

# Clinical prototype of a dosimeter for IMRT beam quality assurance

## Technology

A clinical prototype of a plastic scintillating fiber dosimeter array has been developed. The system comprises twenty-nine scintillating fiber detectors spaced 1 cm apart. The detectors are coupled to clear non-scintillating transport fibers that collect scintillation photons and transport them to a color charge-coupled device (CCD) placed on the treatment table outside of the primary beam. A spectral discrimination technique is used to remove the Cerenkov radiation contaminating the scintillation signal. The CCD is encased in a custom designed, Cerrobend shielded aluminum carrying-case equipped with a custom-made optical fiber connector enabling reproducible removal and insertion of the fibers. This will allow for "hot swappable" detector modules. Residual radiative noise on the CCD is removed with a post-processing algorithm. All dose points are processed simultaneously. The scintillating fiber dosimeter array prototype is found to be accurate, precise and practical. The current system detector capacity exceeds 3500 measurement points per single irradiation.

## Applications

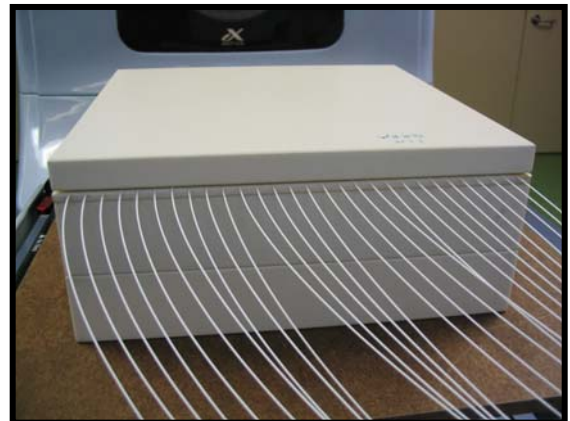
- Intensity modulated radiotherapy quality insurance
- General beam dosimetry monitoring measurements.

## Competitive advantages

- Water-equivalence over a broad energy range
- Highly sensitive medium
- High spatial resolution
- Linearity to dose, doses rate and energy
- Real time readout

## State of development

Clinical prototype



## Business opportunity

Université Laval is seeking partners to develop and commercialize this technology.

## Intellectual property

Provisional patent application to be filed in Q4 2007.

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