Goa University

School of Chemical Sciences (SCS)

REPORT on a talk on "2D Materials Based Sensors and Photodetectors" by Dr. Parikshit Sahatiya, Associate Professor, BITS Pilani Hyderabad Campus.

Activity	"2D Materials Based Sensors and Photodetectors" by Dr. Parikshit Sahatiya, Associate Professor, BITS Pilani Hyderabad Campus.
Date and time	4/11/2025 at 12.00 pm
Faculty attended	10
Students attended	23
Participants	33
The objective/description of the activity	Objective: The talk was organised with the objective of exposing students to emerging interdisciplinary research at the interface of chemistry, materials science, and electronics. An email informing all the students and teaching staff about the talk at the Auditorium of SCS building of Goa University was sent. Dr. Sahatiya began the lecture by introducing two-dimensional (2D) materials, atomically thin materials such as graphene, transition metal dichalcogenides, and related layered structures. He discussed how these materials can be engineered to fabricate highly sensitive devices capable of detecting gases, biomolecules, and environmental pollutants and presented several examples from his research group demonstrating innovative approaches to integrate 2D materials into functional devices. He also highlighted the potential of these materials in neuromorphic devices, which mimic biological neural systems and are expected to play a key role in future artificial intelligence hardware. The lecture and interactive discussion session were highly informative and stimulated significant interest among the students, particularly those working in materials chemistry and nanotechnology. The event concluded with vote of thanks and presentation of a memento to the speaker by the Dean, SCS Prof. V. M. S. Verenkar.
Benefit/Key outcome of the event	Overall, the lecture provided valuable exposure to cutting-edge developments in 2D materials-based electronics and optoelectronics, encouraging interdisciplinary thinking and potential research collaborations.

