Contribution ID: **19** Type: **Poster (by default)**

A Compact DD Neutron Generator with High Neutron Yield

Neutron generator has the characteristics of high neutron energy generation, high inherent safety and flexible use scenarios, and is widely used in many fields, such as scientific research, activation analysis and contraband monitoring. This paper introduces the development of a small Neutron generator based on ECR source, which is being developed by China Institute of Atomic Energy. The generator uses a 2.45GHz high current ECR ion source to generate a high current D beam of several mA magnitude. After acceleration, it bombards a water-cooled self generated pure copper target to generate 2.5MeV neutrons through (D, D) nuclear reaction. This paper introduces the design of a small Neutron generator based on ECR source and the preliminary measurement results of neutron yield. The neutron yield of the device can reach over 1 * 109n/s using a 3He neutron detector. During the nearly 300 hours of experimental testing, the generator operated stably without any component damage. The generator has the characteristics of small size, high yield, long expected working life, etc., which can meet the needs of scientific research and some industrial applications for 2.5 MeV neutron source.

Funding Agency

Email Address

I have read the Code of Conduct to attend ICIS2023.

Yes

Presenter if not the submitter of this abstract

Primary author: CHEN, Lihua (中国原子能科学研究院)

Presenter: CHEN, Lihua (中国原子能科学研究院)

Track Classification: Applications of Ion Sources