MANGALORE UNIVERSITY
and
JSS ACADEMY OF HIGHER EDUCATION AND RESEARCH

Training Programme on

Applications of Radiation and Radioisotopes in Physical, Materials, Chemical and Biological Science Research

Sponsored by

Department of Science and Technology - Synergistic Training program
Utilising the Scientific and Technological Infrastructure (STUTI) Scheme

October 10 - 16, 2022

REPORT

Organised by

Centre for Application of Radioisotopes and Radiation Technology (CARRT)
Centre for Advanced Research in Environmental Radioactivity (CARER)
Promotion of University Research and Scientific Excellence (DST-PURSE)

MANGALORE UNIVERSITY and
JSS Academy of Higher Education and Research, Mysore

DST-STUTI TRAINING PROGRAMME

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PROGRAMME SCHEDULE

<table>
<tr><th>Day/ Date</th><th>Morning Session
(Lecture)</th><th colspan="2">Afternoon Session
(Lab)</th></tr>
<tr><td rowspan="5">Day 1
10.10.2022</td><td>08:45 pm – 09:30 pm
Pre-workshop test</td><td colspan="2" rowspan="5">02:00 pm – 02:15 pm
Prof. Karunakara N.
About the training programme

02:15 pm – 03:15 pm
Dr. Deepak Sharma
Applications of gamma radiation in life science research and development of novel radio-modifying agents – Part 1

03:15 pm – 04:15 pm
Lab Visit:
CARER (Batch 1), CARRT (Batch 2),
DST-PURSE & NMR (Batch 3)

04:15 pm – 05:15 pm
Lab Visit:
CARER (Batch 2), CARRT (Batch 3),
DST-PURSE & NMR (Batch 1)

05:15 pm – 06:15 pm
Lab Visit:
CARER (Batch 3), CARRT (Batch 1),
DST-PURSE & NMR (Batch 2)</td></tr>
<tr><td>09:30 am – 10:00 am
Registration</td></tr>
<tr><td>10:00 am – 11:00 am
Inauguration</td></tr>
<tr><td>11:00 am – 11:30 am
High Tea</td></tr>
<tr><td>11:30 am – 01:00 pm
Dr. Vijay B. Kadwad
Radioimmunoassay and its applications.</td></tr>
<tr><td rowspan="4">DAY 2
11.10.2022</td><td>09:30 am – 10:30 am
Dr. Deepak Sharma
Applications of gamma radiation in life science research and development of novel radio-modifying agents – Part 2</td><td rowspan="4">02:00 pm – 04:00 pm
Dr.Vijay B. Kadwad
Radioimmunoassay 1
(Batch 1)
Mr. Tanhaji Sandu Ghodke
Radioimmunoassay 1
(Batch 2)

Dr. Deepak Sharma
Demonstration experiment.
(Batch 1)</td><td rowspan="4">04:00 pm – 06:00 pm
Dr.Vijay B. Kadwad
Radioimmunoassay 1
(Batch 2)
Mr. Tanhaji Sandu Ghodke
Radioimmunoassay 1
(Batch 1)

Dr. Deepak Sharma
Demonstration experiment.
(Batch 2)</td></tr>
<tr><td>10:30 am – 11:00 pm
Tea Break</td></tr>
<tr><td>11:00 pm – 12:00 pm
Dr. Vijay B. Kadwad
Radiation and radioisotope technology: emerging trends and research opportunities.</td></tr>
<tr><td>12:00 pm – 01:00 pm
Lab Visit/ Training/ Demonstration experiment
(Choice based)</td></tr>
<tr><td>DAY 3
12.10.2022</td><td>09:30 am – 10:30 am
Dr. Swaroop K.
Gamma Radiation Assisted Synthesis of Hydrogels and its Applications.</td><td>02:00 pm – 04:00 pm
Mr. Tanhaji Sandu Ghodke
Radioimmunoassay 2
(Batch 1)</td><td>04:00 pm – 06:00 pm
Mr. Tanhaji Sandu Ghodke
Radioimmunoassay 2
(Batch 2)</td></tr>
</table>

	10:30 am – 11:00 pm Tea Break	**Dr. Swaroop K. + Dr. Yashodhara I.** Synthesis of Hydrogels and Nano composites (Batch 2)	**Dr. Swaroop K. + Dr. Yashodhara I.** Synthesis of Hydrogels and Nano composites (Batch 1)
	11:00 am – 11:45 pm **Dr. Swaroop K.** Carbon-14 Urea Breath Test for *H.pylori* infection		
	11:45 pm – 01:00 pm **Lab Visit/ Training** (Choice based)		
DAY 4 13.10.2022	09:30 am – 10:30 am **Dr. Nimitha S. Prabhu** Gamma Irradiation Effects on Glasses and Their Thermoluminescent Dosimetry Applications.	02:00 pm – 04:00 pm **Dr. Swaroop K. + Dr. Yashodhara I. + Dr. Nimitha S. Prabhu** C-14 UBT + Thermoluminescent Dosimetry (Batch 1) **Dr. Murari M. S. + Dr. Mahesh K. K.** Characterisation of nano composites (Batch 2)	04:00 pm – 06:00 pm **Dr. Swaroop K. + Dr. Yashodhara I. + Dr. Nimitha** C-14 UBT + Thermoluminescent Dosimetry (Batch 2) **Dr. Murari M. S. + Dr. Mahesh K. K.** Characterisation of nano composites (Batch 1)
	10:30 am – 11:00 pm Tea Break		
	11:00 am – 12:00 pm **Demonstration:** FTIR Spectrometry for characterisation of materials (Batch 1) **Lab Visit/ Training** (Choice based) (Batch 2)		
	12:00 pm – 01:00 pm **Demonstration:** FTIR Spectrometry for characterisation of materials (Batch 2) **Lab Visit/ Training** (Choice based) (Batch1)		
DAY 5 14.10.2022	09:30 am – 10:30 am **Prof. Karunakara N.** Carbon-14 measurements and its applications.	02:00 pm – 04:00 pm **Dr. Sudeep Kumara K. + Mr. Avaneesh Rai U. K.** HPGe gamma spectrometry for determination of radioactivity in samples (Batch 1) **Dr. Rashmi Nayak + Mr. Bharath + Ms. Arya Krishnan K.** Carbon-14 dating by Liquid Scintillation Spectrometry (Batch 2)	04:00 pm – 06:00 pm **Dr. Sudeep Kumara K. + Mr. Avaneesh Rai U. K.** HPGe gamma spectrometry for determination of radioactivity in samples (Batch 2) **Dr. Rashmi Nayak + Mr. Bharath + Ms. Arya Krishnan K.** Carbon-14 dating by Liquid Scintillation Spectrometry (Batch 1)
	10:30 am – 11:00 pm Tea Break		
	11:00 pm – 12:00 pm **Dr. R. Venkatesan** Radionuclides as tracers in understanding atmospheric transport, dispersion and large scale meteorology.		
	12:00 pm – 01:00 pm **Lab Visit/ Training** (Choice based)		
DAY 6 15.10.2022	09:30 am – 10:30 am **Prof. A. P. Gnana Prakash** Radiation Effects on Semiconductor Devices.	02:00 pm – 04:00 pm **Prof. A. P. Gnana Prakash** Radiation effects and modification of the properties of semiconductor devices. (Batch 1)	04:00 pm – 06:00 pm **Prof. A. P. Gnana Prakash** Radiation effects and modification of the properties of semiconductor devices. (Batch 2)
	10:30 am – 11:00 pm Tea Break		

<table>
<tr><td></td><td>11:00 am – 12:00 am
Dr. Shanmukhappa B. Kaginelli
Applications of radioisotopes in agriculture and industries.</td><td rowspan="2">Dr. Sathisha K. R.
Confocal microscopy
Mr. Praveen P.
DSC/TGA, , GCMS, LCMS
Mrs. Vinitha D’Sa
NMR spectroscopy
(Batch 2)</td><td rowspan="2">Dr. Sathisha K. R.
Confocal microscopy
Mr. Praveen P.
DSC/TGA, , GCMS, LCMS
Mrs. Vinitha D’Sa
NMR spectroscopy
(Batch 1)</td></tr>
<tr><td></td><td>12:00 pm – 01:30 pm
Lab Visit/ Training
(Choice based)</td></tr>
<tr><td rowspan="7">DAY 7
16.10.2022</td><td>08:45 am – 09:30 am
Post-workshop test</td><td colspan="2" rowspan="7">02:00 pm – 04:00 pm
Visit to Zulekha Yenepoya Institute of Oncology</td></tr>
<tr><td>09:30 am – 10:30 am
Dr. K. Jayapalan
Radiation and radioisotopes in healthcare.</td></tr>
<tr><td>10:30 am – 11:00 pm
Tea Break</td></tr>
<tr><td>11:00 am – 12:00 pm
Prof. Bhasker Shenoy
Radioimmunoassay</td></tr>
<tr><td>12:15 pm – 01:00 pm
Valedictory</td></tr>
<tr><td>01:00 pm – 02:00 pm
Lunch</td></tr>
</table>

