



# Fortieth Annual INTERNATIONAL PITTSBURGH COAL CONFERENCE

University of Pittsburgh · Swanson School of Engineering

## TECHNICAL PROGRAM

### Technology Innovation and Solutions for Clean Energy



**TÜYAP Exhibition and Convention Center, Istanbul, TÜRKİYE**  
**October 4-6, 2023**



Hosted by:



REPUBLIC OF TÜRKİYE  
MINISTRY OF ENERGY AND  
NATURAL RESOURCES



University of  
Pittsburgh



Turkish Mining  
Development Foundation

İTÜ



**WELCOME!**

On behalf of the Conference Advisory Board, Conference Committees, and the University of Pittsburgh, we welcome you to the Fortieth Annual International Pittsburgh Coal Conference (PCC-2023), which will be held October 4 - 6, 2023, in Istanbul, Turkey at TÜYAP Exhibition and Convention Center. The Conference is hosted by the Republic of Türkiye Ministry of Energy and Natural Resources, the General Directorate of Turkish Coal Enterprise (TKI), Ankara, the Turkish Mining Development Foundation, the Istanbul Teknik Universitesi (İTÜ), and the University of Pittsburgh, PA, USA.

The theme of this year’s conference “Technology Innovation and Solutions for Clean Energy” covers wide spectrum of important topics on energy and environmental issues and technologies, which are directly related to extraction and utilization of coal and its byproducts. Over 112 technical papers and posters will be presented at the conference. The Poster Session will be held on Wednesday, October 4, 2023 from 18:00 to 19:30. For detailed information about the technical sessions, please turn to page 8 in the Technical Program.

This year’s invited Plenary Speakers are (1): Dr. Brian Rickett, General Secretary, EUROCOAL; Mr. Don Stevenson, Vice President, Energy Supply & Conversion GTI Energy, USA; Asso. Prof. Sohbət Karbuz, Director, Hydrocarbons and Energy Security, OME, France; Mrs. Ayşe Tarakçıođlu, Chief of ArGe Department, Turkish Coal Enterprise; Prof. Johan van Dyk, Technical Specialist, Research & Engineering, Technology Development GTI Energy, USA; Dr. Jonathan Menk, Design Engineer, Siemag Techberg; Prof. Dr. İskender Gökalg, President Advisor, Scientific and Technological Research Council of Türkiye Marmara Research Center; Dr. Peiqian Yu, Manager of COE of Coal-based Olefin Polymerization, National Institute of Clean-and-Low-Carbon Energy (NICE), Beijing, China; Dr. Paul Baruya, Director, Strategy and Sustainability, World Coal Association; Dr. Satya Chauhan, Senior Program Director, Battelle, USA; Prof. Sarma Pisupati, Director, Center for Critical Minerals - College of Earth and Mineral Sciences-EMS Energy Institute Center for Critical Minerals - College of Earth and Mineral Sciences - Energy Institute, University Park, PA, USA; and Dr. Ahmed Aboudheir, President, Aboudheir Consulting Ltd., Regina, Canada.

We express our sincere gratitude to the Plenary Speakers and Moderators for their support and involvement, to all the authors and co-authors of the technical papers and to all the members of the Technical Program Committee. Special thanks go to the topic coordinators, co-chairs and speakers for their invaluable contributions to the PCC-2023 technical program.

As the chair of the Advisory Board of the Conference, I deeply appreciate your participation and interest in this year’s Conference and we invite you to join us next year for the Forty-first Annual International Pittsburgh Coal Conference in Pittsburgh, PA, USA.

Sincerely,

Massood Ramezan, Chair



Senior Technical Advisor at Key Logic Systems, USA

**CONFERENCE**  
**REGISTRATION**

On-Site Registration will begin Tuesday from 08:00 to 20:00 and will continue Wednesday and Thursday from 08:00 to 20:00 and Friday from 08:00 to 15:00.

**Please check in even if you have  
Pre-Registered!**

**THE INTERNATIONAL PITTSBURGH COAL**  
**CONFERENCE**

**EXECUTIVE DIRECTOR:**

Dr. Badie I. Morsi

**CONFERENCE OFFICE:**

University of Pittsburgh, Swanson School of Engineering  
940 Benedum Hall, Pittsburgh, PA 15261 USA  
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Yön Process Filtration Co.

# GENERAL INFORMATION

## CONFERENCE OVERVIEW

### TUESDAY, OCTOBER 3, 2023

REGISTRATION	08:00 - 20:00
WELCOME COCKTAIL	18:30 - 21:00

### WEDNESDAY, OCTOBER 4, 2023

REGISTRATION	08:00 - 20:00
OPENING CEREMONY	10:00 - 11:15
OPENING OF EXHIBITION	11:15 - 12:00
LUNCH	12:00 - 14:00
PLENARY SESSION	14:00 - 15:45
COFFEE BREAK	15:45 - 16:00
CONCURRENT TECH. SESSIONS	16:00 - 18:00
POSTER SESSIONS	18:00 - 19:30
DINNER	19:30 - 21:30

### THURSDAY, OCTOBER 5, 2023

REGISTRATION	08:00 - 20:00
PLENARY SESSION	09:00 - 10:45
COFFEE BREAK	10:45 - 11:00
CONCURRENT TECH. SESSIONS	11:00 - 12:20
LUNCH	12:20 - 14:00
PLENARY SESSION	14:00 - 15:45
COFFEE BREAK	15:45 - 16:00
CONCURRENT TECH. SESSIONS	16:00 - 18:00
GALA DINNER	19:30 - 21:30

### FRIDAY, OCTOBER 6, 2023

REGISTRATION	08:00 - 15:00
PLENARY SESSION	09:00 - 10:45
COFFEE BREAK	10:45 - 11:00
CONCURRENT TECH. SESSIONS	11:00 - 12:20
LUNCH	12:20 - 14:00
CONCURRENT TECH. SESSIONS	14:00 - 15:20
CLOSING CEREMONY	15:20 - 15:40
COFFEE BREAK AND ADJOURN	15:20 - 15:40

## DAILY TECHNICAL TOUR

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:

**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



# GENERAL INFORMATION

## PLENARY SPEAKERS

**WEDNESDAY, OCTOBER 4, 2023**

**(14:00 - 14:30) Dr. Brian Rickett**  
EUROCOAL  
General Secretary

**“Coal, Lignite and Mine Methane Under  
EU Climate and Energy Policy”**

**(14:30 - 15:00) Mr. Don Stevenson**  
Vice President, Energy Supply & Conversion GTI Energy  
|solutions that transform|

**“Does Coal have a Future in a Decarbonized  
Global Energy System?”**

**(15:00 - 15:30) Asso. Prof. Sohbet Karbuz**  
Hydrocarbons and Energy Security  
Director, OME, France

**“Fueling the future: What's ahead  
for fossil fuels?”**

**(15:30 - 15:45) Q&A**

**THURSDAY, OCTOBER 5, 2023**

**(09:00 - 09:30) Mrs. Ayşe Tarakçıoğlu**  
Chief of ArGe Department, Turkish Coal Enterprise

**“Coal Industry of Türkiye and  
Clean Coal Technologies”**

**(09:30 - 10:00) Prof. Johan van Dyk**  
Technical Specialist Research & Engineering, Technology  
Development GTI Energy |solutions that transform|

