MANISHA MONDAL

Phone: 9434253812/7294874733
manisha.mondal.phy@gmail.com/
manisha92@ap.ism.ac.in

EDUCATION

Ph.D. IIT (ISM) Dhanbad, Department of Physics — November 2020
Title of the thesis: Enhanced frequency upconversion in rare earth doped molybdate phosphors for multifunctional applications (Supervisor: Prof. Vineet Kumar Rai)

M.Sc. Department of Physics, Sidho-Kanho-Birsha University — August 2014
Specialization in Electronics

B.Sc. Department of Physics, Burdwan University — June 2012

HONORS AND AWARDS

Inder Mohan Thapar research (IMTR) award — 2017
for **best researcher**

Best poster presentation award — 2017
in the International conference
on Recent Trends in Chemical Sciences, 2017,
Bikaner, Rajasthan, India

Best oral presentation award
in Winter School, 2017
organized by International Centre for Materials Science,
Jawaharlal Nehru Centre for Advanced Scientific Research,
Jakkur, India. — 2017

Young Scientist award
in the national conference
Advances in Spectroscopic Techniques and Materials,
IIT (ISM) Dhanbad 2018 — 2018

RESEARCH EXPERIENCE

- Synthesis of rare earth doped photo-luminescent (basically upconverting/downconverting) material.
- Upconversion/downconversion/lifetime studies of the synthesized materials

- Study of Fluorescence intensity ratio (FIR) technique based optical temperature sensing ability of the synthesized phosphors.
- The use of the synthesized materials in sensing and detection, solid state lighting devices, security purposes, optical bioprobes, therapeutic purposes, optical temperature sensing and display devices.

TEACHING EXPERIENCE

Name of University: Burdwan University Sept. 2014 to Feb. 2015

Guest Lecturer, Department of Physics

- Taught BSC PART I, II & III, an undergraduate course averaging 20 students per semester, covering the following topics: Mathematical Physics, Optics, Electronics, and Quantum Mechanics.
- Taken practical classes for BSC PART I, II & III (Electronics & Optics).
- Developed homework and class test.
- Revised the syllabus to meet endorsement values

Name of University: IIT (ISM) Dhanbad July 2015 to Dec. 2017

Teaching Assistant, Department of Physics

Practical classes of 1st semester B. Tech (Preparatory)

Name of University: IIT (ISM) Dhanbad Dec. 2017 to Dec. 2018

Teaching Assistant, Department of Physics

Practical classes of B.Tech (Engineering Physics) and 1st year M.Sc. Physics

PUBLICATIONS

Citations: 136 **h-index: 7** **i10-index: 5**

Journal Publications

1. **Manisha Mondal**, Vineet Kumar Rai, Chandan Srivastava, Suman Sarkar, and R. Akash, Enhanced frequency upconversion in $Ho^{3+}/Yb^{3+}/Li^{+}$:$YMoO_4$ nanophosphors for photonic and security ink applications, J. Appl. Phys., 2016, 120, 233101 (1-11), DOI: 10.1063/1.4971966. **I.F. 2.286**

2. **Manisha Mondal**, Vineet Kumar Rai, C. Srivastava, Influence of silica surface coating on optical properties of Er^{3+}-Yb^{3+}:$YMoO_4$ upconverting nanoparticles, Chem. Eng. J., 2017, 327, 838-848, DOI: 10.1016/j.cej.2017.06.166. **I.F. 10.652**

3. **Manisha Mondal**, Vineet Kumar Rai, An effective way to enhance upconversion emission and temperature sensing via Zn^{2+} incorporation in Er^{3+}-Yb^{3+}:$YMoO_4$ nanophosphors, J. Ind. Eng. Chem., 2018, 60, 125-132, DOI: 10.1016/j.jiec.2017.10.043. **I.F. 5.278**

4. **Manisha Mondal**, Vineet Kumar Rai, Ho^{3+}-Yb^{3+}:$YMoO_4$ core@shell nanoparticles for enhanced visible upconversion and security applications, J. Alloys Comp., 2018, 750, 304-311, DOI: 10.1016/j.jallcom.2018.03.148. **I.F. 4.650**