PARTICIPANTS LIST

Sl. No.	Name	Designation	Institution	Gender
1.	Dr. Charan Kumar K	Research Assistant	Bangalore University	M
2.	Mr. Ramesh K	Research Scholar	Mangalore University	M
3.	Dr. Rangappa Keri	Associate Professor	Jain University, Bangalore	M
4.	Mr. Chandan Kapil	Research Scholar	Punjabi University, Patiala	M
5.	Mr. Darshan M	Research Scholar	University of Mysore	M
6.	Mr. Gaurav Bholane	Research Scholar	Savitribai Phule Pune University, Pune,	M
7.	Mr. Raju Sateri Kangutkar	Research Scholar	Rani Channamma University, Belgavi,	M
8.	Mr. Abhishek Joshi	Research Scholar	HNB Garhwal University Uttarakhand.	M
9.	Soven Dhawa	Post-Doctoral fellow	Xavier's Research Foundation, St. Xavier's College, Tirunelveli	M
10.	Dr.Sudarshan.P	Assistant Professor	SDM, Ujire	M
11.	Mr. Shashikumar S. K.	Research Scholar	Bangalore University	M
12.	Dr.Shankramma K	Assistant Professor	JSS AHER, Mysuru	F
13.	Asha P Shirni	Research Scholar	University of Mysore	F
14.	Arti	Research Scholar	NIT Jalandhar	F
15.	Dr Mrunal V. Kangralkar	Lecturer	RLSI, Belagavi , Karnataka	F
16.	Dr. Kalpana Sharma	Assistant Professor	Ramaiah Institute of Technology	F
17.	Deepika D. N.	Research Scholar	Bangalore University	F
18.	Pooja	Research Scholar	HNB Garhwal University	F
19.	Apeksha Sharad Jagdale	Research Scholar	Savitribai Phule Pune University	F
20.	Pratiksha Thombre	Research Scholar	Savitribai Phule Pune University, Pune	F
21.	Shaila G Sanjeevagol	Research Student	Rani Channamma University Belagavi	F
22.	Anushree U	Research Scholar	Manipal College of Health Professions, MAHE Manipal	F

23.	Nourin P A	Resident Medical Physicist	Amrita Institute of Medical Sciences	F
24.	Yashmitha K	Intern Medical Physics	AJ Hospital & Research Centre	F
25.	Ronika Ravi	Intern Medical physicist	AJ Hospital & Research Centre	F
26.	Souparnika P	Intern Medical Physicist	AJ Hospital & Research Centre	F
27.	Anu Roy	Medical Physics	Mangalore University	F
28.	Elizebeth Joseph	Medical Physics	Mangalore University	F
29.	Sowmya P.	Medical Physics	Mangalore University	F
30.	Nisha K. R.	Medical Physics	Mangalore University	F

SCHEDULE OF TALKS

Day/ Date	Time and Topic	Resource Person
Day 1 10.10.2022	11:30 am – 01:00 pm Radioimmunoassay and its applications	Dr. Vijay B. Kadwad BRIT, Mumbai
	02:15 pm – 03:15 pm Applications of gamma radiation in life science research and development of novel radio-modifying agents – Part 1	Dr. Deepak Sharma SOG, BARC, HBNI Mumbai
Day 2 11.10.2022	09:30 am – 10:30 am Applications of gamma radiation in life science research and development of novel radio-modifying agents – Part 2	
	11:00 pm – 12:00 pm Radiation and radioisotope technology: emerging trends and research opportunities.	Dr. Vijay B. Kadwad BRIT, Mumbai
Day 3 12.10.2022	09:30 am – 10:30 am Gamma Radiation Assisted Synthesis of Hydrogels and its Applications.	Dr. Swaroop K. GMIT Davanagere
	11:00 am – 11:45 pm Carbon-14 urea breath test for *H.pylori* infection	
Day 4 13.10.2022	09:30 am – 10:30 am Gamma irradiation effects on glasses and their thermoluminescent dosimetry applications	Dr. Nimitha S. Prabhu IISc Bangalore
Day 5 14.10.2022	09:30 am – 10:30 am Carbon-14 measurements and its applications.	Prof. Karunakara N. CARER, CARRT Mangalore University
	11:00 pm – 12:00 pm Radionuclides as tracers in understanding atmospheric transport, dispersion and large scale meteorology.	Dr. R. Venkateshan Ex. IGCAR Kalpakkam
Day 6 15.10.2022	09:30 am – 10:30 am Radiation effects on semiconductor devices.	Prof. A. P. Gnana Prakash University of Mysore
	11:00 am – 12:00 pm Applications of radioisotopes in agriculture and industries.	Dr. Shanmukhappa B. Kaginelli Medical Physics Division JSS AHER

Day 7 16.10.2022	09:30 am – 10:30 am Radiation and radioisotopes in healthcare.	Dr. K. Jayapalan Medical Physicist Yenepoya, Mangalore
	11:00 am – 12:00 am Radioimmunoassay	Prof. Bhasker Shenoy CARRT Mangalore University

PMU COORDINATOR

Sl. No.	Name	Organisation
1.	Dr. Prashant M. Vishwanath	JSS AHER

ORGANISING COORDINATOR

Sl. No.	Name	Organisation
1.	Prof. Karunakara N.	Mangalore University

SCIENTIFIC PROGRAMME COMMITTEE

Sl. No.	Name	Organisation
1.	Prof. Karunakara N.	Mangalore University
2.	Prof. Manjunatha Pattabi	Mangalore University
3.	Prof. K. Bhasker Shenoy	Mangalore University
4.	Prof. Vishalakshi B	Mangalore University
5.	Prof. Boja Poojary	Mangalore University
6.	Prof. Prashantha Naik	Mangalore University
7.	Dr. Dhanya B. E.	JSS AHER
8.	Dr. Shanmukhappa B. Kaginelli	JSS AHER

PROGRAMME COMMITTEE

Sl. No.	Name	Committee details
1.	Dr. Yashodhara I.	Technical Sessions
2.	Dr. Sudeep Kumara K.	Technical Sessions
3.	Dr. Rashmi Nayak	Technical Sessions
4.	Mr. Bharath	Food Arrangement
5.	Ms. Arya Krishnan	Food Arrangement
6.	Mr. Avaneesh Rai U. K.	Travel & Accommodation
7.	Mr. Ranjith Shetty	TA & Lab Session
8.	Mrs. Soumya D.	TA & Remuneration

ORGANISING COMMITTEE

Sl. No.	Name	Committee details
1.	Mr. Tanhaji Ghodke	CARRT
2.	Mr. Vijith A. P.	CARER
3.	Dr. Murari M. S.	DST-PURSE
4.	Dr. Sathisha K. R.	DST-PURSE
5.	Dr. Mahesh K. K.	DST-PURSE
6.	Mr. Praveen P.	DST-PURSE
7.	Mrs. Vinitha D'Sa	DST-PURSE
8.	Mr. Prashanth D'Souza	CARER
9.	Mrs. Deepika Rai	CARER
10.	Mrs. Divyashree	CARRT
11.	Mr. Jayaram	CARRT
12.	Mr. Karthik	CARER

REPORT

DAY 1 (10.10.2022):

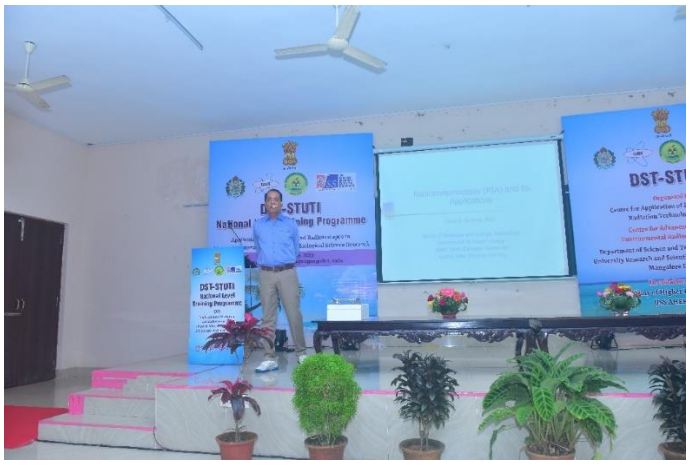
The Centre for Application of Radioisotopes and Radiation Technology (CARRT) and the Centre for Advanced Research in Environmental Radioactivity (CARER) are organising the DST-STUTI training programme in association with the JSS Academy of Higher Education and Research (JSS AHER) during October 10–16, 2022. The training programme is limited to 30 participants (selected based on their research area and interest) from reputed institutions and national laboratories. The focal theme of the training programme is "Applications of Radiation and Radioisotopes in Physical, Materials, Chemical and Biological Science Research".