**“The importance of coal in southern-Africa –  
A techno-political view“**

**(10:00 - 10:30) Dr. Jonathan Menk**  
Siemag Techberg  
Design Engineer

**“Inclined Shaft with Person Transportation”**

**(10:30 - 10:45) Q&A**

**(14:00 - 14:30) Prof. Dr. İskender Gökalp**  
Scientific And Technological Research Council of  
Türkiye Marmara Research Center  
President Advisor

**“Hydrogen Production from Coal”**

**(14:30 - 15:00) Dr. Peiqian Yu**

National Institute of Clean-and-Low-Carbon Energy  
(NICE)  
P. O. Box 001 NICE, Future Science & Technology City,  
Changping District, Beijing 102209, P. R. China

**“Development of Coal-based Olefin Polymerization  
Technology at NICE”**

**(15:00 - 15:30) Dr. Paul Baruya**  
World Coal Association  
Strategy and Sustainability Director

**“Energy Security and a Vision for Coal  
in a Net Zero Future”**

**FRIDAY, OCTOBER 6, 2023**

**(09:00 - 09:30) Dr. Satya Chauhan**  
Battelle, USA

**“Biobased Hydrogen-Donor Solvents to Upgrade Coal  
and heavy Hydrocarbons ”**

**(09:30 - 10:00) Prof. Sarma V. Pisupati**  
Professor of Energy and Mineral  
Engineering and Chemical Engineering  
Director, Center for Critical Minerals - College of Earth  
and Mineral Sciences- EMS Energy Institute  
407 Academic Activities Building  
University Park, PA 16802, USA

**“Is sustainable energy transition possible without  
sustainable mineral supply? ”**

**(10:00 - 10:30) Dr. Ahmed Aboudheir**  
Aboudheir Consulting Ltd., Royal Bank Building,  
2010 – 11th Avenue, 7th Floor, Regina, SK, S4P 0J3,  
Canada

**“Feasible and Proven Solutions for Decarbonizing  
Existing Coal Power Plants by Bulck Removal of CO<sub>2</sub>  
from Flue Gases “**

