## Field Size Dependence Correction Factor for an In-Vivo Diode Dosimetry (IVD) System

Diodes have been extensively used for in-vivo dosimetry. Commercially available diodes usually use a layer of build-up material. Although IVD diodes can be calibrated at a standard field size, i.e.  $10 \times 10 \text{ cm}^2$ , the field size dependence of IVD diodes reading could behave differently than that of the output factor, which includes both collimator and phantom scatter factors. Therefore, a field size correction factor is necessary to compensate for the difference between the field size dependence of the IVD diode and in-water output factor. We measured the field size dependence of both the diode output (Sun Nuclear QED) and in-water ion chamber measured output factors. Both were normalized to  $10 \times 10 \text{ cm}^2$  field size. The field size correction factor was obtained as the ratio of the IVD diode output and the in-water output. This field size correction factor was calculated to be 1.008 at 4 x 4 cm<sup>2</sup> and decreases to 0.997 at 30 x 30 cm<sup>2</sup> for the 6 MV photon beam (Varian 2100C accelerator). For the 18 MV photon beam, it was calculated to be 1.040 at 4 x 4 cm<sup>2</sup> and decreases to 0.993 at 30 x 30 cm<sup>2</sup>. As indicated by the data, this field size correction factor is more significant for the higher energy photon beam and for smaller field sizes. Further details will be presented.