

# Invited Talk - Harnessing the Potential of Nuclear Microreactors in Saudi Arabia: A Path to Sustainable and Resilient Energy

*Tuesday, 14 November 2023 15:10 (20 minutes)*

The advent of nuclear microreactors represents a significant leap in atomic technology, offering a unique combination of safety, versatility, and efficiency. As Saudi Arabia embarks on diversifying its energy sources and reducing carbon emissions, nuclear microreactors emerge as a promising solution, due to their compactness. This talk will delve into nuclear microreactors' technical intricacies and operational mechanisms, underscoring their compact size, transportability, and rapid deployment capabilities.

We will explore how microreactors, with their inherent safety features and reduced need for on-site infrastructure, can revolutionize energy accessibility in remote and off-grid locations across Saudi Arabia, making unlivable places livable. The presentation will provide insights into the advanced cooling systems, passive safety measures, and modular design that characterize these reactors, ensuring a reduced environmental footprint and heightened security.

Moreover, the talk will address the specific energy needs of Saudi Arabia, highlighting how nuclear microreactors can support industrial processes, desalination plants, and urban energy grids and provide reliable 24/7 clean energy for megaprojects, such as the Line, Sindalah, Oxagon, etc. We will discuss the regulatory framework and safety protocols necessary for deploying these reactors, aligning with the Kingdom's Vision 2030 for sustainable energy.

Finally, the presentation will glimpse the future, ongoing research and development in nuclear microreactors and discuss solutions from companies like Aalo Atomic. We will explore potential advancements in fuel efficiency, waste management, and integration with renewable energy sources, setting the stage for a new era of nuclear energy in Saudi Arabia.

**Presenter:** ARAFAT, Yasir (Idaho National Laboratory)

**Session Classification:** Day 2- Parallel Session - III : Fusion and Advanced Reactors