**(10:30 - 10:45) Q&A**

## POSTER SESSIONS

**WEDNESDAY, OCTOBER 4, 2023**

**(18:00 - 19:30) Istanbul Ballroom**

**See page 9**

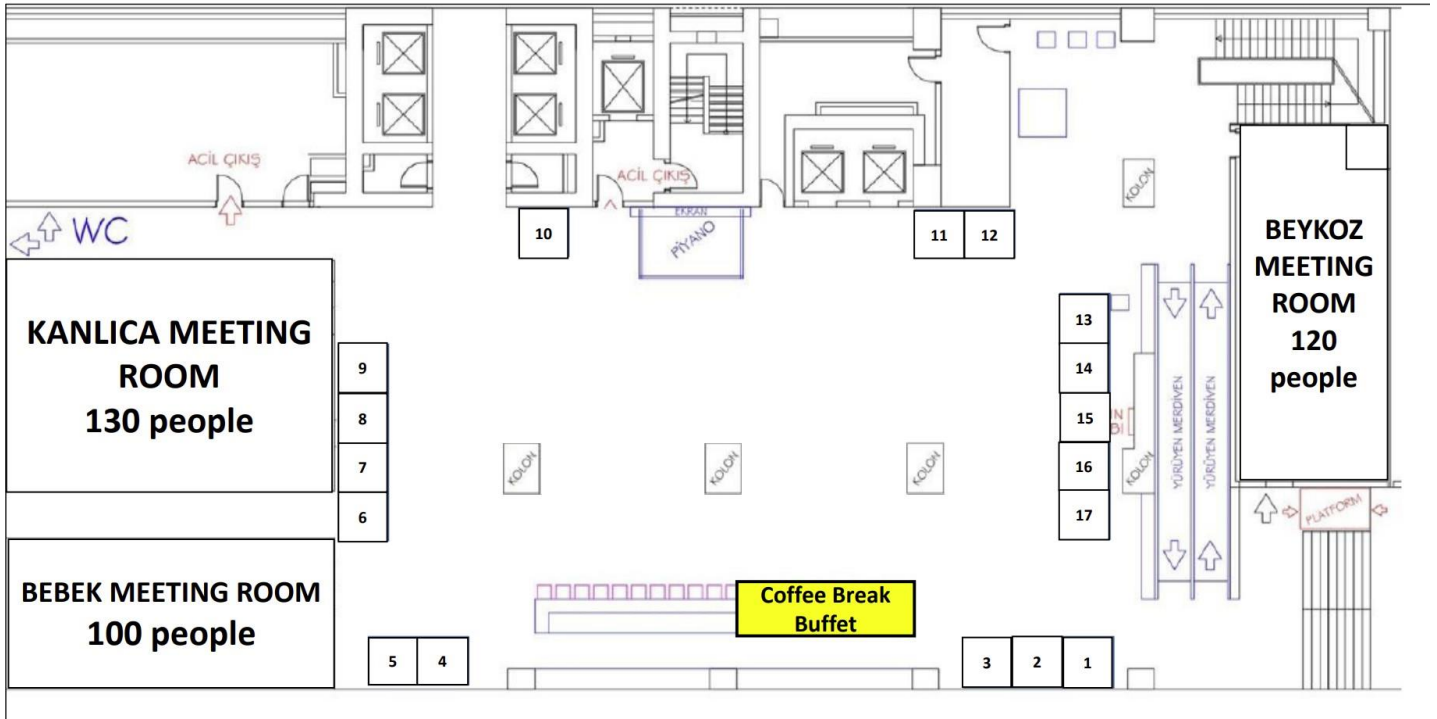
# PROGRAM SCHEDULE

10/3/2023	18:30 - 21:00	Welcome Cocktail				
Wednesday 10/4/2023	10:00 - 11:15	Opening Ceremony				
	11:15 - 12:00	Opening of Exhibition				
	12:00 - 14:00	Lunch				
	14:00 - 14:30	Plenary - 1	Dr. Brian Rickett	In-person	Istanbul Ballroom	
	14:30 - 15:00	Plenary - 2	Mr. Don Stevenson	In-person		
	15:00 - 15:30	Plenary - 3	Asso. Prof. Sohbet Karbuz	Online		
	15:30 - 15:45	Q&A				
	15:45 - 16:00	Coffee break				
			Room - 1	Room - 2	Room - 3	Room - 4
	16:00 - 16:20	1	Session (1) Gasification Technologies - 1	Session (2) Value-Added Products from Coal - 1	Session (3) Coal Science - 1	Session (4) Coal Mining - 1
	16:20 - 16:40	2				
	16:40 - 17:00	3				
	17:00 - 17:20	4				
	17:20 - 17:40	5				
	17:40 - 18:00	6				
18:00 - 19:30	Poster sessions					
19:30 - 21:30	Dinner					
Thursday 10/5/2023	9:00 - 9:30	Plenary - 4	Mrs. Ayşe Tarakçıoğlu	In-person	Istanbul Ballroom	
	9:30 - 10:00	Plenary - 5	Prf. Johan van Dyk	In-person		
	10:00 - 10:30	Plenary - 6	Dr. Jonathan Menk	In-person		
	10:30 - 10:45	Q&A				
	10:45 - 11:00	Coffee break				
			Room - 1	Room - 2	Room - 3	Room - 4
	11:00 - 11:20	1	Session (5) Gasification Technologies - 2	Session (6) Value-Added Products from Coal - 2	Session (7) Clean Coal Demonstration	Session (8) Coal Mining - 2
	11:20 - 11:40	2				
	11:40 - 12:00	3				
	12:00 - 12:20	4				
	12:20 - 14:00	Lunch				
	14:00 - 14:30	Plenary - 7	Prof. Dr. İskender Gökalp	In-person	Istanbul Ballroom	
	14:30 - 15:00	Plenary - 8	Dr. Peiqian Yu	In-person		
	15:00 - 15:30	Plenary - 9	Dr. Paul Baruya	Online		
	15:30 - 15:45	Q&A				
15:45 - 16:00	Coffee break					
		Room - 1	Room - 2	Room - 3	Room - 4	
16:00 - 16:20	1	Session (9) Carbon & Coal Ash Management	Session (10) Value-Added Products from Coal & Combustion Technologies - 1	Session (11) Coal Science - 2	Session (12) Coal Bed Methane and Shale Gas & Clean Hydrogen	
16:20 - 16:40	2					
16:40 - 17:00	3					
17:00 - 17:20	4					
17:20 - 17:40	5					
17:40 - 18:00	6					
19:30 - 23:30	Gala Dinner					
Friday 10/6/2023	9:00 - 9:30	Plenary - 10	Dr. Satya Chauhan	In-person	Istanbul Ballroom	
	9:30 - 10:00	Plenary - 11	Prof. Sarma V. Pisupati	In-person		
	10:00 - 10:30	Plenary - 12	Dr. Ahmed Aboudheir	In-person		
	10:30 - 10:45	Q&A				
	10:45 - 11:00	Coffee break				
			Room - 1	Room - 2	Room - 3	Room - 4
	11:00 - 11:20	1	Session (13) Clean Coal and Gas to Fuels - 1	Session (14) Combustion Technologies - 2	Session (15) Rare Earth Elements - 1	Session (16) Coal Mining - 3
	11:20 - 11:40	2				
	11:40 - 12:00	3				
	12:00 - 12:20	4				
	12:00 - 14:00	Lunch				
			Room - 1	Room - 2	Room - 3	Room - 4
	14:00 - 14:20	1	Session (17) Clean Coal and Gas to Fuels - 2 & Power Plants	Session (18) Sustainability & Environment	Session (19) Rare Earth Elements - 2	
	14:20 - 14:40	2				
	14:40 - 15:00	3				
15:00 - 15:20	4					
15:20 - 15:40	Closing Ceremony					
15:40	Coffee Break and adjourn					

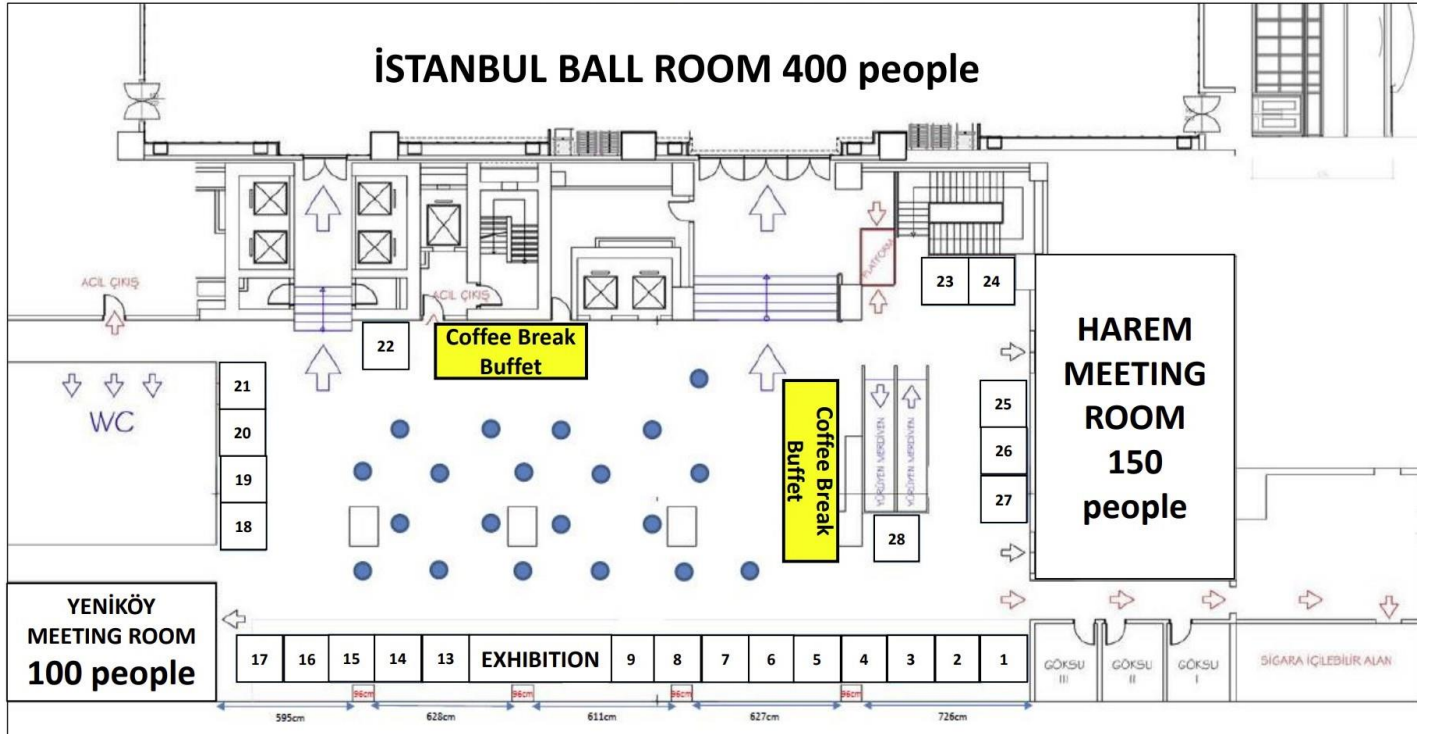
# CONFERENCE VENUE

**TÜYAP Exhibition and Convention Center**  
**Address: 34500 Büyükçekmece/Istanbul, TÜRKİYE**

## FIRST FLOOR



## SECOND FLOOR



# TECHNICAL PROGRAM

## ORAL SESSIONS

Wednesday, October 4

16:00-18:00

### SESSION 1

#### GASIFICATION TECHNOLOGIES – 1

*Dr. Aleksander Sobolewski, Prof. Dr. Hasan Can Okutan*

**16:00 - 16:20 Development and Characterization of Densified Biomass-plastic Blend for Entrained Flow Gasification**, Kunlei Liu, Jameson Hunter, Dimitrios Koumoulis, Heather Nikolic, University of Kentucky, USA.

**16:20 - 16:40 Pressurized Gasification of Low Rank Turkish Coal in A Pilot Scale Bubbling Fluidized Bed Reactor with Air, Oxygen and Steam Agents and Syngas Cleaning**, Ersin Üresin, Emir Aydar, Ömer Orçun Er, Fehmi Akgün, Hakan Karataş, Namık Ünlü, Tahsin Bahar, Mahmut Ateş, Bayram Subaşı, Orhan Koşdaş, Mert İskenderoğlu, TÜBİTAK Marmara Research Center, Clean EnergyTechnologies Research Group, TÜBİTAK Marmara Research Center, Hydrogen and Fuel Cell Technologies Research Group, TKİ, General Directorate of Turkish Coal Enterprises.

