

Registration & Payments latest Monday, March 10!

Limited seats available.

Selected Lectures only: FREE
Full attendance, including lunches & coffee breaks: R 1000
Emoya Game Drive & Dinner: R 600

For Registration & Inquiries, email Matin Naghizadeh naghizadeh.m@ufs.ac.za at the UFS Dept. of Chemistry

We look forward to welcoming you to this groundbreaking symposium!

Program Committee and Organization:
 Karel von Eschwege (UFS) & Elham Fini (ASU)
Secretaries: Elham Jalali, Matin Naghizadeh

Event Schedule: March 13th and 14th, 2025

Day 1: March 13th, 2025 **Focus:** Biomass & Sustainable Materials

Location: Agriculture Boardroom, Top floor | **Time:** 08:30–15:30

Time	Speaker	Topic
8:30–9:00	Registration	UFS Agriculture Building top floor
9:00–9:20	Welcome Address Co–chairs Profs. Karel von Eschwege (UFS) & Elham Fini (ASU)	Overview & Objectives
9:20–10:00	Prof. Karel von Eschwege (UFS)	Sustainable Biomass: Commercial Applications and Viability in the 21st Century
10:00–10:40	Prof. Elham Fini (ASU)	Enhancing Environmental Sustainability and Community Resilience via Bio–based and Bio–inspired Solutions
10:40–11:10	Prof. Mahour Parast (ASU)	Data Science for Roadways and Environment
11:10–11:30	Coffee Break	
11:30–12:10	Prof. Yusuf Isa (Wits Univ)	Biochar in the Water–Food–Energy Nexus
12:10–12:45	Ms. Otshepeng Pooe (virtual, SA Gov)	Assessment of the Potential to Produce Biochar and Its Application in South Africa
12:45–13:30	Lunch Break	UFS Agriculture Building, top floor
13:30–14:00	Prof. Hessam Yazdani (MU)	Atom by Atom: Molecular Dynamics Simulations Shaping Sustainable and Resilient Infrastructure
14:00–14:30	Prof. Rouzbeh Ghabchi (virtual, ASU)	Soil Stabilization with Fibers

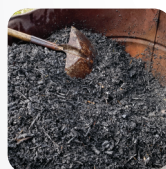
Time	Speaker	Topic
14:30–15:00	Dr. Abdolhossein Naghizadeh (UFS)	Utilizing Industrial and Agricultural Waste in Sustainable Cement Formulation
15:00–15:30	Profs. Karel von Eschwege & Elham Fini	Wrap–up
17:00–21:00	EMOYA Game Drive & Dinner	

Day 2: March 14th, 2025

Focus: Ecological Engineering & Mining Safety

Location: Agriculture Boardroom, Top floor | **Time:** 10:00–14:00

Time	Speaker	Topic
10:00–10:40	Dr. Yolandi Schoeman (UFS)	Building Bridges Through Chrono–Ecological Engineering: A Collaborative Frontier for Sustainability on Earth and Beyond
10:40–11:10	Dr. Megan Welman–Purchase (UFS)	Arsenic Behaviour in Gold Mine Tailings: A Case Study for Sustainable Remediation Strategies
11:10–11:30	Coffee Break	
11:30–12:00	Prof. Hamed Khodadadi Tirkolaei (virtual, ASU)	Mine Tailings Stabilization via Enzyme–Induced Carbonate Precipitation
12:00–12:30	Dr. Susan Criswell (virtual, Barrow Neurological Institute)	Manganese Neurotoxicity: The Health Consequences from Occupational and Environmental Mn Exposure in South Africa
12:30–13:00	Prof. Siyuan Song (virtual, ASU)	Hazard Awareness Training and Risk Identification for New Surface Miners
13:00–13:15	Profs. Karel von Eschwege & Elham Fini	Wrap–up & Conclusion
13:15–14:15	Closing Lunch (Awela)	



ASUFS Symposium:

Environmental Sustainability and Community Resilience

13 & 14 March, 2025

The “2025 – Environmental Sustainability and Community Resilience” symposium will focus on future research collaborations between Arizona State University in the USA and the University of the Free State in South Africa, addressing critical environmental challenges. Experts in science, environmental engineering, sustainability, and community planning will explore biochar’s potential in carbon sequestration, soil enhancement, and pollution mitigation, along with topics in environmental engineering and mining safety. Through interdisciplinary discussions, the event aims to develop innovative strategies that enhance community resilience to climate change and promote long-term ecological sustainability.

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SPEAKER BIOGRAPHIES



DAY 1: 13 MARCH, 2025 Biomass & Sustainable Materials

Prof. Karel von Eschwege (University of the Free State, In-person)

Associate Professor and Head of the Analytical Chemistry Division at UFS, Prof. Karel von Eschwege is an NRF-rated scientist specializing in commercializable projects. His research focuses on low-cost biomass applications for environmental and community-based solutions, with prior work in optical molecular switching devices and charge transfer photocatalysts. He brings extensive experience in renewable energy consulting and will host the event.

Topic: *Sustainable Biomass: Commercial Applications and Viability in the 21st Century*

Prof. Elham Fini (Arizona State University, In-person)

Prof. Elham Fini is an Invention Ambassador at the American Association for the Advancement of Science, a Fulbright Scholar, and Director of the Innovation Network for Materials, Methods, and Management at ASU. A Senior Sustainability Scientist, her research centers on designing and characterizing bio-based materials to enhance the sustainability and health of civil infrastructure.

