

Alternative Mathematical form for Determining the Effectiveness of High-LET Radiations at Lower Doses Region

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Abstract : The Effectiveness of lower doses of high-LET radiations is not accurately determined by using energy-based physical parameters such as absorbed dose and radio-sensitivity parameters. Therefore, an attempt has been carried out in this research to propose alternative parameter that capable to quantify the effectiveness of these high LET radiations at lower doses regions. The linear energy transfer and mean free path are employed to achieve this objective. A new mathematical form of the effectiveness of high-LET radiations at lower doses region has been formulated. Based on this parameter, the optimized effectiveness of high-LET radiations occurs when the energy of charged particles is deposited at spacing of 2 nm for primary ionization.

Keywords : effectiveness, low dose, radiation mean free path, linear energy transfer

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