Inauguration of the DST STUTI training programme

The inaugural ceremony of the DST-STUTI training programme on "Applications of Radiation and Radioisotopes in Physical, Materials, Chemical and Biological Science Research" commenced with the lighting of the lamp on Monday, October 10, 2022 by Prof. Dr. M. Vijayakumar, Vice-Chancellor, Yenepoya (Deemed to be University), Deralakatte, Mangalore with a group of dignitaries-Prof. P. S. Yadapadithaya (Vice-Chancellor, Mangalore University), Dr. B. Manjunatha (Registrar, JSS AHER), Dr. Prashant M. Vishwanath (Director-Research & IQAC Coordinator, JSS AHER), Prof. Karunakara N.

(Coordinator, CARRT & CARER, Mangalore University) and Prof. Bhasker Shenoy (CARRT, Mangalore University). The programme was followed by an invocation. Prof. Karunakara N. formally welcomed all the dignitaries present on the dais, and participants from various parts of the country, colleagues, press, and students. Dr. Prashant M. Vishwanath described about the DST-STUTI training programme. Prof. Dr. M. Vijayakumar delivered the inaugural address. Dr. B. Manjunatha addressed the gathering, and Prof. P. S. Yadapadithaya delivered the presidential address. In the end, Prof. Bhasker Shenoy offered a vote of thanks to all. Before beginning the training programme, the participants took a 40 MCQs pre-workshop test to gauge their level of understanding of the subject.

On the first day, first session, Dr. Vijay B. Kadwad, BRIT, Mumbai, delivered a talk on **"Radioimmunoassay and its applications"**.



Talk 01: Dr. Vijay B. Kadwad; Radioimmunoassay and its applications

Second session, Dr. Deepak Sharma, SOG, BARC, HBNI, Mumbai, delivered a talk on **"Applications of gamma radiation in life science research and development of novel radio-modifying agents – Part 1"**.

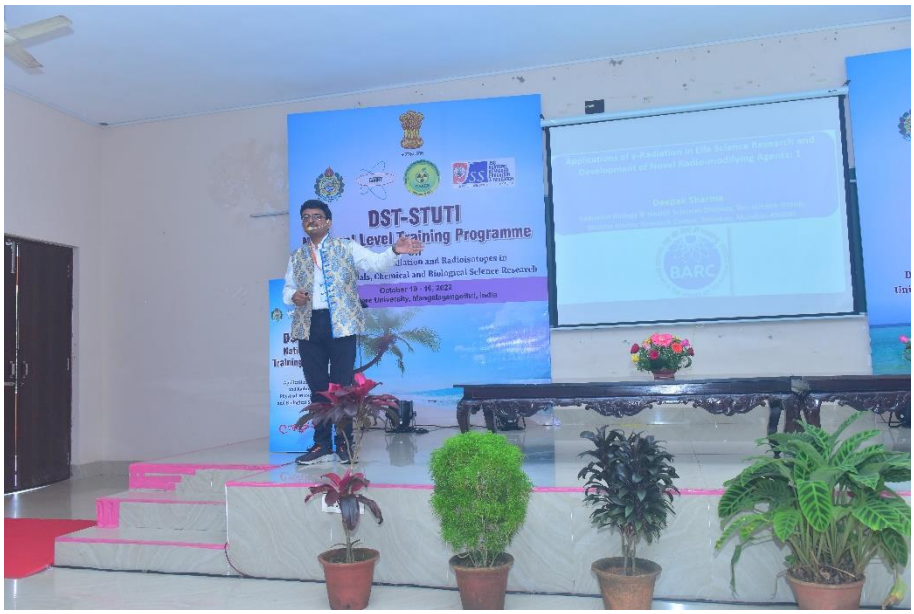
Talk 02: Dr. Deepak Sharma; Applications of gamma radiation in life science research and development of novel radio-modifying agents – Part 1

After completing the second session, participants were allowed to visit the CARRT, CARER, DST-PURSE, and NMR centres to get basic knowledge of the instruments.

Gamma chamber GC5000

DAY 2 (11.10.2022):

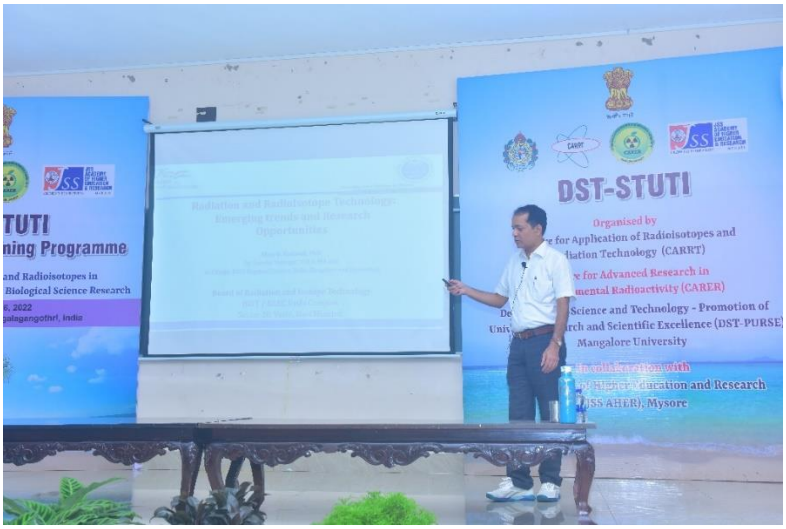
Second day, first session started at 09:30 am. Dr. Deepak Sharma, SOG, BARC, HBNI, Mumbai, delivered a talk on **"Applications of gamma radiation in life science research and development of novel radio-modifying agents – Part 2"**.



Talk 03: Dr. Deepak Sharma; Applications of gamma radiation in life science research and development of novel radio-modifying agents – Part 2

Second session, Dr. Vijay B. Kadwad, BRIT, Mumbai, delivered a talk on "**Radiation and radioisotope technology: emerging trends and research opportunities"**.

A special session was introduced for the participants as choice-based. In this session, participants were allowed to visit the lab of their choice. This session benefited all the participants. Participants got hands-on training on instruments which they are using in their research career. This special session was introduced for other days of training also.



Talk 04: Dr. Vijay B. Kadwad; Radiation and radioisotope technology: emerging trends and research opportunities

After lunch, hands-on training sessions started at 2:00 pm. Participants were divided into two batches. For the first batch (2:00 – 4:00 pm for batch 1 and 4:00 – 6:00 pm for batch 2), Dr. Vijay B. Kadwad and Mr. Tanhaji Sandu Ghodke conducted hands-on training on radioimmunoassay.

Lab Session by Dr. Vijay B. Kadwad and Mr. Tanhaji Sandu Ghodke

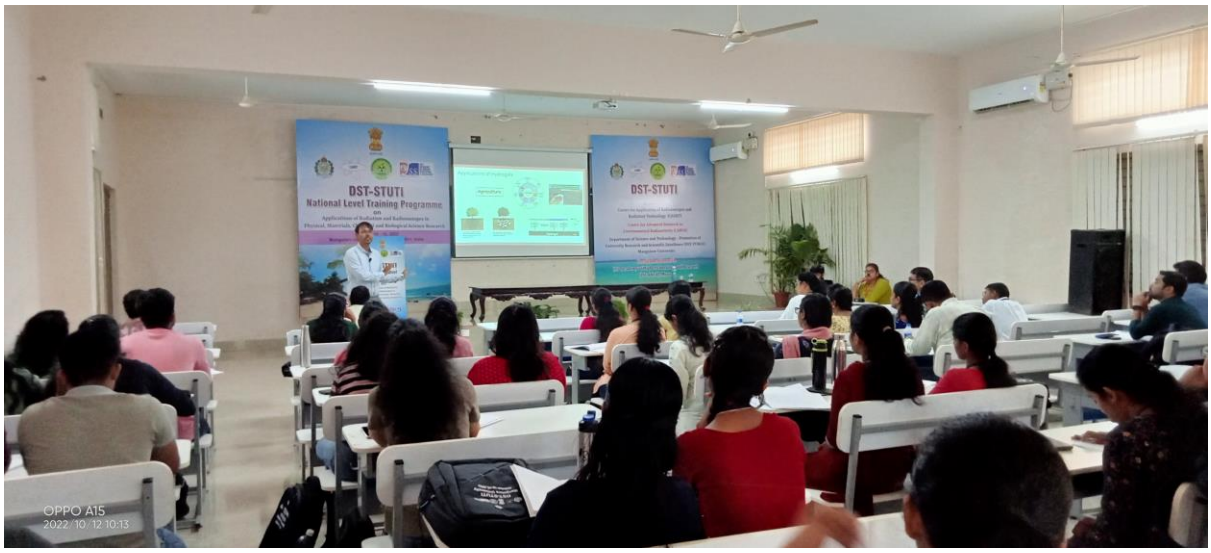
For the second batch (2:00 – 4:00 pm for batch 2 and 4:00 – 6:00 pm for batch 1), Dr. Deepak Sharma demonstrated experiments on novel radio-modifying agents.

