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Dosimetry comparition of 6mev electron by gafchromic ebt2 and parallel plan chamber

Nafise Hasoomi, Mahdi Yazdani and **Mansour Naderi**
Parsian Darou Parto Company

Aims: The reference dosimeter for electrons are plan parallel chamber. Film dosimetry has been used extensively as a convenient and rapid means of measuring dose distributions of therapeutic electron beams. Film dosimetry is new way for measurement of isodose, profile and PDD. Quality control of dosimetry parameters in electron is necessary for difference energy of electrons because of unpredictable electron behaviour and scattering. Also Profile is a view that encompasses symmetry and flatness.

Methods and Material: One of the newest dosimetry film types that are made by the company ISP is EBT2. These types of films are colourless and sensitive to ionizing radiations and UV radiation beams.This project done based on 2 steps: 1- calibration curve of gafchromic film 2- verification of PDD and profile in gafchromic film and parallel plane chamber. Films were exposed by 6MeV electron, and then films scanned with flat board scanner Microtek 9800XL and them analyased with Image J and Excel software.

Results: For all measurements found the maximum uncertainty of 2%.This was calculated through the data of PDD and Profile diagram of 6MeV electron and compare with plan parallel data.

Conclusions: film dosimetry is a good way to measure profile and PDD of electron beams, new gafchromic EBT2 films can achieved 2 dimention isodose. in this project results of gafchromic EBT2 and plane parallel in the dosimetry of 6 MeV electron beam in Varian accelerator shows the variation is under 2% in

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nhasoomi@yahoo.com

High potential applications of nanocomposites of magnetic materials and metal-organic frameworks (MOFs) in drug delivery and cancer therapy

Vahid Jabbari
University of Texas at El Paso, USA

Metal-organic frameworks (MOFs) are new class of porous materials with high surface area and low density. Over past two decades, considerable advancements in MOFs preparation have been achieved, due to easily available raw materials and their high potential applications in adsorption, catalysis, gas storage, sensing, and biomedical applications. Regarding drug delivery and cancer therapy, it has been shown that, compared to conventional drug delivery systems, MOFs own great advantages to accomplish high drug loading and facile controlled drug release kinetics. However, in case of conventional drug delivery systems and MOF-based drug carriers, it is difficult to deliver drugs, drug get into blood before reaching targeting part. Magnetic-based drug delivery is versatile and efficient method to deliver drug to a specific location in body, which can be achieved by compositing magnetic material with drug. And through using an external magnetic field, conduction of magnetic particles and drug to a desired treatment location, is feasible, thus limiting spreading of drug to other parts of body and decreasing side effects of chemotherapy. Synergetic effect of magnetic materials-MOF composites offer advantages of high efficient drug loading and magnetically controllable drug delivery for potential applications in targeted drug delivery and cancer therapy.

vahid_jabbari.azeri@yahoo.com