



The 4th Workshop on Sorptive Rocks and Engineering



PennState

College of Earth and Mineral Sciences



ISRM



The 4th Workshop on Sorptive Rocks and Engineering

OPPORTUNITIES AND CHALLENGES

Chania, Greece
16-20 September 2026

Wednesday, September 16, 2026

Arrival to the hotel in Chania (Greece)

Welcome Session

Thursday, September 17, 2026 - Technical Program

8:25 am - 8:50 am	Opening Session and Welcome Remarks
8:25 am - 8:30 am	Welcome Address by Vice Dean Prof. Georgios Arampatzis
8:30 am - 8:40 am	Welcome remarks by Prof. Michalis Galetakis, School of Mineral Resources Engineering, TUC
8:40 am - 8:50 am	Welcome Address by President of ISRM Sorptive Rock Commission <i>Yixin Zhao, Professor, China University of Mining and Technology (Beijing)</i> <i>Shimin Liu, Professor, Penn State University</i>
8:50 am - 10:05 am	Morning Session 1 <i>Session Chair: Shimin Liu</i>
8:50 am - 9:05 am	Fracture Geometry and Network Connectivity <i>Laura J. Pyrak-Nolte, Professor, Purdue University</i>
9:05 am - 9:20 am	CO2 Gas Fracturing for Enhancing CBM Production in Low-Performance Screened Horizontal Wells <i>Yunxing Cao, Professor, Henan Polytechnic University</i>
9:20 am - 9:35 am	Three-Dimensional Crack Initiation Criterion and Propagation Simulation in Brittle Rocks <i>Yang Ju, Professor, China University of Mining & Technology-Beijing</i>
9:35 am - 9:50 am	Analysis of Dust Hazard Status and Control Methods in China <i>Longzhe Jin, Professor, University of Science and Technology Beijing</i>
9:50 am - 10:05 am	Investigation of the Fracture Behavior of Cylindrical Specimens with a Central Hole Using Expansive Material <i>George Xiroudakis, Assistant Professor, Technical University of Crete</i>

10:05 am - 10:25 am	Coffee Break
10:25 am - 12:00 pm	Morning Session 2 <i>Session Chair: Yunxing Cao</i>
10:25 am - 10:40 am	A Precisely Controlled Technology of Blasting Vibration for Tunnel Excavation under Dense Buildings <i>Min Gong, Professor, University of Science and Technology Beijing</i>
10:40 am - 10:55 am	Experimental Investigation of Gas Permeability of Concrete Lining and Membrane for CAES in Repurposed Mine Shafts <i>Marcin Lutynski, professor, Silesian University of Technology</i>
10:55 am - 11:10 am	Geomechanical Model of Deep Coalbed Methane and Its Application in Fracturing <i>Yong Li, Professor, China University of Mining & Technology-Beijing</i>
11:10 am - 11:25 am	Research on the Geomechanical Characteristics of Coalbed Methane Reservoirs and Their Control Effects on Wellbore Stability <i>Yubin Wang, Professorate Senior Engineer, PetroChina Coalbed Methane Company Limited</i>
11:25 am - 11:40 am	Competitive Sorption of Radionuclides and Engineering-Induced Heavy Metals in Deep Fractured Granite <i>Yanhui Dong, Professor, Institute of Geology and Geophysics, Chinese Academy of Sciences, State Key Laboratory of Deep Petroleum Intelligent Exploration and Development</i>
11:40 am - 12:00 pm	Discussion and Announcements
12:00 pm - 1:35 pm	Lunch Break
1:35 pm - 2:50 pm	Afternoon Session 1 <i>Session Chair: Yong Li</i>
1:35 pm - 1:50 pm	Mechanism of Hazardous Gas Outburst and Hazard Precursor Characteristics in Deeply Buried Tunnels <i>Pingye Guo, Professor, China University of Mining & Technology-Beijing</i>
1:50 pm - 2:05 pm	Adsorption Mechanism and Application of Coal Seams with Biosynthetic Solvent for Coalbed Methane Dissolution <i>Weidong Pan, Professor, China University of Mining & Technology-Beijing</i>
2:05 pm - 2:20 pm	Transition from Capillary to Viscosity-controlled drainage processes based on microfluidic experiments and lattice-Boltzmann simulations <i>Andreas Yiotis, Assistant Professor, National Technical University of Athens</i>

