

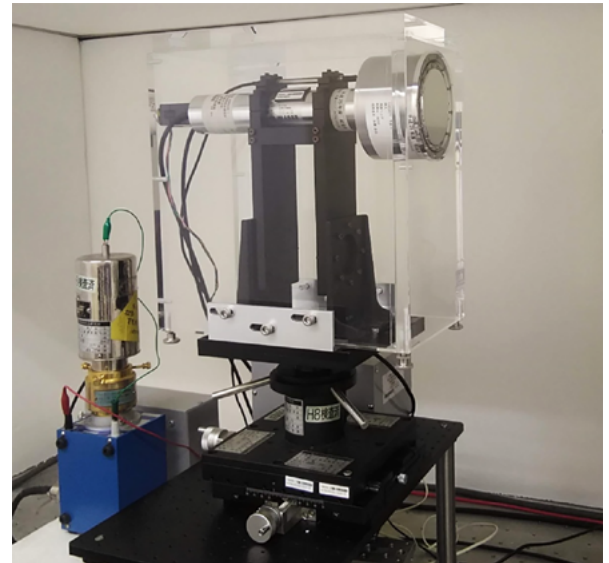
Beta-particle dosimetry standards for the dose management of the lens of the eye

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Radiation workers who handle radiation, such as medical workers, nuclear power plant workers and researchers, use dosimeters to manage the dose of radiation so that the adverse effects of radiation exposure do not occur on the body. Recent studies have improved the understanding of radioactive cataracts in the lens of the eye, and the International Commission on Radiological Protection has advised that more precise management is required. Therefore, new dose management has been put in place for exposure to the eyes.

NMIJ has developed the standards for the personal dose equivalent at the depth of 3 mm, $H_p(3)$, required for calibration and testing of eye lens dosimeters for beta particles, which are radiations that may badly affect the lens. Using an extrapolation chamber as the primary standard, the $H_p(3)$ has been determined for beta-particles from the Sr-90/Y-90 source which is widely used and the Ru-106/Rh-106 source emitting the beta-particles of high energy. The extrapolation chamber is a radiation measuring instrument specialized for beta dosimetry.

The method of performing calibration and testing based on the standards for $H_p(3)$ provided by NMIJ is adopted in the guidelines for the dose monitoring of the lens of the eye published by the Japan Health Physics Society and is used for ensuring the reliability of commercially available dosimeters. NMIJ is currently participating in the EURAMET supplementary comparison (Project No. 1398: Comparison of personal dose equivalent at 0.07 mm and 3 mm depth, $H_p(0.07)$ and $H_p(3)$, for beta radiation), and is working to establish the international consistency of the primary standards.



Extrapolation chamber for beta-particle radiations.