

## Talk 5: Progress of atmospheric neutron irradiation research at ANIS

*Wednesday, 12 June 2024 10:31 (12 minutes)*

### Abstract:

In recent years, an atmospheric neutron beamline was strongly advocated in China by the domestic industries related to semiconductors, aviation, power electronics, etc. In 2017, the Atmospheric Neutron Irradiation Spectrometer (ANIS) was approved by Department of Science and Technology of Guangdong Province, for China Electronic Product Reliability and Environmental Testing Research Institute, Guangzhou and for Spallation Neutron Source Science Center, Dongguan. The conceptual design, physical design and mechanical construction of ANIS were then started at the China Spallation Neutron Source (CSNS) [1,2]. The initial commissioning tests of this new neutron irradiation facility were completed in 2022. ANIS is now in the scientific commissioning status.

ANIS views the front part of the spallation target directly, extracting neutrons produced via the spallation reactions from meV to GeV. The most prominent feature of ANIS is the differential neutron spectrum that resembles the atmospheric neutrons, with a wide adjustability of neutron flux and beam spots. The initial evaluation of the broad neutron spectrum was once performed with the simulation results [3]. We have measured the beam parameters including neutron spectrum, beam spots and neutron flux [4]. We have conducted some experiments to verify the impact caused by thermal neutrons, accompanying protons and multilayer circuit boards on the neutron irradiation effects at ANIS. In addition, a series of neutron irradiation tests for electronic components and equipment were performed for the users [5,6]. In this work, we present the progress of neutron irradiation research performed at ANIS, including its current status and future perspectives.

### CV:

Quanzhi Yu is a Professor of Institute of Physics, Chinese Academy of Sciences. She contributed to the neutronics design and the construction of the China Spallation Neutron Source (CSNS). She is the team leader of the Atmospheric Neutron Irradiation Spectrometer (ANIS) at CSNS, focusing on neutronics and material physics research.

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**Session Classification:** Session 1: Neutron facilities