The Future of Neutron Scattering in Canada - Panel Discussion

The main idea of the panel discussion on Monday was to discuss the perspectives of neutron scattering in Canada to ensure that the Canadian scientific community has access to neutron-based experimental facilities in the coming decades. The session was moderated by Dominic Ryan, president of the Canadian Institute of Neutron Scattering (CINS), and Danial Wayner, vice-president of the National Research Council Canada in Physical Sciences. The six panelists included Bruce Gaulin (current president of the Neutron Scattering Society of America and Director of the Brockhouse Institute for Materials Research at McMaster University), Thom Mason (Director of Oak Ridge National Laboratory), Denise Carpenter (President of the Canadian Nuclear Association), Basma Shalaby (President of the University Network of Excellence in Nuclear Engineering, and Professor of Engineering Physics at McMaster University), Ben Rouben (Executive Administrator at the Canadian Nuclear Society), and Dean Chapman (representing the proposed Canadian Neutron Source at the University of Saskatchewan).

The session moderators first overviewed the history of neutron scattering in Canada with a focus on the National Research Universal (NRU) reactor at Chalk River which was built 52 years ago to produce isotopes. However, the reactor is showing its age and has been shut down for over a year for repair. The main questions posed were whether Canada needs its own neutron source and what will be the mission of the re-built reactor?

The panel claimed an urgent need for a new type of neutron source in Canada which would significantly contribute to many spheres of society including academia, industry, and healthcare. It was emphasized that Canada's future depends on the ability to train new scientists and to retain existing expertise and knowledge. The domestic neutron source would support not only basic science experiments but would also provide new resources for medicine and R&D perspectives to the Canadian nuclear industry and the North America neutron community. For example, neutron scattering is essential for materials research and engineering to provide improved understanding of novel systems and high-performance materials. Canada's leading role in advanced materials is evidenced by Bertram Brockhouse's Nobel Prize in Physics in 1994. A new multi-purpose research reactor would encourage the entrepreneurial spirit of innovation and would ensure the continued development of highly qualified scientists and engineers.

Overall, the reactor would help in securing Canada’s role as a world leader in science and technology and radioisotope production.

In summary, according to the panelists, neutron scattering in Canada is at a historic turning point and actions should be taken now to ensure that the next generation gets to use the enormous capabilities of neutron-based multipurpose facilities. The recent failure of the NRU reactor shows the urgent need to develop an orderly succession plan so that Canada’s investment in nuclear research and engineering is not lost and Canada’s leadership in neutron science can continue well into the future.