

# World Hydrogen (H<sub>2</sub>) Day Webinar by AIChE SLS

Date: 08-Oct-2021 (Fri)

Time: 14:00 – 15:30h (GMT +08)

Venue: Zoom Webinar (by invitation)

## Topic #1: Green Hydrogen Production

Human civilization thrives on constant flows of energy and material obtained from natural resources, e.g., fossil fuels, resulting the production of large amounts of wastes. Carbon dioxide, a major one among these wastes, is leading us to climate change. Hydrogen, as a clean fuel option, can help us reduce the carbon emission, known as hydrogen economic. The key to enable the hydrogen economy, is to develop cost-effective technologies for green hydrogen production. In this talk, Dr. Wang will give a brief overview of the current research on green hydrogen production technologies, and the future opportunities and challenges for green hydrogen production.

## Speaker #1's Biography



Wang Lei is an Assistant Professor at the Department of Chemical and Biomolecular Engineering in National University of Singapore (NUS). Lei is interested and experienced in electrochemical related catalysis and materials discovery for sustainable energy and green organic synthesize technologies. Prior to his NUS appointment, Lei received the Swedish Knut and Alice Wallenberg postdoctoral research fellowship award to work in the group of Professor Thomas Jaramillo at Stanford University upon his PhD graduation in 2015 from KTH Royal Institute of Technology. He is also a Chemical Engineering BSc and MSc graduate from Dalian University of Technology. His PhD work at KTH under the supervision of Professor Licheng Sun focused on the design and synthesis of molecular catalysts for water oxidation, which is the kinetic bottleneck in water splitting.

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## Topic #2: Catalysts: The Philosopher's Stones which will Orchestrate a Hydrogen Economy

Sustainably sourced hydrogen will play a vital role as Singapore's economy transitions towards carbon neutrality. Hydrogen can be used in vehicular fuel cells, in electricity generation, and for domestic applications. Orchestrating a transition to a hydrogen economy will require new processes in the energy and chemicals sector. These processes will in turn, be enabled through a new generation of catalytic materials. This talk illustrates at a high-level, how computational methods powered by quantum mechanics can guide catalyst discovery for a hydrogen economy. Using hydrogen powered fuel cells as an example, I will discuss our approach towards discovering stable, cost-effective, and high-performance fuel cell catalysts.

### Speaker #2's Biography



Tej Choksi is an Assistant Professor at the School of Chemical and Biomedical Engineering at NTU-Singapore having joined in December 2019. He is also a co-Investigator at the Cambridge Centre for Advanced Research and Education in Singapore. He obtained his PhD in Chemical Engineering from Purdue University. He was a postdoctoral research fellow at Stanford University from 2017 to 2019. His research group employs quantum mechanics to understand how catalysts work at the atomic scale. Using such insights, we can then discover next-generation catalysts for sustainable solutions.



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