KIRORI MAL COLLEGE

FACULTY PROFILE PERFORMA

First Name	Dr. Ishpal	Middle Name		Last Name		Photograph (attach below)
Title & Designation		**Assistant Prof.**				
Address		**Department of Physics, Kirori Mal College, University of Delhi, Delhi-110007**				
Phone Number						
Office						
Residence						
Mobile		**+91-9873176955**				
Email		**rawalishpal@gmail.com**				
Web-Page		**https://sites.google.com/site/rawalorgmat/home**				

Educational Qualifications:

Degree	Institution	Year
Ph. D	**University of Delhi, Delhi**	**2014**
M. Phil.	**C.D.L. University, Sirsa**	**2007**
M. Sc.	**M.D. University, Rohtak**	**2005**
B.Sc.	**Kurukshetra University, Kurukshetra**	**2003**

Career Profile:

- Working as Assistant Professor in the Department of Physics, Kirori Mal College, since Jan. 2014 to till date.
- Worked as Assistant Professor (Guest Faculty) in the Department of Physics, Hindu College during Jan. – April 2013.
- Worked as Project Assistant in National Physical Laboratory, New Delhi, during March 2008-Nov. 2009.

Administrative Assignments:

Areas of Interest / Specialization:

Material Science:

- Amorphous/Nanocrystalline Carbon thin films for Field emission and Gas/Chemical Sensors.
- Conducting polymers and their hybrid Nanostructures for low temperature gas sensing, low turn-on Field Emitters, Light dependent Resistors, and EMI shielding applications
- Inorganic (metal oxides and metal sulphide) nanomaterials and their films for gas sensors, supercapacitors and UV-photodetectors, etc.

Subjects Taught:

1. Statistical Mechanics
2. Thermal Physics
3. Waves and Optics
4. Quantum Mechanics and Atomic Physics
5. Elements of Modern Physics
6. Solid State Physics

7. SEC-Applied Optics
8. SEC-Electric circuit and Network Skill
9.SEC-Numerical Analysis

Research Guidance:

N.A.

Publications Profile:

a. Research Paper

No. of Publication: *49*
Book Chapter: *02*
Conference Proceeding: *02*
H- index: 17
i-10 index: 29
Citation: 891
Impact Factor: 168.695

List of Publications

[1] **Ishpal Rawal**, Vipin Kumar, Vinod Kumar, Prikshit Gautam, Vijay Kumar Sharma, *Study of conduction mechanism in p-$Zn_{1-x}Sb_xO$/n-Si− (x = 0.00, 0.03, 0.05) hetero-junction devices*, Journal of Materials Science: Materials in Electronics (2021), **doi** 10.1007/s10854-021-06809-2.

[2] Ravi Kant Tripathi, O. S. Panwar, **Ishpal Rawal**, C. K. Dixit, Arpit Verma, Priyanka Chaudhary, A. K. Srivastava and B. C. Yadav, *Study of Variable Range Hopping Conduction Mechanism in Nanocrystalline carbon thin Films deposited by modified anodic jet carbon arc technique: Application to light-dependent resistors*, Journal of Materials Science: Materials in Electronics, 32 (2021) 2535-2546. ISSN: 0957-4522

[3] Rishi Pal, Sneh Lata Goyal, **Ishpal Rawal,** Anil Kumar Gupta, Ruchi , *Efficient energy storage performance of electrochemical supercapacitors based on polyaniline/graphene nanocomposite electrodes*, Journal of Physics and Chemistry of Solids 154 (2021) 110057

[4] Rishi Pal, Sneh Lata Goyal, **Ishpal Rawal**, Asha, *Lightweight graphene encapsulated with polyaniline for excellent electromagnetic shielding performance in X-band (8.2–12.4 GHz)*, Materials Science and Engineering B 270 (2021) 115227

[5] **Ishpal Rawal,** Parveen K. Goyal, *Effect of Ammonia Based Deprotonation on the Variable Range Hopping Conduction in Polypyrrole Nanotubes***,** Solid State Sciences, 99 (2020) 105984.

