

Measurements of Total Cross Sections of Ta and Hf at Pohang Neutron Facility

Guinyun Kim

*Department of Physics, Kyungpook National University,
1370 Sankyok-dong, Puk-ku, Daegu, 702-701, Korea*

The Pohang Neutron Facility, which consists of an electron linear accelerator, a water-cooled Ta target with a water moderator, and a time-of-flight path with an 11 m length has been operated since 2000. We report the neutron total cross-section measurements of Ta and Hf samples in the neutron energy region from 0.01 eV to 100 eV by the neutron time-of-flight method at Pohang Neutron Facility. A $^6\text{Li-ZnS(Ag)}$ scintillator with a diameter of 12.5 cm and a thickness of 1.5 cm has been used as a neutron detector. The background level has been determined by using notch-filters of Co, Ta, and Cd sheets. In order to reduce the gamma rays from a Bremsstrahlung and that from a neutron capture, we have employed a neutron-gamma separation system based on their different pulse shape. The measured total cross-sections of Ta and Hf samples are compared with the previous ones and the evaluated data in ENDF/B-VI. The resonance parameters for Ta and Hf isotopes have been extracted from the transmission data by using the SAMMY code and compared with the previous ones.