

## Program Schedule

DURATION	PRESENTATION TITLE	PRESENTER
8:40 am – 9:00 am	Keynote #1 The Drive Towards Zero Fatality and Zero Emission	Dr. Samuel Frimpong Professor
9:00 am – 9:20 am	Keynote #2 Mining Vehicle Automation from Collision Avoidance to Full Automation	Dr. Eric Poulmann CEO, Nerospec
9:40 am – 10:00 am	Humidity and Dust Constrained Radio Wave Propagation using Stochastic VPE for Miner Localization and Tracking	Emanuel A. Antwi PhD Student
10:00 am – 10:20 am	Adaptive AI-driven 3D Object Detection and Collision Avoidance for Underground Autonomous Trucks Towards Zero Fatality	Ellen Essien PhD Student
10:20 am – 10:40 am	LoRa Concurrent Transmission with Optimal Timing Offset MAC Protocol for UG Mining RF Energy Harvesting Disaster Network	Dr. Hilary K. Anabi Post-Doctoral Fellow
10:40 am – 10:50 am	COFFEE BREAK	COFFEE BREAK
10:50 am – 11:10 am	Keynote #3 AI Enhanced Mining Programs	Lorelai Ratushniak CEO, EOD, Inc.
11:10 am – 11:30 am	Advances in Automation and Robotics: State of the Emerging Future Mining Industry	Mabel Obosu PhD Student
11:30 am – 11:50 am	Keynote 4 Mining 4.0 and Change Management	Vinay Poojary Tech Leader – Digital & Innovation, Vale
11:50 am – 12:10 am	Predicting Miner Localization in Underground Mine Emergencies using a Hybrid CNN-LSTM Model with Data from DTN Database	Patrick Nonguin PhD Research
12:10 pm – 12:40 pm	LUNCH	LUNCH
12:40 pm – 1:00 pm	Extreme Mining Temperature Effects on Human Health and Safety and the Role of Automated Technology in Managing the Risks	Esther Gyabaah PhD Research
1:00 pm – 1:20 pm	Green Energy for Powering the Mining Industry to Meet Climate Change Obligations	Forsyth Kadingdi PhD Student
1:20 pm – 1:40 pm	Hybrid Approach for Optimizing Digital Elevation Model Generation using Gaussian Splatting and Photogrammetry	Selassie Adiwokor PhD Student
1:40 pm – 2:00 pm	Numerical Modeling for Predicting Static Liquefaction Failures of Upstream Tailings Storage Facilities for Sustainable Mining	Peter Nso PhD Student
2:00 pm – 2:30 pm	Conclusions of Research Conference	Dr. Samuel Frimpong Professor
2:30 pm – 4:30 pm	MOVIE: Hidden Figures	MOVIE: Hidden Figures
4:30 pm	Conference Adjournment	Adjournment

Conference Chair and Moderator:

**Dr. Muhammad A Raza, Assistant Research Professor**

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# Missouri University of Science & Technology

## MIFI Research Group

The Mining Industry of the Future Initiative (MIFI) is a forward-looking group at Missouri S&T advancing mining research through creativity, innovations, and collaborations.

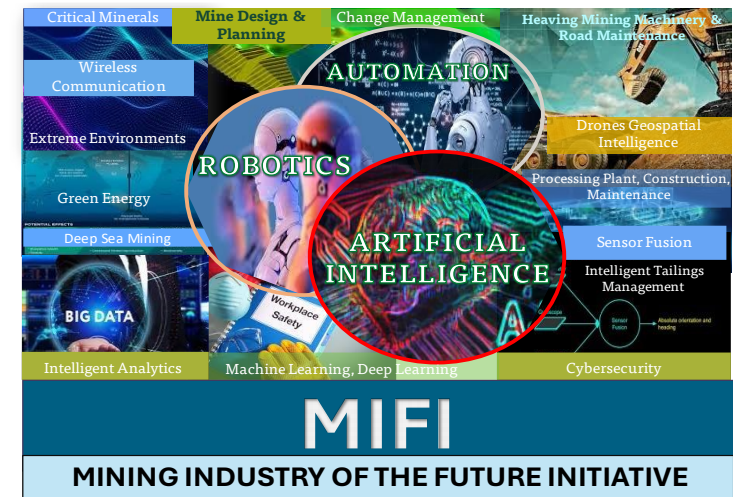
Our current focus includes:

- Automation, robotics & intelligent systems
- Wireless communications & smart mining
- Green energy & decarbonization
- Climate change & energy transitions
- Surface mining & formation excavation
- Tailings engineering & management
- Change management for mining 4.0
- Critical minerals & supply chain
- Immersive technologies & Mine T
- Mine safety, health & hazard engineering

We're building a comprehensive platform for

- Faculty and researcher profiles
- Ongoing research projects
- Recent publications, awards & news
- Collaborations and student involvement
- Mining industry of the future

MIFI is shaping the future of mining — safer, smarter, and more sustainable.



## 2025 RESEARCH CONFERENCE

Creating Tomorrow's Mining World:  
Advancing

### Mining Industry of the Future Initiative (MIFI) Research Group

Department of Mining and Explosives Engineering  
Missouri University of Science and Technology  
Room 226 McNutt Hall, 1860 Miner Circle, Rolla, MO

Saturday, August 16, 2025  
Venue: 268 McNutt Hall; Duration: 8:30 AM – 4:30 PM

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