

**X-RAY SPECTROMETRY OF RADIATION QUALITIES OF ISO 4037 NARROW SPECTRUM SERIES**VIVOLO V<sup>1</sup>, CALDAS LV<sup>1</sup>

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The spectrometry of an X-ray system is very important to define standard X-ray beams and to assure their quality control program. Almost all dosimetric systems for the measurement of ionizing radiations at routine conditions are energy dependent. Calibration factors are therefore usually provided by calibration laboratories for different photon spectra. X-ray bremsstrahlung spectra are commonly characterized by the kilovoltage across the X ray tube, the filtration, and the half-value layers (in Al or Cu mm). Some laboratories also specify other quantities, such as the homogeneity coefficient, the mean energy, or the effective energy. These specifications will be sufficient for many applications. However, the spectral distribution of photons in the X-ray beams need to be known. In the case of the dosimeter sensitivity to be determined as a function of energy, using continuous spectra, the shape of these spectra needs to be known for the 'unfolding' procedure if a good energy resolution is to be achieved. A knowledge of the spectra will also be necessary for many theoretical model calculations in connection with irradiation experiments. This fact is more important as more pronounced is the energy dependence of the dosimeter in question. The spectrometry of an X radiation system, Pantak/Seifert, model ISOVOLT 160 HS, of the Calibration Laboratory of IPEN was realized. This system will be utilized to calibrate instruments used in radiation protection and diagnostic radiology measurements. The spectrometry was obtained taking measurements from 60 to 150 kV. For this spectrometry procedure, a spectrometer system, EG&G ORTEC, model NOMAD PLUS, with an HPGe semiconductor detector, model GLP 16195/10-S, was utilized. The measurement distance were 1.0, 2.0, 2.33 and 2.5 m, from of the X-ray tube focus (focal spot). The data collected was treated through a special software, Maestro (ORTEC TM). For the calibration of the spectrometry system a radioactive source of <sup>241</sup>Am (0.29 MBq), with energy peaks at 17.61 keV and 59.54 keV, was utilized.