Recent Development in inorganic scintillator-based optic fiber dosimeters

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Aim

To study the various development in the area of Scintillator-based optic fiber dosimeter, concentrating especially on the inorganic Scintillator.

There are two types of dosimeter available:

1. Diode based i.e MOSFET
2. Scintillator based

1 Diode Based

1.1 Advantages

- good sensitivity
- small size
- real-time readout

1.2 Disadvantage

- Expensive
- incident angle dependent
- limited durability

2 Scintillator based

2.1 Advantages

- passive detection
- small size
- linear response to dose rate
- energy independence
- immunity to electromagnetic interference
- good medical robustness
- capacity for multiplexing

Scintillator based are further classified on the basis of what material they are using for fabrication

1. **organic scintillator:** This are combination of plastic + organic scintillator comprising of aromatic hydrocarbon molecules.
2. **inorganic scintillator:** although application of inorganic scintillator are very less in scintillator based dosimeter due to their non-linear response to x-ray energies under 100 keV and non watery equivalency, yet current day research interest is raised due to its "high sensitivity to low radiation dose rate.