

6<sup>th</sup> October, 2018

## Report

### Preamble

Vidyalankar Institute of technology (VIT) always promotes interaction with industries and research laboratories to inculcate research culture among faculty and students. In this regard VIT had conducted a workshop on “Application of Radiation and Radioisotopes in Diagnosis and Therapy of Cancer” on Saturday, 15 October 2016.

Biomedical Engineering Department of VIT wanted to continue interaction with the Society and in 2018 again approached Dr. Badri N. Pandey, Head, Radiation Signalling and Cancer Biology Section, BARC who is the Secretary of the Society to conduct a value added course/workshop for the benefit of students. And we are thankful that he agreed to conduct the workshop on an area which is more important and relevant to Biomedical Engineering students and the topic was fixed as “Current Challenges in Diagnosis and Radiotherapy of Cancer”. A convenient date was proposed and agreed by both VIT and SRR as 6<sup>th</sup> October 2018.

### About Society for Radiation Research

Society for Radiation Research is a Society of Scientists, Clinicians, Students, Academia and Industries having interest in field of Radiation Research. The society is started with the following objectives:

1. To promote research in the areas of:
  - Radiation biology with basic and applied aspects;
  - Clinical radiation biology and oncology;
  - Radiation hormesis and low dose radiation biology;
  - Environmental radiation biology, non-ionizing radiation effects;
  - Radiation medicine, radiation technologies;
  - Transnational research;
  - Terrestrial and space radiation biology and any other relevant research areas.
2. To facilitate integration and interaction of different radiation research areas.
3. To promote the diffusion of knowledge in these research areas through organizing meetings, conferences, workshops, awareness programs, scientific publications etc.
4. Promote discussion, interactions amongst scientist-public-industry and acting as liaison to communicate facts and research developments to public, government and regulatory bodies.

- Integration of Society with other National and International Scientific Bodies.
- Facilitate and promote research in areas of radiation research by various means. Encourage and promote young researchers and students to pursue research and build career in the areas of radiation research
- Promote and facilitate education of radiation research in national Institutes and Universities.

## About Biomedical Engineering Department, VIT

The Biomedical Engineering Department of VIT has a clear vision to become a **Center of Excellence** in the field of Biomedical engineering where learners are nurtured in a scholarly environment to evolve into competent professionals to benefit society. Department has been accredited by National Board of Accreditation and has signed MoU with GE Healthcare for creating a Centre of Excellence lab under the leadership of current Head of Department Dr. Jitendra Toravi

## About the Workshop

Schedule of the program was finalised and brochures/banners were prepared and was distributed to members of the Society as well as Faculty of Mumbai University. It was also published on the website of SRR and VIT. Around 60 participants including Doctors Scientists, Faculty, Research students and Graduate students had attended the workshop. There were also outstation participants from Mysore and Ahmadabad

## Program of the workshop

9:00-9.30 am	Registration
9.30: -9.45 am	Inauguration
9:45-10:30 am	<b><i>"PET-CT an Unique Modality in Management of Cancer"</i></b> <b>Dr. Sunita Sonavane, Radiation Medicine Centre (RMC).</b> Bhabha Atomic Research Centre Tata Memorial Centre Annex, E. Borges Marg, Parel, <b>Mumbai</b> -400012 India
10:30-11:15 am	<b><i>"Nuclear Medicine: Emerging Modality of Cancer Diagnosis and Treatment"</i></b> <b>Dr. Chandan Kumar, RPhD, BARC, Mumbai</b>
11:15-11:30 am	<b>Tea Break</b>
11:30-12:15pm	<b><i>"Applications of Accelerators in Cancer Radiotherapy"</i></b> <b>Dr. S. D. Sharma, Radiological Physics and Advisory Division (RP&amp;AD), BARC, Mumbai</b>
12:15-01:00 pm	<b><i>"Glimpsing the Future of Radiation Technologies in Multidisciplinary Cancer Care"</i></b> <b>Dr. Shankar Vangipuram, HCG Cancer Centre, Mumbai</b>
1.00pm	<b>Vote of Thanks and discussions</b>

## Overview of the Workshop

The program started with a simple inaugural function which was presided over by honoured guests Dr. K.P. Mishra, Founder President, SRR, Dr. Badri Pandey, BARC, Dr. Jitendra Toravi, Head, Biomedical Engineering Department, VIT. The function started with Saraswati Vandana which was followed a brief overview about department of Biomedical Engineering and its



**Inaugural Function**



**Dr. K. P. Mishra Founder President, SRR**



**Dr. Badri N. Pandey, Head, Radiation Signalling and Cancer Biology Section, BARC. Secretary, SRR**

activities were given by Dr. Jitendra Toravi Head of Biomedical Department. This was followed by a brief by Dr. K. P. Mishra Founder President of SRR about the advancements in Radiation Therapy and Medicine. He had also mentioned about the Nobel Prize in this year for Cancer Immunotherapy. He further explained about ionising radiations and their use in cancer therapy. Following this Dr. Pandey elaborated on the purpose of the Society for Radiation Research and its objectives.

