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Comparative study between glass dosimeter and Thermoluminescent dosimeter for postal dose audit system

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Thermoluminescent dosimeter (TLD) has been used for postal dose audit by IAEA, ESTRO and RPC. TLD is small enough to handle easily and have fine accuracy up to these days. However, the accuracy of radiotherapy has become more and more progressed and the requirement of quality assurance is increasing. We'd like to suggest glass dosimeter (GDR) for postal dose audit tool.

GDR (Chiyoda technol Co.) is radiation-induced photoluminescence (RPL) detector. RPLorigins are created by irradiation and these origins are excited by UV-ray results in orange RPL emission. This RPL emission is proportional to the amount of irradiation dose. The advantages of GDR compared with TLD are repeatable readout results in reduction of random error and little fading results in reduction of systematic error.

Feasibility study using GRD were done at NIRS using linac (6MV and 10MV) and Co-60 machines. The standard deviation was about 1.2 % (N=180) which seems pretty well than conventional TLD method. We are going to confirm the accuracy of TLD usingsame measurement condition to make sure the GRD is the superior tool for postal doseaudit.