



Contribution ID : 146

Type : Oral

Nanoparticle Dose Enhancement of Synchrotron Beams on the IMBL

Thursday, 26 November 2015 11:30 (20)

Nanoparticles with high atomic number (Z) have a larger x-ray cross section than biological tissues. Synchrotron beams interact with the nanoparticles to produce Auger electrons which deposit their energy over a short range, typically less than a micron. This characteristic offers the ability to enhance the dose delivered to tumors by synchrotron broad beam (BB) or microbeam radiation therapy (MRT). High Z nanoparticles can also be used as a contrast agent for in-vivo x-ray imaging during the treatment setup.

Here we present our initial findings on the dose enhancement effect for synchrotron beams on the IMBL using UV/Vis spectroscopy with radiosensitive dosimeters irradiated with and without nanoparticles.

Keywords

Nanoparticles, Dose Enhancement, IMBL

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Session Classification : Radiotherapy and Radiobiology

Track Classification : Radiotherapy and Radiobiology