

FAO: NEWS EDITORS AND NEWS WIRES

13 October 2017

iThemba LABS Celebrates 30-years of Operating Separated Sector Cyclotron (SSC) that put SA among the Major Players in Nuclear Science and a Significant Producer of Radiopharmaceuticals

Friday, 13 October 2017 – Today, iThemba Laboratory for Accelerator Based Sciences (iThemba LABS), a National Research Facility managed by the National Research Foundation (NRF), celebrated 30 years of operating the Separated Sector Cyclotron (SSC) which has enabled iThemba LABS to establish itself as a major player in nuclear science by studying and understanding the internal structure of atomic nuclei that constitute the core of matter and the fuel of the stars. iThemba LABS through its basic research activities has a significant societal impact by supplying accelerator-based radiopharmaceuticals in South Africa and internationally.

The SSC is an accelerator which produces particle beams for nuclear research and for the production of radioisotopes. Accelerators and reactors produce different kinds of radioisotopes which are very important for the diagnosis of cancer. In nuclear medicine procedures, radioisotopes are combined with other chemicals or pharmaceutical compounds to form radiopharmaceuticals. These radiopharmaceuticals, once administered to the patient, migrate through the body and localise in specific organs or cellular receptors. This property provides nuclear medicine with the ability to image the extent of a disease process in the body, based on the cellular function and physiology, rather than relying only on physical changes in the tissue anatomy.

Radioisotope production at iThemba LABS has thus far been an internationally celebrated example of research supporting innovative and societally relevant solutions. In the past 30 years, the SSC has played a pivotal role in entrenching the focus of iThemba LABS in providing scientifically and medically useful radiation through the acceleration of charged particles using the SSC and other appropriate technologies. The SSC has also played a pivotal role in positioning and supporting iThemba LABS' vision of being the primary centre of expertise in radiation medicine, nuclear science, and technologies to advance the knowledge and health of the people of South Africa.

More significantly, iThemba LABS has established itself as an important supplier for short-lived accelerator-based radiopharmaceuticals in South Africa and internationally. As radiopharmaceuticals have application in the diagnosis and treatment of various ailments from cancers to heart conditions, iThemba LABS thus making it one of the key contributors to the national health system.

Over the years there a large number of students achieved their masters and doctoral degrees through the research on the SSC. The facility continues to contribute to the development of a highly skilled and transformed cohort of nuclear professionals which includes scientists, engineers, and technicians. iThemba LABS SSC Alumni currently hold academic positions at South African and African universities, and others work in the nuclear industry such as the South African National Nuclear Regulator, Necsa, and the Koeberg nuclear power plant.

The Director of iThemba LABS, Dr Faïçal Azaiez, said: “The 30 years of operation of the SSC is the foundation on which the future of iThemba LABS with its ‘South African Isotope Facility Project’ will be built. The ‘South African Isotope Facility’ will place iThemba LABS at the highest level for subatomic research to understand the processes that generate chemical elements in the universe, as well as research and development of future generation radioisotopes for the benefit of Southern Africa medical therapy and diagnostics”.

Dr Molapo Qhobela, CEO of the NRF, said: “As the premier atomic particle accelerator laboratory on the African continent, iThemba LABS has the potential to transform the nuclear science research landscape. The current research and production of accelerator-based radioisotopes is a demonstration of basic and applied research being translated into innovative real-world solutions, and this is at the core of the NRF’s mandate.”

In a keynote address, Dr Thomas Auf der Heyde, Deputy Director-General: Research Development and Support at the Department of Science and Technology, said the facility contributed to the development of a highly skilled and transformed cohort of nuclear professionals – scientists, engineers, and technicians.

“The transdisciplinary research agenda of iThembaLABS brings together scientists working to understand the structure and origin of the matter that constitutes the universe. The research agenda also directly contributes to the national priorities of energy, security, and health. The facility translates basic research in the physical, medical, and biological sciences into knowledge that solves real-world problems.”

More information on the highlights and achievements of iThemba LABS over 30 years can be found on the website at: <http://tlabs.ac.za/>

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Issued by: the National Research Foundation

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About iThemba LABS: Activities at iThemba LABS are based around a number of sub-atomic particle accelerators. The largest of these, a k-200 separated sector cyclotron, accelerates protons to energies of 200MeV, and heavier particles to much higher energies. Smaller accelerators at the Western Cape site are two injector cyclotrons, one providing intense beams of light ions, and the other, beams of polarized light ions or heavy ions, and a 3MV tandem accelerator. Accelerators at the Gauteng site include a 6MV tandem accelerator and two low energy electrostatic accelerators for ion implantation and other surface science studies.

iThemba LABS brings together scientists working in the physical, medical and biological sciences. The facilities provide opportunities for modern research, advanced education, the treatment of cancers, and the production of unique radioisotopes.

The focus is on providing scientifically and medically useful radiation through the acceleration of charged particles using the Separated Sector Cyclotron and other appropriate technologies.

The vision of iThemba LABS is to be the primary centre of expertise in radiation medicine and nuclear science and technologies to advance the knowledge and health of the people of Africa.

About NRF: The National Research Foundation (NRF) is an independent statutory body set up in accordance with the National Research Foundation Act. Its mandate is to support and promote research through funding, human resource development and the provision of the necessary research facilities in order to facilitate the creation of knowledge, innovation and development in all fields of science and technology, including indigenous knowledge, and thereby contribute to the improvement of the quality of life of all South Africans.