



The South African Institution for Chemical Engineers (SAIChE), the Academy of Science of South Africa (ASSAf), the South African Institute of Electrical Engineers (SAIEE) and the South African Academy of Engineering (SAAE)

invite you to a webinar on

Toward Energy Transition from Fossil Fuels to Green Hydrogen and Green Ammonia

with keynote address by

Prof Amir H. Mohammadi

School of Engineering, University of KwaZulu-Natal

Date: 7 May 2025
Time: 16:00 – 18:00
Platform: Zoom
RSVP: [Click here](#) to register

OBJECTIVES

- Understand key technologies in energy transition
- Explore opportunities and challenges
- Connect research with policy and innovation
- Participate in Q&A

ABSTRACT

The concept of "transition fuels" embodies a strategic approach to confront the global challenge of moving away from conventional, carbon-intensive energy sources toward a more sustainable and environmentally conscious energy model. These fuels function as interim solutions, seeking to alleviate immediate environmental impacts and ease the adoption of cleaner alternatives. Examples include natural gas, biofuels, hydrogen and synthetic fuels. While serving as a bridge to a renewable energy future, transition fuels are not exempt from controversy, with concerns about their potential to hinder progress toward fully sustainable solutions. This presentation delves into the role, varieties, and challenges linked to transition fuels, underscoring their importance in navigating the intricate and pressing shift toward a more sustainable energy landscape. The lecture also delves into the paradigmatic shift from traditional fossil fuels to green hydrogen and green ammonia, positioning them as pivotal components in the quest for a more eco-friendly and sustainable energy panorama. Motivated by the urgency to combat climate change and curtail carbon emissions, green hydrogen, and green ammonia emerge as versatile and promising substitutes. Green hydrogen, crafted through electrolysis powered by renewable energy, emerges as an eco-friendly energy carrier with applications spanning diverse sectors like transportation and industry. Concurrently, ammonia, traditionally acknowledged for its role in fertilisers, gains prominence as a proficient carrier of hydrogen, especially in maritime and power generation realms. Despite the potential of these alternatives, challenges such as production costs and infrastructure development underscore the intricate nature of the transition. This presentation highlights the ongoing importance of technological progress, policy backing, and global cooperation in navigating the intricate journey toward a more sustainable and resilient energy future.



BIOGRAPHY

Prof Amir H. Mohammadi

School of Engineering, University of KwaZulu-Natal

Dr Amir H. Mohammadi holds the position of Full Professor in the Discipline of Chemical Engineering at the College of Agriculture, Engineering, and Science, University of KwaZulu-Natal (UKZN). He earned his BSc and MSc degrees in Chemical Engineering from the University of Tehran (Iran) in 1997 and 1999, respectively. His academic journey continued with an MPhil and PhD in Petroleum Engineering from Heriot-Watt University (United Kingdom) in 2003 and 2006, followed by a DSc (Habilitation) in Chemical Engineering from the University of Paris 13 (France) in 2011.

Following the completion of his PhD, Dr Mohammadi embarked on a post-doctoral programme at Ecole des Mines de Paris (France) in 2006 and subsequently served as academic staff at MINES ParisTech (France) from 2007 to 2013. He joined UKZN as academic staff in July 2013, having previously held a three-year honorary appointment at UKZN in 2011. His professional experience includes a tenure as a Process Engineer at two crude oil refineries in Iran from 1999 to 2001.

Over the years, Dr Mohammadi established a notable presence as a visiting scholar at various universities and institutions in Europe and America. Notably, he held an Honorary Professor appointment at Durban University of Technology, and an Adjunct Professor appointment at the Cape Peninsula University of Technology. He was associated with Curtin University (Malaysia Campus). Currently, he holds an honorary appointment at INTI International University (Malaysia), an Extraordinary Professor appointment at North-West University, and an Adjunct Professor appointment at Khazar University (Azerbaijan).

Dr Mohammadi is actively involved in international conferences, serving on organising/scientific committees. Furthermore, he contributes to the academic community as a member of the editorial board/associate editor for distinguished international journals, including "The South African Journal of Chemical Engineering". His academic achievements were acknowledged by Stanford University, which identified him as one of the World's Top 2% Scientists in October 2022.

Dr Mohammadi's prolific research output is reflected in over 600 published articles in Scopus-indexed journals, predominantly by renowned publishers such as Elsevier, ACS, Springer, Taylor and Francis, and Wiley. He has been actively engaged in examining Masters' and PhD theses from institutions worldwide, including Curtin University (Malaysia Campus), Memorial University of Newfoundland (Canada), National Institute of Technology (India), Laval University (Canada), University of Adelaide (Australia), Kuwait University (Kuwait), University of KwaZulu-Natal, Durban University of Technology, MINES ParisTech (France), École Nationale Supérieure des Mines de Saint-Étienne (France), École Nationale Supérieure de Techniques Avancées (France), Tarbiat-Modares University (Iran), Shiraz University (Iran), and University of Guilan (Iran).

In addition to his contributions as a researcher, Dr Mohammadi has served as a reviewer for nearly 100 high-impact factor journals, published primarily by Elsevier, ACS, Springer, Taylor and Francis, and Wiley. He has consistently received the Research Productivity Award of the UKZN since 2011 and has been recognized as one of the top 30 productive researchers at UKZN for the past 13 consecutive years.

In 2020, he was honoured with the Deputy Vice-Chancellor, College of Agriculture, Engineering, and Science Research Awards. Dr Mohammadi is an esteemed member of professional organizations, including the Institution of Chemical Engineers (IChemE), the Society of Petroleum Engineers (SPE), the American Institute of Chemical Engineers (AIChE), and the South African Institution of Chemical Engineers (SAIChE).

