

Curriculum Vitae



Dr. Maheshwary

Ph.D., M.Sc (Physics), B.Ed

E-mail: maleshwarysingh@gmail.com

maleshwaryphysics@cuh.ac.in

Permanent Address: Maheshwary Kuntal, C/O Jitendra Singh Kuntal, Kuntal Sadan, Neemda Gate, Bharatpur, Raj. (321001)

Current Address: Room No. 116, Department of Physics, Central University of Haryana, Mahendergarh, Haryana, India (123031)

D.O.B: 3rd May, 1987 **Language Proficiency:** English and Hindi

Research Interest:

- Experimental nanotechnology.
- Synthesis of nanomaterials using Chemical Route and study of optical properties of different luminescent nanomaterials.
- Study of effect on the Luminescent properties of nanomaterials doped with rare earth elements.

Educational Qualifications:

Examination	Board/University	Percentage	Year	Remarks
Ph.D.	Dr. Hari Singh Gour University, Sagar		2016	Awarded
M.Sc.(physics)	Dr. Hari Singh Gour University, Sagar	88%	2010	Topper of M.Sc. Physics
B.Ed	University college of education, Sagar	80%	2008	Topper of B.Ed.
B.Sc. (PCM)	Dr. Hari Singh Gour University, Sagar	68%	2007	1 st Rank Holder in PCM group.
12 th	CBSE Board	72%	2004	Among Top 5%

10 th	CBSE Board	83%	2002	2 nd Rank Holder in the Merit List
------------------	------------	-----	------	---

Ph. D. Dissertation Title: “Synthesis and luminescent properties of some rare earth doped nanophosphors”

Thesis Summary:

My thesis deals with the synthesis and structural, optical and luminescent characterization of some rare earth doped tungstates and molybdates that have applications in *w*-LEDs and display devices. This thesis work is focused on the synthesis of rare earth doped luminescent nanophosphors. During this work we have synthesized the following nanophosphors.

- (1) Eu³⁺ (Eu³⁺ = 2, 5, 7 and 10 at.%) doped SrWO₄.
- (2) Sm³⁺ (Sm³⁺ = 2, 5, 7 and 10 at.%) doped CaWO₄.
- (3) Ln³⁺ (Ln³⁺ = Dy³⁺, Eu³⁺ and Sm³⁺) doped SrWO₄.
- (4) Zn²⁺ (Zn²⁺ = 0, 2, 5, 7 and 10 at.%) co-doped CaMoO₄:2Eu³⁺.

Various characterizations techniques are used to analyze the prepared nanophosphors. XRD studies are done using D8 Bruker X-ray diffractometer (XRD) with Ni-filtered Cu-K α (1.5405 Å) radiation at 40 kV and 40 mA. All patterns were recorded over the range $10^\circ \leq 2\theta \leq 80^\circ$ with a step size of 0.035° . These studies corroborates that all the nanophosphors are highly crystalline in nature with tetragonal structure. The Rietveld analysis was performed for all the phosphors using the *FullProf* software. The surface morphology and particle size of the nano-particles were characterized by Transmission Electron Microscopy (TEM) using a Tecnai G² 20 at an acceleration voltage of 200 kV. The particle sizes determined from TEM are in agreement with the calculated sizes from XRD studies. Simultaneous DSC/TGA studies were done using NETZSCH STA 449 *F1* and the samples were measured in the temperature range of 35 to 1000 °C with a heating rate of 10 °C/min, in nitrogen air under a flow of 60 cm³ min⁻¹. These studies confirm the thermal stability of the samples. Infrared spectra were recorded on a Fourier transform infrared (FT-IR) spectrophotometer of Shimadzu (model 8400 S) with a resolution of 2 cm⁻¹ and in the range 400-4000 cm⁻¹. FTIR studies confirm the characteristic vibrational modes for specific samples. UV-vis spectra were recorded using UV-2700 Double beam spectrophotometer in the reflection mode and the band gap energy of the samples was calculated. The Raman spectra of the as prepared and annealed samples were recorded with Renishaw micro-Raman spectrometer attached with 633 nm laser as an excitation source. At room temperature all samples show well known Raman bands. Photoluminescence measurements were carried out under ultraviolet excitation using 266 nm radiation from a Nd:YAG laser and detected by a CCD detector (Model: QE 65000, Ocean Optics, USA) attached with the fiber. Lifetime decay was recorded with Edinburg instrument F-920 equipped with 100 W μ s flash xenon lamp as the excitation source. These Studies corroborate the potentiality of these samples as a promising red phosphor for *w*-LEDs applications.

Thesis Supervisor: Prof. R. A. Singh, Dean of Academic Affairs, Professor & Head, Department of Physics, Dr. H. S. Gour Central University, Sagar.

Academic Affiliation:

- ❖ Assistant Professor of Physics
September 14, 2016 – present
Central University of Haryana, Mahendergarh, Haryana, India-123029.
- ❖ College Lecturer of Physics
June 1, 2016 to September 10, 2016
JK College of Science and Research Technology, Bharatpur, Rajasthan, India-321001

Computer Proficiency:

- Application software: MS Word, Power Point, Paint.
- Operating System: Windows 98, XP, Vista, W7.
- Languages: C.

