



Ontario Tech University
IAEA Collaborating Center

Workshop
on

Nuclear Hydrogen Production

19 – 20 June 2023

Agenda

Monday – 19 June 2023

09:00 Registration & Refreshments

Opening Session – Hossam Kishawy, Dean of Faculty of Engineering & Applied Science

10:00 **Les Jacobs**
Vice President Research & Innovation, Ontario Tech
Jerry Hopwood
President, The University Network of Excellence in Nuclear Engineering (UNENE)

Speakers Session

10:15 Innovative Nuclear Hydrogen Production Technologies Research at CERL
Ibrahim Dincer, Professor of Mechanical Engineering, Ontario Tech

10:30 Hydrogen from Nuclear Power
Alina Constantin, Project Officer, IAEA

Panel Discussion

The use of Current Fleet and Advanced Reactors for Hydrogen Production

Moderator: Matthias Krause, Director, INuEC

10:45 **Rupsha Bhattacharyya, Scientific Officer, India Bhabha Atomic Research Centre (online)**
Jerry Hopwood, President, The University Network of Excellence in Nuclear Engineering
David Ouellette, Research Scientist, Canadian Nuclear Laboratories
Elina Teplinsky, Partner & nuclear hydrogen expert, Pillsbury Winthrop Shaw Pittman LLP
Akira Tokuhira, Professor of Nuclear Engineering, Ontario Tech

12:00 Lunch break & Networking

Speakers Session

13:00 Building a Clean Energy Future
Wes Johnsen, Director, Net Zero, Bruce Power

13:15 Canadian Developments in Nuclear Hydrogen Production
Adriana Gaona & David Ouellette, Canadian Nuclear Laboratories

Panel Discussion

Challenges and opportunities toward the deployment of Large-Scale

Nuclear Hydrogen Production Moderator: Alina Constantin Project Officer, IAEA

13:30 **Adriana Gaona, Research Scientist, Canadian Nuclear Laboratories**
Wes Johnsen, Director, Net Zero, Bruce Power
Christopher Penny, Manager, Hydrogen Projects
Shripad Revankar, Professor of Nuclear Engineering, Purdue University (online)

14:30 Q & A

15:00 End of Day 1

Tuesday – 20 June 2023

09:30 Registration & Refreshments

Technical Session

10:00 Training session on IAEA HEEP tool
Alina Constantin, Project Officer, IAEA

12:00 Lunch & Networking

Technical Visit
14:00 Ontario Tech's Hydrogen Enabled Automotive Centre of Excellence (ACE)
Clean Energy Research Laboratory (CERL)

Speakers/Panelists (in alphabetical order):

Ms. **Rupsha Bhattacharyya** is a Scientific Officer at the Chemical Engineering Group, Bhabha Atomic Research Center, Mumbai, India. She has 12 years' experience in nuclear chemical engineering with focus on process engineering and design for hydrogen isotope separations, techno-commercial analyses and optimization of nuclear and renewables assisted hydrogen production, purification and storage systems. Her on-going doctoral work focuses on multi-criteria assessment of the role of nuclear power in achieving India's net zero emissions targets.



Ms. **Alina Constantin** is currently the project officer for non-electric applications of nuclear power working in the International Atomic Energy Agency. Prior to that she worked for the World Nuclear Association and World Nuclear University on various nuclear energy-related activities and was involved in organizing and implementing the leadership program Summer Institute for professionals working in the field of nuclear energy. Alina has been working also as researcher at the Institute for Nuclear Research in Romania and has PhD in chemical engineering.



Mr. **Ibrahim Dincer** is professor of Mechanical Engineering at Ontario Tech University. He has authored numerous books and book chapters and many refereed journal and conference papers. He has chaired many national and international conferences, symposia, workshops, and technical meetings. He has also delivered many plenary, keynote & invited lectures. He is an active member of various international scientific organizations and societies and serves as editor-in-chief, associate editor, regional editor, and editorial board member for various prestigious international journals. He is a recipient of several research, teaching & service awards, including Premier's Research Excellence Award in Ontario. For the past seven years, he has been recognized by Thomson Reuters as one of The Most Influential Scientific Minds in Engineering & one of the Most Highly Cited Researchers.



Ms. **Adriana Gaona** is a Research Scientist at the Hydrogen Technologies Branch of Canadian Nuclear Laboratories. Adriana has more than 7 years of experience in sustainable chemical engineering and alternative energy systems and her areas of expertise include life cycle and techno-economic assessments of emerging technologies, with extensive experience on developing process and mathematical models of conventional and emerging technologies in the nuclear, water, and renewable energy industries. a research scientist at the Canadian Nuclear Laboratories. She has PhD in renewable energy systems from the University of Toronto.