[6] Rishi Pal, Sneh Lata Goyal, and **Ishpal Rawal**, Transition of charge transport phenomena from 3D to 1D hopping at low temperatures in polyaniline/graphene composites, J. Appl. Phys. **128** (2020) 175108 (1-10),

[7] Rishi Pal, Sneh Lata Goyal, **Ishpal Rawal,** High-performance solid state supercapacitors based on intrinsically conducting polyaniline/MWCNTs composite electrodes, Journal of Polymer Research **27** (2020) 179 (1-13)

[8] Rishi Pal, Sneh Lata Goyal, **Ishpal Rawal**, Smriti Sharma, Efficient room temperature methanol sensors based on polyaniline/graphene micro/nanocomposites, Iranian Polymer Journal, **29,** (2020) 591–603

[9] Vipin Kumar, **Ishpal Rawal,** Vinod Kumar, Parveen K. Goyal, *Efficient UV photodetectors based on Ni-doped ZnS nanoparticles prepared by facial chemical reduction method*, Physica B: Condense Matter 575 (2019) 411690.

[10] Rishi Pal, Sneh Lata Goyal, Vinay Gupta and **Ishpal Rawal,** *MnO_2-Magnetic Core-Shell Structured Polyaniline Dependent Enhanced EMI Shielding Effectiveness: A Study of VRH Conduction, ChemistrySelect 4* (2019) 9194 –9210.

[11] Karmvir Singh, **Ishpal Rawal,** Neeru Sharma, Prikshit Gautam, Rakesh Dhar, *Quantum efficient fast UV photodetectors based on nanocrystalline $Zn_{1-x}P_xO$ (x=0.00, 0.03, 0.07) thin films deposited by pulsed laser deposition technique*, Materials Science in Semiconductor Processing 95 (2019) 7-19.

[12] Karmvir Singha, **Ishpal Rawal,** Prikshit Gautam, Neeru Sharma, Rakesh Dhar, *Diluted magnetic semiconducting properties of nanocrystalline $Zn_{0.98}X_{0.02}O$ (X=Fe, Ga, Ni) thin films deposited by PLD technique for spintronic applications*, Journal of Magnetism and Magnetic Materials 468 (2018) 259–268

[13] Karmvir Singh, Neelam Berwal, **Ishpal Rawal**, Sajjan Dahiya, Rajesh Punia, Rakesh Dhar, *Determination of valence and conduction band offsets in Zn0.98Fe0.02O/ZnO hetero-junction thin films grown in oxygen environment by pulsed laser deposition technique: A study of efficient UV photodetectors*, Journal of Alloys and Compounds 768 (2018) 978-990.

[14] Ravi Kant Tripathi, OS Panwar, **Ishpal Rawal,** BP Singh, BC Yadav, *Study on nanocrystalline silicon thin films grown by the filtered cathodic vacuum arc technique using boron doped solid silicon for fast photo detectors*, Journal of the Taiwan Institute of Chemical Engineers 86 (2018) 185-191

[15] **Ishpal Rawal**, Lalit Kumar, Ravi Kant Tripathi, and Omvir Singh Panwar, *Surface Structure-Dependent Low Turn-On Electron Field Emission from Polypyrrole/Tin Oxide Hybrid Cathodes*, **ACS Omega** 2 (2017) 7515−7524

[16] Karmvir Singh, **Ishpal Rawal**, Rajesh Punia, and Rakesh Dhar, *X-ray photoelectron spectroscopy investigations of band offsets in $Ga_{0.02}Zn_{0.98}O$/ZnO heterojunction for UV photodetectors*, **Journal of Applied Physics 122**, (2017) 155301-1-13

[17] **Ishpal Rawal**, Neeraj Dwivedi, Ravi Kant Tripathi, O.S. Panwar, Hitendra K. Malik, Organic-inorganic hybrid nanomaterials for advanced light dependent resistors, **Materials Chemistry and Physics** 202 (2017) 169-176,

[18] Neeraj Dwivedi, Chetna Dhand, **Ishpal Rawal,** Sushil Kumar, Hitendra K. Malik, Anomalous Electron Transport in Metal/Carbon Multijunction Devices by Engineering of the Carbon Thickness and Selecting Metal Layer, **Journal of Applied Physics, 121, (2017) 225101-1-8, ISSN: 0021-8979.**

[19] Lalit Kumar, **Ishpal Rawal**, Amarjeet Kaur and S. Annapoorni, *Flexible Room Temperature Ammonia Sensor based on Polyaniline film*, **Sensors and Actuators B: Chemical 240 (2017) 408–416.** ISSN: 0925-4005

