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BOOK OF ABSTRACTS

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DOSIMETRIC CHARACTERIZATION OF A MULTIPURPOSE EXPERIMENTAL GAMMA CHAMBER

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Ionizing radiation is used as an industrial process for different purposes: sterilization, disinfestation, increase food products shelf life or for materials modification. Each industrial use is preceded by a validation process, to study the impact of the radiation on the product characteristics. At Nuclear and Technological Campus, Portugal, an experimental gamma chamber with four Co-60 sources, with a total activity of 4.79 kCi (in Nov. 2012) and four levels for irradiation, is used for different research studies in food irradiation, waste water treatment, polymerization and sterilization. Recently, in 2009, the experimental chamber was re-charged with new sources, and since then a continuous work has been done for the complete characterization of the different irradiation positions and levels. In the present study, the dose rate for each level and position was estimated using an Ionization Chamber (from IBA-dosimetry corporation). The estimated doses and a three dimensional dose mapping is presented for the four levels of the chamber. This dose mapping allows an enhanced optimization and implementation of irradiation processes, namely for food irradiation.

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