DAY 3 (12.10.2022):

Third day, first session started at 09:30 am. Dr. Swaroop K., GM Institute of Technology, Davangere delivered a talk on **"Gamma Radiation Assisted Synthesis of Hydrogels and its Applications"**.

Talk 05: Dr. Swaroop K; Gamma Radiation Assisted Synthesis of Hydrogels and its Applications

Second session, Dr. Swaroop K., delivered a talk on "**Carbon-14 Urea Breath Test for *H.pylori* infection"**.



Talk 06: Dr. Swaroop K; Carbon-14 Urea Breath Test for *H.pylori* infection

After lunch, hands-on training sessions started at 2:00 pm. For the first batch, Mr. Tanhaji Sandu Ghodke conducted hands-on training on radioimmunoassay.

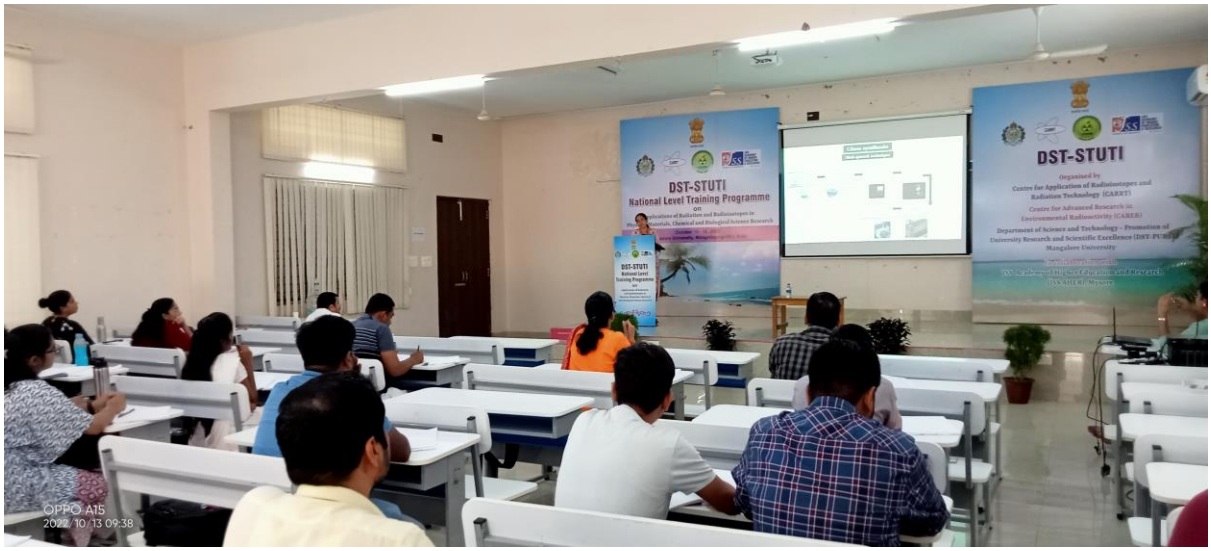
Lab Session by Mr. Tanhaji Sandu Ghodke

For the second batch, Dr. Swaroop K. and Dr. Yashodhara I., conducted hands-on training on Synthesis of Hydrogels and Nano composites.

Lab Session by Dr. Swaroop K. and Dr. Yashodhara I.

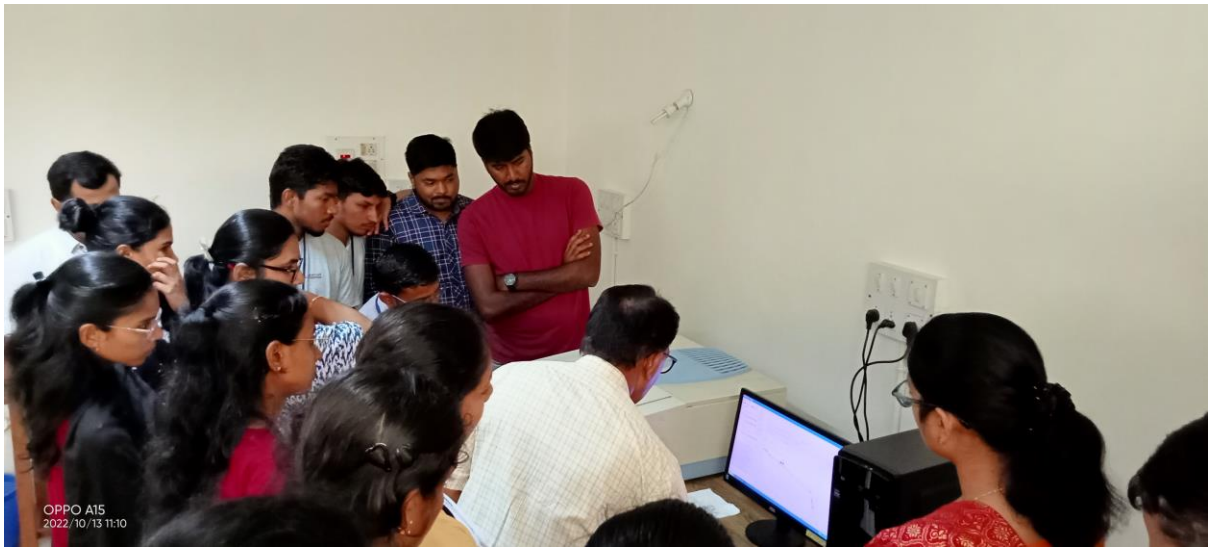
DAY 4 (13.10.2022):

Fourth day, first session started at 09:30 am. Dr. Nimitha S. Prabhu, Indian Institute of Science (IISc), Bangalore, delivered a talk on **"Gamma Irradiation Effects on Glasses and Their Thermoluminescent Dosimetry Applications"**.



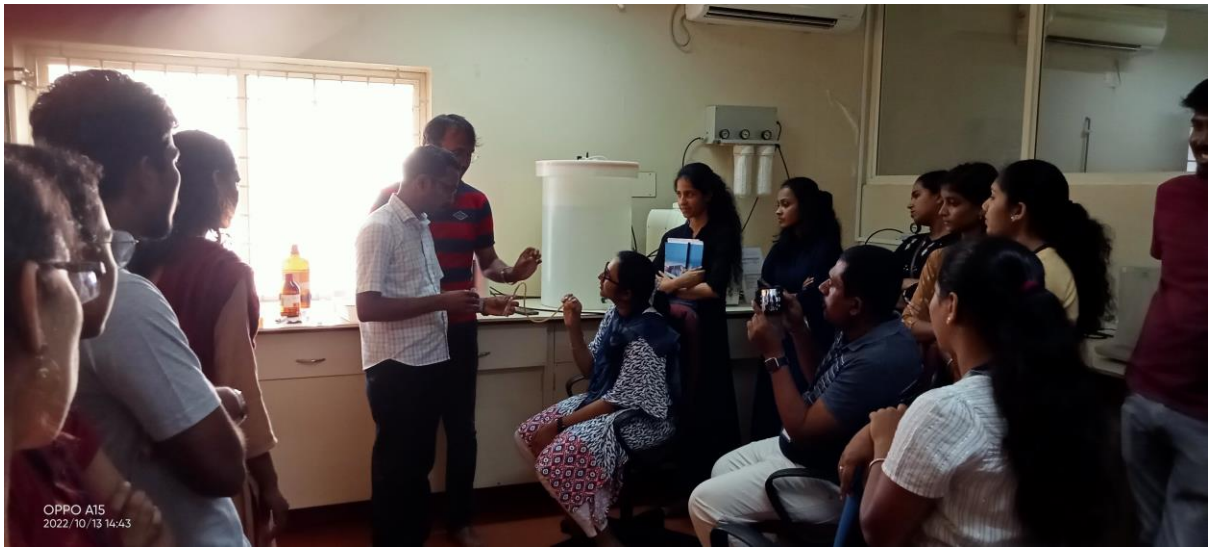
Talk 07: Dr. Nimitha S. Prabhu; Gamma Irradiation Effects on Glasses and Their Thermoluminescent Dosimetry Applications

After the first session, Dr. Nimitha S. Prabhu, conducted hands-on training on Fourier Transform and Infrared Spectroscopy (FTIR).