[20] **Ishpal Rawal,** J. David Carey, O.S. Panwar, Ravi Kant Tripathi, *Organic-inorganic hybrid cathodes: Facile synthesis of polypyrrole/zinc oxide nanofibers for low turn-on electron field emitters*, **RSC Advances 6 (2016)**

46372-46379. ISSN:2046-2069

[21] **Ishpal Rawal**, Ravi K Tripathi, OS Panwar, *Easy synthesis of organic–inorganic hybrid nanomaterials: study of DC conduction mechanism for light dependent resistors,* **RSC Advances 6 (2016) 31540-31550.** *ISSN* :2046-2069,

[22] **Ishpal Rawal**, *Facial synthesis of hexagonal metal oxide nanoparticles for low temperature ammonia gas sensing applications*, (**RSC Advances 5 (2015) 4135-4142)** *ISSN* · 2046-2069

[23] **Ishpal Rawal,** Amarjeet Kaur, *Low frequency and temperature dependent dielectric spectroscopic studies of polypyrrole nanoparticles,* **Philosophical Magazine 95 (2015) 1399-1413. ISSN:**1478-6435

[24] **Ishpal Rawal**, O.S. Panwar, R.K. Tripathi, A.P. Singh, S.K. Dhawan, A.K. Srivastava, Effect of helium gas pressure on dc conduction mechanism and EMI shielding properties of nanocrystalline carbon thin films, **Material Chemistry and Physics 158 (2015) 10-17. ISSN: 0254-0584**

[25] **Ishpal Rawal,** O. S. Panwar, R. K. Tripathi, A. K. Srivastava, Mahesh Kumar, Sreekumar Chockalingam, S*tructural and nanomechanical properties of nanocrystalline carbon thin films for photodetection,* **Journal of Vacuum Science Technology A 33** (2015) 031501**. ISSN: 0734-2101**

[26] O. S. Panwar, **Ishpal Rawal**, R. K. Tripathi, A. K. Srivastava, Mahesh Kumar, *Structural, nanomechanical and variable range hopping conduction behavior of nanocrystalline carbon thin films deposited by the ambient environment assisted filtered cathodic jet carbon arc technique,* **Journal of Alloys and Compounds –628 (2015) 135-145, ISSN: 0925-8388.**

[27] Atul Bisht, S. Chockalingam, O. S. Panwar, A. K. Kesarwani, **Ishpal Rawal**, B. P. Singh, V. N. Singh, *Structural, field emission and ammonia gas sensing properties of multiwalled carbon nanotube-graphene like hybrid films deposited by microwave plasma enhanced chemical vapor deposition technique,* **Science of Advanced Materials 6 (2015) 1-11, ISSN: 1947-2935**

[28] **Ishpal Rawal**, Kiran Sehrawat, Amarjeet Kaur, *Vibration spectroscopy for the investigation of ammonia gas sensing mechanism in polypyrrole nanostructures* (**Vibrational Spectroscopy- 74 (2014) 64–74), ISSN: 0924-2031,**

[29] **Ishpal Rawal** and Amarjeet Kaur, *Effect of anionic surfactant concentration on the variable range hopping conduction in polypyrrole nanoparticles,* **(Journal of Applied Physics 115 (2014) 043717-1-*6)* ISSN: 0021-8979.**

[30] R. K. Tripathi, O. S. Panwar, A. K. Kesarwani, **Ishpal Rawal**, B. P. Singh, M. K. Dalai and S. Chockalingam, *Investigations on phosphorous doped hydrogenated amorphous silicon carbide thin films deposited by filtered cathodic vacuum arc technique for photo detecting application, (***RSC Advances 4** (**2014) 54388-54397**) ***ISSN*:2046-2069**, **16/10/2014,**

[31] Neeraj Dwivedi, S. Kumar, **Ishpal Rawal**, H. Malik, *Influence of consumed power on deposition of nano-structured diamond-like carbon thin films and its spectroscopic and nano-mechanical investigations* –(**Applied Surface Science 300 (2014) 141-148*)* ISSN: 0169-4332.**

