

AbstractID: 3847 Title: Dosimetric evaluation of GAFCHROMIC<sup>®</sup> XR type T and XR type R films

**Purpose:** Recently, two new films models, GAFCHROMIC<sup>®</sup> XR type R and type T films have been developed by ISP, for the measurement of high dose radiation in interventional radiological procedures. The objective of this project is to determine the dosimetric characteristics such as linearity, time dependence, sensitivity, energy dependence, dose rate dependence and UV light sensitivity of these new film types. A comparison of dosimetric characteristics of these film types with the other commercially available film models is also presented here.

**Method and Materials:** The XR type T, type R and MD-55-2 films were exposed to low energy beams from an Oldef Therapax HF 150T superficial unit and also to high energy beams from a Varian LINAC. The type T films were scanned using a Lumiscan-50 laser scanner and the type R films were read using a GretagMacbeth D19C reflection densitometer. The optical densities of MD-55-2 films were measured with both the scanning techniques for comparison with XR type T and type R films.

**Results:** For low energy beams, the type T and R films were found to be approximately 14 times and 6 times more sensitive than MD-55-2 film, respectively. The optical densities of these film types were found to increase by approximately 16% within the first 24 h after exposure and an additional 4% for the next 24 h. No significant changes were found approximately 360 h after the exposure. The energy dependence of the new films for high energies was similar to that of MD-55-2, but at low energies these films show a larger variation of optical density compared to MD-55-2 film. An insignificant effect of UV light on the sensitivities of the new films was observed.

**Conclusion:** The dosimetric characteristics of the news films were evaluated and also compared to the other commercially available film models.