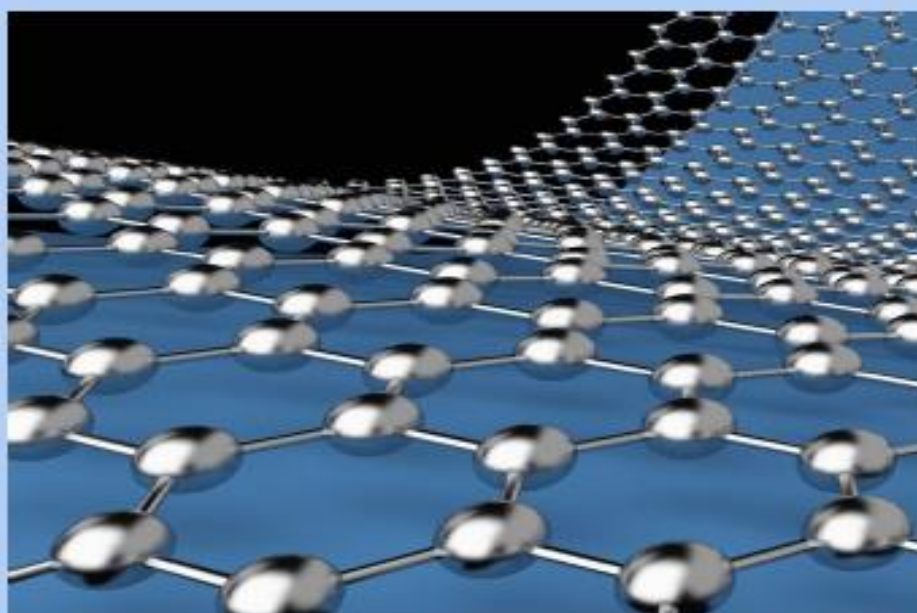




**RTU(ATU) TEQIP-III SPONSORED  
FACULTY DEVELOPMENT PROGRAM  
ON  
“EMERGING TRENDS IN NANO-ELECTRONICS”  
(ETNE-2020)  
SEPTEMBER 21-25, 2020**



**Organized by**  
**Rajasthan Technical University, Kota**  
**&**  
**Swami Keshvanand Institute of Technology,  
Management & Gramothan, Jaipur**



**Host Institute**  
**Department of Electronics & Communication Engineering**  
**Swami Keshvanand Institute of Technology,**  
**Management & Gramothan, Jaipur-302017**  
**[www.skit.ac.in](http://www.skit.ac.in)**



**A  
Report  
on  
Five Days  
Faculty Development Program  
Emerging Trends in Nano Electronics  
ETNE-2020**

**21-25 September 2020**

**Sponsored by TEQIP III**



**RTU Event Coordinator:**

**Dr. M L Meena  
Mr. Riyaz Ahmad**

**Host Institute Coordinators:**

**Prof. Mukesh Arora  
Prof. Praveen Jain  
Dr. Rukhsar Zafar  
Dr. Shubhi Jain**

**Organized By**

**Rajasthan Technical University, Kota  
&**

**Swami Keshvanand Institute of Technology Management &  
Gramothan, Jaipur**

**Host Institute**

**Department of Electronics and Communication Engineering  
Swami Keshvanand Institute of Technology Management &  
Gramothan, Jaipur**

# Approval Letter

## Notice



### RAJASTHAN TECHNICAL UNIVERSITY

Rawatbhata Road, Akelgarh, Kota-324 010

**TEQIP III-RTU(ATU) OFFICE**

Phone: 0744-2473060 Fax: 2473002 Email: [rtuteqip@rtu.ac.in](mailto:rtuteqip@rtu.ac.in)

No. RTU/TEQIP-III/F(56)/2020-21/ 4892-97

DATE:- 05/09/20

In continuation of office order RTU/TEQIP-III/F(56)/2018-19/4752-58 dated 10/07/2020, following dates and RTU coordinators are approved for the faculty development programmes (FDPs) mentioned as below.

S. No.	Name of the Institute	Title of the FDP	No. of Days	RTU Coordinator	Dates
1	ACERC Jaipur	Image Processing Techniques for real world applications	5	Harish Sharma	8-12 Aug 2020
2	Anand International College of Engineering	Technology and Innovation in Math Education	5	Dr. Kamlesh Jangid	14-18 Sept 2020
3	Anand International College of Engineering	Artificial Intelligence and Machine Learning Using Python	3	Mr. Vikash Tripathi	10-12 Sep 2020
4	Arya College of Engineering & Research Centre	Data Science	2	Dr. Harish Sharma	12-13 Sept 2020
5	Arya College of Engineering & Research Centre	Machine Learning	3	Dr. Harish Sharma	16-18 Sept 2020
6	Arya Institute of Engineering & Technology	Practical Exposure on Image Processing using MATLAB	2	Dr. Harish Sharma	29-30 Aug 2020
7	BK Birla Institute of Engg. & Tech., Pilani	Applications of Optimization Techniques in Science and Engineering	5	Dr. S.D. Purohit	23-27 Aug 2020
8	Chartered Institute of Technology, Aburoad	Energy Auditing and Management	3	Dr. Rajeev Gupta	4-6 Sept 2020
9	GEETANJALI INSTITUTE OF TECHNICAL STUDIES, UDAIPUR	POWER ELECTRONICS CONVERTERS: APPLICATIONS AND THEIR CONTROL	3	Mr. Sawan Singh	10-12 Aug 2020
10	GEETANJALI INSTITUTE OF TECHNICAL STUDIES, UDAIPUR	Solar Design and Drafting	5	Dr K. B. Rana & Dr. Pankaj Sharma	21-25 Sept 2020
11	GEETANJALI INSTITUTE OF TECHNICAL STUDIES, UDAIPUR	Machine Learning and Its Aspects	3	Dr. Harish Sharma	23-25 Aug 2020
12	Jagan Nath Gupta Institute of Engineering and Technology, Jaipur	IOT ( Internet of Things)	3	Ms. PARUL CHAUHAN	19-21 Aug 2020
13	JAIPUR INSTITUTE OF TECHNOLOGY-GROUP OF INSTITUTIONS, JAIPUR	EMPLOYABILITY SKILLS FOR ENGINEERING GRADUATES	5	Dr. Irum Alvi	7-11 Sept 2020
14	JEC KUKAS	Recent advances in renewable energy technologies for sustainable development	2	Mr. Sawan Singh	21-22 Aug 2020
15	JEC KUKAS	RECENT ADVANCES N FIELD OF PHYSICAL SCIENCES	2	Ms. Priyanka Agarwal	7-8 Aug 2020
16	JEC KUKAS	Artificial Intelligence & IOT	2	Dr. Harish Sharma	19-20 Sept 2020
17	JEC KUKAS	Transient stability in power system	2	Prof. Dinesh Birla	11-12 Sept 2020

*jm*



# RAJASTHAN TECHNICAL UNIVERSITY

Rawatbhata Road, Akelgarh, Kota-324 010

TEQIP III-RTU(ATU) OFFICE

Phone: 0744-2473060 Fax: 2473002 Email: rtuteqip@rtu.ac.in

No. RTU/TEQIP-III/P(56)/2020-21/ 489-97

DATE:- 05/08/20

37	RIET JAIPUR	EMERGING ISSUES IN ENVIRONMENT ENGINEERING AND DISASTER MANAGEMENT	5	Dr Munish Bindal	21-25 Sept 2020
38	RIET jaipur	Drone Technology	5	Dr S. S. Godara	25-29 Aug 2020
39	Sawai Madhopur College of Engineering & Technology, Sawai Madhopur	Smart Agriculture	1	Dr Rajeev Gupta	29-Aug-20
40	Sawai Madhopur College of Engineering & Technology, Sawai Madhopur	Green Energy Technologies	2	Munish Bindal	3-4 Sept 2020
41	Shankara Institute of Technology	Entrepreneurship Development	2	T V S KALYAN CHAKRAVARTHI	18-19 Sept 2020
42	Shrinathji Institute of Technology & Engineering Nathdwara	Artificial Intelligence & Data Analytics with Matlab	5	Dr Harish Sharma	8-Aug 12 2020
43	Shrinathji Institute of Technology & Engineering, Nathdwara	Advance Microgrids, Smart Renewable & Distributed Energy System	3	Prof Dinesh Birla	24-26 Sept 2020
44	Shrinathji Institute of Technology and Engineering, Nathdwara	Fuel additives for C.I. Engine And Performance Evaluation	3	Mr. VAIBHAV GUPTA	10-12 Sept 2020
45	SRI BALAJI COLLEGE OF ENGINEERING AND TECHNOLOGY	RECENT TRENDS IN RENEWABLE ENERGY	3	Dr Munish Bindal	10-12 Sept 2020
46	SRI BALAJI COLLEGE OF ENGINEERING AND TECHNOLOGY	MAT LAB AND IT'S APPLICATIONS	3	Dr S. S. Godara	1-3 Sept 2020
47	SRI BALAJI COLLEGE OF ENGINEERING AND TECHNOLOGY	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	3	Mr. Vipin Prakash Yadav	7-9 Sept 2020
48	SRI BALAJI COLLEGE OF ENGINEERING AND TECHNOLOGY	ELECTRICAL VEHICLE	3	Dr D. K. Yadav	4-6 Sept. 2020
49	SRI BALAJI COLLEGE OF ENGINEERING AND TECHNOLOGY	MULTI VARIABLE MULTI RESPONSE OPTIMIZATION	5	Dr. Rahul Jain	14-18 Sept 2020
50	SRI BALAJI COLLEGE OF ENGINEERING AND TECHNOLOGY	ENERGY SIMULATION OF BUILDING	5	Dr. K B Rana & Dr. Pankaj Sharma	7-11 Sept 2020
51	SWAMI KESHVANAND INSTITUTE OF TECHNOLOGY, MANAGEMENT & GRAMOTHAN	AATMNI RBHAR BHARAT: ENCOURAGING ENTERPRISE IN RURAL COMMUNITIES AND REMOTE REGIONS	3	Prof Rajesh Singal	4-6 Sept 2020
52	SWAMI KESHVANAND INSTITUTE OF TECHNOLOGY, MANAGEMENT & GRAMOTHAN	Embedded Systems and IoT	5	Ms. PARUL CHAUHAN	4-8 Aug 2020
53	SWAMI KESHVANAND INSTITUTE OF TECHNOLOGY, MANAGEMENT &	Emerging Trends in Nano Electronics (ETNE)	5	Dr. M. L. Meena & Riyaz Ahmad	21-25 Sept 2020

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## **ABOUT FDP**

The motivation of this faculty development program (FDP) is to bring together faculty members from different institutions to share and exchange their ideas and research findings in the field of emerging advanced nano-electronics, their processing as well as their sustain ability and applicability in different fields of interest. Through this forum, the participants will have opportunities to discuss innovations, encountered challenges and their probable solutions in the field of nano-electronics. This program could provide a virtual environment for faculty members to collaborate and to contribute to the collective effort in developing a knowledge-based sustainable society.