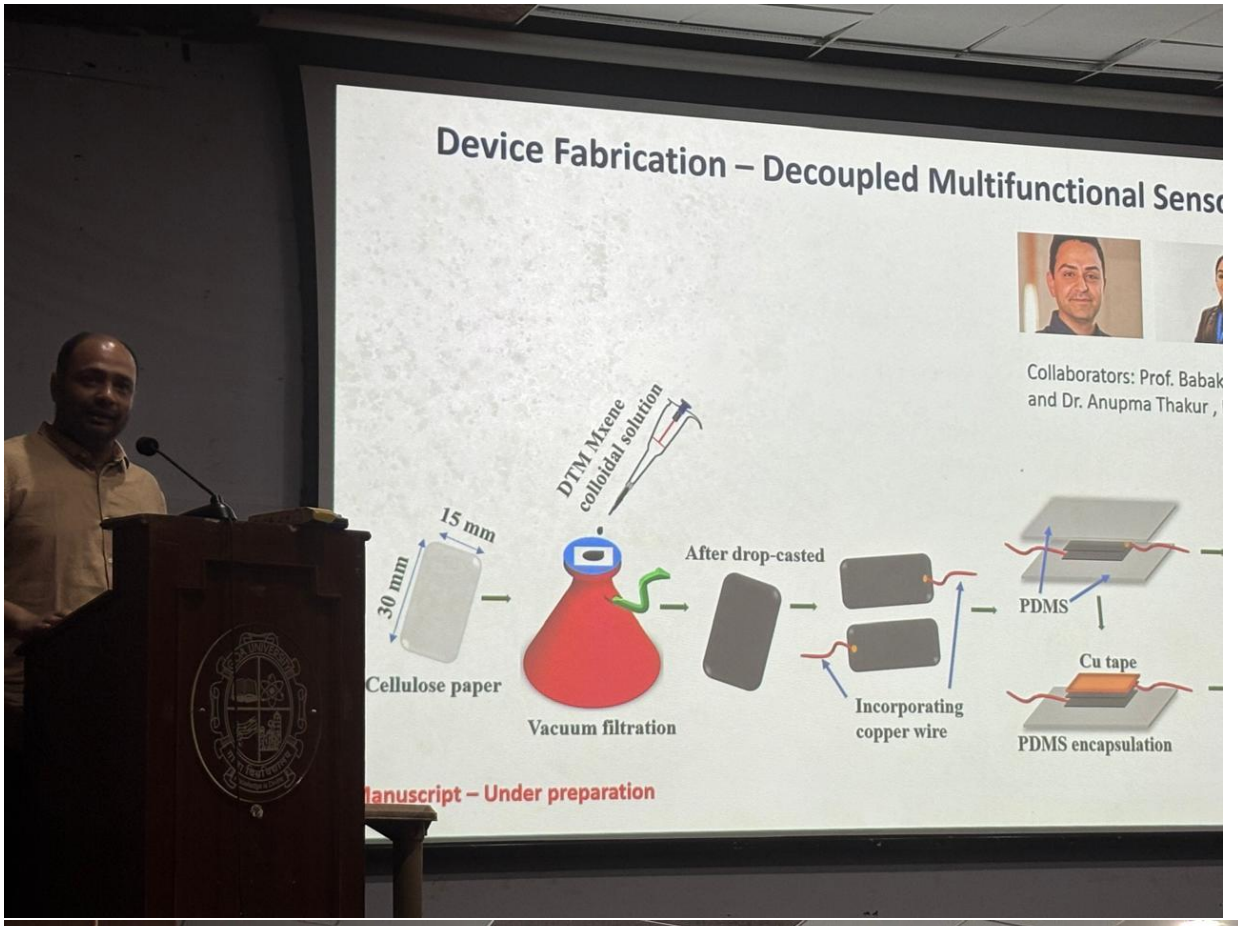
for Dr. Rhea Patel
Convenor

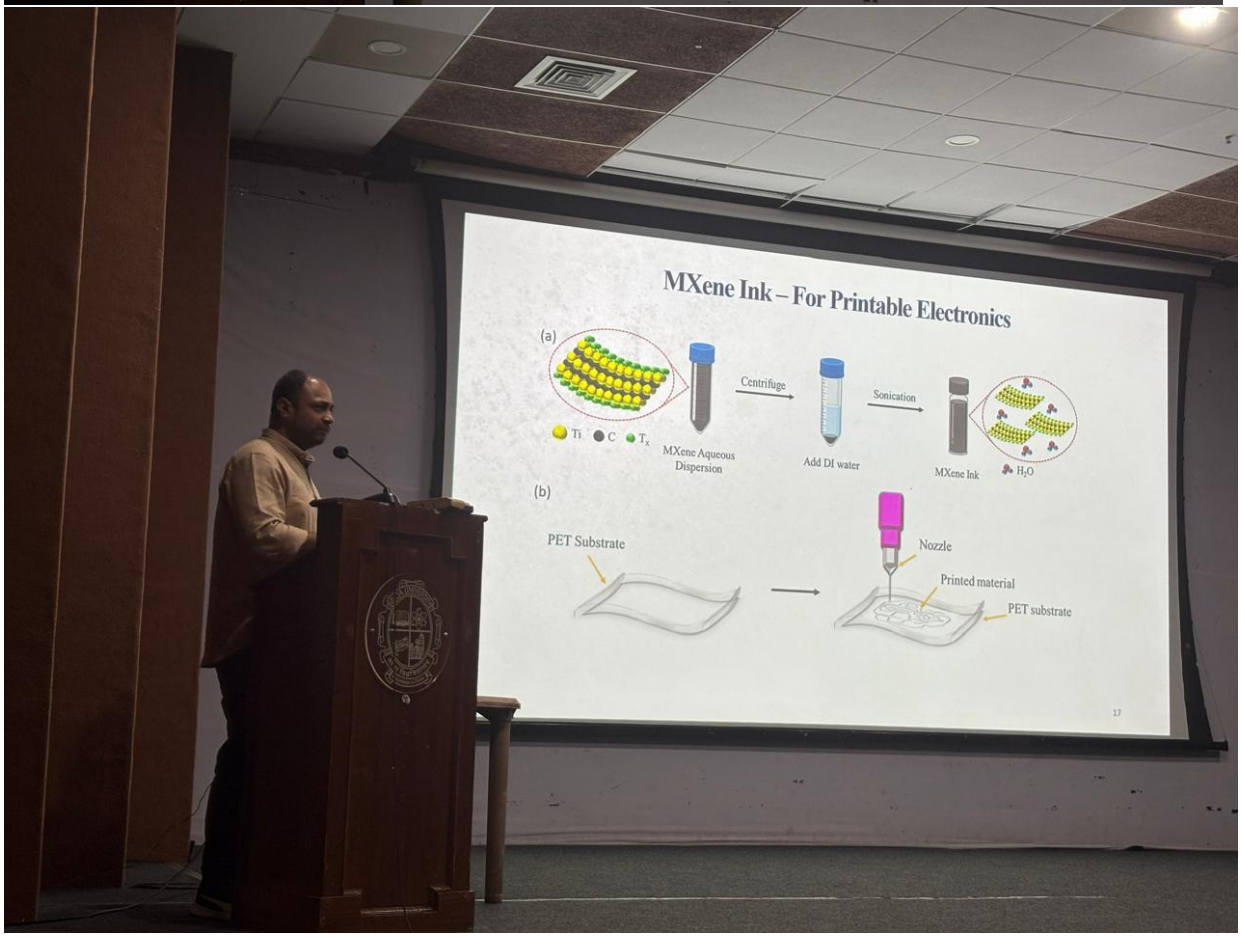
Dr. Diptesh Naik
Co-convenor

Prof. V. M. S. Verenkar
Dean, SCS

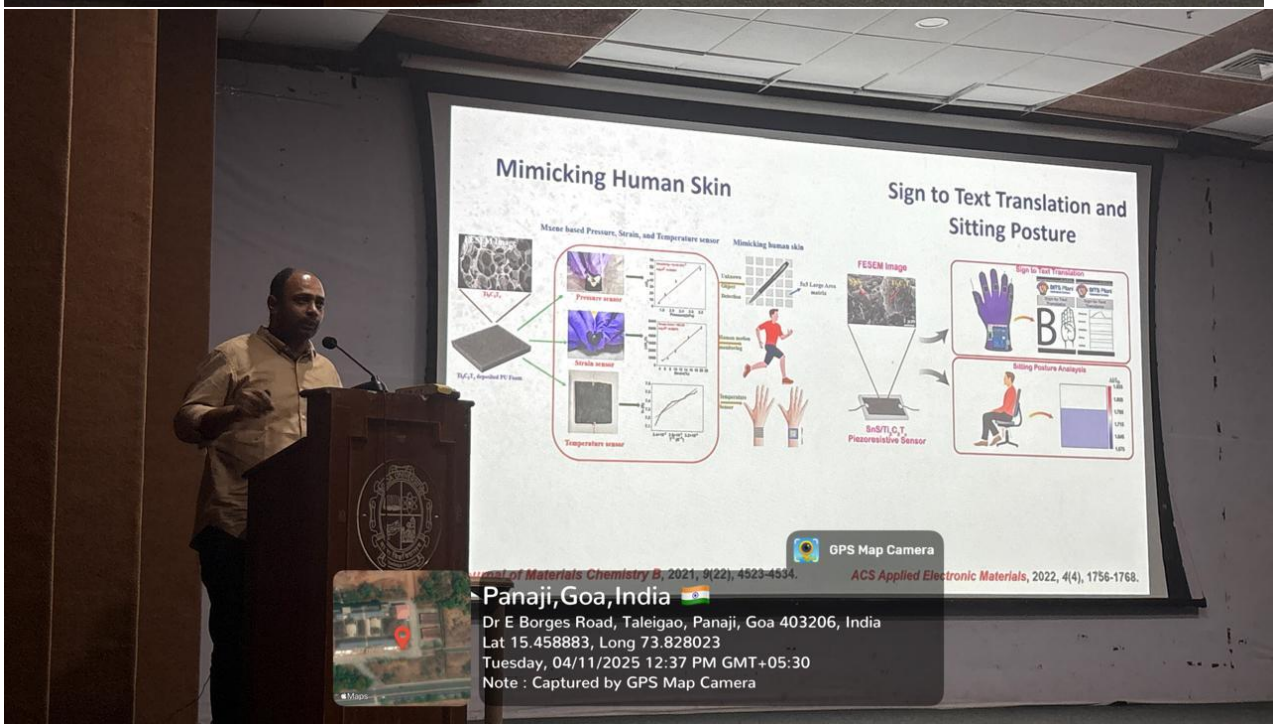
GOA UNIVERSITY ★ SCHOOL OF CHEMICAL SCIENCES ★ TALEIGAO PLATEAU GOA


BITS Pilani
Pilani | Dubai | Goa | Hyderabad
2D Materials Based Sensors and Photodetectors
Prof. Parikshit Sahatiya
Dept. of Electrical and Electronics Engineering
Associate Head, Center for Research Excellence in Semiconductor Technology (CREST)
PI: Nanoscale Devices Laboratory
BITS Pilani Hyderabad Campus
Email : parikshit@Hyderabad.bits-pilani.ac.in
GPS Map Camera
Panaji,Goa,India
Dr E Borges Road, Taleigao, Panaji, Goa 403206, India
Lat 15.458926, Long 73.827959
Tuesday, 04/11/2025 12:17 PM GMT+05:30
Note : Captured by GPS Map Camera
Maps


