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EDITORIAL

Editorial

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"*Every once in a while, a new technology, an old problem, and a big idea turn into an innovation*"- Dean Kamen

Radiation therapy is a leading branch in cancer management these days. This branch is highly influenced by technical development and innovation in radiation treatment delivering and diagnosing equipment with high accuracy and precision. Radiation treatment is an effective, personalized cancer treatment that has benefited from technological advancements. Given that these advances have played a central role in the success of radiation therapy as a major component of comprehensive cancer care [1, 2].

The purpose of this special issue is to provide a platform to discuss new ideas of emerging technology for the field and to recognize areas for greater research investment. Expert clinicians and scientists discussed innovative technology in radiation oncology, in particular as to how these technologies are being developed and translated to clinical practice in the face of future challenges and opportunities.

In this issue we have included technologies encompassed topics in functional imaging, treatment devices, nanotechnology, and information technology (IT), radiation dosimetry. The technical, quality and safety performance of these technologies is also considered. A major theme of the issue was the growing importance of innovation in the domain of process automation, oncology informatics and better diagnosis.

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This issue includes five papers which were presented during AOCMP-AMPICON2017 in Jaipur, India. The selection criteria of papers is on the basis of innovative original ideas, economical technology development, automation, radiation dosimetry in field of radio-diagnosis and radiotherapy.

In the paper titled "**Development of a CMOS-based Optical Computed Tomography System (CMOS-OCT) for 3D Radiotherapy Dosimetry**" *Nurul Farah Rosli et al.* have shown characteristics of in-house developed 3D imaging system named "Optical Computed Tomography (OCT) for ensuring radiotherapy dose delivered to PRESAGE™ dosimeters. It reconstructs dose distributions delivered to the radiochromic PRESAGE™ that changes its colour when irradiated. The results show that the system is capable of capturing the projection images of a 3D translucent object with good linearity and uniformity.

In the paper titled "**An inexpensive method of Small Photon Field Dosimetry with EBT3 Radiochromic Film**" *AnkurMourya et al*. have developed a MATLAB program to use EBT3 Radiochromic films as a dosimeter for small field dosimetry. Small field dosimetry is complicated due to electron disequilibrium, steep dose gradient and perturbation due to different densities of the detector and the medium [3]. They have demonstrated that due to excellent spatial resolution EBT3 Radio-chromic films can be used as economical small field dosimeter with high sensitivity, reproducibility and ease of use.

In the paper titled "**Dual-energy high-count-rate X-ray computed tomography scanner using a cerium- doped yttrium aluminum perovskite crystal and a small-photomultiplier tube**" Tsukuru Sato et al. have developed a dual energy (DE) computed tomography (CT) scanner using detector which consisting of a cerium doped yttrium aluminum perovskite and a Photo Multiplier Tube (PMT), to improve both the spatial and energy resolution at two different energies for improved imaged quality [4, 5].

In the paper titled "**Triple-energy high-count-rate X-ray computed tomography scanner using a cadmium telluride detector**" Eiichi Sato et al. have developed a triple energy (TE) computed tomography scanner using detector which consist of cadmium telluride. This scanner can obtain three kinds of tomograms at three different X-ray energy ranges simultaneously which improves the image quality and will increase clinical informative outcomes of the scan [4, 5].

In paper titled "**850-nm-peak high-sensitivity near-infrared-ray computed tomography scanner in the living-body window**"according toYuichi Sato et al. conventional technology it is difficult to image objects with high spatial resolution so they have developed first-generation near infrared CT scanner with a peak wavelength of 850 nm and which can reconstruct tomograms with changes in the relative sensitivity [6] .

The technology driven advance nature of healthcare in field of radiation therapy and radio-diagnosis predisposes radiological physics research teams to take on research initiatives. The studies presented on technology development are also focused on the need for efficacy and effectiveness. So that need of the hour "cost-effective advancement in healthcare technologies" can be achieved.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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