

AbstractID: 1585 Title: Application of GAFchromic HS Radiochromic Film in Clinical Dosimetry

The clinical use of GAFchromic HS radiochromic film was investigated for the dosimetric verification of IMRT and HDR. The film measurement procedure utilized a Howtek 860 film scanner to obtain digital images and the commercially available RIT software for image processing. Image processing employed the double exposure technique to correct for non-uniformities in the film response. Radiochromic film was used to measure a point dose in an IMRT phantom and compared to an Exradin micro-chamber dose measurement. The IMRT plan was calculated by Pinnacle³ treatment planning computer. The IMRT phantom was set-up according to the plan on an Elekta SL15 using the 6MV and 15MV photon beams. The results of radiochromic film measurements for 3 cases showed agreement within 2% of the planned delivered dose and a relative agreement within 3% for the micro-chamber. Also, radiochromic film was used clinically to verify in-vivo dose in HDR treatments. The HDR plan was calculated by Varian BrachyVision software. The film was taped to a vaginal cylinder and inserted into the treatment position. The dose was delivered by a Varian VariSource HDR unit. Results of these measurements yielded an agreement within 4% for 2 cases between film measurements and the calculated dose. In conclusion, GAFchromic HS film provides an adequate tool for measurement of dose in the clinical applications of IMRT and HDR. The clinical implications, procedure, and application of radiochromic film for in-vivo dosimetry will be presented as an alternative to other more complex dosimetry techniques for community hospitals and academic settings.