[32] Vinod Kumar, Sunny, **Ishpal Rawal**, V.N. Mishra, R. Dwivedi, R.R. Das, *Fabrication and Characterization of Grided Pt/SiO_2/Si MOS Structure for Hydrogen and Hydrogen Sulphide Sensing* ***(Material Chemistry and***

Physics 146 (2014) 418-424), **ISSN: 0254-0584.**

[33] R. K. Tripathi, O. S. Panwar, A. K. Srivastava, **Ishpal Rawal** and Sreekumar Chockalingam, Structural, nanomechanical, field emission and ammonia gas sensing properties of nitrogenated amorphous carbon films deposited by filtered anodic jet carbon arc technique, (**Talanta 125 (2014) 276-283)**, 19/03/2014**, ISSN: 0039-9140.**

[34] **Ishpal Rawal** and A. Kaur, *Synthesis of mesoporous polypyrrole nanotubes/ nanoparticles for ammonia gas sensing application* **(Sensors and Actuators A: Physical 203 (2013) 92-102) ISSN: 0924-4247.**

[35] **Ishpal** and A. Kaur, *Spectroscopic and electrical sensing mechanism in Oxidant mediated polypyrrole nanofibers/nanoparticles for ammonia gas* **(Journal of Nanoparticle Research 15 (2013) 1637-1-14)** ISSN: 1572-896X

[36] **Ishpal** and A. Kaur, *Spectroscopic investigation of ammonia gas sensing mechanism in polypyrrole nanotubes/nanorods* **(Journal of Applied Physics-113 (2013) 094504-1-11), ISSN: 0021-8979.**

[37] R. K. Tripathi, O. S. Panwar, A. K. Srivastava, **Ishpal**, M.Kumar and S. Chockalingam, *Structural, nanomechanical and field emission properties of amorphous carbon films having embedded nanocrystallites deposited by filtered anodic jet carbon arc technique*, (**Journal of Nanoscience- 2013 (2013) 401710-1-11),**

[38] R. Dhar, **Ishpal**, P. Kumar, Deepika, D. Mohan, Synthesis of Reliable Food Grade packaging Materials, **International Journal of Printing, Packaging and Allied Sciences 1 (2013) 26-29, ISSN 2320-4389.**

[39] **Ishpal**, S. Kumar, N. Dwivedi and C.M.S. Rauthan, *Investigation of radio frequency plasma for the growth of diamond like carbon films* (**Physics of Plasma 19 (2012) 033515-1-14), ISSN: 1070-664X**

[40] A. Kaur, **Ishpal** and S. K. Dhawan, *Tuning of EMI shielding properties of polypyrrole nanoparticles with surfactant concentration* **(Synthetic Metals 162 (2012) 1471–1477), ISSN: 0379-6779.**

[41] O.S. Panwar, **Ishpal**, R.K. Tripathi, *Effect of substrate bias in hydrogenated amorphous carbon films having embedded nanocrystallites deposited by cathodic jet carbon arc technique* **(Diamond and Related Materials 25(2012) 67-72*)*, ISSN: 0925-963*5***.

[42] **Ishpal**, O.S. Panwar, M. Kumar and S. Kumar, *Effect of ambient gaseous environment on the properties of amorphous carbon thin films* (**Materials Chemistry and Physics 125 (2011) 558–67**)**, ISSN: 0254-0584.**

[43] **Ishpal**, O.S. Panwar, A.K. Srivastava, S. Kumar, R.K. Tripathi, M. Kumar, S. Singh, *Effect of substrate bias in amorphous carbon films having embedded nanocrystallites* (**Surface & Coatings Technology 206 (2011) 155–64**)**, ISSN: 0257-8972.**

[44] O.S. Panwar, S. Kumar, **Ishpal**, A.K. Srivastava, A. Chouksey, R.K. Tripathi and A. Basu, *Effect of substrate bias in nitrogen incorporated amorphous carbon films with embedded nanoparticles deposited by filtered cathodic jet carbon arc technique* (**Materials Chemistry and Physics 132 (2011) 659-666**)**, ISSN: 0254-0584.**

[45] N. Dwivedi, S. Kumar, **Ishpal**, S. Dayal, Govind, C.M.S. Rauthan and O.S. Panwar, *Studies of nanostructured copper/hydrogenated amorphous carbon multilayer films* (**Journal of Alloys and Compounds 509 (2011) 1285–93**)**, ISSN: 0925-8388**.