**16:40 - 17:00 An Experimental Study on Underground Coal Gasification of Soma Basin Coals**, Muharrem Hilmi Çevik, Anıl Soylu, İsmail Hakkı Sarıçam, Samet Bozdoğan, Murat Çınar, Abdullah Fişne, Istanbul Technical University, Turkish Petroleum Corporation.

**17:00 - 17:20 Synthesis Gas Production From Eskişehir Alpu Lignite Reserve with Underground Coal Gasification: Techno-Economic Assessments**, Hasan Can Okutan, Alper Sarıoğlu, ITU Synthetic Fuels and Chemicals Technology Center, Istanbul/TÜRKİYE.

**17:20 - 17:40 Feasibility of Methane Production from Elbistan Lignite Using Termite Enzymes: A Numerical Analysis**, Cemil Koyunoğlu, Yalova University, Ahmet Arısoy, Istanbul Technical University, TÜRKİYE.

### SESSION 2

#### VALUE-ADDED PRODUCTS FROM COAL - I

*Dr. Ahmed Aboudheir, Mr. Ayhan Kandemir*

**16:00 - 16:20 Upgraded Coal and Coal Waste to Graphite for Lithium-Ion Battery Applications**, Alexander Azenkeng, Nicholas E. Stanislawski, Jason D. Laumb, University of

North Dakota Energy & Environmental Research Center, USA.

**16:20 - 16:40 Novel Processes for Converting Coal to High-Value and Lower Carbon-Footprint Products**, Satya P. Chauhan, Dan Garbark, Jeff Cafmeyer, Battelle Memorial Institute, USA.

**16:40 - 17:00 Novel PRB Coal based asphalt**, Jeramie J. Adams, L.C. Muller, T.I. Pfeiffer, R. Horner, P. Behrens, J.-P. Planche, Y. Kumbargerı, J. Rovani, University of Wyoming, USA.

**17:00 - 17:20 Is It Time to Utilize Coal as Value Added Material: Carbon Fiber**, M.F. Can, A. Kılıç, A. Sarıoğlu, F. Boylu, S. Gürmen, H. Okutan, M.S. Çelik, Afyon Kocatepe University, Istanbul technical University, TÜRKİYE.

**17:20 - 17:40 General Directorate of Turkish Coal Enterprises Leonardite Projects**, Murat KURT, Turkish Coal Enterprises, TÜRKİYE.

**17:40 - 18:00 Development Studies for Construction Chemicals Using Humic Acid**, Özlem Akalın, PLUSTECHNO Consultancy & Construction Chemicals Ltd., Sibel Yılmaz, TUBITAK Marmara Research Center, Chemical Process Technologies Research Group, Hamza Cin, TUBITAK Marmara Research Center, Betül Özdemir, PLUSTECHNO Consultancy & Construction Chemicals Ltd., Büşra Ünal, General Directorate of Turkish Coal Enterprises (TKİ), Department of R&D and New Technologies, Şerife Sarıoğlu, Assoc. Prof. Dr., TUBITAK Marmara Research Center, Hasan Hüseyin ERDOĞAN, Dr., General Directorate of Turkish Coal Enterprises (TKİ), İffet Yakar Elbeyli, Assoc. Prof. Dr., TUBITAK Marmara Research Center, Türkiye.

### SESSION 3

#### COAL SCIENCE – 1

*Prof. Atsushi Ishihara, Prof. Dr. Mehmet Sabri Çelik*

**16:00 - 16:20 Comparing of the Estimation Reserve Results with after Mining Operation Rom Results in Çivilicam Open Pit Panel in Garp Lignite Enterprise**, Mehmet OSKAN, Aycan CATAL, Kazım BAŞKAYA, Ceren DEMİR, Ali BORA, Turkish Coal Enterprises, TURKIYE.

**16:20 - 16:40 Uysal Madencilik – CS ARGE Coal Drying Plant Project**, Bahadır KOCABIYIK, CS ARGE INC, Cihan DEMİRTAŞ, UYSAL MADENCİLİK INC, TURKIYE.

**16:40 - 17:00 The Design and Performance Study of a Coal Sorting Machine Using X-Ray Technology**, Erdem KAZAN, Soner AKIN, CS ARGE INC, TURKIYE.

**17:00 - 17:20 Pilot Scale Allair Jig Application on Some Turkish Coals**, Feridun Boylu, Yusuf Enes Pural, Fatma Arslan, Mehmet S. Çelik, Istanbul Technical University, TÜRKİYE.

**17:20 - 17:40 Chemical Desulfurization of Low-Rank Muğla-Yatağan and Kütahya-Tunçbilek Lignites**, Figen Gündüz, Hüseyin Karaca, Inonu University, TÜRKİYE.

**17:40 - 18:00 A Study on Efficient Energy Utilization in Grinding**, Barış AKKAYA, İhsan TOROĞLU, Mehmet BİLEN, Zonguldak Bülent Ecevit University, TÜRKİYE.

### SESSION 4

#### COAL MINING, PREPARATION, AND HANDLING - 1

*Mr. Francis Lau, Prof. Dr. Feridun Boylu*

**16:00 - 16:20 Astec Osborn Coal Processing Equipment and Case Study of Kangal Power Plant's Crushing and Screening System**, Oguzhan TOPRAK, Astec Industries, USA.

**16:20 - 16:40 Future Mining Technology - Advanced Monitoring and Control in Coal Mining with Smart Helmets**, Cem CAN, Mining Engineer, Turkish Coal Enterprise, Ankara, TÜRKİYE.

**16:40 - 17:00 An Assessment of Direct Gas Content Measurement Techniques on Asphaltite Samples**, Anıl Soylu, Samet Bozdoğan, Abdullah Fişne, Istanbul Technical University, Türkiye.

**17:00 - 17:20 Bitumen and Bituminous Gravel Reserves in Albania**, EkitaToska, National Agency of Natyral Resources, ALBANIA; Genc Demi, Rr. Elbasanit, ALBANIA; Kimet Fetahu, Rr. Elbasanit, ALBANIA.

**17:20 - 17:40 Innovations In Mine Safety Technology For Coal Mines**, Cem CAN, Turkish Coal Enterprise, TÜRKİYE.

**17:40 - 18:00 Projecting High Faced Mechanized Longwall Panels at Çayırhan Underground Mines**, Faik USTABAŞ, Çayırhan Lignite Plant Mining Operations Manager, KİAŞ, TÜRKİYE; Murat KUMRU, Umut Ramis ÜNAL, Doğan BAYER, Çayırhan Lignite Plant, KİAŞ, TÜRKİYE.



# TECHNICAL PROGRAM

## POSTER SESSIONS

Wednesday, October 4

18:00 - 19:30

### GT: GASIFICATION TECHNOLOGIES

**GT-P1 Underground coal gasification for a low-carbon future: San Juan, La Guajira, Colombia,** Ilker Senguler, YILDIRIM Group of Companies, Türkiye; Margaret Munoz, Oscar Saavedra, Marco A. Orozco, Best Coal Company, COLOMBIA; Baris Elci, Onur Karakaya, Sevkett Erol, Yildirim Group of Companies/Yilmaden Holding, TÜRKİYE.

**GT-P2 Effect of particle morphology of coal gasification fine slag on collector adsorption and flotation,** Mo Chua, Xu Shi, Yanyu Liu, China University of Mining & Technology (Beijing), CHINA.