Device Fabrication – Decoupled Multifunctional Sens
Collaborators: Prof. Babak
and Dr. Anupma Thakur ,
DTM Mxene
colloidal solution
15 mm
30 mm
Cellulose paper
Vacuum filtration
After drop-casted
PDMS
Cu tape
Incorporating
copper wire
PDMS encapsulation
anuscript – Under preparation


MXene Ink – For Printable Electronics
(a)
Ti
C
T_x
MXene Aqueous
Dispersion
Centrifuge
Add DI water
Sonication
MXene Ink
H_2O
(b)
PET Substrate
Nozzle
Printed material
PET substrate
17


Gait Detection
Smart Creepe Bandage
Gait Detection
Flow Monitoring in Biomimetic Blood Vessel
FESEM
Wireless Health Monitoring by Wearable Smart Shoe and Crypt Bandage
Ti3C2Tx/ SnSe2 Nanohybrid Sensor
S Applied Electronic Materials, 2021, 3, 4091.
Advanced Materials Interfaces, 2021, 9, 2101687.


Mimicking Human Skin
Sign to Text Translation and Sitting Posture
Mxene based Pressure, Strain, and Temperature sensor
Mimicking human skin
FESEM Image
Sign to Text Translation
Sitting Posture Analysis
Pressure sensor
Strain sensor
Temperature sensor
SnS/Ti3C2Tx Piezoresistive Sensor
GPS Map Camera
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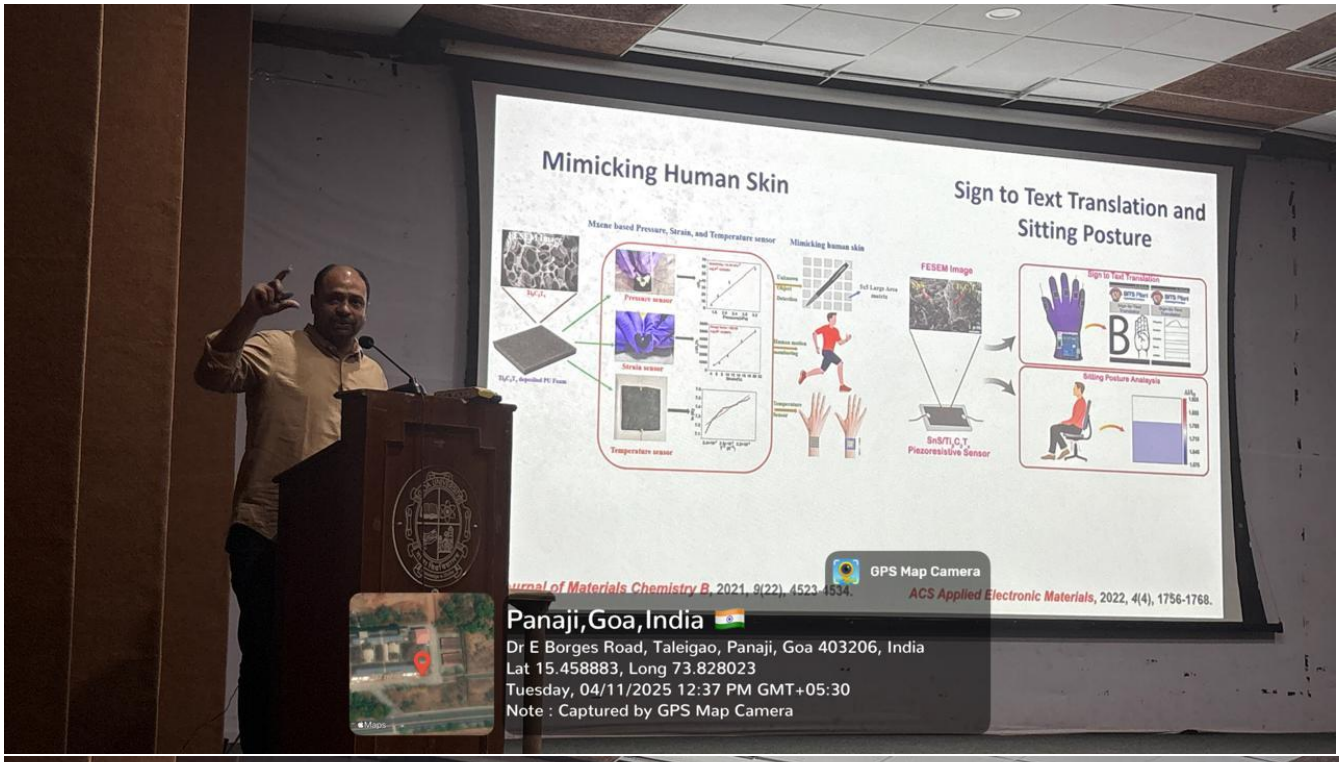
Dr E Borges Road, Taleigao, Panaji, Goa 403206, India
Lat 15.458883, Long 73.828023
Tuesday, 04/11/2025 12:37 PM GMT+05:30
Note : Captured by GPS Map Camera
ACS Applied Electronic Materials, 2022, 4(4), 1756-1768.