### **◆Contents**

- ◆ Nano Materials for Gas Sensors
- ◆ Nano Materials for Optical Detectors
- ◆ Nano Materials for Hydrogen Energy Applications
- ◆ Nano-Photonics Waveguides
- ◆ Nano-Photonics assisted Solar Cells
- ◆ Spintronics
- ◆ Supercapacitors

S.No	Expert Name, Affiliation and Title of Talk
1	Dr. Govind, Senior Principal Scientist & Professor (AcSIR), NPL, New Delhi Title of Talk: Fabrication of Next Generation Optical Detectors for Ultraviolet Radiations
2	Dr. Mahesh Kumar, IIT Jodhpur Title of Talk: Growth of MoS <sub>2</sub> Nano Materials for NO <sub>2</sub> Gas Sensor
3	Dr. Aditya Jain, Inst. of Materials Science and Engineering, NUAA, China Title of Talk: Multi Layer Ceramic Capacitors for Energy Storage Applications
4	Dr. Mohan S. Mahata, DTU, New Delhi Development and Applications of Nano Sized Luminescent Materials
5	Dr. Anshu Sharma, Central University of Haryana Title of Talk: Nano Materials for Hydrogen Energy Applications
6	Dr. Praveen Kumar IACS-Kolkata, and Chair of the MCAA Indian Chapter Title of Talk: Material Science Innovations for Hydrogen Generation from Water
7	Dr. Pooja D., Senior Scientist, CSIR-CSIO, Chandigarh Title of Talk: Carbon Quantum Dots: A Promising Platform for Water Pollutants Monitoring
8	Dr. Rakesh Ranjan .NIT Patna Title of Talk: Nano-Photonics Waveguides and Its Applications
9	Prof. Vijay Janyani, MNIT, Jaipur Title of Talk: Photonic Crystal Assisted Solar Cells
10	Dr. Sanjeev Yadav, GEC, Ajmer Title of Talk: Nano Antennas and Metamaterial
11	Dr. Anurag Gaur, NIT Kurukshetra Title of Talk: Spintronics based Magnetoresistive and Multiferroic Materials
12	Dr. Balwinder Raj, Associate Professor, NITTTR Chandigarh Title of Talk: Multi Gate Nano-Electronics Devices
13	Dr. Kanupriya Sachdev, Professor, MNIT Jaipur Title of Talk: Carbon Nano-Materials and their Applications
14	Dr. Rishi Vyas, Associate Professor, SKIT Title of Talk: Aspects of Conductometric Gas Sensors
15	Dr. Anurag Gaur, NIT Kurukshetra Title of Talk: Super-capacitors: The future energy storage devices

## **Event Coordinator**

**Dr. M L Meena**

(RTU Event Coordinator)

**Assistant Professor**

Department of Electronics Engineering

Rajasthan Technical University, Kota

**Mr. Riyaz Ahmad**

(RTU Event Coordinator)

**Assistant Professor**

Department of Electronics Engineering

Rajasthan Technical University, Kota

### **Host Institute Co-Ordinator Details**

**1. Dr. Mukesh Arora**

Professor and Head

Department of Electronics and Communication Engineering

Swami Keshvanand Institute of Technology Management and Gramothan, Jaipur

Email id: [hodece@skit.ac.in](mailto:hodece@skit.ac.in)

Phone no: 9829630099

**2. Dr. Praveen Kumar Jain**

Professor and Dy, Head

Department of Electronics and Communication Engineering

Swami Keshvanand Institute of Technology Management and Gramothan, Jaipur

Email id: [pkjain@skit.ac.in](mailto:pkjain@skit.ac.in)

Phone no: 9928652224

**3. Dr. Rukhsar Zafar**

Associate Professor

Department of Electronics and Communication Engineering

Swami Keshvanand Institute of Technology Management and Gramothan, Jaipur

Email id: [rzafar@skit.ac.in](mailto:rzafar@skit.ac.in)

Phone no: 8058318786

**4. Dr. Shubhi jain**

Assistant Professor

Department of Electronics and Communication Engineering

Swami Keshvanand Institute of Technology Management and Gramothan, Jaipur

Email id: shubhijain19@gmail.com

Phone no: 9468783437

**Resource Person**

The Various sessions of the FDP preceded by the experts from IITs, NITs and other reputed institutes.

**Registration Fee**

There is No Registration Fee.

**Targeted Audience**

Faculty of various engineering institutes affiliated to Rajasthan Technical University, Bikaner Technical University and other academic institutions.



# FDP Schedule



Rajasthan Technical University, Kota and Swami Keshyanand Institute of Technology, Management & Gramothan, Jaipur  
*One Week Faculty Development Programme*



on  
*Emerging Trends on Nano-Electronics (ETNE-2020)*  
(21/09/2020 to 25/09/2020)

Host Institute: Swami Keshyanand Institute of Technology, Management & Gramothan, Jaipur

## SCHEDULE

Date (Day)	9:00 am-10:00 am	10:15 am -11:15 am	12:00 pm -1:00 pm	1:00 pm -2:00 pm
21.09.2020 (Monday)	Inauguration (9:30 am -10:00 am)	Dr. Goyind, Senior Principal Scientist & Professor (AcSIR) NPL, New Delhi Title of Talk: Fabrication of Next Generation Optical Detectors for Ultraviolet Radiations	Dr. Mahesh Kumar, IIT Jodhpur Title of Talk: Growth of MoS <sub>2</sub> Nano Materials for NO <sub>2</sub> Gas Sensor	Dr. Aditya Jain Inst. of Materials Science and Engineering, Nanjing University of Aeronautics & Astronautics, China Title of Talk: Multi Layer Ceramic Capacitors for Energy Storage Applications
22.09.2020 (Tuesday)	Dr. Mohan S. Mahata, DTU, New Delhi Development and Applications of Nano Sized Luminescent Materials	Dr. Anshu Sharma, Central University of Haryana Title of Talk: Nano Materials for Hydrogen Energy Applications	Dr. Praveen Kumar IACS-Kolkata, and Chair of the Marie Curie Alumni Association (MCAA) Indian Chapter Title of Talk: Material Science Innovations for Hydrogen Generation from Water	
23.09.2020 (Wednesday)	Dr. Pooja D., Senior Scientist, CSIR-CSIO, Chandigarh Title of Talk: Carbon Quantum Dots: A Promising Platform for Water Pollutants Monitoring	Dr. Rakesh Rajan, NIT Patna Title of Talk: Nano-Photonics Waveguides and Its Applications	Prof. Vijay Janyani, MNIT, Jaipur Title of Talk: Photonic Crystal Assisted Solar Cells	
24.09.2020 (Thursday)	Dr. Sanjeev Yadav, GEC, Ajmer Title of Talk: Nano Antennas and Metamaterial	Dr. Anurag Gaur, NIT Kurukshetra Title of Talk: Spintronics based Magneto-resistive and Multiferroic Materials	Dr. Balwinder Raj, Associate Professor NITTTR Chandigarh Title of Talk: Multi Gate Nano-Electronics Devices	
25.09.2020 (Friday)	Dr. Kamupriya Sachdev, Professor, MNIT Jaipur Title of Talk: Carbon Nano-Materials and their Applications	Dr. Rishi Vyas, Associate Professor, SKIT Title of Talk: Aspects of Conductometric Gas Sensors	Dr. Anurag Gaur, NIT Kurukshetra Title of Talk: Super-capacitors: The future energy storage devices	Valedictory (1:15 pm – 1:30 pm)

### RTU Event Coordinator

Dr. M. L. Meena  
Mr. Riyaz Ahmad

### HOST Institute Coordinator

Dr. Praveen Kumar Jain  
Dr. Mukesh Arora  
Dr. Rukhsar Zafar

### Principal-Host Institute

Dr. Ramesh Kumar Pachar

## List of Participants

Rajasthan Technical University, Kota and Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur  
One Week Faculty Development Programme

on

Emerging Trends on Nano-Electronics (ETNE-2020)

(21/09/2020 to 25/09/2020)

Host Institute: Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur

### List of Participants

Sr.N	Salute	Name	Institute	Email Id	RTU/BTU Affiliated	Attendance (Day Wise)					Feedback Submitted (Yes/No)	Assignment Submitted (Yes/No)
						Day-1	Day-2	Day-3	Day-4	Day-5		
1	Mr.	Abhishek Kumar	JECRC FOUNDATION, JAIPUR	abhishekkum2009@gmail.com	No	P	P	P	P	P	Yes	Yes
2	Mr.	Abhishek Kumar	Gaya College of Engineering Gaya	ak64810@gmail.com	No	P	P	P	P	P	Yes	Yes
3	Ms.	Ananya Barman	JIS College of Engineering	ananya.barman@jiscollege.ac.in	No	P	P	P	P	P	Yes	Yes
4	Mr.	Kalpiti Jain	Poomima College of Engineering	kalpiti.jain@poomima.org	Yes	P	P	P	P	P	Yes	Yes
5	Mr.	Ganesh Dubey	Vivekananda Institute of Technology East	mariner.dubey@gmail.com	Yes	P	P	P	P	P	Yes	Yes
6	Ms.	Shweta Agrawal	Shankara Institute of Technology Kukas Jaipur	29shweta.agarwal@gmail.com	Yes	P	P	P	P	P	Yes	Yes
7	Mr.	Abhas Kumar Singh	ISROSET, INDIA	abhasnuth@gmail.com	No	P	P	P	P	P	Yes	Yes
8	Mr.	Bhavanesh sharma	Arya College of Engineering and IT	bhavaneshsharma2009@gmail.com	Yes	P	P	P	P	P	Yes	Yes
9	Ms.	Sheilly Padda	CEC LANDRAN	cecncse.sheilly@gmail.com	No	P	P	P	P	P	Yes	Yes
10	Mr.	Ch Sandeep Reddy	KLEF(Deemed to be University), Hyderabad	chintakuntlasandeep@gmail.com	No	P	P	P	P	P	Yes	Yes
11	Mr.	Balaji Dhopte	SVNIT, Surat	dhoptebalaji@gmail.com	No	P	P	P	P	P	Yes	Yes
12	Mr.	Dinesh Bhatia	University Departments, RTU	dimbhatia@gmail.com	Yes	P	P	P	P	P	Yes	Yes
13	Dr.	Hredeya Mishra	Jaihind College of Engineering, Kuran Pune	drhredeyamishra@gmail.com	No	P	P	P	P	P	Yes	Yes
14	Dr.	Niketa Sharma	Swami Keshvanand Institute of Technology, Management & Gramothan Jaipur	dmiketa@skit.ac.in	Yes	P	P	P	P	P	Yes	Yes
15	Ms.	Sonali Gupta	CEC	er.sonali.gupta@gmail.com	No	P	P	P	P	P	Yes	Yes
16	Prof.	Sanjeev Gupta	Government College of Engineering and Technology Jammu	fiipsanjeevpreeti@gmail.com	No	P	P	P	P	P	Yes	Yes
17	Mr.	G.Boopathi Raja	Velalar College of Engineering and Technology	g.boopathiraja14@gmail.com	No	P	P	P	P	P	Yes	Yes
18	Ms.	Gayathri Priya. S	RMD Engineering College	gayathripriyasehvamuthu@gmail.com	No	P	P	P	P	P	Yes	Yes
19	Mr.	Dipankar Gogoi	NIT Arunachal Pradesh	gogoidipankar784160@gmail.com	No	P	P	P	P	P	Yes	Yes
20	Mr.	Shalendra Goswami	Engineering College Baran	goswamishalendra7@gmail.com	Yes	P	P	P	P	P	Yes	Yes
21	Dr.	Gyanesh Soni	IIS DEEMED TO BE UNIVERSITY, JAIPUR	gyaneshsoni10@gmail.com	No	P	P	P	P	P	Yes	Yes
22	Mr.	Syed Hasan Parvez	Jamia Millia Islamia University, New Delhi	hasansyed695@gmail.com	No	P	P	P	P	P	Yes	Yes
23	Mr.	Henraj Kumawat	SBNITM Jaipur	henraj.kum@gmail.com	Yes	P	P	P	P	P	Yes	Yes
24	Mr.	H Ganesh	NPA CENTENARY POLYTECHNIC COLLEGE, KOTAGIRI	hiiganesh@yahoo.co.in	No	P	P	P	P	P	Yes	Yes
25	Mr.	Jay Kumar Pandey	Shri Ramswaroop Memorial University	jay.pandey@srmm.ac.in	No	P	P	P	P	P	Yes	Yes
26	Mr.	Kalyan Kumar Jena	PMEC, Berhampur	kalyankumarjena@gmail.com	No	P	P	P	P	P	Yes	Yes



