Expert Lecture on Recent Trends in Medical Instrumentation

Resource Person :

Dr. A. Janani, Assistant Professor, Department of Biomedical Engineering, Anna University - Guindy Campus, Chennai 600 025, Phone No.: 99443 66149

1. Title of the event: Expert Lecture on 'Recent Trends in Medical Instrumentation'
2. Date of the event: 07.05.2025
3. Approval letter from the Trust office (if any): NA
4. Proof for funding (if any): NA
5. Name of the resource person with phone number: Dr. A. Janani, Assistant Professor, Department of Biomedical Engineering, Anna University - Guindy Campus, Chennai 600 025, Phone No.: 99443 66149
6. Official address of the resource person: Department of Biomedical Engineering, Anna University - Guindy Campus, Chennai 600 025
7. Objective of the event: Expert lecture for the Professional Elective II - 20ECEl610 / Medical Electronics
8. Attendance sheet of the participants: Students who opted for Medical Electronics as Professional Elective II
9. Sample certificates filled (if certificates issued to the participants): NA
10. Details of the collaborating agency (if any): NA
11. Geo tagged photos of the event:

Sri
SAI RAM ENGINEERING COLLEGE
An Autonomous Institution
West Tambaram, Chennai - 44
www.sairam.edu.in

DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING

IEEE SOC STUDENT BRANCH
IEEE ComSoc
IEEE Communications Society

Expert lecture on

"RECENT TRENDS IN MEDICAL INSTRUMENTATION"

07.05.2025 , Wednesday | 6:30 to 7:30 PM | Google MEET

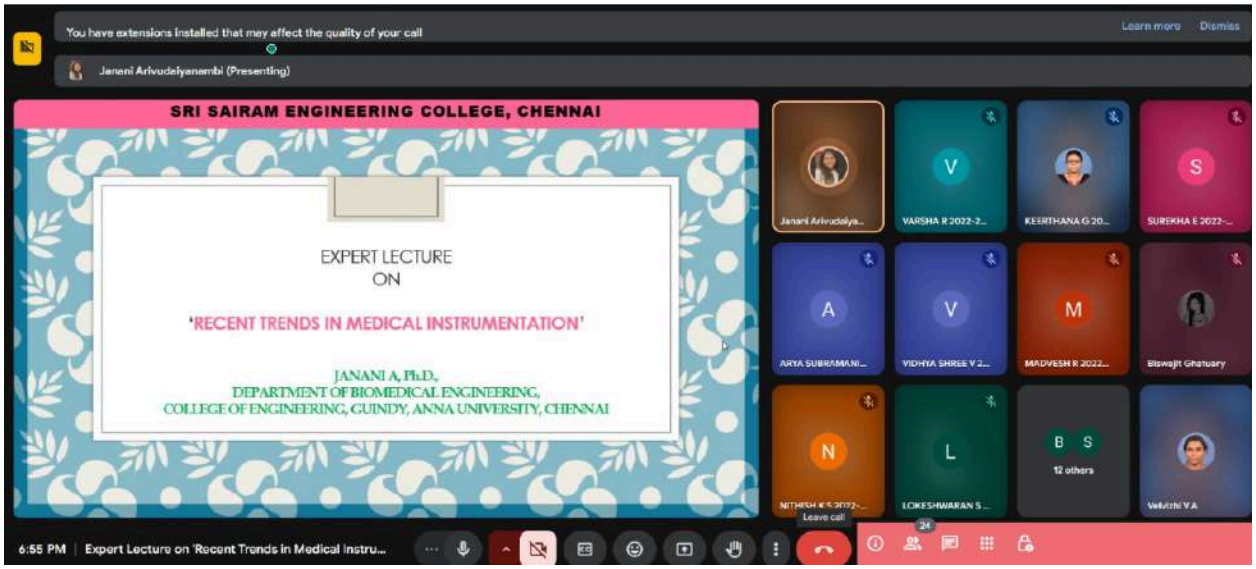
Scan to Join !

