

A Dose Evaluation Formalism of Glass Dosimeter for the Precision Measurement

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The use of radiophotoluminescent glass dosimeter is increasing because it has good dosimetric properties and the characteristics of repeatable read-out and reusability. Most of the glass dosimeter readout systems in the market determine the dose by using an internal calibration dosimeter and standard glass dosimeters that are irradiated in a specific radiation condition. But the user condition such as the beam type and the dose level may be different from the specific condition so it causes the limitation on the precise dose measurement.

We reviewed the dose evaluation process of glass dosimetry systems in the market and made a dose evaluation formalism for the precision dose measurements.

We considered the fading effect of the glass dosimeter and the natural dose accumulation in the formalism. The fading effect is less than 5% in a year, but it cannot be negligible if the period between the irradiation and the read-out becomes longer.

And reference glass dosimeters according to the user beam type and the interest range of the dose are introduced instead of the internal calibration dosimeter. They are read at the same time with sample glass dosimeters to correct the reader response.