91	Dr. Manasvi Dixit	Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur	manasvi.sp1@gmail.com	Yes	P	P	P	P	P	Yes	Yes
92	Ms. Manju Choudhary	Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur	manju.choudhary@skit.ac.in	Yes	P	P	P	P	A	Yes	Yes
93	Ms. Mehak Sood	Post Graduate Government College for Girls	mehaksood88@gmail.com	No	P	P	P	P	P	Yes	Yes
94	Dr. Mukesh Kumar	Shree Guru Gobind Singh Tricentenary University, Gurugram	mukesh.kumar@sgtuniversity.org	No	P	P	A	P	P	Yes	Yes
95	Mr. Nand Kishore	LNCT Bhopal	nkmeena83@gmail.com	No	P	P	P	P	P	Yes	Yes
96	Mr. Partha Sarathi Padhy	Roland Institute of Technology, Odisha	partha.padhy@gmail.com	No	P	P	P	P	P	Yes	Yes
97	Dr. KULATHURAAAN K	Arumiguru Palaniandavar College of Arts and Culture	pkkmaterials@gmail.com	No	P	P	P	P	A	Yes	Yes
98	Mr. Pavan Kunchur	Gogte Institute of Technology	pknkunchur@git.edu	No	P	P	P	P	P	Yes	Yes
99	Dr. Rajesh Yadav Mudi	Vishnu Institute of Technology	rajeshyadav_m@vishnu.edu.in	No	P	P	P	P	P	Yes	Yes
100	Dr. Md Shahidul Islam Khan	Pandit Deendayal Upadhyaya Adarsha, Mahavidyalaya, Amjonga	rakhakshik786@gmail.com	No	A	P	P	P	P	Yes	Yes
101	Dr. RAVI	GIUS&T	ravipharman@gmail.com	No	P	P	P	P	P	Yes	Yes
102	Ms. Rina Sharma	S.S. Jain Subodh PG College, Jaipur	rina.physics1@gmail.com	No	P	P	P	A	P	Yes	Yes
103	Dr. MOHAMED JAFFER	YUNNAN UNIVERSITY	sadiqmsc@gmail.com	No	P	P	P	P	P	Yes	Yes
104	Dr. Sanjiv Mishra	Allenhouse Institute of Technology, Kanpur	sanjivkanpur@gmail.com	No	P	P	A	P	P	Yes	Yes
105	Ms. SANTANA DAS	GURU NANAK INSTITUTE OF TECHNOLOGY	santana.das@gnit.ac.in	No	P	P	P	P	P	Yes	Yes
106	Ms. SARADA MARELLA	GLOBAL INSTITUTE OF ENGINEERING AND TECHNOLOGY	sarada2012@gmail.com	Yes	P	P	P	A	P	Yes	Yes
107	Mr. Shakir Sultan	Xian Jiaotong University	shakir635@gmail.com	No	P	P	P	P	P	Yes	Yes
108	Mr. Rahul Sharma	Chameli Devi Group of Institutions, Indore	sharma.rahul5656@gmail.com	No	P	A	P	P	P	Yes	Yes
109	Ms. C SHEEJA HEROBIN	St.Xavier's Catholic College of Engineering	sheeja@sxccc.edu.in	No	P	P	P	P	P	Yes	Yes
110	Ms. Shweta Dnyaneshwar L	Davranand Science College Latru	shweta.lokhande266488@gmail.com	No	P	P	P	A	P	Yes	Yes
111	Mr. Priya Singh	SRMGPC, LUCKNOW	singh.priya15691@gmail.com	No	P	P	P	P	P	Yes	Yes
112	Ms. Snehal Marathe	Army Institute of Technology	smarathe@aitpune.edu.in	No	A	P	P	P	P	Yes	Yes
113	Mr. Sanjeeb Limbu	North Eastern Hill University, Shillong	snjblimbu.hgg@gmail.com	No	P	P	P	P	P	Yes	Yes
114	Mr. Thutha BHASKARARA	ZPHSCHOOL DANDU GOPALAPURAM	thuthabhaskararao@gmail.com	No	P	P	A	P	P	Yes	Yes
115	Mr. G. VENKATESH	PANIMALAR ENGINEERING COLLEGE	venkateshgeie@gmail.com	No	P	P	P	P	P	Yes	Yes
116	Dr. K Viswanath Allamraju	Institute of Aeronautical Engineering	akvn87@gmail.com	No	P	P	P	P	A	Yes	Yes
117	Mr. Amir Sultan	Comrats University Islamabad Pakistan	amirmoon42@gmail.com	No	P	P	A	P	P	Yes	Yes
118	Ms. Abha Singh	MLVTEC, Bhilwara	amrudhishgh345@gmail.com	Yes	A	P	P	P	P	Yes	Yes
119	Ms. Anju Yadav	Government College Tadaraisingh	anjumophy@gmail.com	No	P	P	P	P	P	Yes	Yes
120	Mr. ANOOP JATAV	Global institute of technology,Jaipur	anoopbanishwaind98@gmail.com	Yes	P	A	P	P	P	Yes	Yes
121	Ms. Darshi Jain	SMU	darshijain45@gmail.com	No	P	P	A	P	P	Yes	Yes
122	Dr. Sandip Kumar Dash	Berhampur University	dashsandipkumar@gmail.com	No	P	P	P	P	P	Yes	Yes
123	Dr. Deepak Kumar	Graphic Era Deemed to be University Dehradun	deepakphysics20@gmail.com	No	P	P	P	P	P	Yes	Yes
124	Mr. Pandurang Ajun Ghad	Karmaveer Bhaurao Patil Mahavidyalaya, Pandharpur	ghadagepa@gmail.com	No	P	P	P	P	A	Yes	Yes
125	Dr. IMRUL HUSSAIN	Nabajyoti College, Kalgachia, Barpeta, Assam	imrulhusain123@gmail.com	No	P	A	P	P	P	Yes	Yes
126	Mr. ARUN PRATAP SINGH	Graphic Era Dehradun	majorrathod@gmail.com	No	P	P	P	P	P	Yes	Yes

127	Ms. Mamta Jain	Swami Keshvanand Institute of Technology, Management and Gramothan	mamta.jain@skit.ac.in	Yes	P	P	P	P	P	Yes	Yes
128	Mr. Nikhil Jain	Arya College of Engineering and I.T.	nikhiljain.ac@aryacollege.in	Yes	P	P	P	P	P	Yes	Yes
129	Mr. Nitesh Kumar	University Departments-RTU Kota	nitesh.npiu.ec@rtu.ac.in	Yes	P	P	P	P	P	Yes	Yes
130	Mr. RANCHITH KUMAR	University College of Engineering Arani	pranchithkumar@gmail.com	No	P	P	P	P	A	Yes	Yes
131	Mr. Qazi Abdul Hayee	Xian Jiaotong University	qazi.abhayee@gmail.com	No	P	P	P	P	P	Yes	Yes
132	Dr. Renu Upadhyay	Amity University, Jaipur	renupadhyay25@yahoo.co.in	No	P	P	P	P	P	Yes	Yes
133	Mr. Reynolds Duddu	Bhilai Institute of Technology Durg	reynoldnutri@gmail.com	No	A	P	P	P	P	Yes	Yes
134	Ms. Rosalin Pradhan	Indira Gandhi Institute of Technology, Sarang	rosalin.pradhan@gmail.com	No	P	P	P	P	P	Yes	Yes
135	Mr. Sandeep Kumar Jain	Vivekananda Global University, Jaipur	sandeep_jain@vgu.ac.in	No	P	P	P	A	P	Yes	Yes
136	Dr. Sanjeev Tyagi	MJP Rohilkhand University	sanjeev_tyagi@jeee.org	No	P	P	P	P	P	Yes	Yes
137	Mr. SHIVANAND BHIMAR	G.V Acharya College, Shelu Mumbai	shivya_konade@rediffmail.com	No	P	P	P	P	P	Yes	Yes
138	Dr. SHRUTI KALRA	JAIPOUR ENGINEERING COLLEGE AND RESEARCH CENTER JAIPIUR	shrutikumkalra@gmail.com	Yes	P	P	P	P	A	Yes	Yes
139	Mr. M Sudarshan	FACT Cochin	sudarshanfact@gmail.com	No	P	P	P	P	P	Yes	Yes
140	Dr. S. MARIA SERAPHIN	St.Xavier's Catholic College of Engineering	sujitha@sxccc.edu.in	No	P	P	P	P	P	Yes	Yes
141	Ms. Sukrit Solanki	RTU Kota	sukrit.solanki93@gmail.com	Yes	P	P	A	P	P	Yes	Yes
142	Prof. Dr. Triben Prasad Banerjee	Dr. B.C.Roy Engineering College, Durgapur	tribenprasadbanerjee@bcrc.ac.in	No	P	P	P	P	P	Yes	Yes
143	Mr. Vijay Bhan Singh Rajar	Engineering College Baran	vijaybanna407@gmail.com	Yes	P	P	P	P	P	Yes	Yes
144	Dr. Vishal Mathur	Sur University College	vishalmathur@gmail.com	No	P	A	P	P	P	Yes	Yes
145	Ms. Almas Ambreen	AISSMS College of Engineering Pune	aambreen@aiissmcoe.com	No	P	P	P	P	P	Yes	Yes
146	Dr. M.Athimoolam	Agri College of Technology	aasthi.m101@gmail.com	No	P	P	P	P	P	Yes	Yes
147	Mr. ANABATHULA SOMA	INSTITUTE OF AERONAUTICAL ENGINEERING	anabathula.somasiah@gmail.com	No	P	P	A	P	P	Yes	Yes
148	Mr. Anand Kumar	IETE	anandnihanuwal@gmail.com	No	P	P	P	P	P	Yes	Yes
149	Mr. Anuj Kr. Yadav	BIET Bhanu	anuj_y9@gmail.com	No	P	P	P	P	P	Yes	Yes
150	Ms. Tenali Anusha	ST.MARY'S GROUP OF INSTITUTIONS GUNTUR	anusharajburuga@gmail.com	No	A	P	P	P	P	Yes	Yes
151	Ms. CHAITU BHARGAVA	ST.MARY'S GROUP OF INSTITUTIONS, GUNTUR.	bhargavi.chattus06@gmail.com	No	P	P	P	P	P	Yes	Yes
152	Mr. Deependra Khandelwal	JEC Kukas-Jaipur	dkhandelwal2021@yahoo.co.in	Yes	P	P	P	P	P	Yes	Yes
153	Ms. Deepali Newaskar	RMD Sinhgad School of Engineering	deepali.newaskar@gmail.com	No	P	P	P	A	P	Yes	Yes
154	Ms. Monika sarodia	Bhartiya skill development university	gunm208@gmail.com	No	P	P	P	P	P	Yes	Yes
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156	Mr. Idris Opeyemi OLAYIN	CIMAV	itjazz@gmail.com	No	P	A	P	P	P	Yes	Yes
157	Mr. Ravi Kumar Jangir	Swami Keshvanand Institute of Technology, Management and Gramothan	jangir_rj89@gmail.com	Yes	P	P	P	P	A	Yes	Yes
158	Ms. Mayuri Dhanraj Patil	R.C Patel Arts, Commerce and Science College, Shirpur	mayuripatilshreyul@gmail.com	No	P	P	P	P	P	Yes	Yes
159	Mr. Prashant Kumar	CSIR-NATIONAL PHYSICAL LABORATORY NEW DELHI	prashantkchic92@gmail.com	No	P	P	P	P	P	Yes	Yes
160	Dr. Dr. Rashmi Jain	LOVELY PROFESSIONAL UNIVERSITY PHILMAB	rashmishubhi@gmail.com	No	P	P	P	A	P	Yes	Yes
161	Dr. Dr. Rekha Annigeri	Government College (Autonomous), Kalaburagi	rekha_annigeri@yahoo.co.in	No	P	P	P	P	P	Yes	Yes
162	Mr. Rajkumar Baiwa	UD RTU, Kota	rkumar.npiu.me@rtu.ac.in	Yes	P	P	P	P	P	Yes	Yes

