

PS1 P 26

**Evaluation of TLD 600/700 responses at different irradiation fields**T. A. Cavalieri, V. A. Castro, P.T.D. Siqueira

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The implementation of a gamma dosimetry system based on TLD 600/700 pair has been attained by the BNCT research group of Ipen, in order to cope with international standard procedures, replacing the so far procedure which lays on TLD 400 measurements. The intended procedure was carried out by the response study of all mentioned TLDs to different radiation fields of increasingly complexity, before using them at the BNCT research facility. The radiation fields used in this work were:

- (1) a pure gamma field, derived from a 10 mCi  $^{60}\text{Co}$  calibration source;
- (2) a mixed neutron-gamma field driven from a 2 Ci AmBe source placed inside a polyethylene moderator arrangement and
- (3) a mixed neutron-gamma field driven from IPEN/MB-01, a bench marked zero power reactor.

Besides presenting fields with different intensities and compositions, the experimental parameters from all arrangements were known to an extent so that simulations could be done with great accuracy. Simulations with the MCNP code were run in parallel to the experiments and provided not only discrimination of the field's components but also their contribution to the dose delivered to each one of the TLDs from each single field component.

The adopted working procedure provided a better understanding of the responses of each type of TLDs to gamma and thermal, epithermal and rapid neutrons. TLD 400 in spite of been insensitive to neutrons, has not shown a so good precision as TLD 600 and TLD 700 do. TLD 600 has shown a marked relationship between the two dosimetric areas under the glow curve and relative intensities of gamma and thermal neutrons. TLD 700, on its turn, has shown to be sensitive to neutrons which may overestimate gamma dose. The TLD 600/700 pair may therefore be used to performed mixed beam dosimetry but demand a clear understanding of its limitations mainly in a not negligible epithermal neutron field, which is the present case of the BNCT research facility at Ipen.

PS1 P 27

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