Characteristics of Transmitted Bremsstrahlung Spectra Through Al, Cu, Ag, Gd and Au Filters for Diagnostic Radiology

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The characteristics of the transmitted bremsstrahlung spectra of 40, 80 and 120 keV end point energies are evaluated using the recently reported photon attenuation coefficients. The peak energy and full width at half maximum of the beam which is considered as a measure of the monochomotization of the poly-energetic beam, are evaluated. In these evaluations, the characteristic X rays of the anode are not considered. It is noticed, in general, the peak energy of the bremsstrahlung spectrum increases and the full width at half maximum decreases. The effect of K edge is seen clearly on the transmitted spectra for Cu to Au filters. On the whole, the present analysis suggests that better monochomotization (narrower width) of the bremsstrahlung beam and smaller surface dose can be achieved by carefully choosing proper metallic filter other than Al depending on the end point energy of the bremsstrahlung spectrum, for diagnostic radiology.