**GT-P3 Effect of modes of occurrence on release behavior of mercury during pyrolysis of low-rank coal,** Lingmei Zhou, Li Chu, Hao Zheng, Yingjie Zhao, China University of Mining and Technology-Beijing, CHINA; Xiaobing Wang, Kunlun Digital Technology Co., Ltd Beijing, CHINA.

**GT-P4 Computational Fluid Dynamics Study on Coal Combustion and Gasification,** Cemil Koyunoğlu, Yalova University, Mustafa Tolay, Bilgi University, TÜRKİYE.

### CM: CARBON MANAGEMENT

**CM-P1 A laboratory study on improving coal seam permeability with NaOH to enhance CO<sub>2</sub> sequestration,** Theodora Noely Tambaria, Kyushu University, JAPAN; Yuichi Sugai, Kyushu University, JAPAN.

**CM-P2 Using AI for Predicting TEA of the CO<sub>2</sub> Capture Process in Precombustion Applications,** Husain Ashkanani, Kuwait University; Rui Wang, University of Pittsburgh; Wei Shi, Nicholas Siefert, Kathryn Smith, Robert L. Thompson, Janice A. Steckel, Isaac K. Gamwo, David Hopkinson, Victor A. Kusuma, U.S. Department of Energy, National Energy Technology Laboratory; Badie Morsi, University of Pittsburgh, USA.

**CM-P3 TEA of the CO<sub>2</sub> Capture Process in SMR-CCS Applications,** Rui Wang, University of Pittsburgh; Husain Ashkanani, Kuwait University; Wei Shi, Nicholas Siefert, Kathryn Smith, Robert L. Thompson, Janice A. Steckel, Isaac K. Gamwo, David Hopkinson, Victor A. Kusuma, U.S. Department of Energy, National Energy Technology Laboratory; Badie Morsi, University of Pittsburgh, USA.

### CAM: COAL ASH MANAGEMENT

**CAM-P1 Nu-Rock "Engineered Rock" Process Converts All Ash from Coal Fired Power Stations into A Usable Product and Abates Carbon Dioxide Emissions and Uses 12% of the Embodied Energy of A Concrete Product or Clay Fired Product,** Maroun George M. Rahme, Managing Director & founder of Nu-Rock Technology. Mt. Piper Power Station -350 Boulder Rd. Portland NSW Australia.

**CAM-P2 Investigation of Coal Grindability (Hgi) and Ash Fusibility (AFT),** Mehmet BİLEN, Sait KIZGUT, İhsan TOROĞLU, Serdar YILMAZ, Barış AKKAYA, Zonguldak Bülent Ecevit University, TURKIYE.

### CS: COAL SCIENCE

**CS - P1 Evaluation of Coal Tailings (Coal Slimes) Obtaining from Lignite Washery,** Yunus Emre ÇAVDAR, Mustafa ÖZER, Mustafa ÖZER, Istanbul Technical University, Mineral Processing Engineering Department, TÜRKİYE

**CS - P2 Distribution Characteristics of Heavy Metals and Sulfur in Magnetized Coal Char During Pyrolysis,** Chu Mo, China University of Mining and Technology (Beijing), CHINA.

**CS - P3 Classification Of Mabesekwa and Masama Coals and Determination of Their Chemical Formulae,** Mmoloki Makoba, Paul S. Agachi, Tirivaviri Mamvura, Botswana International University of Science & Technology, BOTSWANA.

### CMN: COAL MINING, PREPARATION, AND HANDLING

**CMN-P1 Psychosocial Studies in The Workplaces of Turkish Coal Enterprises,** Fatih Han KUŞDİL, Turkish Coal Enterprises, TÜRKİYE; Hatice ÖNCÜ, Turkish Coal Enterprise, TÜRKİYE;

**CMN-P2 Characterization Study of Overburden Materials in Coal Mining Activities,** Ferda BAYRAK, Ayhan KANDEMİR, Serdar FİDANCI, Şebnem ALPAY, Turkish Coal Enterprises, TÜRKİYE.

**CMN-P3 Main Albanian Coal Deposits,** Genc Demi, Kimet Fetahu, Ekita Toska, Rr. Elbasanit, ALBANIA.

**CMN-P4 Investigating the Evolutionary Trajectory of Cognitive Workload in Hazardous Decision-Making Tasks among Coal Mine Operators Following the Deprivation of Artificial Intelligence Support,** Zeyuan Xiao, Shuicheng Tian, Xi'an University of Science and Technology, CHINA.

**CMN-P5 Emergency Preparations in Mines, Activities of Turkish Coal Enterprise within the Scope of Emergency Preparations and Examples of Exercises,** Seyyit Ahmet ŞİMŞEK, Mining Engineer, Turkish Coal Enterprise, Ankara, TÜRKİYE .

**CMN-P6 Inclusion of Slurry Coals into Fuel Category and The Standardization Process,** Şebnem ALPAY, Ayhan KANDEMİR, Serdar FİDANCI, Turkish Coal Enterprises, TÜRKİYE .

### VA: VALUE-ADDED PRODUCTS FROM COAL

**VA-P1 Pozzolanic Activity of Fly Ash and Bottom Ash by Fratini Test and Electrical Conductivity Test,** Klára Pulcová, Tomáš Doležal, Martina Kohoutková, Martina Šídlová, University of Chemistry and Technology Prague, CZECH REPUBLIC; Rostislav Šulc, Czech Technical University in Prague, CZECH REPUBLIC

**VA-P2 Effect of CaO Content on the Elimination of Alkaline-Silica Reaction Of Mortars with The Addition Of FBC Ash ,** Šídlová Martina, University of Chemistry and Technology Prague, CZECH REPUBLIC; Mauermann Lukáš, University of Chemistry and Technology Prague, CZECH REPUBLIC; Šulc Rostislav, Czech Technical University in Prague, CZECH REPUBLIC; Karolína Králová MSc, University of Chemistry and Technology Prague, CZECH REPUBLIC; Petr Formáček MSc, Czech Technical University in Prague, CZECH REPUBLIC.

**VA-P3 Concrete with A High Admixture Content of Modified Fly Ash,** Cech Jan, Czech Technical University in Prague, CZECH REPUBLIC; Šulc Rostislav, Czech Technical University in Prague, CZECH REPUBLIC; Šídlová Martina, University of Chemistry and Technology Prague, CZECH REPUBLIC; Formáček Petr, Czech Technical University in Prague, CZECH REPUBLIC.

**VA-P4 Possibilities of Partial Replacement of Cement with Sulfocalcic Binder Based On FBC Ash,** Konvalinka Jan, Czech Technical University in Prague, CZECH REPUBLIC; Šulc Rostislav, Czech Technical University in Prague, CZECH REPUBLIC; Šídlová Martina, University of Chemistry and Technology Prague, CZECH REPUBLIC; Formáček Petr, Czech Technical University in Prague, CZECH REPUBLIC.

**VA-P5 Study of the Alkali-Silica Reaction of Mortars with the Addition of Modified FBC Ash ,** Karolína Králová, University of Chemistry and Technology Prague, CZECH REPUBLIC; Šídlová Martina Ph.D., University of Chemistry and Technology Prague, CZECH REPUBLIC; Mauermann Lukáš, University of Chemistry and

# TECHNICAL PROGRAM

Technology Prague, CZECH REPUBLIC;  
Pulcová Klára, University of Chemistry and  
Technology Prague, CZECH REPUBLIC; Šulc  
Rostislav, Czech Technical University in  
Prague, CZECH REPUBLIC

## PP: POWER PLANTS

**PP-P1 Effects of Water Content in Coal and Feed Gas on Self-Heating**, Kiyoshi Sakuragi, Akimasa Yamaguchi, Kazuki Hashimoto, Maromu Otaka, Central Research Institute of Electric Power Industry, JAPAN.