5. **M. Mondal**, V. K. Rai, Optical thermometry using Stark sublevels in charge compensated transition metal molybdate upconverting phosphors, Opt. Laser Tech., 2020, 130, 106341, DOI: 10.1016/j.optlastec.2020.106341. **I.F. 3.233**

6. **M. Mondal**, V. K. Rai, Multiple ratiometric thermometry: Enhanced sensing behaviour via Stark sublevels, J. Alloys Comp., 2020, 844, 155914, DOI: 10.1016/j.jallcom.2020.155914. **I.F. 4.650**

7. Renuka Bokolia, **Manisha Mondal**, Vineet Kumar Rai, and K. Sreenivas, Enhanced infrared-to-visible up-conversion emission and temperature sensitivity in (Er^{3+},Yb^{3+}, and W^{6+}) tri-doped $Bi_4Ti_3O_{12}$ ferroelectric oxide, J. Appl. Phys., 2017, 121, 084101 (1-10), DOI: 10.1063/1.4977006. **I.F. 2.286**

8. Anita Kumari, **Manisha Mondal**, Vineet Kumar Rai and Satyendra Narayan Singh, Photoluminescence study in $Ho^{3+}/Tm^{3+}/Yb^{3+}/Li^{+}$:$Gd_2(MoO_4)_3$ nanophosphors for near white light emitting diode and security ink applications, Methods Appl. Fluoresc. 2017, **6,** 015003, DOI: 10.1088/2050-6120/aa8c61. **I.F. 2.800**

9. Manglesh Yadav, **Manisha Mondal**, Lakshmi Mukhopadhyay, Vineet Kumar Rai, Intense blue upconversion emission and intrinsic optical bistability in $Tm^{3+}/Yb^{3+}/Zn^{2+}$ tridoped YVO_4 phosphors, Methods Appl. Fluoresc, 2018, 6, 025001, DOI: 10.1088/2050-6120/aa9e46. **I.F. 2.800**

10. Sushil Kumar Ranjan, **Manisha Mondal**, Vineet Kumar Rai, Er^{3+}-Yb^{3+}/Er^{3+}-Yb^{3+}-Li^{+}/Er^{3+}-Yb^{3+}-Zn^{2+}:Gd_2O_3 nanophosphors for efficient frequency upconverter and temperature sensing applications, Mater. Res. Bull., 2018, 108, 66-73, DOI: 10.1016/j.materresbull.2018.05.023. **I.F. 4.019**

11. Sonali Biswas, Lakshmi Mukhopadhyay, **Manisha Mondal**, Vineet Kumar Rai, Er^{3+}-Yb^{3+}-Na^{+}:$ZnWO_4$ phosphors for enhanced visible upconversion and temperature sensing applications, To be published in: J. Rare Earths. DOI:10.1016/j.jre.2020.02.018. **I.F. 3.104**

12. V. Tamilmani, M. Mondal, V. K. Rai, A. K. Mishra, Tunable luminescence from yttrium oxide flowers using asparagine as shape modifier, J. Alloys Comp., (accepted) **I.F. 4.650**

Review Articles

1. Manisha Mondal, Lakshmi Mukhopadhyay and Vineet Kumar Rai, A Concise Review on Solid State Lighting, IEC International Journal of Technology Management 2 (2016) 12-15.
2. Manisha Mondal, Lakshmi Mukhopadhyay and Vineet Kumar Rai, A Brief Review of Noncontact based Optical Temperature Sensing, IEC International Journal of Technology Management 2 (2016) 32-35.
3. Lakshmi Mukhopadhyay, Manisha Mondal and Vineet Kumar Rai, Photovoltaics and Photocatalysis: Promising Applications of Lanthanide doped Luminescent Materials, IEC International Journal of Technology Management 2 (2016) 8-11.
4. Lakshmi Mukhopadhyay, Manisha Mondal and Vineet Kumar Rai, A Brief Review on Luminescent Metal Organic Framework, IEC International Journal of Technology Management, 3 (2) (2018).