RESOURCE PERSON:

Dr. A. Janani,
Assistant professor
at Anna University, Guindy Campus,
Chennai

EVENT ID : SEC202505DEC09

Sairam RAISE | Sairam SDG ACTION | Sairam EOMS | Sairam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Janani Arivudaiyanambi (Presenting)
SRI SAIRAM ENGINEERING COLLEGE, CHENNAI
EXPERT LECTURE
ON
'RECENT TRENDS IN MEDICAL INSTRUMENTATION'
JANANI A, Ph.D.,
DEPARTMENT OF BIOMEDICAL ENGINEERING,
COLLEGE OF ENGINEERING, GUINDY, ANNA UNIVERSITY, CHENNAI
12 others
6:55 PM | Expert Lecture on 'Recent Trends in Medical Instru...


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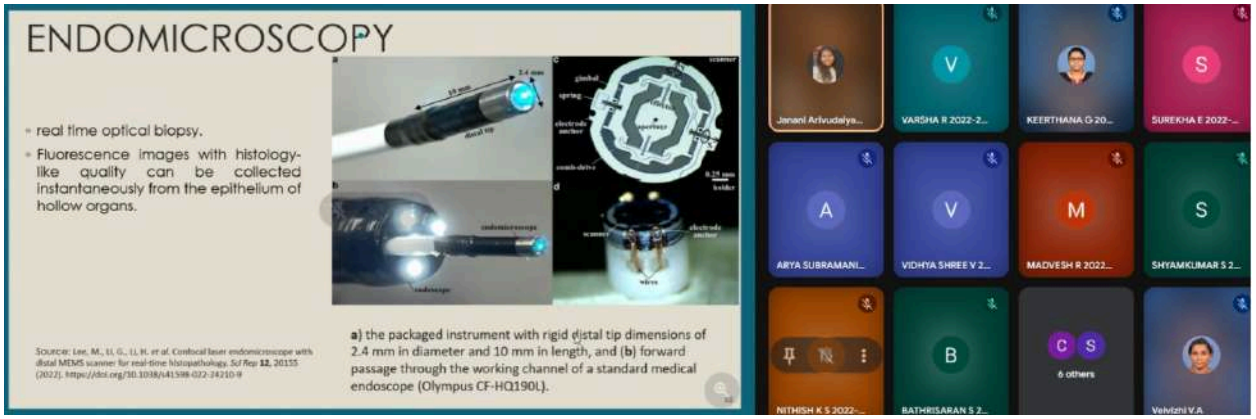
Outline
LASERS IN MEDICINE
✓ Light - introduction
✓ Concept of LASER
✓ Lasing operation
✓ Components of a lasing system
✓ Medical applications of LASERS
✓ For Therapy
❖ In Ophthalmology
❖ In otolaryngology
✓ For diagnosis
❖ Flow cytometry
❖ Endoscopy
➢ endomicroscopy
BRAIN CONTROL INTERFACE
✓ Main blocks
✓ Various applications
✓ Recent trends
CRYOGENICS
✓ Concept of cryogenics
✓ Applications
11 others
6:57 PM | Expert Lecture on 'Recent Trends in Medical Instru...


ENDOMICROSCOPY
real time optical biopsy.
Fluorescence images with histology-like quality can be collected instantaneously from the epithelium of hollow organs.
Source: Lee, M., Li, G., Li, H. et al. Confocal laser endomicroscope with distal MEMS scanner for real-time histopathology. Sci Rep 12, 20155 (2022). https://doi.org/10.1038/s41598-022-24210-9
a) the packaged instrument with rigid distal tip dimensions of 2.4 mm in diameter and 10 mm in length, and (b) forward passage through the working channel of a standard medical endoscope (Olympus CF-HQ190L).
6 others

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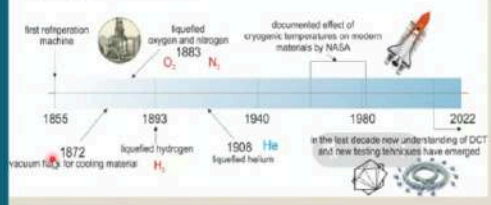
Janani Arivudaiyanambi (Presenting)

Key Events that shaped Deep Cryogenic Treatment



The word cryogenics comes from the Greek word "Kryos," which means cold. This combined with the abbreviated English word "to generate" make the word we know as cryogenics.

