

AbstractID: 1795 Title: Dosimetric Characteristics of a New Radiochromic Film for IMRT Dosimetry

A new radiochromic media has been developed for IMRT dosimetry which is an order of magnitude more sensitive than previously available models. In this paper the sensitivity and uniformity are reported. The film was calibrated at NIST using a ^{60}Co teletherapy beam with a dose rate of about 5 mGy/s at a distance of 1 m. Uniformity was investigated in this beam at a distance of 1.5 m with a fully open collimator. At both positions, the film was irradiated at a depth of 1 cm in polystyrene. The irradiated film was read with a spectrophotometer and two scanning laser densitometers. A unique feature of the new emulsion is that the peak of the absorbance spectrum falls at the wavelength of the HeNe lasers used in these densitometers, maximizing sensitivity. Sensitivities on the order of 600 mAU/Gy were determined, compared to about 65 mAu/Gy for type HS film. Film uniformities were found to be good, on the order of $\pm 5\%$ peak to peak. A simplified double exposure technique is introduced to account for film non-uniformities for small (1 cm^2) samples.

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