163	Ms. Ruchi Sharma	B K Birla Institute of Engineering and Technology (BKBIET)-PILANI	ruchi.sharma@bkbiyet.ac.in	Yes	A	P	P	P	P	P	Yes	Yes
164	Mr. Manoj Kumar Sain	The LNMIIT, Jaipur	sain439@gmail.com	No	P	P	P	P	P	P	Yes	Yes
165	Mr. Manoj Kumar sain	The LNMIIT, Jaipur	sain439@gmail.com	No	P	P	P	P	P	P	Yes	Yes
166	Mr. DEEPAK TIWARI	SSPMT, RAIPUR	tiwari.nrk.9831@gmail.com	No	P	P	P	P	P	P	Yes	Yes
167	Mr. Vikas Pathak	SKIT, Jaipur	vikas.pathak@skit.ac.in	Yes	P	P	P	P	P	A	Yes	Yes
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169	Mr. Vishal randon	Govt Holkar Science College Indore	vishal.randon126@gmail.com	No	P	A	P	P	P	P	Yes	Yes
170	Mr. Ajay Kumar Sharma	Swami Keshvanand Institute of Technology, Management & Gramothan	ajaymit19@gmail.com	Yes	P	P	P	P	P	P	Yes	Yes
171	Prof. Archana Saxena	Swami Keshvanand Institute of Technology, Management & Gramothan	archanasaxena@skit.ac.in	Yes	P	P	P	A	P	P	Yes	Yes
172	Mr. Lalit kumar lata	Swami Keshvanand Institute of Technology, Management & Gramothan	lalit.lata2008@gmail.com	Yes	P	P	P	P	P	P	Yes	Yes
173	Mr. Ankit Vijayvargiya	Swami Keshvanand Institute of Technology, Management & Gramothan	ankitvijay@skit.ac.in	Yes	P	P	P	P	P	P	Yes	Yes
174	Mr. Dharendra Singh	Swami Keshvanand Institute of Technology, Management & Gramothan	dhuendra.kite@gmail.com	Yes	P	P	A	P	P	P	Yes	Yes
175	Mr. Deendayal Singh Dhak	Swami Keshvanand Institute of Technology, Management & Gramothan	dkdhaked08@gmail.com	Yes	P	P	P	P	P	P	Yes	Yes
176	Dr. Vikash Gautam	Swami Keshvanand Institute of Technology, Management & Gramothan	gautam.mnitj@gmail.com	Yes	A	P	P	P	P	P	Yes	Yes
177	Ms. Gloria Joseph	Swami Keshvanand Institute of Technology, Management & Gramothan	gloria.joseph@skit.ac.in	Yes	P	P	P	P	P	P	Yes	Yes
178	Mr. Harshal Nigam	Swami Keshvanand Institute of Technology, Management & Gramothan	hrshirigam@gmail.com	Yes	P	P	P	P	P	P	Yes	Yes
179	Mr. Neeraj jain	Swami Keshvanand Institute of Technology, Management & Gramothan	neerajeng124@gmail.com	Yes	P	P	A	P	P	P	Yes	Yes
180	Ms. Pooja Choudhary	Swami Keshvanand Institute of Technology, Management & Gramothan	pooja.choudhary@skit.ac.in	Yes	P	P	P	P	P	P	Yes	Yes
181	Mr. Rajiv Kumar	Swami Keshvanand Institute of Technology, Management & Gramothan	rkjkit@gmail.com	Yes	P	P	P	P	P	P	Yes	Yes
182	Prof. Dr. R. K. Jain	Swami Keshvanand Institute of Technology, Management & Gramothan	rkjkit@gmail.com	Yes	P	P	P	P	A	P	Yes	Yes
183	Ms. Archana Jain	Swami Keshvanand Institute of Technology, Management & Gramothan	archanajain.rbt@gmail.com	Yes	P	A	P	P	P	P	Yes	Yes
184	Dr. Anurag Sharma	Swami Keshvanand Institute of Technology, Management & Gramothan	anurag@skit.ac.in	Yes	P	P	P	P	P	P	Yes	Yes
185	Prof. Satya N Vijayvargiya	Swami Keshvanand Institute of Technology, Management & Gramothan	satyan.vijay@skit.ac.in	Yes	P	P	A	P	P	P	Yes	Yes
186	Dr. Satya Pal Nehra	Deenbandhu Chhotu Ram University of Science and Technology	spnehra.energy@dcrustm.org	No	P	P	P	P	P	P	Yes	Yes
187	Prof. Mithilesh Kumar	Rajasthan Technical University Kota	mkumar@rtu.ac.in	Yes	P	P	P	P	A	P	Yes	Yes
188	Dr. Neha Sharma	Vishwavidyalaya Engineering College, Lakhapur	neha.phy@gmail.com	No	P	P	P	P	P	P	Yes	Yes

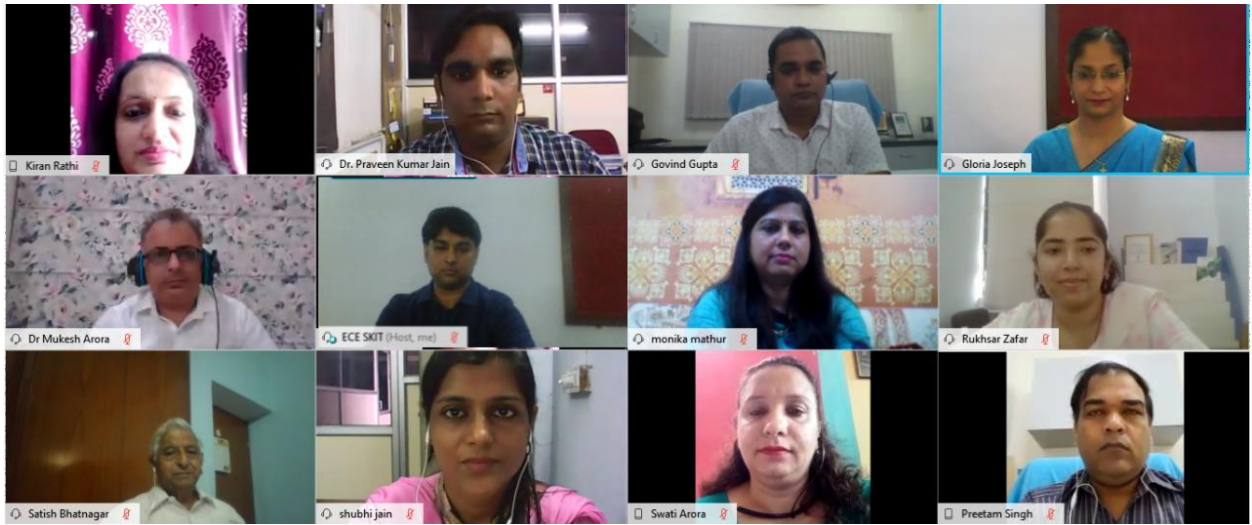
189	Mr. Chandra Prakash Gupta	Manipal University Jaipur	chandraprakash.gupta@jaipur.manipal	No	P	P	P	P	P	P	Yes	Yes
190	Ms. Harshita Agarwal	Jaipur Engineering College, Jaipur	agarwal91harshita@gmail.com	Yes	P	P	P	A	P	P	Yes	Yes
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192	Dr. Minal Bafna	Agrawal P G College, Jaipur	drminalphysics@rediffmail.com	No	A	P	P	P	P	P	Yes	Yes
193	Dr. Gurraj Kumar Prajapat	Sree Chaitanya Institute of Technological Science	prajapatgur38@gmail.com	No	P	P	P	P	P	P	Yes	Yes
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198	Ms. Yazucha Sharma	J. E. C. R. C. Jaipur	yazuchasharma@gmail.com	Yes	P	P	A	P	P	P	Yes	Yes
199	Dr. Muhammad Bilal Hanif	Xi'an Jiaotong University	bilalhanif46@mail.ru	No	P	P	P	P	P	P	Yes	Yes
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204	Mr. Pawan Kumar Jain	Swami Keshvanand Institute of Technology, Management & Gramothan	pawan_hep@yahoo.com	Yes	P	A	P	P	P	P	Yes	Yes
205	Mr. SUBHANI SHAIK	St.Marys Group of Institutions, Guntur	subhanishaik2613@gmail.com	No	P	P	P	P	P	P	Yes	Yes
206	Mr. SOUMEN MAITY	BELDA COLLEGE (VIDYASAGAR UNIVERSITY)	soumyaphysicsnastity@gmail.com	No	P	P	P	P	P	P	Yes	Yes
207	Mr. Shubham Kumar	Gaya College of Engineering, Gaya	shubhamca845449@gmail.com	No	P	P	P	A	P	P	Yes	Yes
208	Ms. Sheetal Vaishnav	Oriental Institute of Science and Technology	sheetal.vsh@gmail.com	No	P	P	P	P	P	P	Yes	Yes
209	Ms. Shashi Sharma	S.S.Jain Subodh PG Autonomous College Jaipur	shamashashi85@gmail.com	No	A	P	P	P	P	P	Yes	Yes
210	Dr. Yogesh Kumar Verma	LOVELY PROFESSIONAL UNIVERSITY PUNJAB	yogesh.25263@lpu.co.in	No	P	P	P	P	P	P	Yes	Yes
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212	Mr. Saurabh Gupta	Bansal Institute of Science and Technology, Bhopal	guptasaurabhengg@gmail.com	No	P	P	P	A	P	P	Yes	Yes
213	Prof. G. D. Gupta	Govt Holkar Science College Indore	profgdgupta@gmail.com	No	P	P	P	P	P	P	Yes	Yes
214	Dr. Sarfaraz Nawaz	SKIT Jaipur	eesarfaraz1983@gmail.com	Yes	A	P	P	P	P	P	Yes	Yes

RTU Event Coordinator  
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Mr. Riyaz Ahmad

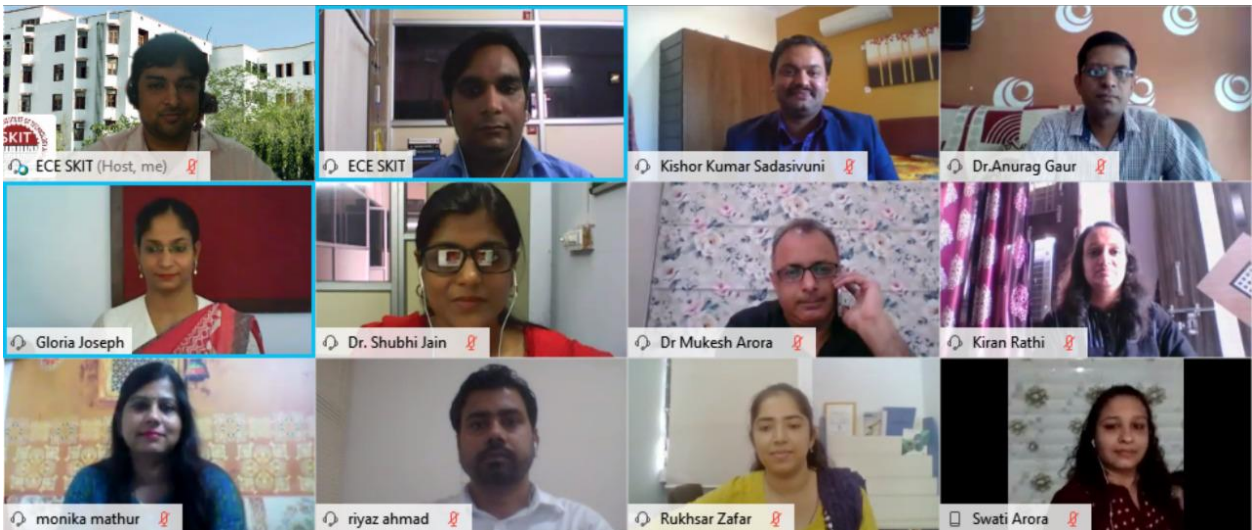
HOST Institute Coordinator  
Dr. Praveen Kumar Jain  
Dr. Mukesh Arora  
Dr. Rukhsar Zafar  
Dr. Shubhi Jain