Technical Skills:

- X- ray diffraction measurement and Data analysis.
- PL measurement and Data analysis.
- Raman Spectroscopy via Micro Raman (Renishaw)
- FTIR Spectroscopy by (FT-IR) spectrophotometer (Shimadzu model 8400 S)
- UV-Vis Spectroscopy by UV-Vis Spectrophotometer (Model SL-196) and Data Interpretation.
- High energy planetary ball mill (Model pulverisette 7, Fritsch, Germany).
- Differential Scanning Calorimetry (DSC) and Thermogravimetric Analysis (TGA)

Software Skills:

- Fullprof Reitveld Software
- Origin 6, 8 Pro and 8.5.
- CIE
- Vista
- Diamond

List of Publications in Journals and Proceedings:

1. **Maheshwary**, B.P. Singh, J. Singh and R. A. Singh, “Luminescence properties of Eu^{3+} -activated SrWO_4 nanophosphors- Concentration and Annealing effect”, RSC Advances, 2014, **4**, 32605.
2. **Maheshwary**, B.P. Singh and R. A. Singh, “Color Tuning in Thermally Stable Sm^{3+} -Activated CaWO_4 Nanophosphors”, New Journal of Chemistry, 2015, **39**, 4494-4507.
3. **Maheshwary**, B.P. Singh and R. A. Singh, “Effect of Annealing on the Structural, Optical and Emissive Properties of $\text{SrWO}_4:\text{Ln}^{3+}$ (Dy^{3+} , Eu^{3+} and Sm^{3+}) Nanoparticles”, Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 2015, **152**, 199-207.
4. B. P. Singh, **Maheshwary**, Ansari and R. A. Singh, “Improved photo-luminescence behaviour of Eu^{3+} activated CaMoO_4 Nanoparticles via Zn^{2+} incorporation” RSC Advances, 2015, **5**, 55977-55985.88

5. **Maheshwary**, B.P. Singh and R. A. Singh, “Structural and Photophysical studies of Eu^{3+} activated SrWO_4 via Bi codoping for WLEDs” Physical Chemistry Chemical Physics (Communicated)
6. M. Tiwari, D. Khatik and **Maheshwary**, “Dynamics of holes in mean field theory”, International Journal of Modern Physics B. (Communicated)
7. M. Tiwari, D. Khatik and **Maheshwary**, “Extended $t - J$ model with parallel hopping of holes”, Physica C : Superconductivity and its Applications. (Communicated)

Papers presented /attended/ participated in International Conferences/Workshops:

1. **Maheshwary** and R. A. Singh, “Defect emission in Li^+ co-doped $\text{YPO}_4:\text{Eu}^{3+}$ ”, Indo-US International workshop on spectroscopy: Application to National Security, Department of Physics, Banaras Hindu University, Varanasi, India, January 18-20, 2013.(Poster Presentation)
2. **Maheshwary** and R. A. Singh, “Synthesis and Luminescent properties of Sm^{3+} in MWO_4 (M= Ca, Sr, Ba) Orange red phosphors”, International workshop on Materials Modeling and Simulations, India, June 24-27, 2013.
3. **Maheshwary** and R.A. Singh, “Synthesis and Photoluminescence Properties of SrWO_4 Nanoparticles Doped with Rare Earth Ions (RE= Dy^{3+} , Eu^{3+} and Sm^{3+})”, International conference on Nanoscience and Nanotechnology - Aligarh Nano IV International 2014, Department of Applied Physics, Aligarh Muslim University, Aligarh, India, March 8-10, 2014.(Oral Presentation)

Papers presented /attended/ participated in National Conferences:

1. **Maheshwary** and R. A. Singh, “Effect of Li^+ ion co-doping on luminescence properties of $\text{YPO}_4:\text{Eu}^{3+}$ ”, National Conference on Advanced Functional Materials, Department of Chemistry, Visvesvaraya National Institute of Technology, Nagpur In association with Society for Promotion of Materials Science, Nagpur, India, January 21-23, 2013.(Oral Presentation)
2. **Maheshwary** and R. A. Singh, “Luminescent properties of scheelite tungstates $\text{MWO}_4:\text{Sm}^{3+}$ (M=Ca, Sr, Ba) red phosphors”, National Conference on Solid State Chemistry and Allied Areas – 2013, Department of Chemistry, Dr. H. S. Gour University, Sagar, M.P., India, February 15-17, 2013.(Poster Presentation)
3. **Maheshwary** and R. A. Singh, “Structural and Luminescence Properties of Ln^{3+} ($\text{Ln}^{3+} = \text{Eu}^{3+}$, Dy^{3+} , and Sm^{3+})-doped SrWO_4 Nanoparticles for w -LEDs”, 29th M.P. Young Scientist Congress, Madhya Pradesh Council of Science and Technology, Bhopal, M.P., India, February 28-01 March, 2014.(Oral Presentation)

Workshops Attended:

1. Workshop on “**Exotic Materials: Synthesis characterization and application**”, Department of Physics, Banaras Hindu University, Varanasi, India, January 1-3, 2013.
2. Workshop on “**Nuclear Magnetic Resonance Spectroscopy and its Applications in Physics, Chemistry and Biology**”, Dr. Hari Singh Gour University, Sagar, M.P. on 16th Feb. 2013.