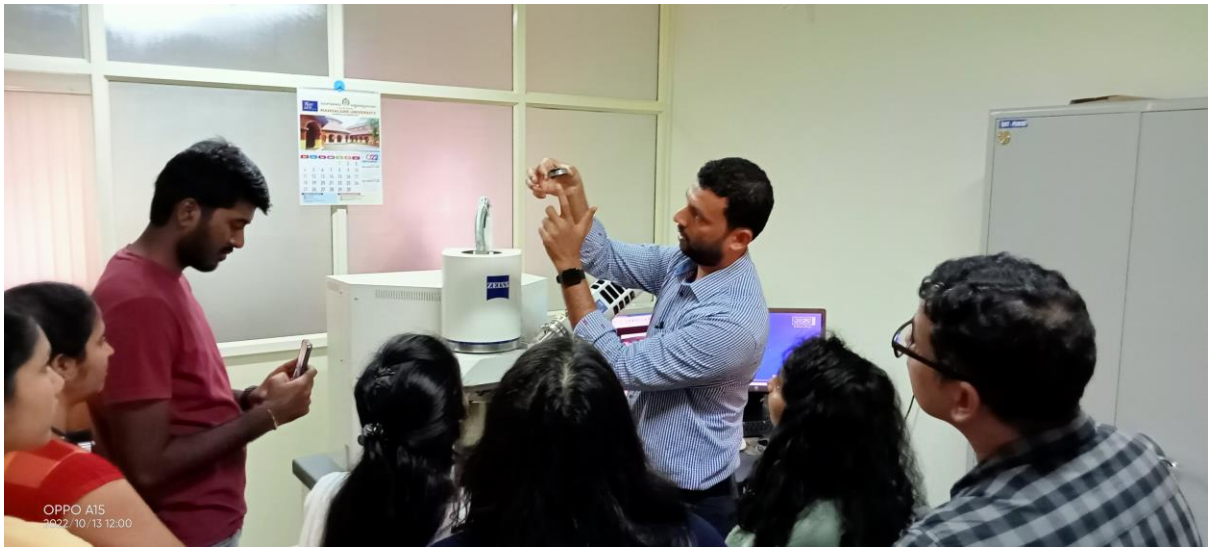
Lab Session by Mr. Ganesh

After lunch, hands-on training sessions started at 2:00 pm. For the first batch, Dr. Swaroop K. and Dr. Yashodhara I., conducted hands-on training on Carbon – 14 urea breath test for H. pylori infection and Dr. Nimitha S. Prabhu, conducted hands-on training on thermoluminescent reader.



Lab Session by Dr. Yashodhara I., and Dr. Swaroop

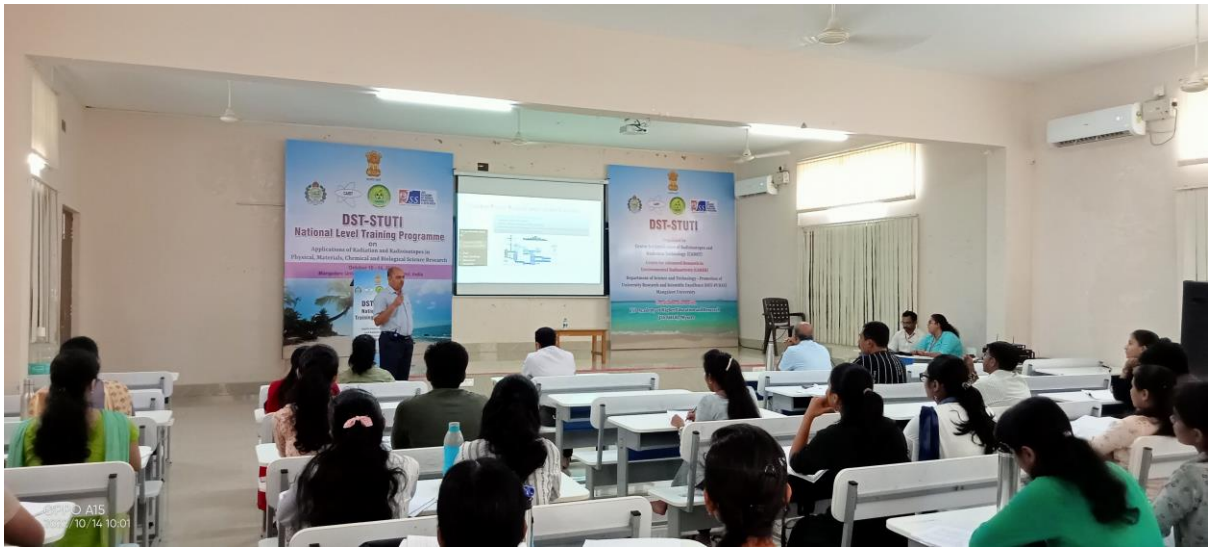
For the second batch, Dr. Murari M. S. conducted hands-on training on characterisation of nano composites by Field Emission Scanning Electron Microscope (FESEM) and Dr. Mahesh K. K. conducted hands-on training on characterisation of nano composites by Single Crystal X-ray Diffractometer (single crystal XRD).



Lab Session by Dr. Murari M. S.

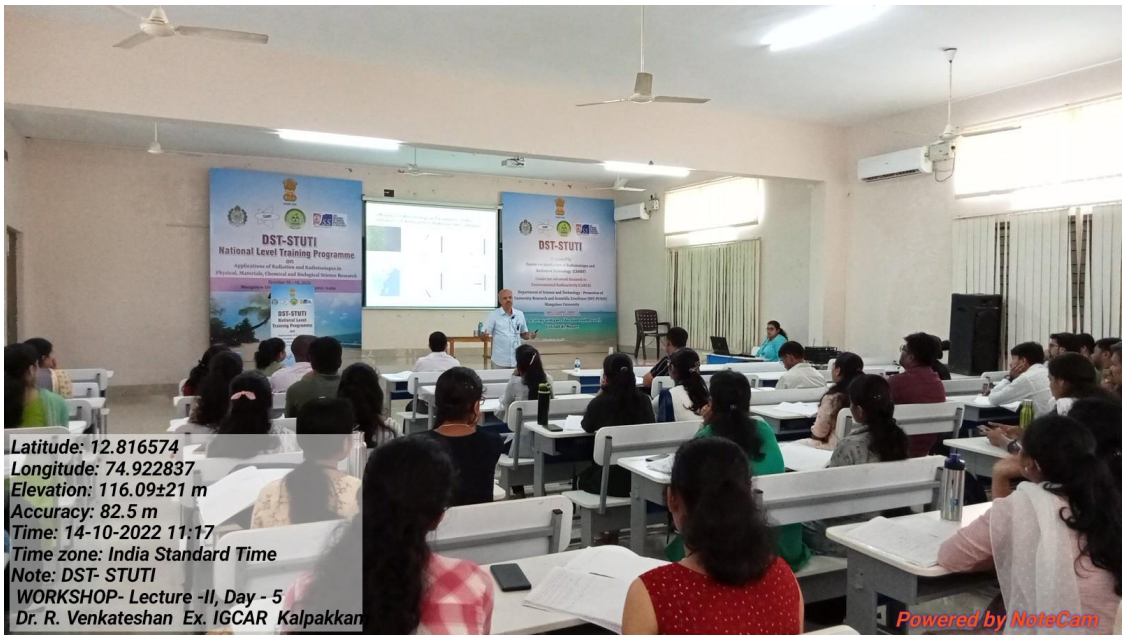
DAY 5 (14.10.2022):

Fifth day, first session started at 09:30 am. Prof. Karunakara N., CARRT & CARER, Mangalore University delivered a talk on **"Carbon-14 measurements and its applications"**.



