

**Dosimetric characterization of the ISOGAMMA LLCo irradiator.**

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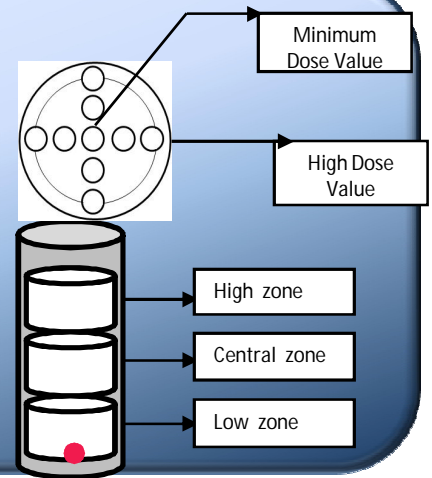
**Objective:**

The object this paper was to make the dosimetry to characterize the dose distribution in the irradiation chamber of the ISOGAMMA LLCo facility, it which will contribute to the correct operation of the facility, ensuring the quality of future radiation processing.

**Materials and Methods.**

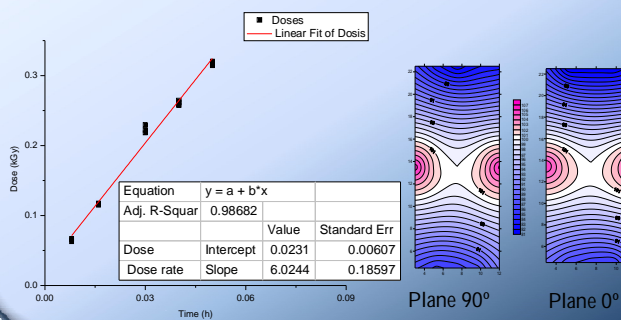


The dosimeters were distributed in the areas where the maximum and minimum dose values are expected. Initially, the Fricke dosimetric system was used to determine dosimetric characterization, and considering the cylindrical geometry of the irradiation chamber and its dimensions, the chamber was divided into three study zones. The dosimeters were measured by using the spectrophotometric method. Later, the alanine dosimetric system was employed to determine the dose distribution and the chamber was divided into six study levels, and the dosimeters were measured by using the electron spin resonance (ESR) technique with a MiniScope 400 equipment. Finally, the dose rate was determined by both dosimetric systems in the point of red color, in different times.

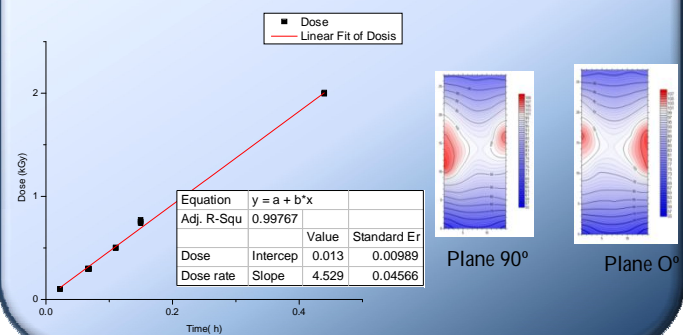


**Results**

**Fricke Dosimetric System**



**Alanine Dosimetric System (ESR)**



Analyzing the obtained absorbed dose values for each study zone, it was observed that the maximum dose values in the irradiation camera corresponds at the central zone, while the minimum dose values are in the high and low zones. These results can be attributed to the distribution geometry of the radioactive sources.

The dose rate value obtained by the Fricke dosimeter was of 6,024 kGy/h in march/2013 and for alanine dosimeter of 4,529 kGy/h in august/2015, which corresponding with the of estimated dose rate value of 4,44 kGy/h, with a relative error of 1,9% between both dosimetric systems.

**Conclusions:**

In this work experimental was obtained dosimetric characterization of the ISOGAMMA LLCo radiation facility with different dosimetric systems, the dose distribution obtained has a similar performance for both dosimetric systems and the highest dose values are observed in the central part of the irradiation chamber and the lower dose values in the upper and bottom parts.

**Acknowledgements**

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