## GF: CLEAN COAL AND GAS TO FUEL

**GF-P1 Batch Reactor Modeling and Simulation by MATLAB for Clean Coal Technologies: First and Second Order Kinetic Modelling Approaches**, Mikail Olam, Figen Gündüz, Inonu University, TÜRKİYE; Cemil Koyunoğlu, Yalova University, TÜRKİYE; Hüseyin Karaca, Prof. Inonu University, TÜRKİYE.

**GF-P2 Coal-Algae Liquefaction: A Sustainable Pathway to Renewable Biofuels**, Figen Gündüz, Mikail Olam, Inonu University, TÜRKİYE; Cemil Koyunoğlu, Yalova University, TÜRKİYE; Hüseyin Karaca, Prof. Inonu University, TÜRKİYE.

## SUSTAINABILITY & ENVIRONMENT

**SE-P1 At The Business Directorates Affiliate of TKI Socio-Economic Impact Analysis of Coal Mining Activities**, Esra İNCE ÖZSOY, Ayhan KANDEMİR, Serdar FİDANCI, Şebnem ALPAY, Turkish Coal Enterprises, TÜRKİYE.

**SE-P2 Within the Scope of TKI/GLI Coal Mining Activities Underground and Well Water Wastewater Treatment Plant**, Onur Fevzi KEVENLİK, Ayhan KANDEMİR, Serdar FİDANCI, Şebnem ALPAY, Turkish Coal Enterprises, TÜRKİYE.

**SE-P3 TKİ Çanakkale/ÇAN Regional Villages Beekeeping Activities and The Social Responsibility Project of Supporting Organic Lavender Honey Production**, Yıldız Aysen SEZER, Ayhan KANDEMİR, Serdar FİDANCI, Şebnem ALPAY, Turkish Coal Enterprises, TÜRKİYE.

## ORAL SESSIONS

Thursday, October 5

11:00-18:00

### SESSION 5

#### GASIFICATION TECHNOLOGIES – 2

*Prof. Johan Van Dyk, Prof. Dr. Hasan Can Okutan*

**11:00 - 11:20 Thermodynamic Modelling of Inorganic Components In Coal, Municipal Solid Waste And Biomass for Clean Energy Production In Gasification**, JC van Dyk, GTI Energy, SOUTH AFRICA, T Eastland, USA, S Petersen, GTT-Technologies, GERMANY.

**11:20 - 11:40 Real-Time Feedstock Analysis for Gasification Control**, JC van Dyk, GTI Energy, SOUTH AFRICA, T Eastland, Zach El Zahab, GTI Energy, USA, C Romero, Lehigh University, USA, R de Saro, Energy Research Company, USA.

**11:40 - 12:00 Geochemical Assessment of Coal Relics from Underground Coal Gasification**, Lele Feng, China University of Mining and Technology, SOUTH AFRICA.

**12:00 - 12:20 Effect Of Microwave Irradiation on The Gas Production Performance of Underground Coal Gasification**, Lele Feng, China University of Mining and Technology, CHINA .

### SESSION 6

#### VALUE-ADDED PRODUCTS FROM COAL - 2

*Dr. Ahmed Aboudheir, Prof. Dr. Gülay Bulut*

**11:00 - 11:20 Valorization of Ttk Armutçuk Region Coal by Transforming It into High Value-Added Products**, Faik ALP, TTK Armutçuk Müessesesi Müdürü, TURKIYE.

**11:20 - 11:40 Influence Of Platinum Nanoparticle Size on Hydrogenation and C-N Bond Cleavage Performance in Hydrodenitrogenation**, Yi-Fan Xue, Jie Feng, Wen-Ying Li, Taiyuan University of Technology, CHINA

**11:40 - 12:00 HighHigh-Selective Separation of Polycyclic Aromatic Hydrocarbonsf from Coal Tar**, Pengzhi Bei, Jie Feng, Wen-ying Li, Taiyuan University of Technology, CHINA.

**12:00 - 12:20 Molecular Design and Application Investigation for the Preparation of Solar Thermal Fuels from Coal Tar**, Xingtang Xu, Wenjing Chen, Jie

Feng, Wen-Ying Li, Taiyuan University of Technology, CHINA.

### SESSION 7

#### CLEAN COAL DEMONSTRATION AND COMMERCIAL PROJECTS

*Mr. Don Stevenson, Prof. Dr. Murat Olgaç Kangal*

**11:00 - 11:20 Clean Coal Gasification and Hydrogen Production: Sustainable Energy Solutions**, Cemil Koyunoğlu, Yalova University, TÜRKİYE, Mustafa Tolay, Bilgi University, TÜRKİYE.

**11:20 - 11:40 A Sample Feasibility Calculation For A Coal Liquefaction Plant**, Mikail Olam, Figen Gündüz, Inonu University, TÜRKİYE; Cemil Koyunoğlu, Yalova University, TÜRKİYE; Hüseyin Karaca, University, TÜRKİYE.

**11:40 - 12:00 Integrating Bentonite-Enhanced Algae Cultivation for Biobased Fuel Production from High Furnace Flue Gas: A Numerical Case Analysis**, Figen Gündüz, Mikail Olam, Inonu University, TÜRKİYE; Cemil Koyunoğlu, Yalova University, TÜRKİYE; Hüseyin Karaca, University, TÜRKİYE

**12:00 - 12:20 Deep Coupling Technology of Coal Chemical Production with Renewable Energy**, Cliff Y. Guo, National Institute of Clean-and-low-carbon Energy, CHINA.

### SESSION 8

#### COAL MINING, PREPARATION, AND HANDLING - 2

*Mr. Francis Lau, Asso. Prof. Dr. Abdullah Fişne*

**11:00 - 11:20 Hazard Map Application by Using GSI In Polyak Eynez Underground Lignite Mine**, F. Büyükbaş, O. Özyurt, N. Kayabalı, Polyak Eynez, TÜRKİYE; T. Onargan, Dean, Dokuz Eylül Üniversitesi, TÜRKİYE

**11:20 - 11:40 Implementing Three-Product Heavy Medium Cyclones in Turkish Lignite Processing: Operational Insights and Outcomes**, Ahad HARZANAK, Bahadır AKSANI, Teoman ZENGİN, Emrah SERPER, Demir Export A.Ş., TÜRKİYE.

**11:40 - 12:00 A New Approach in Staffing Norm Practices in Mining – TKI Case Study**, Mücella Ersoy, Turkish Coal Enterprises (TKI), TÜRKİYE; Mustafa Öncer, NCR Training and Consultancy, Büyükçekmece-İstanbul, TÜRKİYE.

**12:00 - 12:20 Assessment of Kosovo Coal in the Context of the Western Balkan States**, Habib Basholli, Electro-Energy Corporation of Kosovo, Prishtina, KOSOVO; Kimet Fetahu,

# TECHNICAL PROGRAM

Prof.Ass.Dr. Faculty of Geology and Mines, Rr. Elbasanit, Tirana, ALBANIA; Rina Basholli, University of Sheffield, USA.

