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## Determination of Dose Components with A Thermal Neutron Beam for Boron Neutron Capture Therapy at Hanaro Reactor

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A thermal neutron beam facility utilizing a typical tangential beam port for Boron Neutron Capture Therapy was installed at the Hanaro, 30 MW multi-purpose research reactor. In order to determine the different dose component in phantoms irradiated with a mixed thermal neutron beam and gamma-ray for clinical applications, various techniques was applied including the use of activation foils, TLDs and ionization chambers. The thermal neutron flux was measured by gold foils. The magnesium ionization chamber and TLD-700 detectors of Harshaw were used for gamma dosimetry. The tissue equivalent ionization chamber was used to determine the total absorbed dose and the neutron dose was evaluated using a subtraction method. The water and polyethylene(solid water) phantoms utilized in the measurement. The results of the measurement were compared with MCNP4B calculation. The thermal neutron flux was  $1.096E9$  n/cm<sup>2</sup>.s in the 2cm depth of the central axis. And gamma dose was 5.74 Gy/hr of the same position. When the moderation filter was cooling by liquid nitrogen, the thermal neutron flux was about 60% larger than that without cooling. The current study confirmed the suitability of the thermal neutron beam for possible BNCT clinical trials.

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