

POSTCONVENTION WORKSHOP

W-6: Autonomous Energy Geoscience: Digital Twins, Physics-Informed AI, and Intelligent Automation

George R. Brown Convention Center, Room 362A

Start	Stop	Presentation	Speaker	Affiliation
1:30 PM	1:40 PM	Introduction	Sashi Gunturu	Petrabytes
Session 1				
2:00 PM	2:30 PM	Digital Twin Foundations and Real-Time Monitoring Explore how dynamic virtual replicas of reservoirs and wells integrate continuously updated physics-based models with sensor data to enable real-time visualization and control of subsurface operations.	Sashi Gunturu	Petrabytes
2:30 PM	3:00 PM	Physics-Informed Machine Learning for Subsurface Modeling Learn hybrid approaches that combine domain physics with machine learning to achieve orders-of-magnitude computational speed-ups while preserving physical realism for rapid decision-making.	Atharva Gadad	Petrabytes
3:00 PM	3:30 PM	Break		
Session 2				
3:30 PM	4:30 PM	Agentic AI Systems and Autonomous Workflows Examine intelligent agents and multi-agent systems that coordinate data analysis, modeling, and decision-making with minimal human intervention across complex geoscience tasks.	Kamlesh Todai	Petrabytes
4:30 PM	5:00 PM	Field Applications and Implementation Strategies Review case studies from automated drilling, carbon storage monitoring, and geothermal operations while addressing practical challenges in deploying autonomous systems in real-world energy projects.	Sashi Gunturu	Petrabytes