Low-dose photon irradiation response of Ge and Al-doped SiO(2) optical fibres

Abstract:

We have investigated the thermoluminescent response and fading characteristics of germanium- and aluminium-doped SiO2 optical fibres. These optical fibres were placed in a solid phantom and irradiated using 6 and 10 MV photon beams at doses ranging from 0.02 to 0.24 Gy delivered using a linear accelerator. In fading studies, the TL measurements were continued up to 14 days post-irradiation. We have investigated the linearity of TL response as a function of dose for Ge-, Al-doped optical fibre and TLD-100 obtained for 6 and 10 MV photon irradiations. We have concentrated on doses that represent a small fraction of that delivered to the tumour to establish sensitivity of measurement for peripheral exposures in external beam radiotherapy.