Zero degrees Kelvin (0 K) is the theoretically coldest possible temperature (-273.15 °C)

Liquid gases at or below -150° C are also used to freeze other materials. Once a gas begins to liquefy, the environment is considered a cryogenic one. The most common gases that are turned into liquid for cryogenics are oxygen, nitrogen, hydrogen and helium.

Ultra-cold temperatures change the chemical properties of materials. This has become an area of study for researchers who examine different materials as they transition from a gas to a liquid to a solid state.

Janani Arivudaiyanambi... | VARSHA R 2022-2... | KEERTHANA G 20... | SUREKHA E 2022-...
ARYA SUBRAMANI... | VIDHYA SHREE V 2... | MADVESH R 2022... | SHYAMKUMAR S 2...
NITHISH K S 2022-... | BATHRISARAN S 2... | 7 others | Velvizhi V.A

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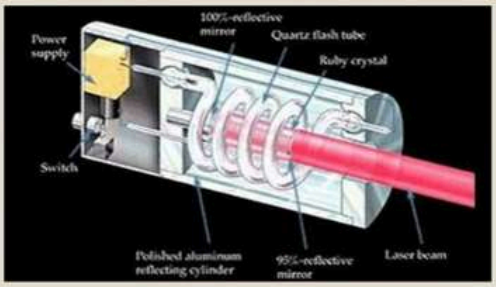
Janani Arivudaiyanambi (Presenting)

Laser Components

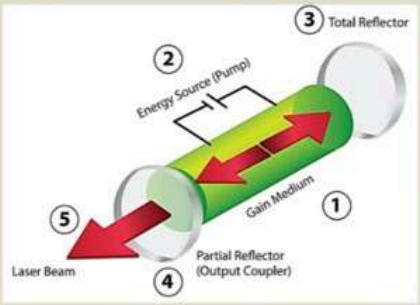
1. Gain or excitation medium - excite the lasing material, causing it to emit light

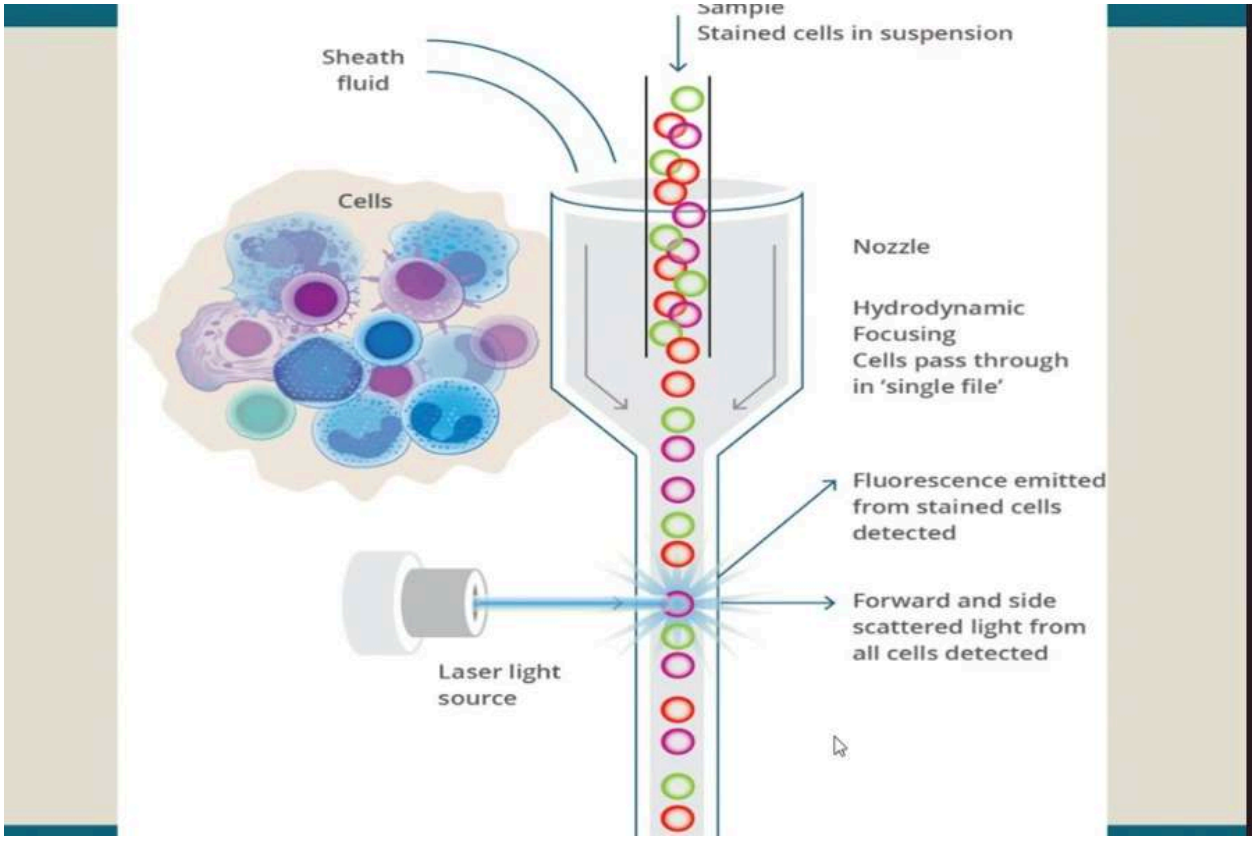
atoms are kept in an excited state and stimulated by an outside photon to emit light in a particular direction.

