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Turquoise Hydrogen Production Course

Edmonton Convention Centre
April 24, 2023, 1pm to 4:30pm

The hydrogen economy is a vital component of Alberta's future growth to sustainable energy development. Turquoise hydrogen will be an important part of Alberta's pathways for developing a hydrogen economy. It uses natural gas as feed material and has a small to no CO_2 footprint, depending on the energy vector utilized for the process. In addition, depending on the design of the technology and catalyst utilized, it has the potential to produce a valuable elemental carbon product which can be another source of revenue for the operation. In that regard, InnoTech Alberta established a high-temperature processing and carbon characterization laboratory to develop, test and support CCU and hydrogen technologies.

This course will introduce the leading technologies available for turquoise hydrogen production and provide fundamental basics to enable informed decision-making and the technology selection process. The course will discuss the centralized and decentralized production concepts and the advantages and disadvantages of each approach.

Turquoise Hydrogen Production Course

This course will discuss the basic information required for evaluating and understanding different allotropes of elemental carbon and explain all the necessary analytical techniques for the characterization of the produced carbon type, such as carbon nanotubes, graphenes, graphite, and amorphous carbon.

COURSE OUTLINE

- Canada and Alberta's roadmap to the hydrogen economy
- Methane pyrolysis basics
- Production methods
- Compression and transportation
- Centralized vs. decentralized production approaches
- Elemental carbon basics
- Elemental carbon characterizations

COURSE INSTRUCTORS

Aref Najafi, PhD, PEng, EP, CEM, PMP
InnoTech Alberta

Aref is the Manager for Carbon Capture, Conversion and Decarbonization. In his role, he oversees technology advancements and development for technologies from Technology Readiness Level (TRL) 3 to 8 at two separate facilities. Calgary research park lab facility for lower TRL technologies and Alberta Carbon Conversion Technology Center, a facility established to de-risk and demonstrate technologies for higher TRL. InnoTech Alberta is keenly interested in advancing carbon capture and utilization (CCU) and hydrogen technologies through validation and de-risking for successful implementation and adoption by industry. Aref holds a PhD in Chemical Engineering, and he has 20 years of industrial experience in developing technologies and deploying them at a commercial scale.

Farbod Sharif, PhD, PEng.
InnoTech Alberta

Farbod is a Research Engineer in the Carbon Capture, Utilization & Decarbonization team at InnoTech Alberta. He has over 10 years of experience in tackling environmental issues from wastewater treatment to Carbon capture and conversion. Prior to joining InnoTech Alberta, Farbod worked as the Chief Technology Officer at Carbon Corp – a finalist of the Carbon XPrize and winner of the 2021 X-Factor award - for almost 3 years and led the team during the competition. Farbod holds a Ph.D. degree in Chemical Engineering from the University of Calgary.

Martin Huard, PhD, PEng.
InnoTech Alberta

Martin is InnoTech's Hydrogen Lead, coordinating the creation of test facilities and services for clean hydrogen technology development. Martin has worked at InnoTech Alberta since 2014. He also participates in the Carbon Capture, Conversion and Storage (CCCS) Working Group at Canada's Oil Sands Innovation Alliance (COSIA), where he provides technical support and guidance to the CCCS Working Group. Prior to his involvement in clean hydrogen and CCUS technologies, Martin was a project manager and researcher in the Materials & Reliability in Oil Sands (MARIOS) program, an industry-led consortium managed by InnoTech Alberta. Martin completed a PhD in Chemical Engineering at Western University in 2015, where he worked on fast pyrolysis of biomass and heavy crude oil to produce upgraded oil with reduced emissions.

FOR MORE INFORMATION CONTACT CHARITI SAWCHUCK

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