Topic: *Enhancing Environmental Sustainability and Community Resilience via Bio-based and Bio-inspired Solutions*

Prof. Mahour Parast (Arizona State University, In-person)

Eminent Scholar at ASU's Del E. Webb School of Construction, Prof. Mahour Parast researches supply chain resilience, disruption risk, and innovation. His work, published in top journals, is supported by the NSF and USDOT. With industrial experience in quality management, he contributes to sustainable infrastructure through data-driven solutions.

Topic: *Data Science for Roadways and Environment*

Prof. Yusuf Isa (University of the Witwatersrand, In-person)

Associate Research Professor in the School of Chemical and Metallurgical Engineering at Wits, Prof. Yusuf Makarfi Isa is a chemical engineer and NRF C-rated researcher. His expertise lies in synthetic fuels, sustainable fuels, and biomass-derived materials, with experience in petroleum refining and catalytic conversion of fermentation broth to fuel-range hydrocarbons akin to fossil-based fuels.

Topic: *Biochar in the Water-Food-Energy Nexus*

Ms. Otshepeng Poee (Department of Forestry, Fisheries, and the Environment, Virtual)

Ms. Otshepeng Poee serves in the Biodiversity Risk Management Directorate, focusing on biodiversity and climate change. Holding a Master's and Bachelor's in Conservation Ecology from Stellenbosch University, she develops policies for ecosystem-based adaptations to climate impacts, promoting sustainable and just transitions for climate-resilient development in South Africa.

Topic: *Assessment of the Potential to Produce Biochar and Its Application in South Africa*

Prof. Hessam Yazdani (University of Missouri, In-person)

Associate Professor of Civil and Environmental Engineering at Mizzou, Dr. Hessam Yazdani directs the Sustainable Infrastructure, Geotechnics, and Materials (SIGMa) Lab. His research in multiscale mechanics, polymer nanocomposites, and machine learning focuses on high-performance materials and resilient geotechnical systems.

Topic: *Atom by Atom: Molecular Dynamics Simulations Shaping Sustainable and Resilient Infrastructure*

Prof. Rouzbeh Ghabchi (South Dakota State University, Virtual)

Associate Professor in Civil and Environmental Engineering at SDSU, Dr. Rouzbeh Ghabchi earned his Ph.D. from the University of Oklahoma. His research explores pavement engineering, environmentally friendly materials, and asphalt technologies, including bio-asphalt and soil stabilization. He has led projects funded by the Oklahoma Department of Transportation and other agencies to enhance pavement performance.

Topic: *Soil Stabilization with Fibers*

Dr. Abdolhossein Naghizadeh (University of the Free State, In-person)

Senior Lecturer in Engineering Sciences at UFS, Dr. Abdolhossein (Hossein) Naghizadeh leads the UFS Green Concrete Lab. A civil engineer, his research focuses on sustainable construction materials, including recyclable cements, low-carbon concrete from industrial waste, and eco-friendly mixtures for 3D printing, advancing circular economy principles.

Topic: *Utilizing Industrial and Agricultural Waste in Sustainable Cement Formulation*

DAY 2: 14 MARCH, 2025 Ecological Engineering & Mining Safety

Dr. Yolandi Schoeman (University of the Free State, In-person)

Senior Lecturer at the Centre for Mineral Biogeochemistry at UFS, Dr. Yolandi Schoeman is an NRF-rated ecological engineer and pioneer in her field. She founded the Ecological Engineering Institute of Africa and has led international projects across Russia, Australia, Africa, and the USA, currently heading the ecological engineering portfolio at UFS.

Topic: *Building Bridges Through Chrono-Ecological Engineering: A Collaborative Frontier for Sustainability on Earth and Beyond*

Dr. Megan Welman-Purchase (University of the Free State, In-person)

Geologist and environmental geochemist at UFS, Megan Welman-Purchase specializes in the behavior and remediation of toxic elements like arsenic, uranium, and cyanide in mine tailings. With expertise in analytical techniques (XRD, XRF, SEM, BET), she also explores cement recyclability and mineral biogeochemistry.

Topic: *Arsenic Behaviour in Gold Mine Tailings: A Case Study for Sustainable Remediation Strategies*

Prof. Hamed Khodadadi Tirkolaei (Arizona State University, Virtual)

Dr. Hamed Khodadadi Tirkolaei is an Assistant Professor of geotechnical engineering at Arizona State University, and a senior investigator at the US-NSF Engineering Research Center for Bio-mediated and Bio-inspired Geotechnics (CBBG). His research focuses on developing innovative, nature-inspired, and eco-friendly solutions to address emerging global challenges through geotechnical perspectives. He has published over 45 peer-reviewed journal articles and conference papers and serves on the editorial board of Biogeotechnics.

Topic: *Mine tailings stabilization via enzyme induced carbonate precipitation: Field Deployment Study*

Dr. Susan Criswell (Barrow Neurological Institute, Virtual)

Professor of Neurology at Barrow Neurological Institute. Her research focuses on neurological effects of airborne pollutants such as manganese. She is board certified in neurology by the American Board of Psychiatry and Neurology. Dr. Criswell's clinical expertise includes the diagnosis and treatment of Parkinson's disease and other movement disorders.

Topic: *Manganese Neurotoxicity: The Health Consequences from Occupational and Environmental Mn Exposure in South Africa*

Prof. Siyuan Song (Arizona State University, Virtual)

Associate Professor at ASU's School of Sustainable Engineering, Prof. Siyuan Song founded the Safety Automation and Visualization Environment (SAVE) Lab. Her research advances construction safety, workforce development, and AI-driven solutions, improving hazard awareness and productivity in the built environment.

Topic: *Hazard Awareness Training and Risk Identification for New Surface Miners*