2. Energy source to pump the gain medium
3. Total reflector to reflect energy
4. Partial reflector
5. Laser beam output



Solid State Laser Construction





12. Website link of the event: NA

13. About the event with outcome of the event (in one page)

Report

Event Name: Expert Lecture on ‘Recent Trends in Medical Instrumentation’

Date: 07.05.2025

Time: 6.30 PM to 8.00 PM

Venue: Online Mode

1. Objective of the Lecture

The expert lecture aimed to provide students and faculty with insights into recent advancements and practical applications in the field of medical instrumentation, with a specific focus on lasers in medicine, endodiathermy, and cryogenic applications.

2. Highlights of the Session

🔬 Lasers and Applications in Medicine

- The speaker elaborated on the principles of medical lasers, including their types (CO_2, Nd:YAG, Excimer, etc.).
- Clinical applications were discussed, such as:
    - Laser-assisted surgeries
    - Ophthalmic procedures (e.g., LASIK)
    - Dermatological treatments (e.g., tattoo and scar removal)
    - Oncology (tumor ablation and photodynamic therapy)

⚡ Endodiathermy

- Introduction to diathermy and endodiathermy techniques used in minimally invasive surgeries.
- Explanation of how high-frequency currents are employed to coagulate or cut tissue.

- Applications in laparoscopy, ENT surgeries, and urology were presented with real-world case examples.

❄️ Cryogenic Applications in Medicine

- Overview of cryogenic technology and its role in medicine.
- Detailed discussion on:
    - Cryosurgery for tumor destruction
    - Cryopreservation of cells, tissues, and reproductive cells
    - Use of liquid nitrogen and safety protocols

3. Key Takeaways

- Students gained exposure to cutting-edge tools and techniques used in modern clinical practice.
- The session helped bridge the gap between theoretical knowledge and real-time medical applications.
- Emphasis was laid on interdisciplinary innovation in biomedical engineering.

