Advanced Hydrogen Production and Transport Technologies

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Hydrogen is one of the strategic research areas that the National Research Council Canada (NRC) is pursuing to support the Government of Canada in achieving the 2050 net-zero emissions target. It is a key research pillar of the NRC's Advanced Clean Energy (ACE) program, which organizes research and technology development to support the transition to a low-carbon economy, aligning with the priorities of both the Government of Canada and Canadian industry.

The NRC's Advanced Clean Energy (ACE) program develops clean technologies in collaboration with partners to produce, distribute, and utilize hydrogen with zero greenhouse gas emissions. To facilitate business innovation in advanced hydrogen production, the NRC teams are working with key stakeholders to establish a water electrolysis supply chain for producing clean hydrogen in Canada. To enable applications on the user end, the NRC is collaborating with target partners to evaluate the potential of transporting hydrogen through Canada's extensive pipeline infrastructure. Additionally, the NRC provides technical support to develop hydrogen codes and standards. The research achievements and capabilities in catalyst materials, catalyst layers, membrane electrode assembly (MEA) architecture design, MEA fabrication, pipeline materials characterization, and lab-scale full pipeline testing will be presented.