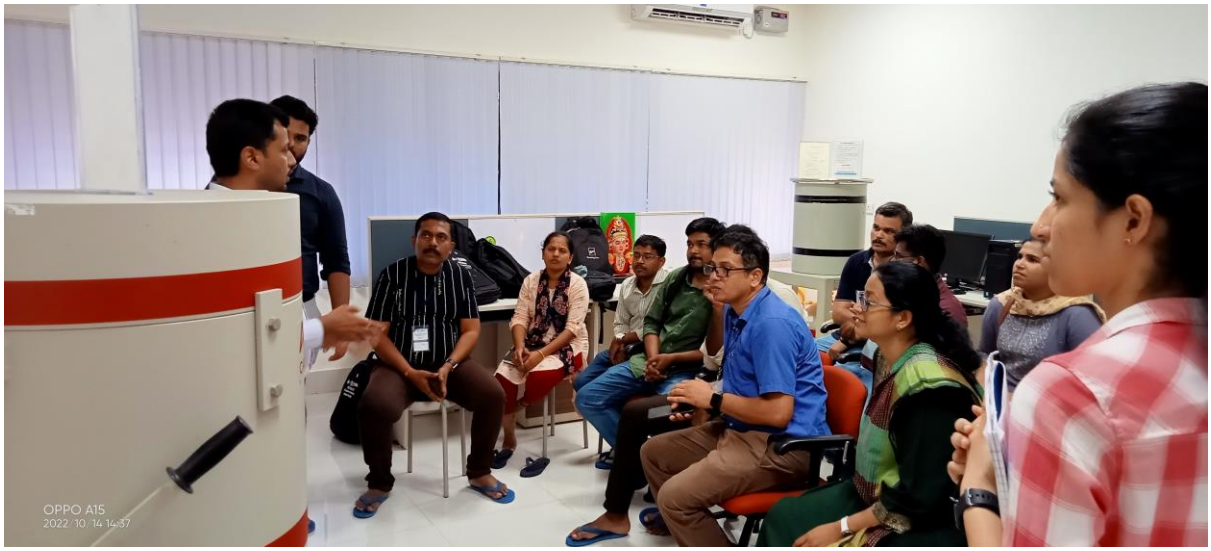
Talk 08: Prof. Karunakara N; Carbon-14 measurements and its applications

Second session, Dr. R. Venkatesan, delivered a talk on "**Radionuclides as tracers in understanding atmospheric transport, dispersion and large scale meteorology**".



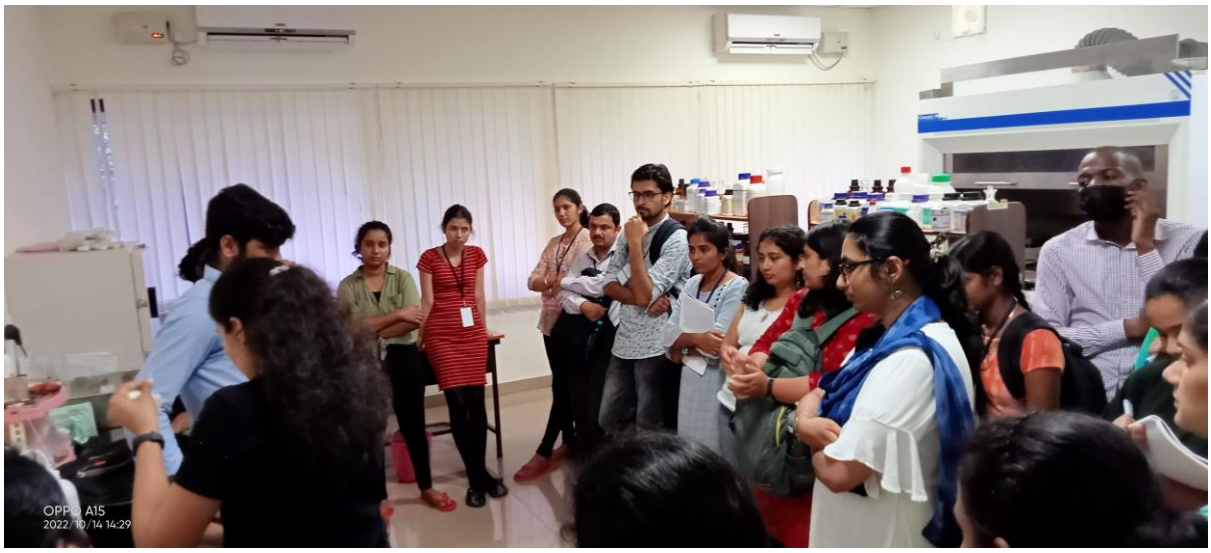
Talk 09: Dr. R. Venkatesan; Radionuclides as tracers in understanding atmospheric transport, dispersion and large scale meteorology

After lunch, hands-on training sessions started at 2:00 pm. For the first batch, Dr. Sudeep Kumara K. and Mr. Avaneesh Rai U. K. conducted hands-on training on HPGe gamma spectrometry for determination of radioactivity in samples.



Lab Session by Dr. Sudeep Kumara and Mr. Avaneesh Rai U. K.

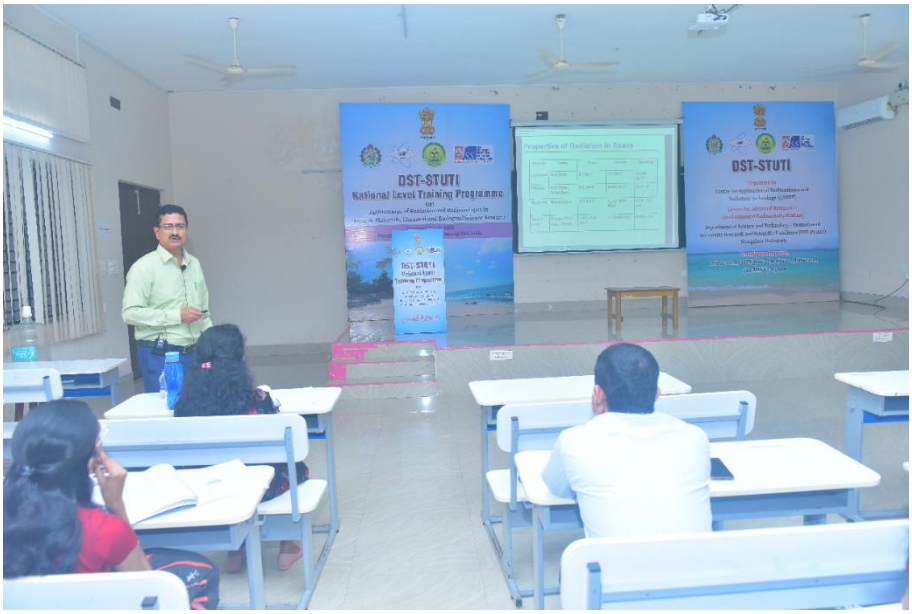
For the second batch, Dr. Rashmi Nayak, Mr. Bharath and Ms. Arya Krishnan K. conducted hands-on training on Carbon-14 dating by Liquid Scintillation Spectrometry.



Lab Session by Mr. Bharath and Ms. Arya Krishnan

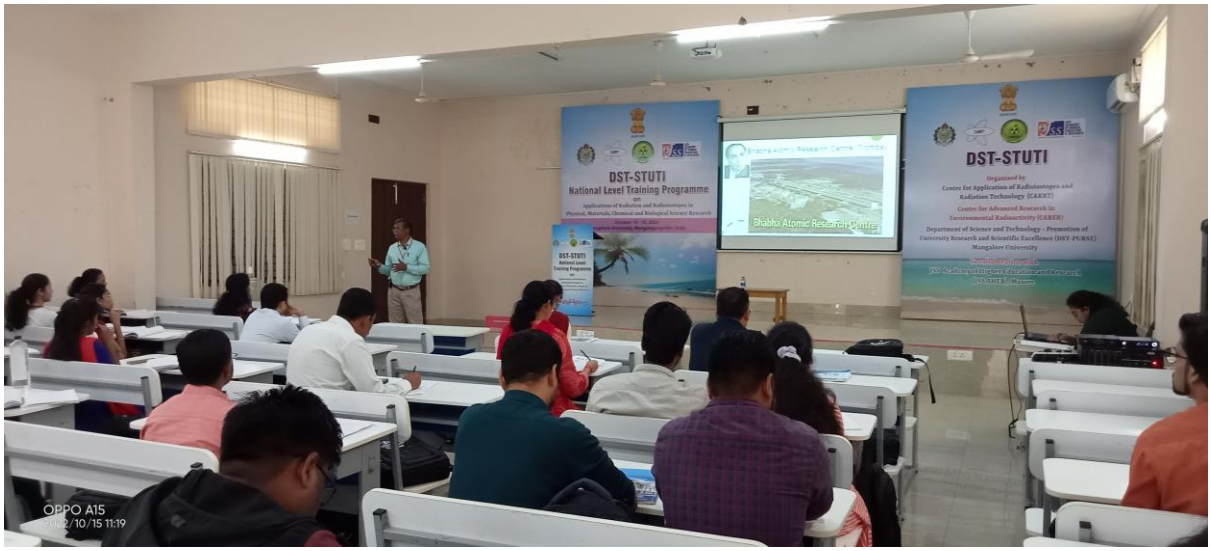
DAY 6 (15.10.2022):

Sixth day, first session started at 09:30 am. Prof. A. P. Gnana Prakash, University of Mysore, delivered a talk on **"Radiation Effects on Semiconductor Devices"**.