4. Feedback & Interaction

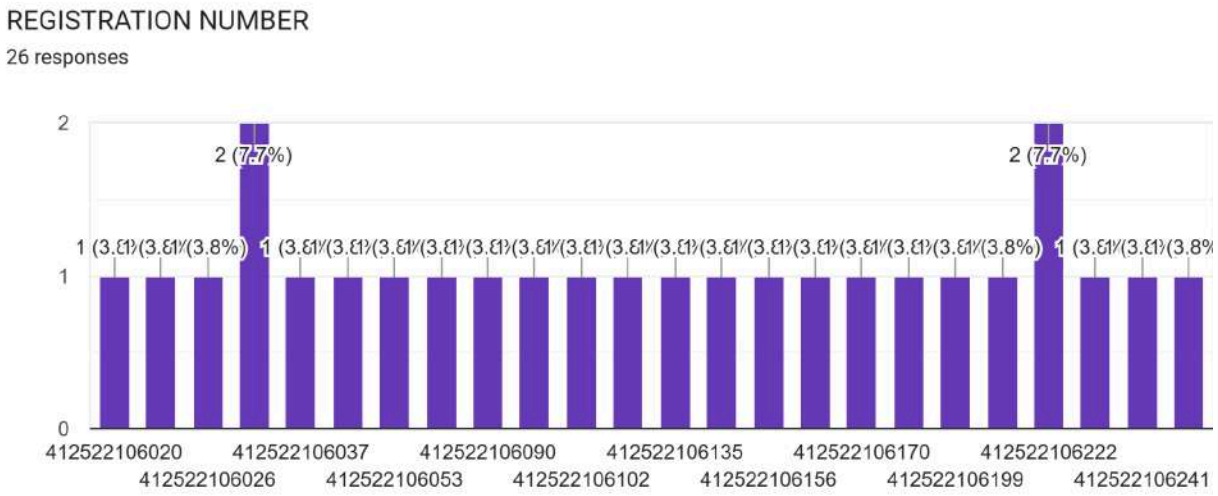
- The session was well-received, with active participation from students and faculty.
- Attendees appreciated the speaker's in-depth knowledge and illustrative examples.
- A Q&A session at the end allowed participants to clarify doubts and explore career opportunities in biomedical research.

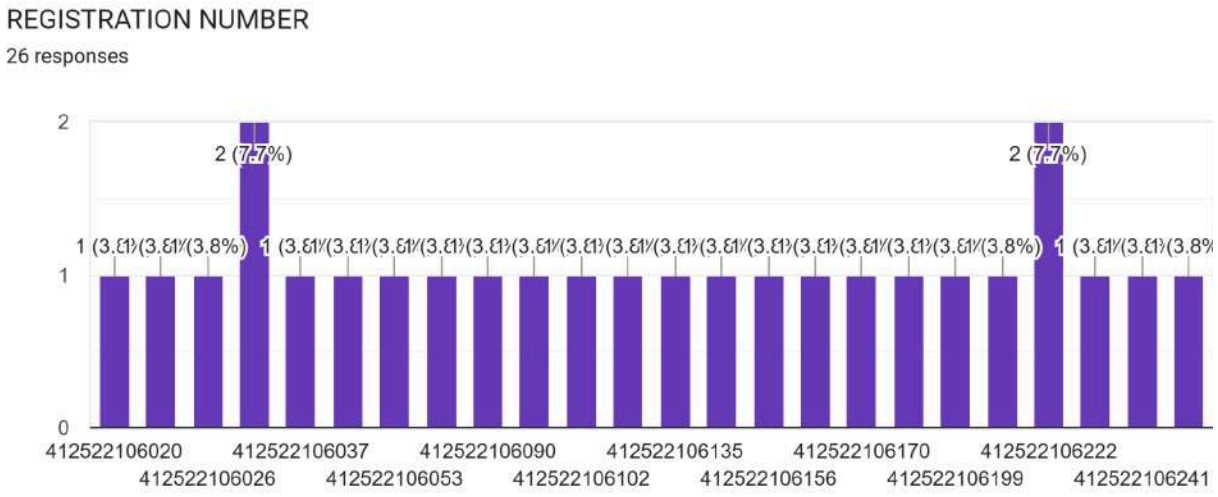
5. Conclusion

The expert lecture significantly contributed to enhancing awareness about the technological advancements in medical instrumentation. It served as a valuable learning experience for budding engineers and researchers in the biomedical field.

6. Acknowledgement

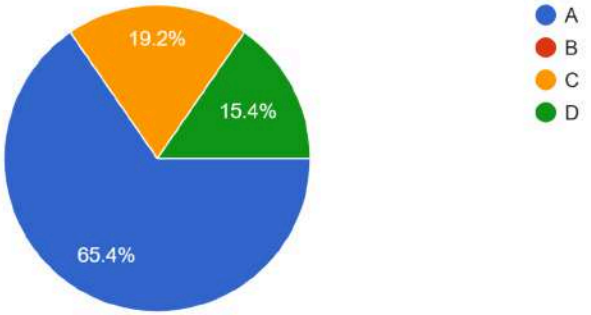
We extend our heartfelt thanks to Dr. A. Janani for their valuable time and enlightening session. Gratitude is also due to the organizing team, faculty members, and students for their enthusiastic support.