In the first technical session was on ***"PET-CT an Unique Modality in Management of Cancer"*** by **Dr. Sunita Sonavane, Radiation Medicine Centre (RMC)**. She started from the difference between normal imaging which is used in detection of ailments and nuclear imaging. According to her, normal imaging methods like X-ray focus on anatomical level where as nuclear imaging focus on cellular/functional level. She also explained about advantages of nuclear medicine with few examples of 2D/3D/4D imaging. Then she elaborated on radiopharmaceuticals and response to treatment. She finally concluded with areas where engineers are required for all these applications. This session was followed by Tea Break.



**Dr. Sunita Sonavane, Radiation Medicine Centre (RMC) Mumbai**

The second session was on **“Nuclear Medicine: Emerging Modality of Cancer Diagnosis and Treatment”** by **Dr. Chandan Kumar, RPhD, BARC, Mumbai**. He started the session with atom, radioactivity and radionuclide. Later he elaborated on production of radionuclide and their generation. In further discussion, he talked on selection of radionuclide for different therapies, radio-pharmaceuticals and their quality control. He specified about the labelling of radio-nuclides and their targeting. Finally, he discussed about the various instruments for radio-diagnosis and imaging like SPECT and PET. In different radiotherapies, he mentioned about use of radiation in brachytherapy, bone pain palliative care etc. He concluded the session with recent developments in cancer diagnosis.



**Dr. Chandan Kumar, RPhD, BARC, Mumbai**

The third session was on **“Applications of Accelerators in Cancer Radiotherapy”** by **Dr. S. D. Sharma, Radiological Physics and Advisory Division (RP&AD), BARC, Mumbai**. In the session, Dr Sharma elaborated on ionizing radiation. He explained about the various accelerators used in radiotherapy. He also discussed about photon emission in radiotherapy and mentioned it as a costly method. He mentioned that all these nuclear imaging and radiotherapy equipments are costly and are available mainly in Government organisations or limited big hospitals.



**Dr. S. D. Sharma, Radiological Physics and Advisory Division (RP&AD), BARC, Mumbai**

The fourth session was by ***"Glimpsing the Future of Radiation Technologies in Multidisciplinary Cancer Care"*** by **Dr. Shankar Vangipuram**, HCG Cancer Centre, Mumbai. In his dynamic session he started from brief idea about what is cancer and differences between tumour and cancer. He elaborated on the various causes of cancer such as pollution in air, water, food and life style. According to him radiation is a very small component which causes cancer. In his interactive lecture he explained about the importance of the precision and accuracy during cancer radiotherapy. Example of PET imaging and radiation therapy was taken to explain how administration of radiation is done how precisely the location and angle of administration is adjusted so that healthy tissues are minimally affected. He further elaborated on the importance of role of Biomedical Engineer in all these processes.



**Dr. Shankar Vangipuram, HCG Cancer Centre, Mumbai**

All the sessions were quite interactive and the participants were involved in the session which was obvious from the level of questions asked by them. The speakers were very happy that the audience were asking relevant questions after every session which validated all the concepts taught in the workshop.





**Technical Session**



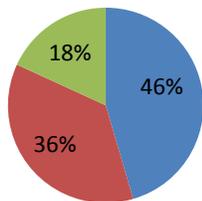
**Group Photos**

The session came to a conclusion with feedbacks from the participants. One of the participant Ms. Priyanka Shetty had expressed that the workshop made her inclined towards nuclear medicine and she is planning to opt for nuclear medicine for masters. A written feedback was taken from all the participants. This was followed by vote of thanks by Dr. Pandey of Society and Prof. Geetha Narayanan from VIT.

**Feedbacks on various aspects of the workshop**

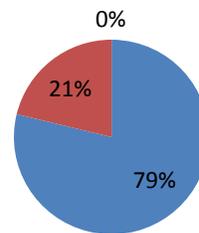
**Course Content**

■ Excellent ■ Very Good ■ Good



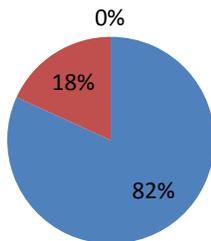
**Lecture Arrangements**

■ Excellent ■ Very Good ■ Good



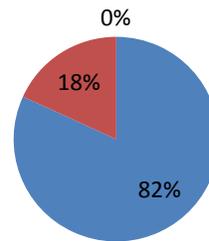
**Facilities**

■ Excellent ■ Very Good ■ Good



**Staff Co-operation**

■ Excellent ■ Very Good ■ Good



**Report Prepared by:** Dr Geetha Narayanan, Dept of Biomedical Engineering, VIT, Mumbai