy, and the environment. It is a unique forum for in-depth exchange of technical information and policy issues among all participants from industry, academia and governments throughout the world.

Coal remains one of the main components in the world's primary energy mix (oil, natural gas, coal, hydroelectric, renewables, and nuclear). The BP Statistical Review of World Energy 2022 (71st edition) reveals that "Coal prices rose dramatically in 2021, with European coal prices averaging \$121/ton and the Asian market price averaging \$145/ton, which is the highest since 2008. Also, coal consumption grew over 6% to 160 EJ (Exajoule), slightly above 2019 levels and its highest level since 2014. China and India accounted for over 70% of the growth in coal demand in 2021, increasing by 3.7 and 2.7 EJ, respectively. The global production matched consumption with an increase in supply of 440 ton. China and India accounted for much of the increase in production, which was largely consumed domestically, as well as Indonesia, supporting higher exports. Notably, both Europe and North America showed an increase in coal consumption in 2021 after nearly 10 years of back-to-back declines. Nonetheless, with innovative research, coal will remain the most concentrated form of prehistoric biomass and the most abundant fossil fuel in the US, China, and India." (1 EJ = 1015 kJ = 163.425 million barrel of oil equivalent (boe). More information can be found at: <https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>

Conference Theme: "Technology innovation and solutions for clean energy" surrounding the continued clean coal utilization for supporting the future clean energy market."

The PCC committees kindly invite you to submit papers and attend this important event.

Abstracts Submission

Abstracts of potential papers may be submitted in all program topics. The abstract must include sufficient and adequate information for evaluation by the Technical Program Committee of the conference.

An abstract template is available here:

<https://www.engineering.pitt.edu/subsites/conferences/pcc/pittsburgh-coal-conference/conference/2023-conference/abstract-template/>

Please submit an abstract by email to ipcc@pitt.edu, ymgv@ymgv.org.tr, kangal@itu.edu.tr

The submission deadline is September 1, 2023.

Note to Authors

The Annual International Pittsburgh Coal Conference does not provide any financial support to contributing authors. Benefits from participation include the privilege of presenting papers at the conference and publication of the papers in the Conference Proceedings for worldwide distribution.

Conference Proceedings

The proceedings of the PCC-2023 will be published online after the conference.

For a paper to be included in the conference proceedings, a paid registration of the presenter must be received and a complete manuscript in English, must be sent by email to the conference office prior to the conference date.

Proceedings of the previous International Pittsburgh Coal conferences are available and can be purchased online: <https://www.engineering.pitt.edu/PCC/>

Oral Presentations & Posters

Oral Presentations: Each author is allowed 20 minutes, including 5 minutes Q&A.

Presenter Instructions are available here:

<https://www.engineering.pitt.edu/subsites/conference/pcc/pittsburgh-coal-conference/conference/presenter-instructions/>

Contact

Conference Website: <http://www.pccpitt.org>

Please contact the Conference Coordinator with any questions.

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We are currently working remotely; please leave a voice message and we will return your call.

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Registration Fees (USD)

	Before 31 July 2023	After 31 July 2023
Full Registration	900	950
Registration (without accommodation and meals)	650	700
Accompanying person	450	500
Student	300	300
1 Day without accommodation	400	450

- **Services included in the full registration fees:**
- **3-Night Accommodations,**
- **Breakfasts,**
- **Coffee Breaks,**
- **Lunches,**
- **Dinners,**
- **Welcome Cocktail,**
- **Gala Dinner,**
- **Conference Materials,**
- **Free Wi-Fi, and**
- **Shuttle Service (3 Days) to city center.**

Daily Technical tours

A daily technical tour by bus to a coal-fired power plant or a gas-fired power plant for at least for 10 persons, including lunch.
(Cost per person: 150 USD).

Cultural Tours

(All cultural tours require the participation of at least 10 people)



Efes – Pamukkale (Denizli)

2 days

(included: Flight, hotel, 2 lunches, and 1 dinner).

Fee: 350 USD



Cappadocia

2 days

(Included: Flight, hotel, 2 lunches, and 1 dinner).

Fee: 350 USD



Full Day - İstanbul

(Topkapı Palace, Hagia Sophia, Sultanahmet Mosque, and Grand Bazaar)

(With special vehicle and guide, lunch included)

Fee: 90 USD



Half Day - İstanbul

(Topkapı Palace, Hagia Sophia, Sultanahmet Mosque)

(With special vehicle and guide, lunch included)

Fee: 70 USD

Please contact the registration desk for reservation.