Principal-Host Institute  
Dr. Ramesh Kumar Pachar

## Event Photographs



(Inauguration Ceremony: 21.09.2020)



(Valedictory Session: 25.09.2020)

GJ  
Gloria Joseph

DJ  
Dr. Praveen Kumar J

GG  
Govind Gupta

ES  
ECE SKIT

SJ  
shubhi jain

**Emerging Trends in Nano Electronics (ETNE-2020)**  
21<sup>st</sup>- 25<sup>th</sup> September 2020.

**Fabrication of Next Generation Optical Detectors for Ultraviolet Radiations**

**Dr. Govind Gupta**  
Senior Principal Scientist & Professor,  
Academy of Scientific & Innovative Research  
Head, Sensor Devices & Metrology  
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Rajasthan Technical University, Kota and Swami Keshvanand Institute of Technology Management and Gramothan, Jaipur

GG  
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GJ  
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Dr. Praveen Kumar J

SJ  
shubhi jain

RZ  
Rukhsar Zafar

**Polar-Planar GaN-UV-Photodetector on Si (111)**

**Transient Response @ 13 mW optical Power**

**800 mA/W**

**Power Dependent @ 1 V**

**Responsivity (A/W) vs Applied Bias (V)**

at 13 mW Incident Optical Power

**Responsivity (A/W) vs Optical Power (mW)**

under 1 V Applied

**@ 1 V & 13 mW:**  
R = 800 mA/W  
I<sub>0</sub> = 25.8 mA;  
I<sub>ph</sub> = 0.12 mA  
D = 2.64 × 10<sup>8</sup> Jones;  
NEP = 1.1 × 10<sup>-10</sup> W.Hz<sup>-1/2</sup>

**@ 1 V & 1 mW:**  
R = 1.5 A/W  
I<sub>0</sub> = 25.8 mA;  
I<sub>ph</sub> = 18.17 μA  
D = 4.84 × 10<sup>8</sup> Jones;  
NEP = 60 pW.Hz<sup>-1/2</sup>

*Aggarwal et. al. Advanced Electronic Materials, 1700036 (2017)*

GG  
Govind Gupta

GJ  
Gloria Joseph

DJ  
Dr. Praveen Kumar J

SJ  
shubhi jain

RZ  
Rukhsar Zafar

**Polar UV-Photodetector on (GaN Epilayer)**

**(a) HD-GaN**

**(b) LD-GaN**

**(a) HD-GaN**

**85.05mA/W @5V**

T<sub>r</sub> = 169 ms  
T<sub>c</sub> = 2.4 s

**(b) LD-GaN**

**130.17mA/W @5V**

T<sub>r</sub> = 139 ms  
T<sub>c</sub> = 1.76 s

*Aggarwal et. al., Materials Science & Engineering B, 2020*

# Dr. Mahesh Kumar, IIT Jodhpur

Maresh Kumar | Gloria Joseph | Dr. Praveen Kumar J | ECE SKIT | Rukhsar Zafar

## Growth of MoS<sub>2</sub> nanomaterials for NO<sub>2</sub> Gas Sensors

**Dr. Mahesh Kumar**  
**Electrical Engineering**  
 E-mail: [mkumar@iitj.ac.in](mailto:mkumar@iitj.ac.in)

**Indian Institute of Technology Jodhpur**



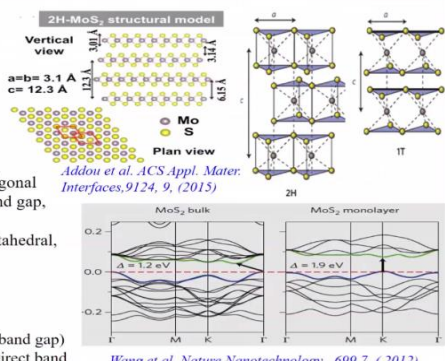
Maresh Kumar | Gloria Joseph | Dr. Praveen Kumar J | ECE SKIT | Rukhsar Zafar

## Aspects of MoS<sub>2</sub>

**Structure: -**  
 Layered structure (1L ~ 6 Å)  
 Lattice constant ~ 3.1 Å  
 Bondlength Mo-S ~ 2.39 Å

**Phase: -**  
**2H** = Mo atom coordination trigonal prismatic, semiconducting band gap.  
**1T** = Mo atom coordination octahedral, metallic band gap

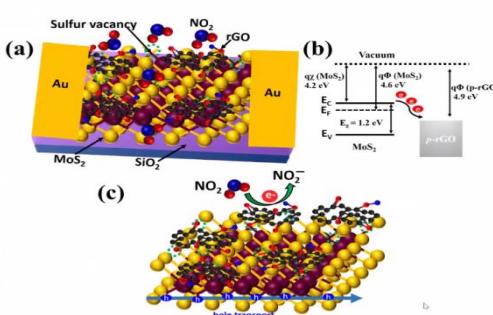
**Energy band gap: -**  
 Bulk MoS<sub>2</sub> ≈ 1.2 eV (Indirect band gap)  
 Monolayer MoS<sub>2</sub> ≈ 1.9 eV (Direct band gap)



*Addou et al. ACS Appl. Mater. Interfaces, 9, (2015)*  
*Wang et al. Nature Nanotechnology, 6, (2012)*

Maresh Kumar | Gloria Joseph | Dr. Praveen Kumar J | ECE SKIT | Rukhsar Zafar

## Sensing mechanism



(a) Sulfur vacancy, Au, MoS<sub>2</sub>, SiO<sub>2</sub>, NO<sub>2</sub>, rGO

(b) Energy levels:  $E_g(\text{MoS}_2) = 4.2 \text{ eV}$ ,  $E_c(\text{MoS}_2) = 4.6 \text{ eV}$ ,  $E_v(\text{MoS}_2) = 1.2 \text{ eV}$ ,  $\phi(\text{p-rGO}) = 4.9 \text{ eV}$

(c) NO<sub>2</sub>, NO<sub>2</sub><sup>-</sup>, hole transport



GJ DJ ES RZ Aditya Jain

### Capacitor Types

4

GJ DJ ES RZ Aditya Jain

### MLCCs in wearable sensors

28

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**Capacitance: 0.1  $\mu$ F**  
**Size: 0.25\*0.125\*0.125 mm**  
**Temperature range: -55 to 85  $^{\circ}$ C**  
**Rated voltage: 6.3 V**

**Smallest capacitor available in the market**

29

Dr. Mohan S. Mehata



## Development and Applications of Nanosized Luminescent Materials

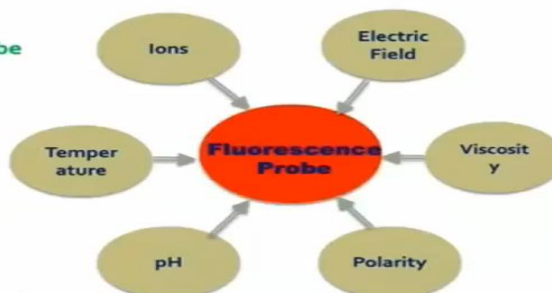
**Dr. Mohan Singh Mehata**  
**Laser-Spectroscopy Laboratory, Department of Applied Physics**  
**Delhi Technological University**

*(Formerly Delhi College of Engineering)*  
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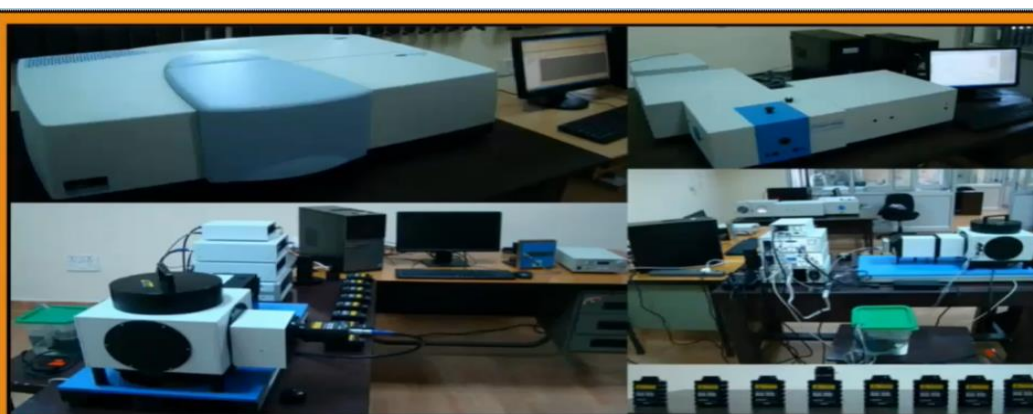
**ETNE-2020 (22.09.2020)**

### Why Photoluminescence/fluorescence ?

Fluorescence is very-3 sensitive!  
Work with subnano molar conc.  
Femtomolar and single molecule can be



- It provides information on the **molecular environment**
- It provides information on dynamic processes on the nanosecond time scale
- Fluorescence probes are essentially molecular **stopwatches**, which monitor **dynamic events** occurs during the excited state lifetime such as **moment of proteins or protein domains**



**Laser-Spectroscopy laboratory, DTU**  
Dr. M.S. Mehata (Lab In-charge)

Nanomaterials for Hydrogen Energy Applications



FDP on Emerging Trends in Nano-Electronics (ETNE-2020)

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22<sup>nd</sup> September, 2020

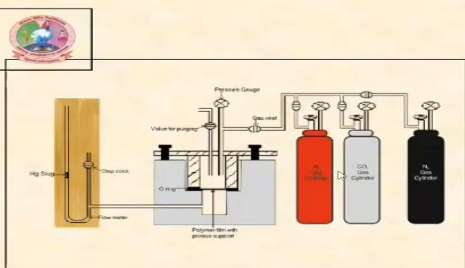


Fig. Gas Permeability set-up

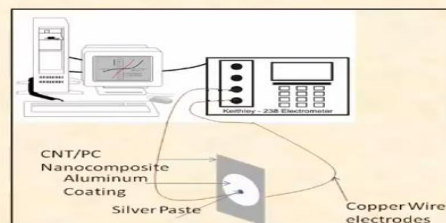


Fig. Keithley-238 high current source measuring unit

- The permeability constant has been calculated by Fick's formula-

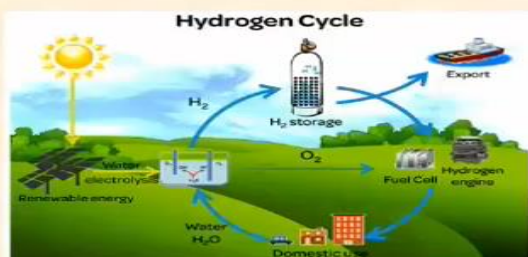
$$P = \frac{\text{Flux (J)} \times \text{Membrane thickness (l)}}{\text{Pressure difference } (\Delta P)}$$

- The measurements were taken at room temperature and at 40 psi.

