

Development and Application Status of 30 MeV Cyclotron Based Neutron Source in Korea

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In Korea, neutron sources and related research facilities have been developed and utilized for the industrial and defense application with PGNAAs and neutron radiography, and also development of fission and fusion energy. Among them, 30 MeV cyclotron-based neutron source development is completed the neutron generation preliminary evaluation is in progress, in which the existing cyclotron was used, and TMRS and new instrumentation devices are added. After the preliminary test, neutron imaging and neutron irradiation tests will be conducted in conjunction with the related facilities.

In the preliminary experiment, neutron spectrum and yield were measured with scintillator-based devices (H3164/9111B series PMTs with HDPE Bonner spheres) and we found that the neutron source can produce 1.6×10^{12} n/s at 30 MeV and 0.01 mA. At this time, we obtained neutron radiography with standard samples for neutron radiography and we found the resolution can be up to 0.3 mm.

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