

Recent trends of X-ray dosimetry with thermoluminescent detectors

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X-ray dosimetry is an area of increasing importance in diagnostic radiology, due to the potential for radiation-induced cancer and acute organ damage to body organs such as skin and eyes. There are three aspects to dosimetry in diagnostic radiology: measurement of performance of X-ray equipment, assessment of doses to patients, and assessment of doses to workers. One type of radiation detectors used in this field is the thermoluminescent dosimeters (TLDs), which consists of a luminescent crystalline material, that when exposed to ionizing radiation, it absorbs and traps some of the energy of the radiation in its crystal lattice. When heated, the crystal releases the trapped energy in the form of visible light, the intensity of which is proportional to the intensity of the ionizing radiation the crystal was exposed to. Some advantages of using TLDs for x-ray dosimetry compared to typical detectors include their ability to measure a greater range of doses, their ease of obtaining doses, and reusability. However, none of the commercially available TLDs fully satisfies all the needs for X-ray dosimetry, which generates a large area of opportunity for the investigation of new materials for this application.

Summary

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