- For I-V characteristics, electrode contacts have been made using silver paste.

**CONCLUSION**

- ❑ Sophisticated battery for energy storage.
- ❑ High potential as a relatively clean fuel of the future.
- ❑ Negative net energy i.e. it takes more energy to produce it than it contains.
- ❑ Very low calorific value.
- ❑ Requires larger and heavier fuel tanks.
- ❑ Extraction methods are extremely energy intensive (e.g.. Electrolysis of water).



# Dr. Praveen Kumar



## Material Science Innovations for Hydrogen Generation from Water



**Dr. Praveen Kumar**  
School of Materials Science,

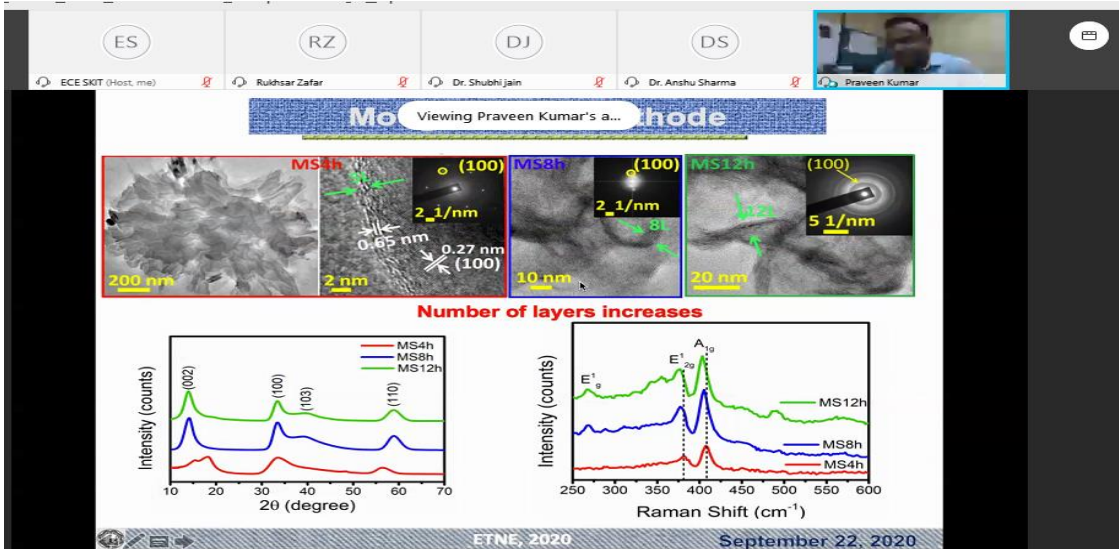
Indian Association for the Cultivation of Science, Kolkata

[Member] National Academy of Science India (NASI)

[Chair] Marie Curie Alumni Association, Indian Chapter (EU)

[Editorial Board Member] Materials Letters, Elsevier

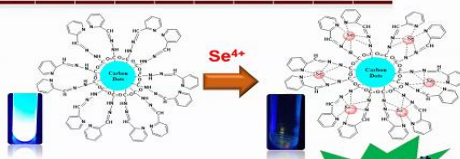
Email: [praiitr@gmail.com](mailto:praiitr@gmail.com), [praveen.kumar@iacs.res.in](mailto:praveen.kumar@iacs.res.in)



# Dr. Pooja D. Sharma

Dr. Praveen Jain (Me) ECE SKIT (Host) Dr. Pooja Abhinandan Jain Dr. Shubhi Jain

## Fluorescent Probe for Detection of Selenium




**Need for Detection of Selenium**

- Damage to critical cell components, such as proteins, DNA, lipids, etc.
- Selenosis, dermatitis, neurodegeneration

**Detection Limit ~0.1 ppb**

**Prototype**

**Se Water Pollution in India**



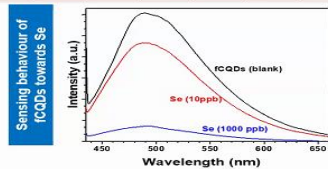
Excitation Wavelength: 420 nm  
Emission Range: 450-550 nm

Pooja et al. ACS Interfaces, 2017

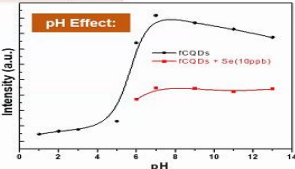
ETNE, 23<sup>rd</sup> September 2020

Dr. Praveen Jain (Me) ECE SKIT (Host) Dr. Pooja Abhinandan Jain Dr. Shubhi Jain

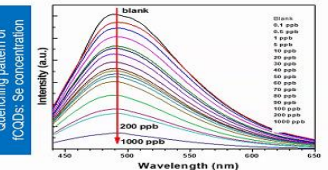
## Response of fCQDs Sensor for Se<sup>4+</sup>



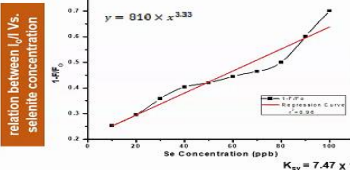
**Sensing behaviour of fCQDs towards Se**



**pH Effect:**



**Quenching pattern of fCQDs: Se concentration**



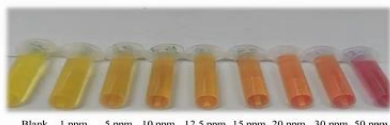
**Relation between  $I_0/I$  Vs. selenite concentration**

$K_{se} = 7.47 \times 10^6 M^{-1}$

ETNE, 23<sup>rd</sup> September 2020

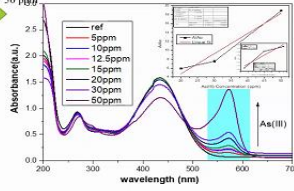
Dr. Praveen Jain (Me) ECE SKIT (Host) Dr. Pooja Abhinandan Jain Dr. Shubhi Jain

## Sensing/color response of sensor towards As(III) Ions



Blank 1 ppm 5 ppm 10 ppm 12.5 ppm 15 ppm 20 ppm 30 ppm 50 ppm

**UV-Vis characteristics for the cr-CQDs colorimetric changes observed for various concentration of Arsenic (III)**



**Colorimetric changes observed with naked eye for Arsenic(III) with cr-CQDs**

**Future Plan:**

- Lowering the detection limit
- Transfer of sensor probe onto paper substrate
- Re-optimization for sensing with paper strip

ETNE, 23<sup>rd</sup> September 2020

# Dr. Rakesh Ranjan

ES  
ECE SKIT

Rakesh Ranjan

GJ  
Gloria Joseph

DJ  
Dr. Shubhi Jain

DJ  
Dr. Praveen Jain

## DIELECTRIC PHOTONIC WAVEGUIDE

Structure & distribution of mode field for Rib waveguide [H = 220 nm]

Impacts of waveguide widths ( $w$ ) & Rib height ( $h$ ) on real part of effective refractive index & Prop. Loss

[6] V. Chandra and R. Ranjan, "Analysis of Propagation Loss in Silicon-on-Insulator based Photonic Rib Waveguide with Small Cross Section," 2019 URSI Asia-Pacific Radio Science Conference (AP-RASC), New Delhi, India, 2019, pp. 1-3, DOI: 10.23919/URSIAP-RASC.2019.8738737.

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Dr. Praveen Jain

## DIELECTRIC PHOTONIC WAVEGUIDE

Mode profile (quasi-TE mode) [4]

Cross-sectional view of SOI slot waveguide with normalized electric field intensity [9]

SOI based strip & slot waveguides [8]

[4] S. K. Selvaraja and P. Selvi, Review on Optical Waveguides (Chapter-6: Emerging Waveguide Technology, Intechopen) [DOI: 10.5772/intechopen.9221536 / 04:50:50]

[8] P. Steglich, Silicon-on-Insulator Slot Waveguides: Theoretical Applications and Experimental Optical Sensing (Chapter-10: Emerging Waveguide Technology, Intechopen) [DOI: 10.5772/intechopen.9221536 / 04:50:50]

[9] P. Steglich, Silicon-on-Insulator Slot Waveguides: Theoretical Applications and Experimental Optical Sensing (Chapter-10: Emerging Waveguide Technology, Intechopen) [DOI: 10.5772/intechopen.9221536 / 04:50:50]

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Dr. Praveen Jain

## PLASMONIC WAVEGUIDE

Operating speeds and dimensions of different technologies [10]

- ❑ SPPs are surface waves, which propagate along a metal-dielectric interface.
- ❑ Word 'SPP' describes that the wave contains both charge motion in metal region (surface plasmons) and electromagnetic waves in the dielectric regions (polariton).

[10] A. D. Boardman, "Electromagnetic Surface Modes" [Wiley, New York, 1992].  
 [11] G. Das, et al., Plasmonic nanostructures for the ultrasensitive detection of biomolecules, La Rivista del Nuovo Cimento, Volume 39, Issue 11, pp.547-588, 2016, DOI: 10.1393/ncr/2016\_10129-y  
 [12] M. Z. Alam, J. A. Stewart, and M. Mojahedi, Theoretical analysis of hybrid Plasmonic waveguide, IEEE Journal of Selected Topics in Quantum Electronics, vol. 19, p. 4602008, May/June 2013.  
 [13] M.Z. Alam, J.A. Stewart, and M. Mojahedi, A marriage of convenience: hybridization of surface Plasmon and dielectric waveguide modes, Laser

Surface Plasmon polariton, also known as surface Plasmon (SP), supported by such a metal-dielectric interface is transverse magnetic (TM) in nature.

The figure below shows the electric field profile and surface charge distribution of SP propagating in the x-direction.

Interface of metal-dielectric & field profile of SP mode

DJ ES AA Vijay Janyani

## Photovoltaic Effect

Three important functions of a solar cell:

- Carrier generation:** The generation of carriers occurs in the bulk of the material.
- Carrier separation:** The separation of carriers would require a p-n junction.
- Carrier collection:** For effective carrier collection, a proper contacting method is required.

Additionally anti-reflective coatings are used to minimize reflection from the front surface, and back reflector is used to reflect high wavelength photons.

