AbstractID: 7655 Title: GafChromic Film Dose Verification of an Optimized Treatment Plan Using the HAM Applicator in HDR-IORT

**Introduction:** An atlas of about 1000 treatment plans has been developed for HDR-IORT. The GafChromic film dose verification of HAM (Harrison-Anderson-Mick) applicator is part of the commissioning of the atlas. **Materials and Method:** The various sizes of HAM applicators are made of clear superflab in which plastic catheters had been embedded. The atlas of treatment plans was generated with Nucletron Plato Brachy module V14.0. The dose of 10 Gy is prescribed at 1 cm distance from the source plane at which dwell times are optimized to achieve a uniform dose. GafChromic films model MD55-2 were irradiated at the target plane. Another sets of films were exposed to generate H-D curves for the same batch of MD55-2 films. Lumisys model 150 scanning densitometer and RIT software was used to read films and to analyze the data. **Results:** The completed 2-D dosimetry of the films shows that the prescription dose of 10 Gy isodose line matches with that generated by the treatment plan within 1 mm. It is also true for the isodose line of 8 Gy. The hot area of 11Gy isodose line covers 46% of the target area (5cm x 9cm) for the treatment plan, versus 50% shown on the film measurement. **Conclusions:** Careful analysis shows that GafChromic film can be used for determination of the dosimetry of the HDR Ir-192 source. It confirms that the prescribed dose at the target plane for the HAM applicator was delivered using MicroSelectron Afterloader based on the optimized treatment plan from the atlas.