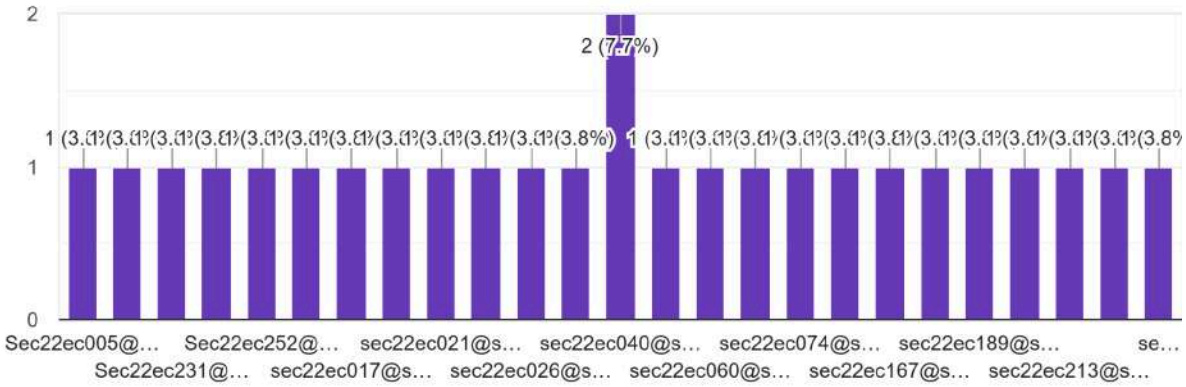
ECE DEPARTMENT SECTION

26 responses



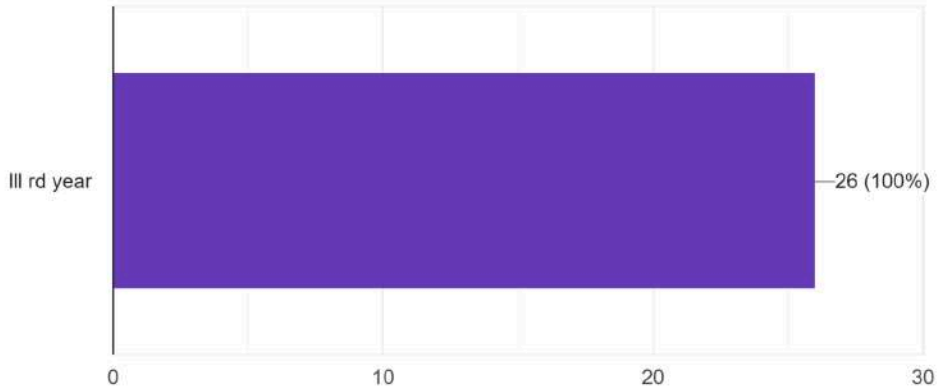
COLLEGE MAIL ID

26 responses



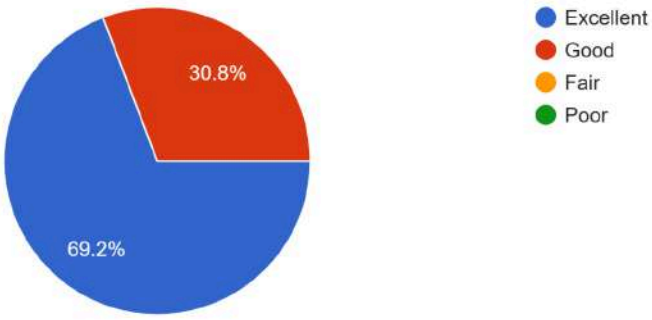
YEAR

26 responses



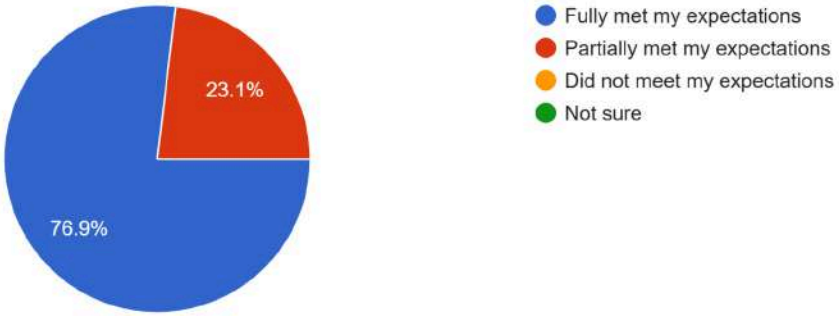
How would you rate the overall session on recent trends in medical instrumentation?