2:20 pm - 2:35 pm	Multicomponent Image-Based Modeling of Water Flow in Heterogeneous Wet Shale Nanopores <i>Xiangjie Qin, Assistant Researcher, Shandong University of Science and Technology</i>
2:35 pm - 2:50 pm	In-situ SAXS Study on Deformation Behavior of Nanopores during CO₂ Adsorption in Cyclically Water-Immersed Coal Based on Multifractal Theory <i>Yingfeng Sun, Associate Professor, University of Science and Technology Beijing</i>
2:50 pm - 3:10 pm	Coffee Break
3:10 pm - 5:00 pm	Afternoon Session 2 <i>Session Chair: Weidong Pan</i>
3:10 pm - 3:25 pm	Theoretical model of free gas density gradient diffusion in coal particles and its experimental verification <i>Hao Xu, Associate Professor, Shandong University of Science and Technology</i>
3:25 pm - 3:40 pm	Thermo-Hydro-Mechanical Couplings in Rock Mass during Underground Coal Gasification <i>Teng Teng, Associate Professor, China University of Mining & Technology-Beijing</i>
3:40 pm - 3:55 pm	Research and Application of Active Control Technology for Catastrophic Stress in Deep Soft Rock Roadways <i>Yong Zhang, Associate Professor, China University of Mining & Technology-Beijing</i>
3:55 pm - 4:10 pm	Thermodynamic Controls on Hydrogen Generation in Ultramafic Systems: Insights from Equilibrium Modeling of Olivine Composition <i>Zhiyang Chen, Ph.D. Student, Pennsylvania State University</i>
4:10 pm - 5:00 pm	Discussion and Announcements
6:00 pm - 8:30 pm	GALA Dinner

Friday, September 18, 2026 - Technical Program

9:00 am - 10:00 am	Morning Session 3 <i>Session Chair: Guijie Sang</i>
9:00 am - 9:15 am	Low-Temperature Nitrogen Adsorption Characterization of Thermally Evolving Sorptive Pore Systems in Oil Shale <i>Zhaobin Zhang, Professor, Institute of Geology and Geophysics, Chinese Academy of Sciences, State Key Laboratory of Deep Petroleum Intelligent Exploration and Development</i>

9:15 am - 9:30 am	Research on Precision Blasting Pressure Relief Technology for Deep Mines <i>Yuantong Zhang, Lecturer, University of Science and Technology Beijing</i>
9:30 am - 9:45 am	Pore-scale flow dynamics imaged in continuum-scale rock samples <i>Shan Wang, Lecturer, China University of Mining & Technology-Beijing</i>
9:45 am - 10:00 am	Revealing the Open and Closed Pore Distribution in Coal Reservoirs: A Contrast-Matching SANS Study <i>Xiaodong Guo, Lecturer, China University of Mining & Technology-Beijing</i>
10:00 am - 10:20 am	Coffee Break
10:20 am - 11:35 am	Morning Session 4 <i>Session Chair: Yingfeng Sun</i>
10:20 am - 10:35 am	Attachment of Sporosarcina pasteurii on Anhydrite Grains for MICP Fracture Sealing <i>Guijie Sang, Lecturer, University of Liverpool</i>
10:35 am - 10:50 am	Practice of the 110 New Coal Mining Method in Guizhou Mining Areas <i>Gonghua Chen, Senior Engineer (Professor Level), Guizhou Ansheng Energy Co., Ltd.</i>
10:50 am - 11:05 am	A-SHAP-Based Interpretable Machine Learning Approach for Acoustic Sensing and Identification of Damage in Hydro-Mechanically Coupled Sandstone <i>Yao Sun, Master Student, Xi'an University of Science and Technology</i>
11:05 am - 11:20 am	Hydrogen Storage in Coal for Future Energy Systems <i>Shimin Liu, Professor, Pennsylvania State University</i>
11:20 am - 11:35 am	Application and Advances for Characterizing Pore-Interface Structures in Coal Using Small-Angle Scattering Technology <i>Yixin Zhao, Professor, China University of Mining & Technology-Beijing</i>
11:35 am - 12:30 pm	Closing Discussion and Workshop Remarks
12:30 pm - 1:30 pm	Transfer to TUC for Lunch
1:30 pm - 5:30 pm	Visit to the Technical University of Crete (TUC)
5:30 pm - 8:00 pm	Transfer back to City Center for Dinner

Saturday, September 19, 2026 - Technical Tour 1

9:00 am - 5:00 pm

Heraklion Archaeological Museum (Mining & Materials focus)

A guided tour will be offered to the Archaeological Museum and the site of Knossos, the center of the ancient Minoan civilization, build around 1900BC. The sites are located close to the city of Heraklion, located 2 hours by bus from Chania. The schedule includes a morning gathering in Chania, a guided trip by bus to Heraklion and the two sites, lunch in a local tavern, some free time in the city of Heraklion, return by bus in the early evening back to Chania.

Sunday, September 20, 2026 - Technical Tour 2

9:00 am - 5:00 pm

Coastal Geology and Field Observation in South Crete

A guided trip to Falassarna a stunning award-winning coastal area on the western edge of Crete, famous for its wide white and pink sands and crystal-clear turquoise waters. The schedule includes a morning gathering in Chania, a guided trip to Falassarna, a visit to the geological site that is famous for a dramatic tectonic uplift event that raised the western coast of Crete by 6 to 9 meters, leaving its ancient Hellenistic harbor stranded high and dry inland, free time at the beach for visiting local taverns and swimming, return by bus in the early evening back to Chania.

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