

Commissioning of an Atmospheric Neutron Irradiation Spectrometer at CSNS

The Atmospheric Neutron Irradiation Spectrometer (ANIS) is a new beamline at the China Spallation Neutron Source (CSNS), which is mainly dedicated to accelerated testing of modern microelectronics. It features an atmospheric-like neutron spectrum, with both collimated beam spots and flood beam spots. The total length of ANIS is 40 m, equipped with neutron shutter, flight tube, neutron expander, flux controller, collimators, clearing magnet, neutron filters, and also beamline shielding. A control room, an operation room and a storage room are arranged at the back end of ANIS. Design, assembly, check-out testing, and initial commissioning tests were successfully completed in 2022. ANIS is now in an advanced stage of scientific commissioning, for the measurement of the neutron spectrum, flux and profiles in the different configurations. The neutron beam characters were measured with fission ionization chamber (FIC), position-sensitive gas electron multiplier (GEM), activation foils and single crystal diamond detectors. In this work, we present the measured beam specifications and the beam evaluation of ANIS, which are promising for an imminent start of the ANIS user programme. The early operation and user experiments are also presented.

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Session Classification: Instruments: HiCANS/Neutron Irradiation spectrometer