26 responses



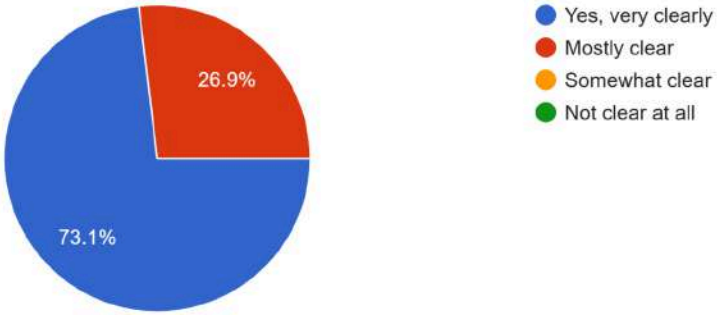
Did the session meet your expectations in terms of content and delivery?

26 responses



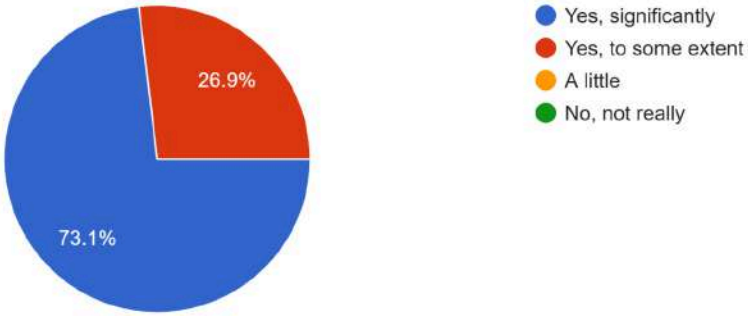
Were the topics explained clearly by the experts?

26 responses



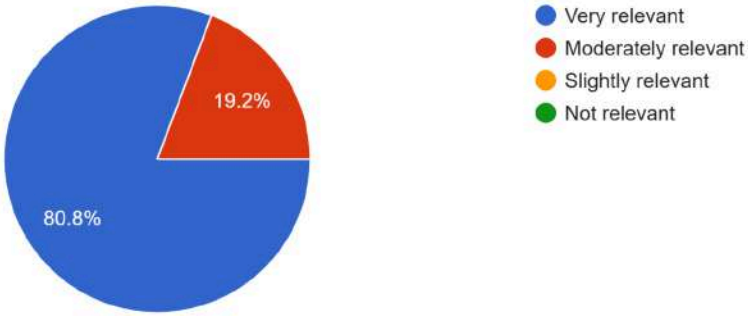
Did you gain a better understanding of the major concepts in the field of medical instrumentation?

26 responses



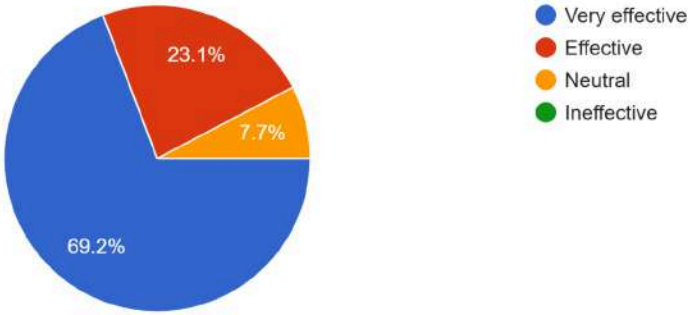
How relevant were the topics discussed to current advancements in the medical field?

26 responses



Was the virtual mode of the event effective in delivering the session content?

26 responses



Do you feel more confident in your knowledge of recent trends in medical instrumentation after attending this session?

26 responses