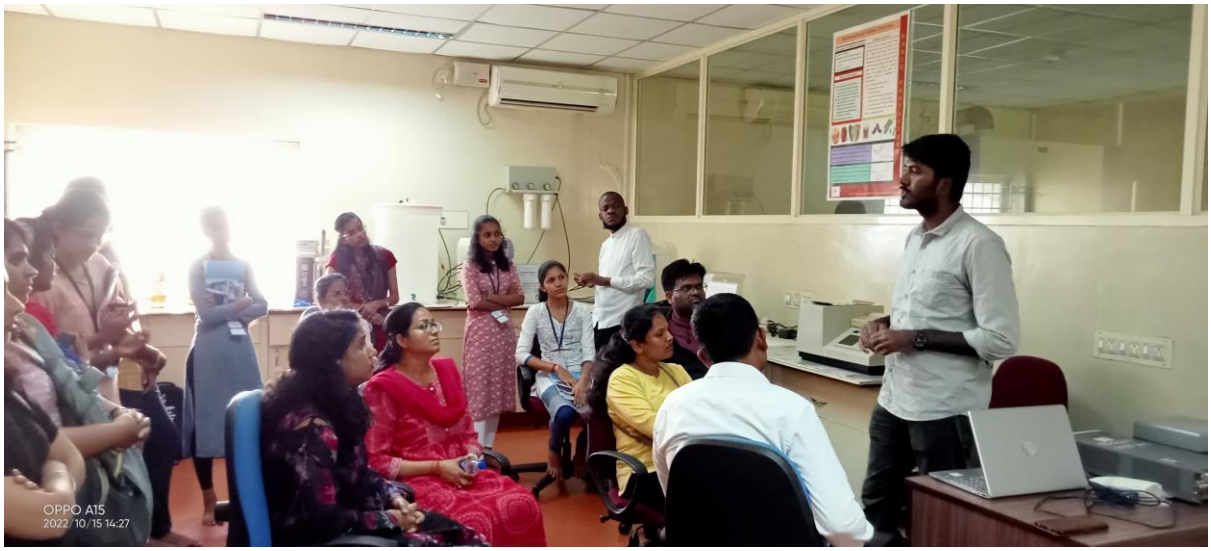
Talk 10: Prof. A. P. Gnana Prakash; Radiation Effects on Semiconductor Devices

Second session, Dr. Shanmukhappa B. Kaginelli, JSS AHER, delivered a talk on **"Applications of radioisotopes in agriculture and industries"**.



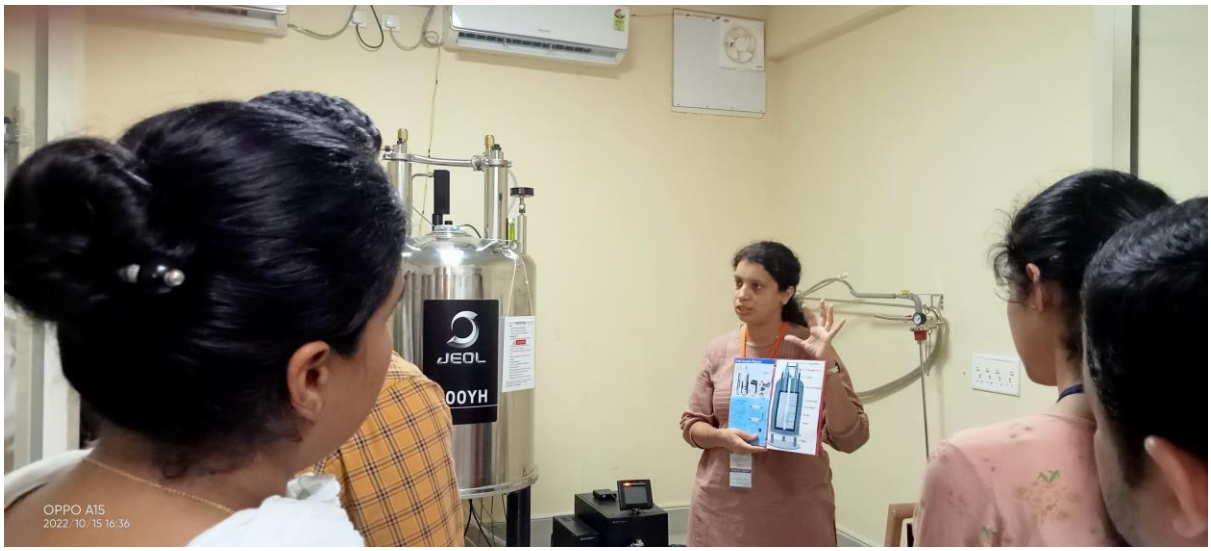
Talk 11: Dr. Shanmukhappa B. Kaginelli; Applications of radioisotopes in agriculture and industries

After lunch, hands-on training sessions started at 2:00 pm. For the first batch, Mr. Darshan M. and Ms. Asha P. Shirni conducted hands-on training on Radiation effects and modification of the properties of semiconductor devices.



Lab Session by Mr. Darshan and Asha P. Shirni

For the second batch, Dr. Sathisha K. R. conducted hands-on training on confocal microscopy, Mr. Praveen P. conducted hands-on training on DSC/TGA, GCMS, and LCMS, and Mrs. Vinitha D'Sa conducted hands-on training on NMR spectroscopy.

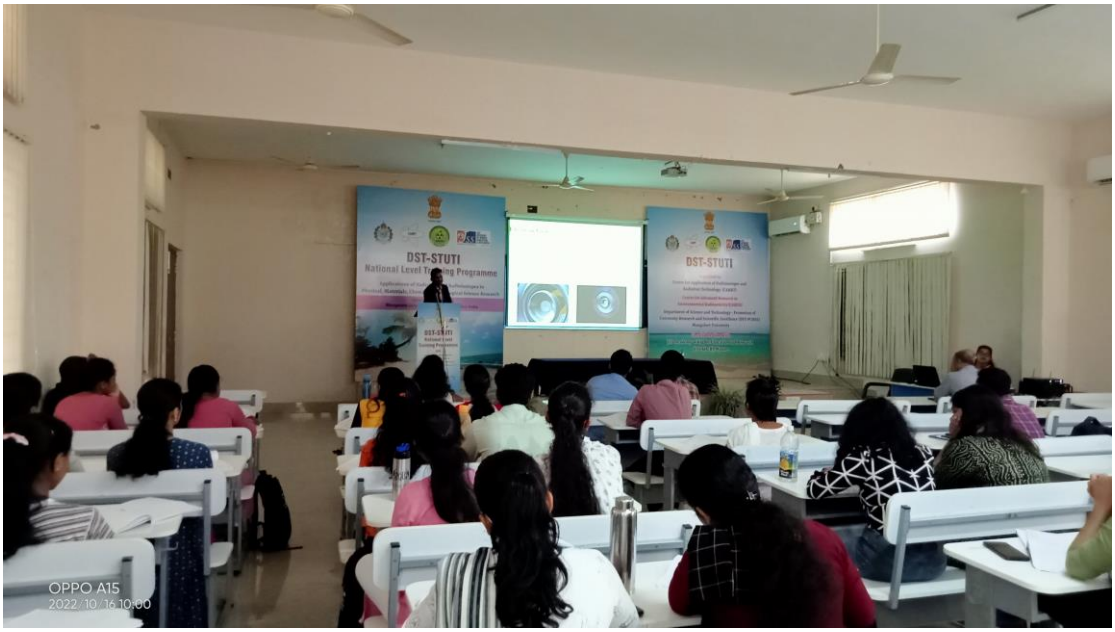


Lab Session by Mrs. Vinitha D'Sa

DAY 7 (16.10.2022):

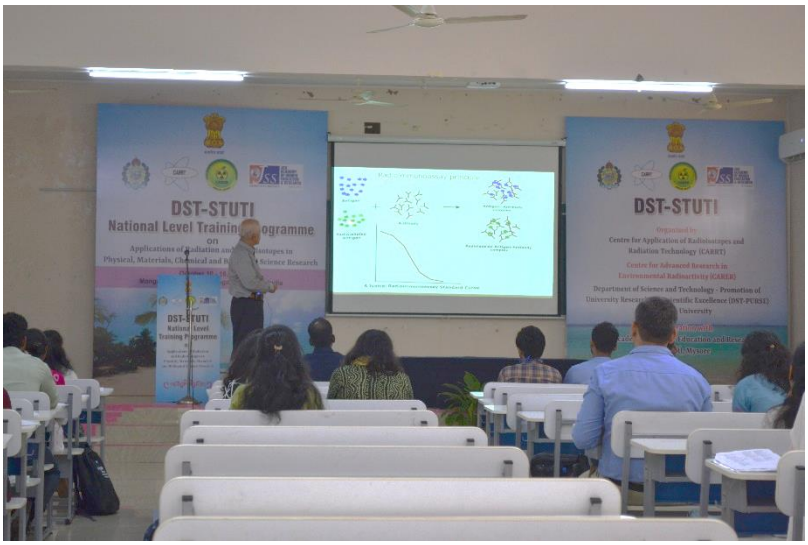
On the seventh day, the knowledge gained by the participants during the training programme was assessed by giving a post-workshop test (8:45 am). Mr. Gaurav Bholane, Savitribai Phule Pune University, Ms. Asha P. Shirni, University of Mysore, and Ms. Souparnika, A J Hospital & Research Centre, Mangalore, secured second place, and Dr. Kalpana Sharma, Ramaiah Institute of Technology, Bangalore, secured first place in the knowledge assessment test. A certificate of merit was given to these students.