[46] **Ishpal**, O.S. Panwar, M. Kumar and S. Kumar, *X-ray photoelectron spectroscopic study of nitrogen incorporated amorphous carbon films embedded with nanoparticles* (**Applied Surface Science 256 (2010**)

7371–76), ISSN: 0169-4332.

[47] O.S. Panwar, M. A. Khan, B.S. Satyanarayana, S. Kumar, **Ishpal**, *Properties of boron and phosphorous incorporated tetrahedral amorphous carbon films grown using filtered cathodic vacuum arc process* (**Applied Surface Science 256 (2010) 4383–90), ISSN: 0169-4332**.

[48] O.S. Panwar, M. A. Khan, S. Kumar, A. Basu, B.R. Mehta, S. Kumar and **Ishpal**, *Effect of high substrate bias and hydrogen and nitrogen incorporation on spectroscopic ellipsometric and atomic force microscopic studies of tetrahedral amorphous carbon films* (**Surface & Coatings Technology 205 (2010) 2126–33), ISSN: 0257-8972.**

[49] O.S. Panwar, M. A. Khan, B.S. Satyanarayana, R. Bhattacharyya, B.R. Mehta, S. Kumar and **Ishpal,** *Effect of high substrate bias and hydrogen and nitrogen incorporation on density of states and field emission threshold in tetrahedral amorphous carbon films* (**J. Vacuum Sci. Technology B-28 (2010) 411-22), ISSN: 2166-2746.**

b. Books

c. Chapter in books

1. V Kumar, **Ishpal Rawal**, V Kumar, Easy Synthesis of Nanostructures of ZnO and ZnS for Efficient UV Photodetectors, Micro-Electronics and Telecommunication Engineering, 106 (2020) 713

2. R. K. Tripathi, O. S. Panwar, **Ishpal**, Sreekumar Chockalingam, *Growth and Characterization of Nitrogen Incorporated Amorphous Carbon Films Having Embedded Nanocrystallites*, **Physics of Semiconductor Devices (2014) 685-688, DOI: 10.1007/978-3-319-03002-9_176.** ***Book Chapter: Series ISSN*** *1863-5520,* ***Online ISBN: 978-3-319-03002-9.*** *Dated* **2014,** Springer International Publishing Switzerland.

d. Articles/Research Paper in Books

e. Conference Proceedings

- Ravi Kant Tripathi, BC Yadav, OS Panwar, **Ishpal Rawal**, AK Srivastava, *Study on filtered and unfiltered deposition of amorphous carbon nanocrystalline thin films*, Proceedings of the seventeenth international conference on thin films: abstracts, INIS Volume 52 (2017).
- O. S. Panwar, **Ishpal**, R.K. Tripathi, A.K. Srivastva and S. Kumar, *Hydrogenated amorphous carbon films having embedded nanoparticles deposited by cathodic jet carbon arc technique*, ***Proc. SPIE*** **8549, 16th International Workshop on Physics of Semiconductor Devices, (2012) 85491M-85491M-6; doi:10.1117/12.924629,** ***ISSN*** · 0277-786X**.** 15/10/ 2012

Conference / Workshops/Training Organized:

Creation of ICT Mediated Teaching Learning Pedagogy and Content:

Conference/Workshops/Training attended as Faculty Member/ Research Scholar:

1. **Ishpal Rawal** and Amarjeet Kaur, *Growth of polypyrrole nanoparticles for gas sensing applications*, ***National Conference on Synthesis, Characterization and Applications of Advance Nanomaterials (NCSCAAN 2014)***, at ***Hindustan College Science and Technology, Mathura, U.P*** during ***17th – 19th Jan. 2014***.
2. **Ishpal Rawal** and Amarjeet Kaur, *Understanding of ammonia gas sensing mechanism in polypyrrole nanofibers, Presented in "**The 2nd International conference on advanced materials, energy and environments (ICMEE' 13)** at **Kanto Gakuin University, Yokohama, Japan** during **8-9 Aug., 2013.***
3. Amarjeet Kaur and **Ishpal Rawal**, *Growth of polypyrrole nanospheres for EMI shielding applications, Presented in "**The 2nd International conference on advanced materials, energy and environments (ICMEE' 13)** at **Kanto Gakuin University, Yokohama, Japan,** during **8-9 Aug., 2013.***
4. **Ishpal Rawal,** A. Kaur, *Spectroscopic and electrical ammonia gas sensing mechanism in oxidant mediated polypyrrole nanoparticles/nanofibers, Presented* in ***XIth International Conference on Nanostructured materials (NANO2012)*** at **Rodos, Greece** during **26-31 Aug., 2012**.
5. **Ishpal** and A, Kaur, *Surfactant mediated Synthesis of polypyrrole nanoparticles for gas sensing application, Presented* in ***International conference of nanoscience and nanotechnology (NanoSciTech-2012)*** at **Panjab University, Chandigarh** during **Feb. 16-18, 2012.**
6. **Ishpal** and A. Kaur, *Effect of acidic doping on the gas sensing properties of Polypyrrole nanoparticles* Oral presentation in ***International Conference on Nanomaterials and Nanotechnology (ICNANO-11)*** at **University of Delhi, Delhi** during **Dec. 19-21, 2011.**
7. **Ishpal** and A. Kaur, *Experimental investigation of polypyrrole nanostructures for sensors for monitoring environmentally hazards gases,* Presented in ***International Conference on Frontiers of Polymers and Advanced Materials (Macro-2010***) at **IIT, Delhi** during **Dec. 15-17, 2010.**
8. **Ishpal** and A. Kaur, *Surfactant directed synthesis of polypyrrole nanorods via reverse microemulsion method, Presented* in ***Indraprastha International Conclave on Nano Science & Technology (NanoConclave-10***) at **G. G. S. Inderparastha University, Delhi** during **Nov 16-17, 2010.**\
9. S. Kumar, **Ishpal**, N. Dwivedi, O.S. Panwar, *Correlation of plasma parameters with diamond like carbon films properties*, Oral presentation in ***National conference on Recent Advances in Surface Engineering (RASE-09)*** at **National Aerospace Laboratory, Bangalore** during **Feb. 26-27, 2009**.
10. **Ishpal Rawal,** R. K. Tripathi, O.S. Panwar, Synthesis *of Polypyrrole/SnO2 Nanoneedles for White Light Detectors*, ***National Seminar on Recent Trends in Physics and Chemistry (NSRTPC-15)****,on 25 March, 2015 at* S.A Jain(PG) College, Ambala City, Haryana
11. R. K. Tripathi, O.S. Panwar, **Ishpal Rawal**, Amorphous carbon thin films for photo detection

application, ***National Seminar on Recent Trends in Physics and Chemistry (NSRTPC-15)****, on 25 March, 2015* at S.A Jain(PG) College, Ambala City, Haryana

Invited Lectures/Resource Persons:

N.A.

Research Projects (Major Grants/Research Collaboration):

N.A.

Awards and Distinctions:

N.A.

Association with Professional Bodies:

N.A.

Other Activities:

Faculty Development Programs:

- **Online Short Term Course:** Synthesis and Characterization of Nanomaterials (SCNM-2020) organized by Department of Physics, J.C. Bose University of Science and Technology, YMCA, Faridabad from **November 02-07, 2020**.
- **Faculty Development Program:** on **"**Moving Towards New Normal Through Effective Online Teaching", organized by Kalindi College, University of Delhi, Delhi in the collaboration of Mahatma Hansraj, Faculty Development Centre, Hansraj College, University of Delhi, under the Ministry of Education, Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) **from December 01-07, 2020.**
- **Online Faculty Induction-Orientation Program:** organized by Teaching Learning Centre (TLC), Ramanujan College, under the Ministry of Education, Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) from **February 11 2021 to March 13, 2021**
- **Faculty Development Program/one week workshop:** on "Academic Writing" organized by Teaching Learning Centre (TLC), Ramanujan College, under the Ministry of Education (erstwhile, Ministry of Human Resource Development), Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) from March 12-18, 2021
- **Online Refresher Course/Faculty Development Program:** on "*Managing Online Classes and Co-Creating Moocs 4.0*" organized by the Teaching Learning Centre, Ramanujan College, University of Delhi under the Ministry of Education (erstwhile, Ministry of Human Resource Development), Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) from **March 11-26, 2021**