Mimicking Human Skin
Sign to Text Translation and Sitting Posture
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Mimicking human skin
FESEM Image
Pressure sensor
Strain sensor
Temperature sensor
Sign to Text Translation
Sitting Posture Analysis
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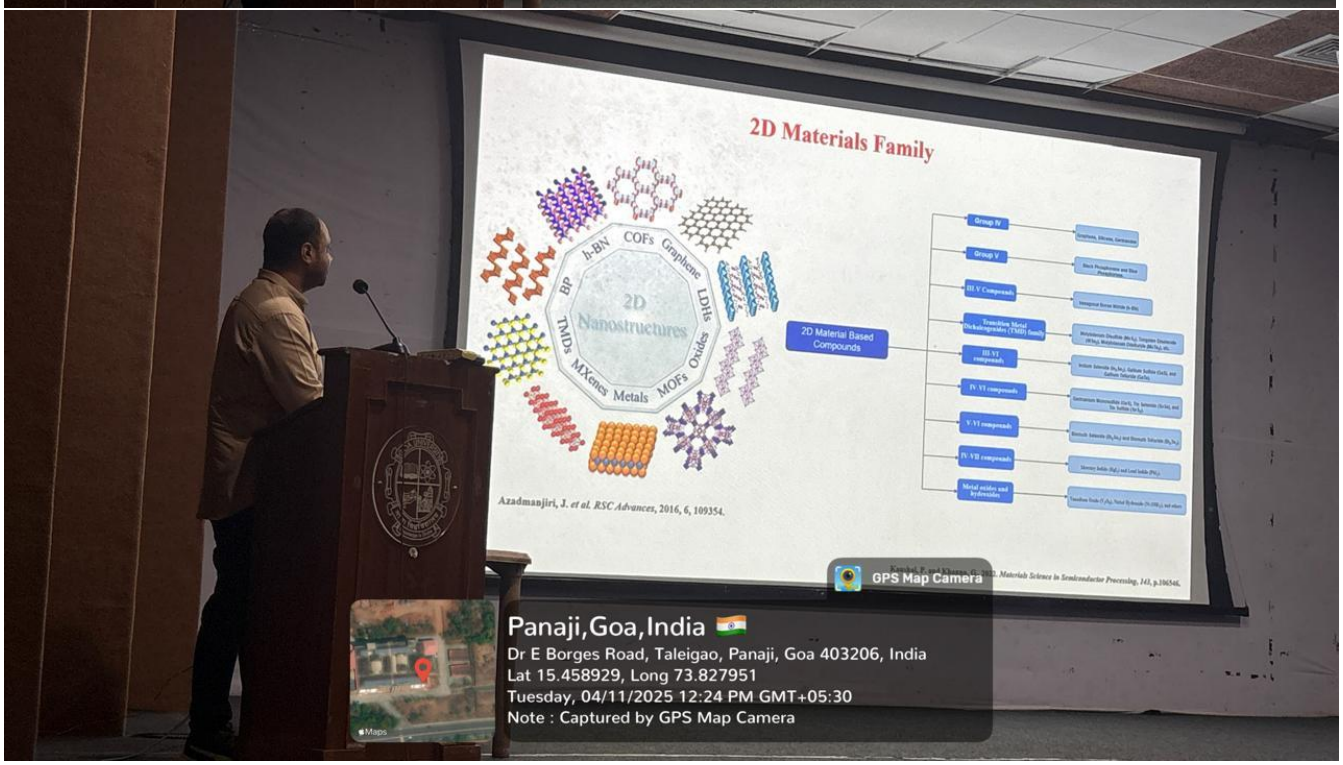
2D Materials Family
h-BN
COFs
Graphene
LDHs
BP
2D Nanostructures
TMDs
Oxides
MXenes
Metals
MOFs
2D Material Based Compounds
Group IV
Group V
III V Compounds
Transition Metal Dichalcogenides (TMD) family
III VI compounds
IV VI compounds
V VI compounds
IV VII compounds
Metal oxides and hydroxides
Azadmanjiri, J. et al. RSC Advances, 2016, 6, 109354.
GPS Map Camera
Panaji,Goa,India
Dr E Borges Road, Taleigao, Panaji, Goa 403206, India
Lat 15.458929, Long 73.827951
Tuesday, 04/11/2025 12:24 PM GMT+05:30
Note : Captured by GPS Map Camera