## SESSION 9

### CARBON & COAL ASH MANAGEMENT

*Asst. Prof. Husain Ashkanani, Asso. Prof. Dr. Mustafa Özer*

**16:00 - 16:20** **Balancing Act for the Developing Countries between the Use of Coal and the Paris Agreement**, Hakan Arden Kahraman, Technical Director, DMT GmbH & Co. KG, Türkiye .

**16:20 - 16:40** **An Improved CO<sub>2</sub> Separation System Based on Compression Theory for Oxy-Fuel Combustion of Coal**, Hasan Can Okutan, ITU Synthetic Fuels and Chemicals Technology Center, TÜRKİYE; Hande Çukurlu, TUBİTAK Marmara Research Center, TÜRKİYE; Barış Oktay, Hüsnü Atakül, Alper Sariođlan, ITU Synthetic Fuels and Chemicals Technology Center, TÜRKİYE

**16:40 - 17:00** **Opportunities For CO<sub>2</sub> Utilization in Coal-to-Methanol Processes: Optimal Design and Performance Evaluation**, Wenjing Chen, Xingtang Xu, Jie Feng, Wen-Ying Li, Taiyuan University of Technology, CHINA.

**17:00 - 17:20** **Sorption Capacity Evaluation of Carbon Dioxide from Flue Gas Mixture using South African Coal Seams**, Lawrence Koech, Kasturie Premllal, Tshwane University of Technology, SOUTH AFRICA.

**17:20 - 17:40** **Utilization of Treated Oil Shale Bottom Ash as A Partial Replacement Concrete Components**, Yaniv Knop, Ariel University, ISRAEL.

**17:40 - 18:00** **Oil Shale Bottom Ash as a Neutralization/Fixation Reagent of Acidic Wastes and the Utilization of Treated Ash as A Partial Substitute to Cement and Aggregates in Industrial Concrete**, Sarit Nov, Shay Barak, Haim Cohen, Yaniv Knop, Ariel University, ISRAEL.

## SESSION 10

### VALUE-ADDED PRODUCTS FROM COAL & COMBUSTION TECHNOLOGIES - 1

*Prof. Johan Van Dyk, Prof. Dr. Abdulkerim Yörükođlu*

**16:00 - 16:20** **Research and Development of Advanced CTL and Product Upgrading Integrated Technology**, Zhuowu Men, Quan Lin, Kui Zhang, Meng Cheng, Weizhen Li, Hai Chang, Huabo Zhao, Yijun Lv, Xiangkun Meng, Yifeng Bu, Tao Wang and Peng Wang, National Institute of Clean-and-Low-Carbon

Energy, Future Science & Technology City, CHINA.

**16:20 - 16:40** **Deep Learning-Based Model for Real-Time Prediction and Control Optimization of NO<sub>x</sub> And NH<sub>3</sub> Concentrations At SCR Outlet**, Hyunbin Jo, Sungkyunkwan University, Republic of Korea; Donghyup Kang, Korea Midland Power Co., Ltd, Republic of Korea; Changkook Ryu, Sungkyunkwan University, Republic of Korea.

**16:40 - 17:00** **Study on the Transformation Behavior of N During Co-Combustion of Coal and Ammonia**, Congming Yu, Dunxi Yu, Huazhong University of Science and Technology, CHINA.

**17:00 - 17:20** **Study on the Digital Twin System of 660MW Ultra Supercritical Circulating Bed Boiler**, Chen Yang, Xiaosheng Wang, Chongqing University, CHINA.

## SESSION 11

### COAL SCIENCE - 2

*Prof. Atsushi Ishihara, Prof. Dr. Fatma Arslan*

**16:00 - 16:20** **Catalytic Effects of Extraneous Mineral Matter on Product Distribution During Pyrolysis of Blends of Highveld Fine Coal Rejects, Its Beneficiated Fractions and Reactive Oxides of Major Coal Minerals**, Katlego Mphahlele, Henry R. Matje, John R. Bunt, North-West University, SOUTH AFRICA.

**16:20 - 16:40** **Cracking Reactivity of ZSM-5 Zeolite Prepared in the Presence of Vietnamese Coal Ash Components**, Atsushi Ishihara, Koki Kunieda, Hung Viet Nguyen, Mie University, Shinya Matsuura, Mie Prefecture Industrial Institute, Tadanori Hashimoto, Mie University, JAPAN.

**16:40 - 17:00** **Using Thermal Analysis TGA/DSC to Determine Coal Properties and the Combustion Behavior of Coals**, Haim Cohen, Aviv Hassid, Ariel University, Mathias Klinger, Steffen Krzack, TU Bergakademie Freiberg, ISRAEL.

**17:00 - 17:20** **Combined Thermogravimetric Analysis (TGA)/ Differential Scanning Calorimetry (DSC) As A Tool for Determination of the Chemical Processes Accompanying the Spontaneous Heating of Coals**, Aviv Hassid, Ariel University, Ariel, Mathias Klinger, Steffen Krzack, TU Bergakademie Freiberg, Haim Cohen, Ariel University, ISRAEL.

**17:20 - 17:40** **Mechanistic Study of Coking Behaviour and Coke Structure Formation under Stamp-Charged Conditions**, Arash Tahmasebi, Salman Khoshk Rish, Ai Wang, Marta De Sousa Felix, University of Newcastle, AUSTRALIA.

**17:40 - 18:00** **Evaluation of Dense Medium Cyclone Performance**, Bahadır KOCABIYIK, Soner AKIN, CS ARGE INC., TÜRKİYE; Cihan DEMİRTAŞ, UYSAL MADENCİLİK INC., TÜRKİYE.

## SESSION 12

### COAL BED METHANE AND SHALE GAS & COAL MINING - 3

*Mr. Don Stevenson, Mr. Dursun Akyürek*

**16:00 - 16:20** **Analysis of Gas Content Determination Methods for Coal Beds in Turke**, Samed Bozdoğan, Anıl Soylu, Abdullah Fişne, Istanbul Technical University, TÜRKİYE

**16:20 - 16:40** **Methane Drainage Application in Polyak Eyzek Lignite Mine**, Hasan N.Kayabalı, F.Büyükbay, O.Özyurt, Polyak Eyzek, TÜRKİYE.

**16:40 - 17:00** **Investigation of the Effectiveness Of Methane Drainage in A Multi-Seam Coal Mine with the Use of Long-Reach Directional Drilling - A Case Study from USCB, Poland**, Wiesław Szott, Małgorzata Słota-Valim, Krzysztof Milek, Piotr Łetkowski, Piotr Rucinski, Oil and Gas Institute - National Research Institute, POLAND

**17:00 - 17:20** **Maliqi Peats, Their Reserves and Energy Potential**, Kimet Fetahu, Rr. Elbasanit, ALBANIA; Genc Demi, Rr. Elbasanit, ALBANIA; Ekita Toska, National Agency of Natyral Resources, ALBANIA.

## ORAL SESSIONS

**Friday, October 6**

**11:00 -15:20**

## SESSION 13

### CLEAN COAL AND GAS TO FUELS - 1

*Dr. Zhuowu Men, Ms. Mücella Ersoy*

**11:00 - 11:20** **Experience of SNG Production from Thar Coal In Pakistan**, Farid A. Malik, FCC University, Lahore Pakistan; Abid Aziz, Pak Motors (Pvt) Ltd, Pakistan.