Schematic diagram of basic silicon solar cell

03:50:45 / 04:50:50

DJ ES AA PJ Vijay Janyani Praveen Jain

## Functional layers in thin film solar cells

- Anti-reflection:** To reduce surface losses due to specular reflections
- Buffer layer:** To reduce recombinations / strain at interface
- Absorber layer:** To absorb the incident solar spectrum
- Back Reflector:** To reflect back a part of solar spectrum for maximum absorption

DJ ES AA PJ Vijay Janyani Praveen Jain

## Design Criteria

Layer Thickness:

Neutral n-region + Neutral p-region

Long  $\lambda$

Medium  $\lambda$

Short  $\lambda$

Finger electrode

Back electrode

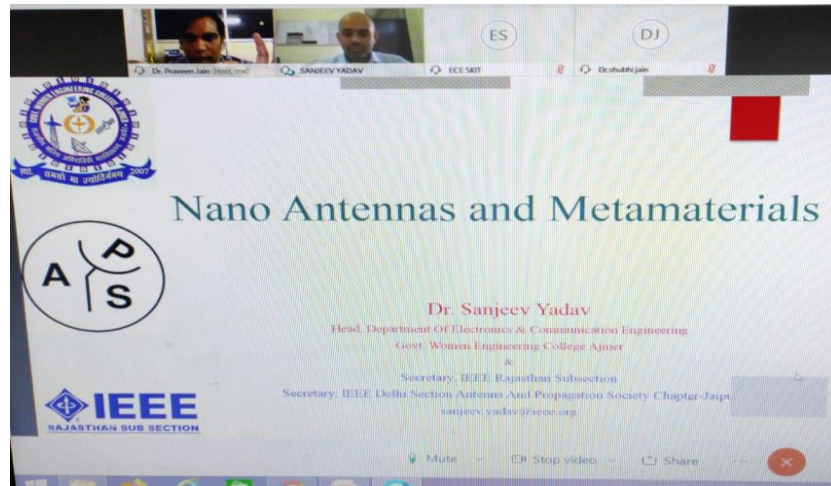
Drift

Diffusion

Depletion region

$V_{oc}$

# Dr. Sanjeev Yadav




## Optical Metamaterials

44


Fabrication/Design Challenges for optical metamaterials:

- ▶ Smaller wavelength = smaller features
  - ▶ Coupling between elements becomes more serious
- ▶ Metal's response to electromagnetic waves changes at higher frequencies.
  - Metal no longer behaves as perfect electrical conductors  
(dielectric losses need to be taken into account)
  - A frequency is eventually reached where the energy of the oscillating, excited electrons becomes comparable to the electric field. When this occurs, the metal's response is known as *plasmonic*
  - Resistive and dielectric losses become much more significant





# Multi-Gate Nanoelectronic Devices




Dr. Balwinder Raj, Associate Professor  
Department of ECE, NITTR Chandigarh

(balwinderraj@gmail.com)

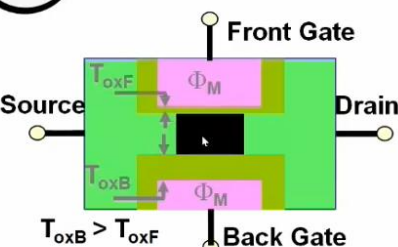
NITTR Chandigarh

Dept. of ECE

7:28 PM 9/30/2020



## Asymmetric DG Devices



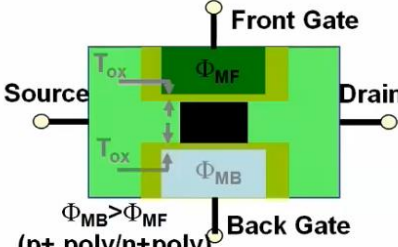
Source Drain

Front Gate

Back Gate

$T_{oxB} > T_{oxF}$

Asymmetric Oxide



Source Drain

Front Gate

Back Gate

$\Phi_{MB} > \Phi_{MF}$   
(p+ poly/n+poly)

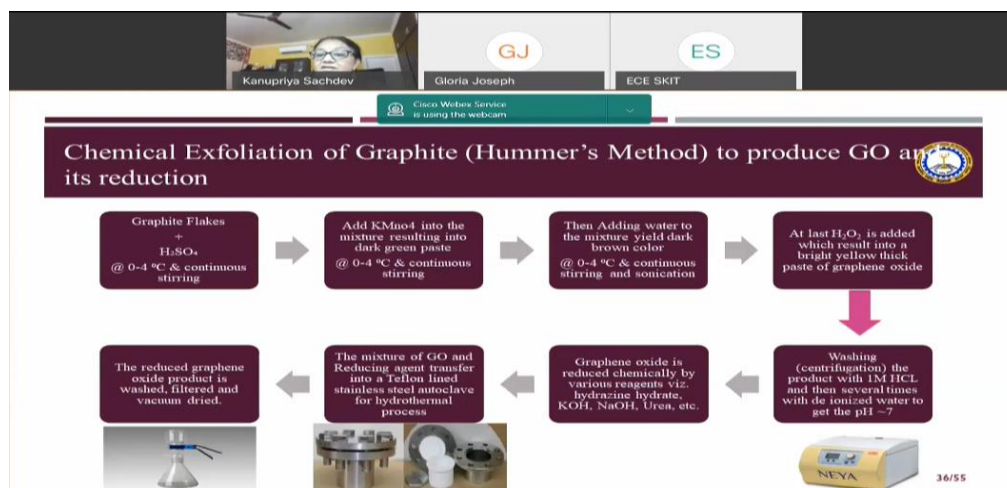
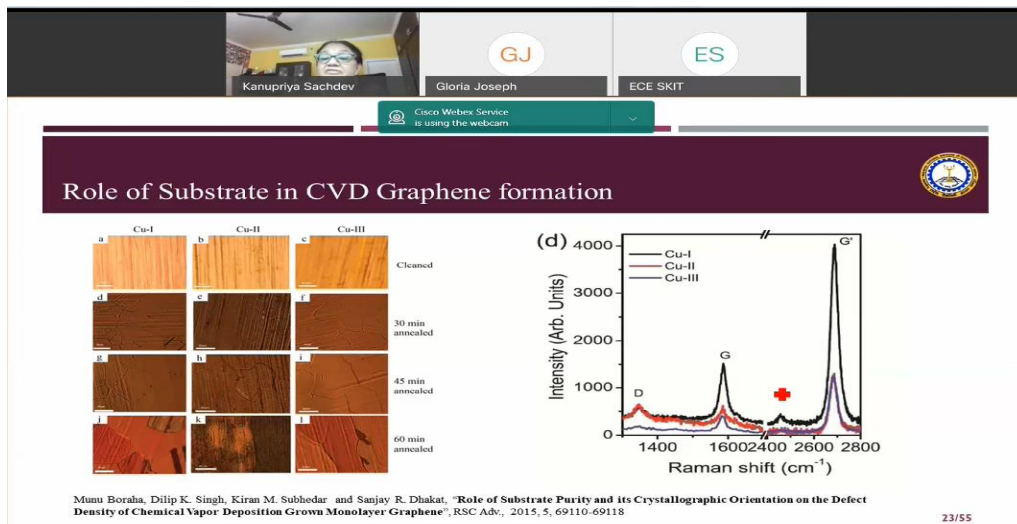
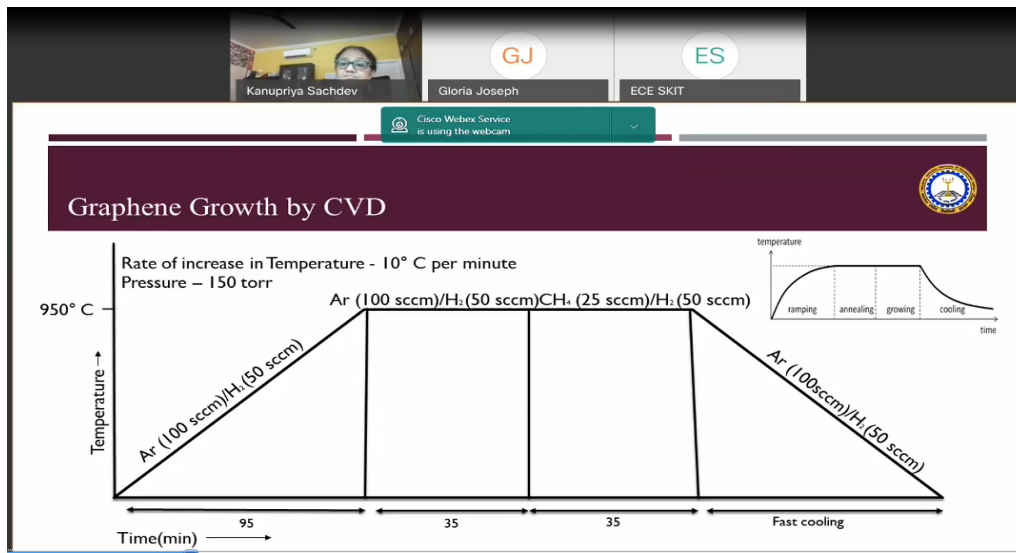
Asymmetric Work function


- Asymmetric DG devices have different front and back gate properties
  - Front gate is stronger and has more control over the channel than the back gate


NITTR Chandigarh


Dept. of ECE


8:08 AM 10/1/2020



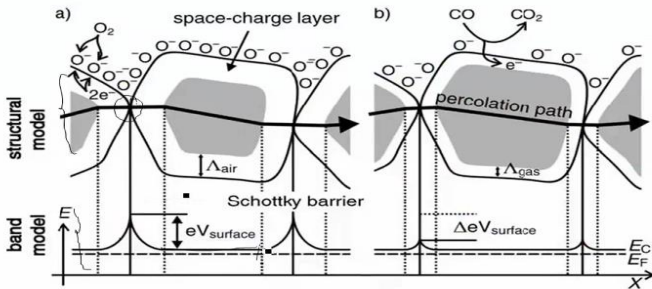
  
 Rishi Vyas

  
 Gloria Joseph

  
 Rukhsar Zafar

  
 ECE SKIT


## Mechanism?





Structural and band models of conductive mechanism upon exposure to reference gas


https://www.mdpi.com/1424-8220/10/3/2088

Dr. Rishi Vyas
Aspects of Conductometric Gas Sensors
25 September 2020
10

  
 Rishi Vyas

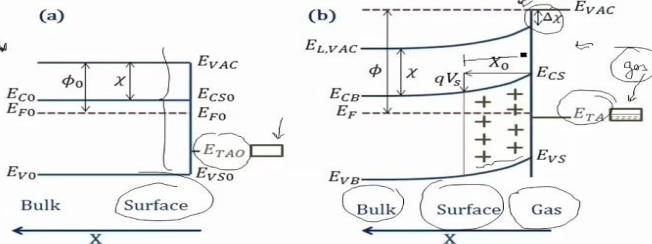
  
 Gloria Joseph

  
 Rukhsar Zafar

  
 ECE SKIT


## Mechanism?


The charge found in surface states is supplied by the underlying bulk. The carrier density in the vicinity of the surface deviates from its equilibrium value and results in a surface space charge region (SCR).





Solid State Gas Sensing, Editors: Elisabetta Comini, Guido Faglia, Giorgio Sberveglieri  
<https://link.springer.com/book/10.1007/978-0-387-09665-0>

Dr. Rishi Vyas
Aspects of Conductometric Gas Sensors
25 September 2020
13

  
 Rishi Vyas

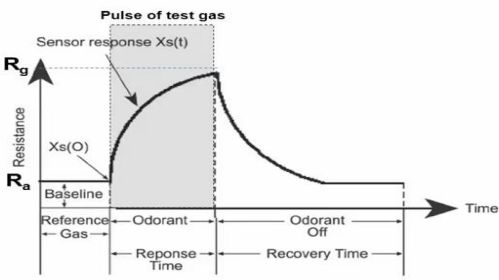
  
 Gloria Joseph

  
 Rukhsar Zafar

  
 ECE SKIT

## An Ideal Gas Sensor

- Sensitive to large variety of gases
- Very low cross-sensitivity
- Lower operating temperature
- Lower power consumption
- Lower response and recovery time
- Capable of operation in harsh environment
- Inexpensive to produce
- Easy to miniaturize
- Reliable (Stable over time)



Dr. Rishi Vyas
Aspects of Conductometric Gas Sensors
25 September 2020
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## Report of the Event

Faculty Development Program on *Emerging Trends in Nano Electronics (ETNE-2020)* is jointly organized by Rajasthan Technical University, Kota & Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur from 21<sup>th</sup> September 2020 to 25<sup>th</sup> September, 2020. This FDP was fully sponsored by RTU (ATU) under Technical Education Quality Improvement Program phase III (TEQIP-III) and conducted on Webex online platform.

Dr. M.L Meena and Mr. Riyaz Ahmad were the RTU Coordinators of this FDP. Dr. Praveen Kumar Jain, Dr. Mukesh Arora, Dr. Rukhsar Zafar and Dr. Shubhi Jain were the coordinators from the host institute.