Nanoscale Devices Group
2D Materials based Electronics/Optoelectronics
Memristors
Microneedle Patch based Biosensor
Photodetectors
VOC/Gas Sensing
Digital image of flexible PCB on PET substrate
Flexible and Wearable Electronics/Sensors
Transient Electronics
0 min
15 min
Moisture triggered
Healthy
Diabetic
GPS Map Camera
Panaji,Goa,India
Dr E Borges Road, Taleigao, Panaji, Goa 403206, India
Lat 15.458929, Long 73.827952
Tuesday, 04/11/2025 12:22 PM GMT+05:30
Note : Captured by GPS Map Camera

Goa University
School of Chemical Sciences

Organises a talk on the topic

‘2D Materials Based Sensors and Photodetectors’

Date: 4th November, 2025
Time: 12.00 pm
Venue: Auditorium, SCS,GU.

Speaker:

Dr. Parikshit Sahatiya

Associate Professor,
Department of Electrical and Electronics Engineering,
Birla Institute of Technology & Science, Pilani
Hyderabad Campus

All are Cordially Invited!!

Dr. Rhea Patel Dhond,
Convenor

Dr. Diptesh Naik,
Co-convenor

Prof. V. M. S. Verenkar,
Dean, SCS

Invited Talk.

Topic : 2D Materials Based Sensors & Photodetectors
Date : 04th November 2025 at 12.00pm.
Speaker : Dr. Parkshit Sahariya. Co-ord: Dr. Rhea Patil & Dr. Diplion Naik.
Venue : SCS Auditorium

Attendance.

Sr. No.	Name.	School.	Sign.
1	Manjusha M. Gaonkar	SCS	
2	Kanti H. Mayankar	SCS	
3	Kanti H. Mayankar	SCS	
4.	Parshuram P. Gaonkar	SCS	
5	Ria Colaco	SCS	
6	Deepti Velip	SCS	
7	Vanita Kunkalkar	SCS	
8	Medha M. Gaude	SCS	
9	Dr. Luann R. D'Souza	SCS	
10	Ankita Desai	SCS	
11.	Shefali Anikar	SCS	
12.	Pritesh Khobrekar	SCS	
13	Pranav Kalwaikar	SCS	
14	Saran Sattarkar	SCS	
15	Upma Gaonkar	SCS	
16	Kajal N. Salgaokar	SCS	
11	Gayatri Gawade	GURU	
12	Namitha Panday	GURU	
13	Balram Swami	GURU	
14	Sheffali J. Jena	GURU	
15	Akanksha Kushwaha	GURU	
16	Deepika Karmalkar	SCS	
17	Savita A. Kundaikar	SCS	
18.	Amita N. Vetekar	SCS	
19	Aniket S. Mandrekar	SCS	
20.	DIPTESH G. NAIK	SCS	
21	Kashinath Dhumeda	SCS	

Saraswati®

22	Amita Kharangate	SES	
23	Kanchanmala Deshpande	SES	
24	Delicia A. Barretto	SCS	
25	HARI K. KADAM	SCS faculty	
26	Sandesh T. Bugde	SCS	
27.	PAVANKUMAR V. PATIL	SCS	
28.	NITESH U. VENTI	SCS	
29	PRIYANKA S. MODAK	SCS	
30	Leo F. B - D'souza	SES	
31	Pradnya . T. Gonal	SCS	
32	Madhusmita Das	SCS	
33	Praeli Tarmy	SES	