Mr. **Jerry Hopwood** is President of UNENE (University Network of Excellence in Nuclear Engineering) since 2016, leading Canada's University-Industry partnership in nuclear research and education. Jerry has extensive experience in the nuclear industry over four decades. Starting in the nuclear field in Great Britain, Jerry moved to Canada to join Atomic Energy of Canada Limited as a reactor safety specialist, participating in the Bruce and Point Lepreau nuclear plant build projects. After secondments to Point Lepreau during its initial operation, and later to Korea as Technical Director for AECL, Jerry held progressive positions in design, product development and business development with AECL, and since 2011 with SNC Lavalin Candu Energy, as Vice President for Product Development. In June 2019, Jerry received the CNS/CNA Harold Smith Outstanding Contribution Award for services to the nuclear community.



Mr. **Wes Johnsen** is the Director of Net Zero at Bruce Power, where he focuses on identifying commercial opportunities that utilize nuclear energy's carbon-free advantages to support the transition to decarbonized energy systems in Ontario. With a strong background in the nuclear industry spanning almost a decade, Wes has extensive experience in power trading, risk management, and navigating deregulated power markets across North America. He is deeply passionate about environmental sustainability and recognizes the importance of achieving a successful Energy Transition while maintaining affordability, reliability, and security in the energy sector. Wes holds an MBA from Queen's University, a Bachelor's degree in Finance from the University of Calgary, and is a CFA charter holder.



Mr. **Matthews Krause** is a nuclear expert with a diverse background. He began his career at Atomic Energy of Canada Ltd., specializing in primary heat transport systems and containment thermal hydraulics. Later, at the International Atomic Energy Agency (IAEA), he led HWR Technology Development activities, conducted research on advanced reactor technologies, and facilitated Reactor Technology Assessments. Matt retired from the IAEA in 2021 and now runs his own consulting company while pursuing his hobby of restoring classic German automobiles.



Mr. **David Ouellette** is a Research Scientist in the Hydrogen Technologies Branch at the Canadian Nuclear Laboratories (CNL), and has over 13 years of experience in the areas of electrochemical energy systems and technologies. During his 5 years at CNL, David has been primarily involved in the development of advanced hydrogen isotope separation technologies, and clean hydrogen and synthetic fuel production technologies, such as the Copper-Chlorine Hybrid Thermochemical Cycle, and high temperature electrolyzers. During this time, David has been actively involved in many committees and national task forces to support the implementation of Canada's hydrogen strategy, and nuclear hydrogen production in Canada.



Mr. **Christopher Penny** is an engineering, project management and program management professional with extensive experience managing large-scale and integrated major projects. With over 14 years of experience in the broad-based energy industry, including custom industrial manufacturing, field-based oil & gas operations and construction, CANDU nuclear refurbishment, and thermal power - Christopher is now leading the technical and project delivery team at Atura Power as the Manager of Hydrogen Projects. Christopher is a graduate of Toronto Metropolitan University with a Bachelor of Engineering in Aerospace Engineering and a Master of Applied Science in Mechanical Engineering and holds a Professional Engineering License in Ontario.



Mr. **Shripad Revankar** is a Professor of Nuclear Engineering and Director of Multiphase and Fuel Cell Research Laboratory in the School of Nuclear Engineering at Purdue University, West Lafayette, Indiana. His research work in the past in nuclear hydrogen includes hydrogen production with Sulfur-iodine cycle or high temperature electrolysis, coupled to high-temperature reactor, analysis of SI cycle and dynamics of couple HTGR and hydrogen plant, and technical and economic assessment of Nuclear Hydrogen Generation. He has participated in three Coordinated Research Projects with IAEA on nuclear hydrogen.



Ms. **Elina Teplinsky**, Pillsbury's Global Energy Industry Leader and a leading member of the firm's International Nuclear Projects and Hydrogen teams, focuses on international nuclear energy matters, including advice to U.S. and global clients on transactional and regulatory issues. Elina is a trusted advisor to nuclear owner-operators, reactor and equipment suppliers, investors, architect-engineering companies and technical consulting firms on complex nuclear transactional and regulatory matters. She frequently serves as lead outside counsel on new build projects, equipment and fuel procurements, M&A transactions and joint ventures in the nuclear sector. She has worked on transactions for more than 30 countries in North and South America, Europe, Turkey and the Middle East, Russia and the former CIS, Asia and Africa.



Mr. **Akira Tokuhiko** is professor at the Department of Energy and Nuclear Engineering, Ontario Tech University and has a PhD in Nuclear Engineering from Purdue University. He has 30+ years of international R&D experience in advanced reactor concepts and related safety-in-design issues. Previously he was Senior Engineer, NuScale Power, when they completed their – now (US) regulator-approved SMR design. Earlier, in partnership with Idaho National Labs (USA) he contributed to feasibility studies on high temperature gas-cooled reactors to hydrogen production methods.