Details of Professional Recognitions, Awards, and Fellowships Received:

- **Maheshwary:** Graduate Aptitude Test in Engineering (GATE) qualified (2011).
- **Maheshwary:** Central Research Fellowship (JRF) (From July, 2013 – Jan 2015).
- **Maheshwary:** Seminar on Springer user awareness program by Springer on 18th Dec 2013 at Dr. H. S. Gour University, Sagar, M.P. India.
- **Maheshwary:** Guest lecture delivered in Workshop on “Career Opportunity and Guidance in Biotechnology, Industrial Chemistry, Physics and All Science Subjects” Noble College, Sagar, MP, on 15th Feb.2014.

Teaching Experience at UG, PG and Ph.D. Level (5.9 Years):

S. No.	Topics	Level
Theory		
1.	Quantum Mechanics	M.Sc.
2.	Electrostatics	B.Sc.
3.	Basics of C language and Numerical Ability	M.Sc.
4.	Physics of Nanomaterials	Pre PhD course Work
5.	Nuclear and Particle Physics	M.Sc.
6.	Atomic and Molecular Physics	M.Sc.
7.	Mechanics	B.Sc.
8.	Nuclear and Particle Physics	B.Sc.
9.	Quantum Mechanics	B.Tech
10.	Optics	B.Tech
Practical		
1.	C Language	M.Sc.
2.	Basic Experimentations	Pre PhD course Work
3.	General Physics	B. Sc.
4.	Optics Experiments	M.Sc.
5.	Laser Physics Practical Experiments	M.Sc.
6.	General Physics	B.Tech

Hobbies: Reading, Teaching, Drawing, Listening music, and playing chess.

Strengths:

- Self Confidence
- Ability to grasp and work quickly
- Sense of responsibility towards my work and duties
- Desire to learn new things

Contribution in the corporate life of University:

- **Faculty Advisor** M.Sc. Final Year Student, , Department of Physics, CUH
- **Lab In-charge**, Department of Physics, CUH
- **Member**, Departmental Library Committee, CUH
- **Member**, NAAC Coordination Committee, Central University of Haryana, for the academic sessions 2016-2017
- **Member** of Flying Squad in Dec 2017 Examinations, CUH
- **Deputy superintendent** of Examinations in Department of Physics, CUH
- **Exam Coordinator** of End-Semester Examination (Dept. Of Physics), Dec 2016, CUH
- **Member**, Board of Studies, Department of Physics, Central University of Haryana.
- **Member**, NAAC Coordination Committee, Department of Physics, CUH
- **Member**, Admission Committee of B.Tech Courses.
- **Member**, M.Sc. Time Table Committee, Department of Physics, CUH

Courses Taught and Responsibilities:

- Atomic and Molecular Physics, M.Sc., Department of Physics, CUH
- Nuclear and Particle Physics, M.Sc., Department of Physics, CUH
- Electronic, M.Sc., Department of Physics, CUH
- Environmental Physics, M.Sc., Department of Physics, CUH
- Mechanics, B.Sc., Department of Physics, JK College of Science and Research Technology.
- Nuclear and Particle Physics, B.Sc, Department of Physics, JK College of Science and Research Technology.
- Engineering Physics-I, Department of Physics, JK College of Science and Research Technology.
- M.Sc. Lab, Department of Physics, CUH
- B.Sc. Lab, Department of Physics, JK College of Science and Research Technology.
- B.Tech Lab, Department of Physics, CUH
- Ph.D. Course Work, Department of Physics, Dr. Hari Singh Gour University
- M.Sc. Theory Classes, Department of Physics, Dr. Hari Singh Gour University
- M.Sc. Practical Lab, Department of Physics, Dr. Hari Singh Gour University
- B.Sc. Theory Classes, Department of Physics, Dr. Hari Singh Gour University
- B.Sc. Practical Lab, Department of Physics, Dr. Hari Singh Gour University

Personal Information:

Name	Dr. Maheshwary
Father's Name	Ombir Singh
Date of birth	03 – 05 – 1987
Gender	Female
Marital Status	Married
Languages Known	Hindi & English
Permanent address	Maheshwary C/O Shri Jitendra Singh Kuntal, Kuntal

	Sadan, Near Shyam Shiksha Sadan School, Bharatpur, Rajasthan 321001 (India)
--	---

References:

Prof. R. A. Singh,

Dean Faculty of Science

HOD, Department of Physics

Dr. Hari Singh Gour University (A Central University),

Sagar, M. P. – 470003, India.

Phone : 07582 – 265459, 265165, 265207(R), 09406557528

E-mail : rasphys@yahoo.co.in

Prof. Ranveer Kumar

Department of Physics

Dr. Hari Singh Gour University (A Central University),

Sagar, M. P. – 470003, India.

Phone : 09425635731

E-mail : ranveerssi@yahoo.com