Conference Papers

1. Manisha Mondal, Astha Kumari, Lakshmi Mukhopadhyay and Vineet Kumar Rai, Er^{3+} doped $YMoO_4$ phosphor for display devices, International Conference on Advances in Light Technologies and Spectroscopy of Materials, ISSN: 2229-3752, Volume 22, 2016.

2. Manisha Mondal and Vineet Kumar Rai, Structural and Optical Investigation in Er^{3+} Doped Y_2MoO_6 Phosphors, AIP Conference Proceedings 1953, 030025 (2018); https://doi.org/10.1063/1.5032360.

3. Sonali, Manisha Mondal and Vineet Kumar Rai, Synthesis and photoluminescence study in Eu^{3+}:Y_2WO_6 phosphors, AIP Conference Proceedings 1953 (1), 060026, 2018.

4. Manisha Mondal and Vineet Kumar Rai, Structural and optical investigation in holmium doped Y_2MoO_6 nanophosphors, IEEE Catalog Number: CFP1816W-POD, ISBN (Online): 978-1-5386-0933-0, Page number- 182.

5. Manisha Mondal, Lakshmi Mukhopadhyay, Mohd Azam, Manisha Prasad, and Vineet Kumar Rai, Spectroscopic investigation in Er^{3+} doped $ZnMoO_4$ phosphors, AIP Conference Proceedings, 2115, 030168, 2019.

6. Mohd Azam, Manisha Mondal, Lakshmi Mukhopadhyay and Vineet Kumar Rai, Green display device technology in Er^{3+} doped TPTiO glass under 808 nm laser excitation, AIP Conference Proceedings 2115 (1), 030232, 2019.

7. Lakshmi Mukhopadhyay, Mohd Azam, Manisha Mondal, Manisha Prasad and Vineet Kumar Rai, Yellowish-green upconversion emission in Ho^{3+}: SrY_2O_4 nanophosphors for display applications, AIP Conference Proceedings 2115 (1), 030160, 2019.

8. Manisha Prasad, Manisha Mondal, Lakshmi Mukhopadhyay, Mohd Azam, and Vineet Kumar Rai, Upconversion emission studies of Tm^{3+}/Yb^{3+} doped $MgWO_4$ for blue emitting devices, AIP Conference Proceedings 2115 (1), 030164, 2019.

PRESENTATIONS

1. Manisha Mondal and Vineet Kumar Rai, NIR to green upconversion in Ho^{3+} doped $YMoO_4$ phosphor, "Condensed Matter Days-2015", Visva Bharati, Santiniketan, India. (**Poster**)
2. Manisha Mondal, Astha Kumari, Lakshmi Mukhopadhyay and Vineet Kumar Rai, Intense green light emitting $GdMoO_4:Er^{3+}$ phosphor for display devices, Q-paCE-2016, IIT (ISM), Dhanbad, India. (**Poster**)
3. Manisha Mondal, Astha Kumari, Lakshmi Mukhopadhyay and Vineet Kumar Rai, Er^{3+} doped $YMoO_4$ phosphor for display devices, International Conference on Advances in Light Technologies and Spectroscopy of Materials, ICALTSM-2016, University of Lucknow, Lucknow, Uttar Pradesh, India. (**Oral**)
4. Manisha Mondal, Anita Kumari, Joydip Dutta and Vineet K. Rai, Efficient NIR to blue upconversion emission in Tm^{3+} doped Y_2MoO_6 nanophosphors, NCLC-2016 at Department of Physics, IIT (ISM), Dhanbad, Jharkhand, India. (**Poster**)
5. Manisha Mondal and Vineet Kumar Rai, Structural and spectroscopic properties of Nd^{3+} doped $YMoO_4$ nanophosphors, Indo-US Conference, Nanotechnology: Science and Application in Advanced Materials and Beyond-2016, Banaras Hindu University, Varanasi, India. (**Poster**)
6. Manisha Mondal and Vineet Kumar Rai, Structural and Optical Investigation in Er^{3+} Doped Y_2MoO_6 Phosphors, International conference on Recent Trends in Chemical Sciences, 2017, Bikaner, Rajasthan, India. (**Best Poster Presentation**).
7. Manisha Mondal and Vineet Kumar Rai, Light upconverting core@shell nanoparticles for emerging applications, Winter School, 2017, International Centre for Materials Science, Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur, India. (**Best Oral Presentation**)
8. Manisha Mondal and Vineet Kumar Rai, Structural and optical investigation in holmium doped Y_2MoO_6 nanophosphors, 3rd International Conference on Microwave and Photonics, IIT (ISM) Dhanbad, during 9-11 February, 2018. **(Oral)**
9. Manisha Mondal, Core@shell upconverting nanoplatform for multifunctional applications, Advances in Spectroscopic Techniques and Materials, IIT (ISM) Dhanbad 2018 (**Oral**) **Young Scientist award**.