Program Topics

1. Gasification Technologies

- Industrial Applications, Economics and Environmental Issues
- Underground Coal Gasification (UCG)
- Syngas to Power (Gas Turbines, Fuel Cells)
- Gasification Science and Modeling
- Novel Gasification Technologies and Concepts
- Co-Gasification of Coal and other Carbon-Based Fuels
- Systems Analysis
- Low Rank Coal Utilization
- Polygeneration

2. Clean Coal Demonstration and Commercial Projects

- Existing and planned clean coal major demonstrations (process and technology demonstrations, (i.e., CCS, IGCC, SCPC, USC, SNG, CTL, Oxy-combustion, etc.)
- Existing and planned clean coal commercial projects (fully integrated systems) and trends
- Industrial-scale and utility-scale carbon capture and carbon storage projects (i.e., >250,000 tons/year of CO₂), lessons learned from technology, demonstrations and first commercial deployments
- Energy storage demonstrations applicable to medium- and long-term storage of energy from coal and fossil energy systems
- Intermediate-scale demonstrations, (i.e., 25-50 MWe)
- Commercially available technology reviews/updates (vendor reports on advanced technology commercial offerings)
- Financing, business and risk management strategies for major demonstration and commercial projects, including first-of-a-kind projects with or without carbon capture and storage
- Regulatory impacts on major demonstration and commercial projects
- Insurance strategies for CO₂ capture and geologic storage

3. Combustion Technologies

- Industrial applications and environmental Issues
- Flue gas clean up and ash chemistry
- Modeling and economic evaluation
- Combustion technology advancements (Pulverized Coal, Fluidized Beds, Co-Firing, etc.)
- Novel Combustion and Cycle Technologies (Oxyfuel, Chemical looping, CO₂ Cycles, etc.)
- Basic studies, materials, and instrumentation

4. Clean Coal and Gas to Fuels

- Coal-To-Liquids fuels, CTL (Direct Liquefaction, Fischer-Tropsch, MTG, DME, etc.)
- Gas-To-Liquid, GTL
- Synthesis gas cleanup
- Substitute Natural Gas (SNG)
- Hydrogen production
- Syngas to chemicals/materials

5. Carbon Management

- Pre-combustion capture
- Post-combustion capture
- Direct Air Capture (DAC)
- CO₂ sequestration (Monitoring, Mitigation and Verification; Storage: Depleted Oil/Gas Reservoirs, Aquifers, Basalt, Coal Bed Methane, etc.)
- Transportation infrastructure issues
- Legal and regulatory issues
- Carbon dioxide to chemicals/fuels

6. Value-Added Products from Coal

- Nano-carbons
- Fibers
- Composites
- 3D Printing
- Additive Manufacturing
- Electrodes
- Capacitors
- Construction Materials
- Concretes
- Thermal Insulators
- Activated Carbons
- Tars, Cokes and Pitches
- Chemicals
- Covetics and other carbon alloys

7. Energy Storage

- Chemical (Hydrogen, Ammonia, Methanol)
- Thermal (Thermochemical, Sensible, Latent)
- Mechanical (Compressed Air, Pumped Hydro)
- Electrochemical (Batteries: Flow, Li-ion, Lead Acid)
- Other (Geothermal)

8. Clean Hydrogen

- Production
- Transportation
- Storage
- Utilization

9. Coal Bed Methane and Shale Gas

- Geology
- Exploration
- Resources and reserves
- Drilling and production
- Completion methods
- Gas quality and processing
- Environmental impacts
- Abating methane emissions from gas and coal production
- Economics and future outlook

10. Power Plants

- Thermodynamic and economic analysis
- Boiler technology and design
- Steam turbine technology (reheat, regeneration, steam seals, blade aerodynamics)
- Gas turbines technology (syngas or hydrogen-rich combustion, compressor aerodynamics, turbine blade heat transfer, materials)

Program Topics (cont.)

- Heat Recovery Steam Generator (HRSG)
- Condenser design and operation
- Cooling tower design and improvements
- Water treatments
- Post combustion gas cleaning
- IGCC integration and components (ASU, gasifiers, syngas cooling, gas clean up, water- gas-shift, and desulfurization)
- Oxy-fuel combustion plants
- Organic Rankine Cycle (ORC)
- Combined Heating and Power (CHP)
- Energy storage (CAES, ice)
- Power plants operation and maintenance experiences
- Any other or innovative new cycles

11. Critical Minerals and Rare Earth Elements (REE) in Fossil Fuel Derived Solids and Liquids

- Critical minerals and rare earth elements in coal and petroleum fuels
- Critical mineral and rare earth element chemistry in power systems
- Mining waste
- Fly ash and slag
- Separation methods
- Rare earth geochemistry
- Measurement and characterization: challenges and solutions
- Modeling
- Mining and recovery methods in industry
- Status of supply and trade
- Emerging issues

12. Coal Ash Management

- Ash pond reclamation
- Extension of landfills over ash ponds
- Long-term recovery of materials from ash ponds

- Secondary uses of closed ash ponds
- Coal Combustion Residuals (CCRs) landfill management
- Beneficial uses of CCRs
- Critical mineral and rare earth element extraction from CCRs
- Role of CCRs for CO₂ storage

13. Coal Science

- Chemistry
- Geoscience/coal resources
- Trace elements/emission
- Coal processing
- Coal preparation
- Coal utilization
- Coal utilization by-products (Ash, Fertilizers, etc.)

14. Coal Mining, Preparation, and Handling

- Coal seam and coal mine methane/gas management in coal mines
- Geological issues related to coal mining/properties of coal-measure, rocks/ground behavior
- Coal mining and reclamation
- Mine safety

15. Sustainability and Environment

- Energy production and water use – conservation and recycle
- Life Cycle Analysis (LCA) or Energy Production Systems (EPS)
- Energy production and the environment
- Energy sustainability – efficiency and conversation to reduce GHG
- GHG, inventory protocol, legal and regulatory considerations, credits

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