**11:20 - 11:40** **A Pilot Study of Fischer Tropsch Synthesis In A Multitubular Fixed-Bed Reactor And Fuel Characteristics And Performance Tests Of Fischer Tropsch Fuels**, Özlem Ataç, Özgür Can Korkmaz, Salih Obut, Selda Durmaz Sezgingil, Gamze Behmenyar, Abdullah Zahid Turan, Eftal Muhammet Peker, Yeliz Çetin, Mehtap Çolakođlu, Ahmet Saygılı, Özlem Dođan, TÜBİTAK Marmara Research Center, Clean EnergyTechnologies Research Group; TKİ, General Directorate of Turkish Coal Enterprises, TÜRKİYE.

# TECHNICAL PROGRAM

**11:40 - 12:00 Optimization of Ideal Mixing Rate and Catalyst Concentration for Ensuring Homogeneity of Coal and Biomass Liquefied Products in a Reactor**, Mikail Olam, Inonu University, TÜRKİYE; Cemil Koyunoğlu, Yalova University, TÜRKİYE; Hüseyin Karaca, Prof. Inonu University, TÜRKİYE.

## SESSION 14

### COMBUSTION TECHNOLOGIES - 2

*Prof. Chung-Hwan ( Steve) Jeon, Prof. Dr. Hasan Can Okutan*

**11:00 - 11:20 Oxy-Fuel Combustion Technology and Techno Economic Analysis of Carbon Dioxide Capture**, Barış Oktay, Hasan Can Okutan, ITU Synthetic Fuels and Chemicals Technology Center, TÜRKİYE; Hande Çukurlu, TUBİTAK Marmara Research Center, TÜRKİYE; Alper Sarıoğlu, Assoc.Prof.Dr., ITU Synthetic Fuels and Chemicals Technology Center, TÜRKİYE.

**11:20 - 11:40 Silopi Thermal Power Plant Asphaltite Coal Fired Fluidized Bed Boiler and Second Phase Slagging Problem as High Limestone Usage**, Özgür ER, Deputy General Manager, Silopi Thermal Power Plant, Şırnak, TÜRKİYE .

**11:40 - 12:00 A Study on the Characteristics of Coal and Ammonia Co-Combustion Using A Lab-Scale Fluidized Bed Reactor**, Jae-Sung Kim, Min-Woo Kim, Mu-Hyeock Yeon, Seung-Mo Kim, Byoung-Hwa Lee, Chung-Hwan Jeon, Pusan National University, SOUTH KOREA.

**12:00 - 12:20 Comprehensive Review on Combustion and NO<sub>x</sub> Emission for NH<sub>3</sub> Co-firing Technology**, Byoung-Hwa Lee, Jae Sung Kim, Si-Hyun Cho, Chung-Hwan Jeon, Pusan National University, SOUTH KOREA.

## SESSION 15

### RARE EARTH ELEMENT - 1

*Dr. Satya Chauhan, Prof. Dr. Ekrem Yüce*

**11:00 - 11:20 Building Environmental Justice and Equity into the Development of Critical Mineral Industries**, Selena Gerace, Madeleine Lewis, Erin Phillips, University of Wyoming, USA.

**11:20 - 11:40 Consortium for Assessment of Northern Appalachia Resource Yield (CANARY) of CORE-CM for Advanced Materials**, Sarma V. Pisupati, Barbara Arnold, Pennsylvania State University, USA.

**11:40 - 12:00 Critical Minerals and Rare Earth Elements in Powder River Basin Coal and Associated Sediments**, Wyoming, USA, Erin H. Phillips, University of Wyoming, Karen Lohkamp, Peabody, Davin Bagdonas, University of Wyoming, Samantha Anderson,

Hui Hu, Peabody, Fred McLaughlin, University of Wyoming, USA.

**12:00 - 12:20 A Novel Process for Improved Recovery of Scandium from Allanite Concentrates**, Sarma V. Pisupati, Hari Jammulamadaka, Mohammad Rezaee, Pennsylvania State University, Dan McFarland Park, Lawrence Livermore National Laboratory, USA.

## SESSION 16

### CLEAN COAL AND GAS TO FUELS - 2 & POWER PLANTS

*Dr. Zhuowu Men, Asso. Prof. Dr. Firat Burat*

**14:00 - 14:20 Application of a Novel Gasification Technology with Carbon Capture and Utilization for the Production of Clean Fuels**, Gary Williams, TCG Projects (Pty) Ltd, SOUTH AFRICA, Anthony Williams, Technical, TCG Projects (Pty) Ltd, SOUTH AFRICA.

**14:20 - 14:40 Gasification of Coal and Biomass to Generate Net-Negative Carbon Electric Power and Hydrogen**, S. Can Gülen, Bechtel Infrastructure & Power, Inc., USA; Babul Patel, NexantECA, Inc.; Dennis Leppin, P.E., GTI Energy; Horst Hack, EPRI, Inc.; Roman Estrada, Nebraska Public Power District, USA

**14:40 - 15:00 Ash Fouling Free Regenerative Air Preheater for Solid Fuel Combustion**, Kunlei Liu, Pengfei He, Len Goodpaster, Heather Nikolic, Dimitrios Koumoulis, University of Kentucky, USA; Samuel Kelty, Aron Patrick, PPL Corporation, USA.

## SESSION 17

### SUSTAINABILITY & ENVIRONMENT & CLEAN HYDROGEN

*Prof. Sarma Pisupati, Mr. Dündar Ergunalp*

**14:00 - 14:20 Evaluation of Diesel-Electric Conversion of Excavators; A Case Study of Can Lignite Enterprise, TKI**, Mücella Ersoy, Arif Çelik, Mustafa Yılmaz, Fatih Sarıca, Turkish Coal Enterprises (TKI), TÜRKİYE.

**14:20 - 14:40 Numerical Analysis of Ammonia Cracker Using Porous Catalyst for Hydrogen Production**, Si-Hyun Cho, Gyeong-min Kim, Chung-Hwan Jeon, Pusan National University, SOUTH KOREA.

**14:40 - 15:00 Production of Ultra-Clean Hydrogen from Deep Coal Seams**, Michael S. Blinderman, Director Operations, Ergo Exergy Technologies Inc, CANADA

## SESSION 18

### RARE EARTH ELEMENT - 2

*Dr. Satya Chauhan, Prof. Dr. Murat Olgaç Kangal*

**14:00 - 14:20 Investigation of the Relationships Between Coal Based Samples' Grindability and Their Ree Contents**, Mehmet BİLEN, Zonguldak Bülent Ecevit University, Deniz TALAN, West Virginia University, TURKIYE.

**14:20 - 14:40 Characterization of REE and Coal in İmbat Coal Washing Wastes in Soma Region**, Nazlım İlkyaz Dinç, Fırat Burat, Istanbul Technical University, TURKIYE .

**14:40 - 15:00 The Mode of Occurrence of Vanadium (V) in Sinanpaşa coal (Afyonkarahisar, Türkiye)**, Naşide Merve SÜTÇÜ, Mustafa Kumral, Ali Tuğcan Ünlüer, Zeynep Döner, ITU, TURKIYE.

**15:00 - 15:20 Depression and Dewatering Characteristics of Kaolinite in Electrolyte Concentrated Process Water: A Perspective for Water Recirculation in Coal Flotation and Tailings Dewatering**, Malibongwe S. Manono, University of Cape Town, SOUTH AFRICA.

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