10. Manisha Mondal, Lakshmi Mukhopadhyay and Vineet Kumar Rai, Ho^{3+} doped $ZnMoO_4$ upconverting phosphors for visible upconverter and display devices, International conference on Perspectives in Vibrational Spectroscopy ICOPVS-2018, BARC, Mumbai, during November 25-29, 2018. (**Poster**)
11. Manisha Mondal, Vineet Kumar Rai, Investigation of luminescence in core@shell nanomaterials for multifunctional applications, Winter School 2018, International Centre for Materials Science, Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur, India. (**Oral + Poster**)
12. Manisha Mondal, Lakshmi Mukhopadhyay, Mohd Azam, Manisha Prasad, and Vineet Kumar Rai, Spectroscopic investigation in Er^{3+} doped $ZnMoO_4$ phosphors, DAE-Solid State Physics Symposium 2018, at GJUST, Hisar, Hariana during December 18-22, 2018. (**Poster**)
13. Manisha Mondal, Lakshmi Mukhopadhyay, Sasank Pattnaik, Manisha Prasad, and Vineet Kumar Rai, Frequency upconversion in rare earth activated phosphors for multifunctional applications, National Conference on Frontiers of Material Science and Photonics: Issues and Developments (NCFMSP-2020) organized by Department of Physics, Sidho-Kanho-Birsha university, Purulia, during March 5 -6, 2020. (**Oral**)

PARTICIPATION IN WEBINAR

1. Attended the National webinar "Organic Chemist and Spectroscopy: Introduction of NMR and its applications in Structure Determination on 28th May 2020.
2. Participated in the International webinar on SMART NANOMATERIALS – 2020, organised by Department of Physics, C.B.M. College, Govt. Aided and Co.Edu. Institution, Affiliated to Bharathiar University, Coimbatore - 42, India on 26th June 2020.
3. Participated in the Science Leadership Workshop organized by the Central University of Punjab, Bathinda, India from 22 to 28th June 2020.

PROFESSIONAL TRAINING

1. Nano Mission School on Nanoscience & Nanotechnology - Physical Sciences (Emerging Materials and Methods in Nanoscience & Nanotechnology)
   at CeNS, Jalahalli, Bengaluru during October 23 to November 3, 2017
   Description: Theoretical and Hands on training on different synthesis as well as characterization tools (i.e., Raman Spectroscopy, XRD, FESEM, TEM, X-ray Scattering Techniques for Nanomaterials, etc.)
2. National Training Programme on Research Methodology
   Organized by Faculty Development Centre, IIT (ISM) Dhanbad during 18-23rd December, 2017.
3. Two day Workshop on Strengthening Career Prospects with Communication and Presentation Skills
   Organized by Department of Humanities and Social Sciences, IIT (ISM) Dhanbad under the aegies of TEQIP-III on 7-8th September, 2019.

PROFESSIONAL AFFILIATIONS

Indian Institute of Technology (Indian School of Mines) Dhanbad
Senior Research Scholar (2015-2020), Department of Physics.

PERSONAL INFORMATIONS

Date of birth:	04.04.1992
Sex:	Female
Category:	General
Permanent address:	Manisha Mondal D/O: Kripamoy Mondal Vill+P.O. Trilock Chandra Pur Dist: Burdwan West Bengal Pin- 713148 Tel: 07908895508/9434253812