**Dr. Govind**, Senior Principal Scientist & Professor (**AcSIR**), **National Physical Laboratory, New Delhi** was chief guest and Dr. Preetam Singh, Principle Scientist **National Physical Laboratory** New Delhi was guest of honour of the inaugural ceremony of this FDP. The FDP began with the welcome address by Prof. Mukesh Arora (Head, ECE SKIT). Prof. Praveen K. Jain (Dy. Head, ECE, SKIT) Highlighted the achievements of the Institute in Past one year as well as put lighting how the institute is motivating the faculty members in enhancing research and Development skills. Dr. Ruksaar Zafar (Jointly Coordinator of This FDP) conveyed the complete Schedule to be followed in five days of this FDP and share the details related to Expert area to all the resource person in FDP. Inauguration ceremony also witnesses the presence of Dr. S. K. Bhatnagar, Dr. Shubhi Jain, Dr. Monika Mathur, Dr. Swati Arora, Ms. Kiran Rathi, Ms. Gloria Joseph as a panelist members.

In the first session of the first day **Dr. Govind**, Senior Principal Scientist & Professor (AcSIR) delivered an expert talk on Fabrication of Next Generation Optical Detectors For

Ultraviolet Radiations. He discuss about optical detectors and the Fabrication process of these detectors. In the second session **Dr. Mahesh Kumar, Associate Professor, IIT Jodhpur** shared his experiences in the field of Growth of MoS<sub>2</sub> Nano Materials for NO<sub>2</sub> Gas sensor. In the subsequent session, **Dr Aditya Jain**, Nanjing University of Aeronautics & Astronautics, China, Deliver an Expert talk on Multi Layer Ceramic Capacitors for Energy Storage Applications.

**Second day** was started with an expert lecture of **Dr. Mohan S. Mahata**, Delhi Technological University, New Delhi. He enlightened the participants with the overview of development and applications of Nano sized Luminescent Materials. In Second session **Dr. Anshu Sharma (Central University of Haryana)** shared his experiences about Nano Materials for Hydrogen Energy Applications. Day two was ended with an expert lecture of Dr. Praveen Kumar Assistant Professor-IACS-Kolkata as well as chair of the Marie Curie Alumni Association (MCAA) Indian Chapter. He Delivered his talk on Material Science Innovation from Hydrogen Generation from Water.

Third day was started with an expert lecture of **Dr. Pooja Sharma, Senior Scientist CSIR-CSIO ,Chandigarh**. She delivered a talk on Carbon Quantum Dots: A Promising Platform for water pollutants monitoring. The Next lecture is followed **Dr. Rakesh Ranjan (NIT Patna)**. He shared his knowledge on **Nano –Photonics Waveguides and Its Applications**. The day third was ended with an expert lecture of **Professor Vijay Janyani (MNIT, Jaipur )** shared his Experience on Photonics Crystal Assisted Solar cells.

Day 4 started with the session of – **Dr. Sanjeev Yadav (Govt Engineering College, Ajmer)**. He enlightens with the knowledge of Nano **Antennas and Metamaterials**. In next session **Dr. Anurag Gaur, NIT Kurukshetra** shared his

experience with the participants on **Spintronics based Magneto resistive and Multi ferroic Materials**. In subsequent to that, **Dr. Balwinder Raj**, Associate Professor, (NITTTR Chandigarh) delivered a talk on Multi Gate Nano-Electronics Devices.

Day 5 was opened with the session of Carbon Nano Materials and their Applications delivered by **Dr. Kanupriya Sachdev (Professor, MNIT Jaipur)**. Next Talk was by **Dr. Rishi Vyas (Associate Professor, SKIT Jaipur)**. He presented **Aspects of Conduct metric Gas Sensors**. Day 5 is ended with an expert lecture of **Dr. Anurag Gaur (NIT kurukshetra)** shared his experience in the field of Super Capacitors i.e the future energy storage devices. The discussed areas are of great benefit for the participants as they are enlightened with the most widely used advance tools, strategies and techniques being used in Nano Electronics.

The assignment, feedback was collected from the participants in valedictory session.

## Media Coverage

### Print Media News

# FACULTY DEVELOPMENT PROGRAM

CITY FIRST

The one-week Faculty development program (FDP) on Emerging Trends in Nanoelectronics (ETNE 2020) witnessed its inaugural ceremony at Swami Keshvanand Institute of Technology Management and Gramothan, Jaipur on Monday, 21 September. This FDP is sponsored by RTU (ATU) TEQIP III, RTU Kota and is jointly organized by Rajasthan Technical University (RTU) Kota and Swami keshvanand Institute of Technology Management and Gramo-  
than (SKIT), Jaipur. The program was graced by Dr Govind, Principal Scientist and Professor (AcSIR), NPL New Delhi and Dr Preetam Singh, Principal Scientist NPL New



Delhi as chief guest and Guest of honor of ceremony respectively. Dr ML Meena and Riyaz Ahmad, RTU Kota were the RTU coordinators of this FDP.

Professor Mukesh Arora, Head, ECE department SKIT welcomed the guests and in-

spired the gathering with his words of motivation. Prof. PK Jain, Professor & Dy. Head, ECE Department SKIT highlighted the achievements of the Institute in past one year and also put light on how the institute is motivating the faculty members in enhancing re-

search and development skills. Dr Rukhsar Zafar, joint coordinator (ETNE 2020) conveyed the complete schedule to be followed in the five-days of this FDP and also shared the details related to expert areas of all the resource persons of this FDP.

[cityfirst@firstindia.co.in](mailto:cityfirst@firstindia.co.in)

City First: 22.09.2020



# ‘इमर्जिंग ट्रेंड्स इन नैनो इलेक्ट्रॉनिक्स’ विषय पर पांच दिवसीय फैकेल्टी डेवलपमेंट प्रोग्राम का हुआ समापन



जयपुर। राजस्थान तकनीकी विश्वविद्यालय (आरटीयू) कोटा और स्वामी केशवानंद इंस्टीट्यूट ऑफ टेक्नोलॉजी मैनेजमेंट और ग्रामोथन (एसकेआईटी), जयपुर द्वारा संयुक्त रूप से आयोजित और आरटीयू (एटीयू) टीईक्यूआईपी -III द्वारा प्रायोजित ‘इमर्जिंग ट्रेंड्स इन नैनो इलेक्ट्रॉनिक्स’ विषय पर पांच दिवसीय फैकेल्टी डेवलपमेंट प्रोग्राम का समापन शुक्रवार (25 सितंबर, 2020) को हुआ। इस एफडीपी में आईआईटी, एनआईटी, सीएसआईआर लैब तथा एनआईटीटीआईआर के प्रख्यात प्रोफेसर्स ने नैनो इलेक्ट्रॉनिक्स विषय के विभिन्न आयामों पर विस्तृत चर्चा की, जो पार्टिसिपेंट्स के लिए बहुत ही ज्ञानवर्धक रही। इस एफडीपी के पहले चार दिन एक्सपर्ट्स ने नेक्स्ट जनरेशन ऑप्टिकल डिटेक्टर फोर अल्ट्राव्हायलेट रेडिएशन, मल्टिलेयर सेरेमिक कैपेसिटर, नैनो मेटेरियल फॉर ह्यूड्रोजन एनर्जी एप्लीकेशन, क्रांटम डैटस फोर वॉटर पॉल्यूशन मॉनिटरिंग, स्पिटॉनिक्स, फोटोनिक वेवग्राइड्स एवं मल्टिगेट नैनो इलेक्ट्रॉनिक्स डिवाइसेज के तकनीकी पहलुओं एवं एप्लीकेशन के बारे में विस्तार से चर्चा की। इस कार्यक्रम के अंतिम दिन डॉक्टर कनुप्रिया सचदेव (प्रोफेसर एमएनआईटी, जयपुर) ने कार्बन नैनोमेटेरियल्स तथा इन मेटेरियल्स की एप्लीकेशन एवं भविष्य की संभावनाओं के बारे में बताया। डॉ. ऋषि व्यास (एसोसिएट प्रोफेसर, एसकेआईटी जयपुर) ने कंडक्टोमेट्रिक गैस सेंसर एवं इन सेंसर की स्पेसिफिकेशंस के बारे में चर्चा की। इसी क्रम में डॉ. अनुराग गौर (एनआईटी, कुरुक्षेत्र) ने सुपर कैपेसिटर अथवा हाइब्रिड कैपेसिटर संबंधित टेक्नोलॉजी के बारे में बताया एवं आने वाले भविष्य में वॉटर स्प्लिटिंग आधारित इलेक्ट्रिसिटी जनरेशन जैसे ग्रीन एनर्जी सोर्स की संभावनाओं एवं उपयोगिताओं के बारे में बताया। इस एफडीपी प्रोग्राम के आरटीयू कोर्डिनेटर डॉ. एम. एल. मौणा एवं रियाज अहमद थे।

इस एफडीपी के समापन समारोह में इलेक्ट्रॉनिक्स विभाग के विभागाध्यक्ष डॉ. मुकेश अरोड़ा ने सभी प्रतिभागियों एवं मुख्य अतिथियों का स्वागत किया। डॉ. शुभो जैन (असिस्टेंट प्रोफेसर, एसकेआईटी जयपुर) ने एफडीपी की विस्तृत रिपोर्ट प्रस्तुत की। इसी क्रम में समापन कार्यक्रम के मुख्य अतिथि डॉक्टर किशोर कुमार सदासिखनि (सेंटर फॉर एडवांस्ड मेटेरियल्स, कतर यूनिवर्सिटी एवं मैनेजिंग एडिटर जनरल ऑफ इमर्जेंट मेटेरियल्स, स्प्रिंगर) ने नैनोइलेक्ट्रॉनिक्स की आपार संभावनाओं एवं भविष्य की उपयोगिताओं के बारे में चर्चा की। इस समापन समारोह के अंत में इस एफडीपी के कोर्डिनेटर डॉ. प्रवीण जैन (प्रोफेसर, एसकेआईटी जयपुर) ने सभी पार्टिसिपेंट्स एवं अतिथियों को धन्यवाद दिया।

26.09.2020

# Poster



## TEQIP-III

### RTU(ATU) TEQIP-III Sponsored Faculty Development Program

on

"Emerging Trends in Nano Electronics (ETNE-2020)"  
September 21-25, 2020

#### Day-1: 21.09.2020 (Monday)



Dr. Govind  
Senior Principal Scientist  
National Physical Laboratory, New Delhi



Dr. Mahesh Kumar  
Associate Professor  
IIT, Jodhpur



Dr. Aditya Jain  
Institute of Material Science and Engineering  
NUAA, China

#### Day-2: 22.09.2020 (Tuesday)



Dr. Mohan S. Mahata  
DTU, New Delhi



Dr. Anshu Singh  
Central University of Haryana



Dr. Praveen Kumar  
IACS-Kolkata

#### Day-3: 23.09.2020 (Wednesday)



Dr. Pooja D.  
Senior Scientist  
CSIR-CSIO, Chandigarh



Dr. Rakesh Ranjan  
NIT, Patna



Prof. Vijay Janyani  
MNIT, Jaipur

#### Day-4: 24.09.2020 (Thursday)



Dr. Sanjeev Yadav  
GEC, Ajmer



Dr. Anurag Gaur  
NIT, Kurukshetra



Dr. Balwinder Raj  
NITTTR Chandigarh

#### Day-5: 25.09.2020 (Friday)



Prof. Kanupriya Sachdeva  
MNIT, Jaipur



Dr. Rishi Vyas  
SKIT, Jaipur



Dr. Anurag Gaur  
NIT, Kurukshetra



Department of Electronics and Communication Engineering  
Swami Keshvanand Institute of Technology,  
Management & Gramothan, Jaipur