First session started at 09:30 am. Dr. K. Jayapalan, Zulekha Yenepoya Institute of Oncology, Deralakatte, Mangalore, delivered a talk on **"Radiation and radioisotopes in healthcare"**.



Talk 12: Dr. K. Jayapalan; Radiation and radioisotopes in healthcare

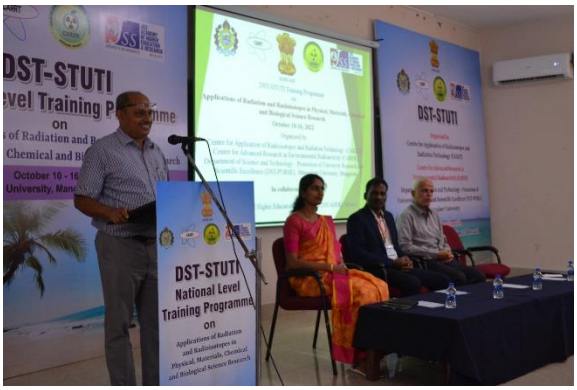
Second session, Prof. Bhasker Shenoy, CARRT, Mangalore University, delivered a talk on **"Radioimmunoassay"**.



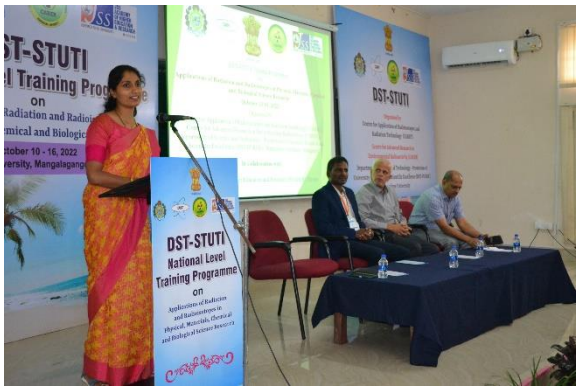
Talk 13: Prof. Bhasker Shenoy: Radioimmunoassay

The valedictory ceremony of the DST-STUTI training programme on "Applications of Radiation and Radioisotopes in Physical, Materials, Chemical and Biological Science Research" commenced on Monday, October 16, 2022 at 12:15 pm. Prof. Karunakara N. formally welcomed all the dignitaries present on the dais, and participants from various parts of the country, colleagues, press, and

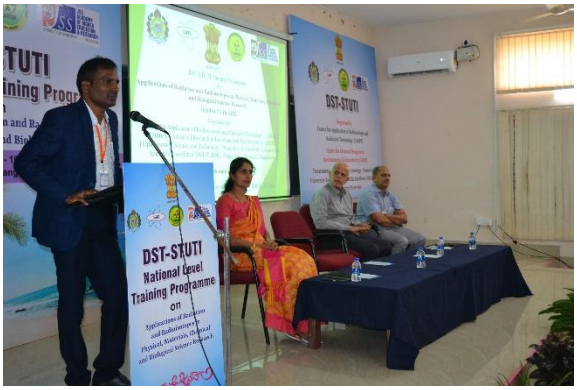
students. Dr. K. Jayapalan of the Zulekha Yenepoya Institute of Oncology, Deralakatte, Mangalore, was the chief guest. Prof. Bhasker Shenoy, CARRT, Mangalore University, presided over the function. Dr. Dhanya B. E., Project Coordinator, DST-STUTI, JSS AHER, described about the DST-STUTI training programme. Certificates of merit and participation were also distributed by the dignitaries on the dais during the ceremony. In the end, Dr. Rashmi Nayak offered a vote of thanks to all. A group photo of the training programme was also captured.



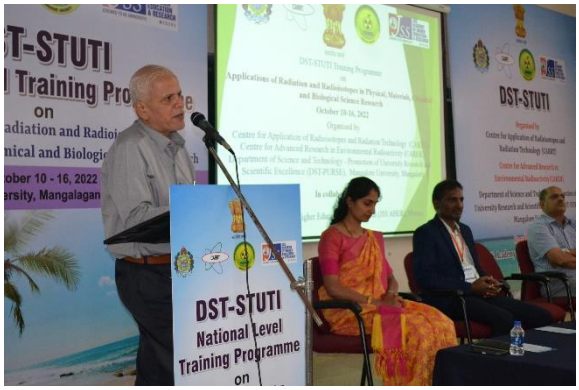
Prof. Karunakara N.



Dr. Dhanya B. E.

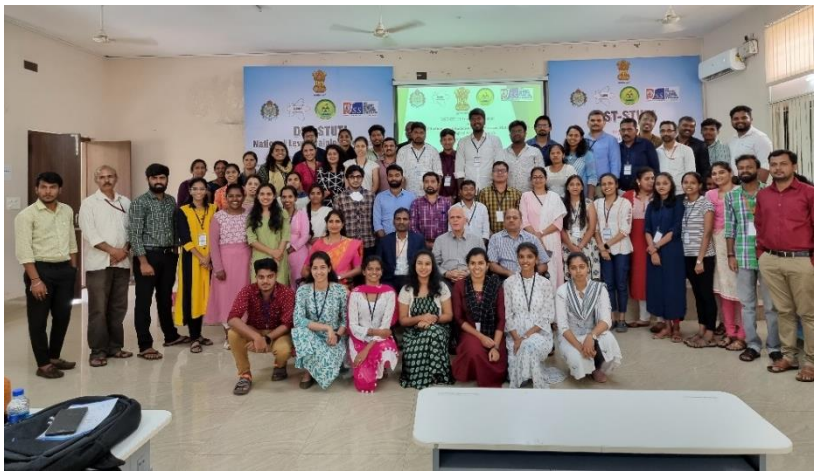


Dr. K. Jayapalan



Prof. Bhasker Shenoy

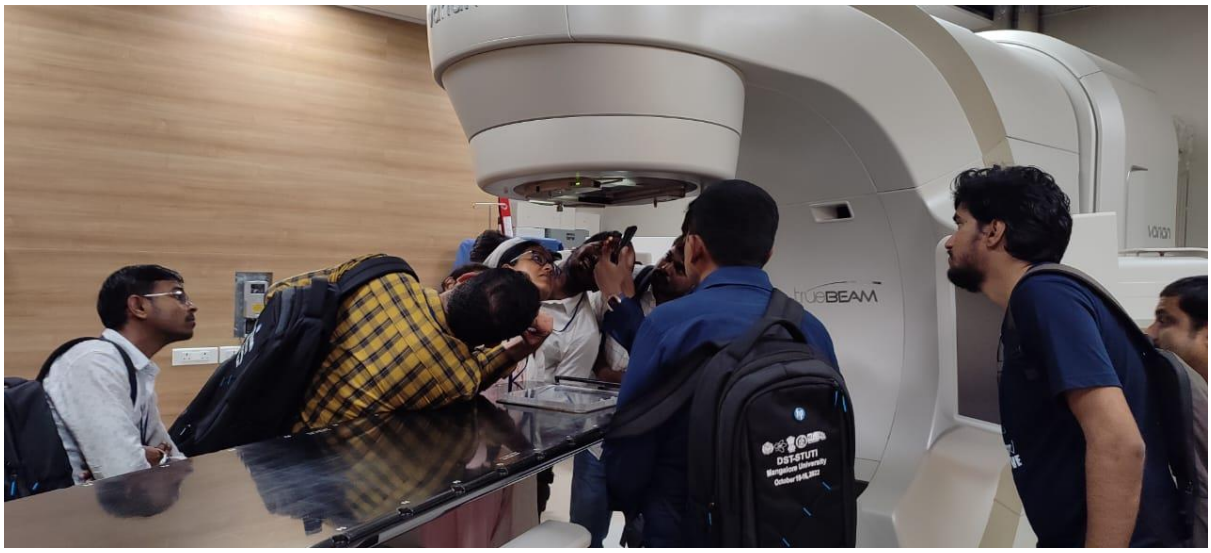
Valedictory ceremony of DST-STUTI training programme



Group Photo

As part of the DST-STUTI training programme, 25 participants visited (2:00 pm) the Zulekha Yenepoya Institute of Oncology, Deralakatte, Mangalore, a newly built cancer treatment centre with TATA Trusts.

Zulekha Yenepoya Institute of Oncology



Zulekha Yenepoya Institute of Oncology