



Dr. Jai Singh

Centre/School/Special Centre: Physical Sciences

Department: Department of Pure & Applied Physics

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Qualifications: Ph.D. (Institute of Science, B.H.U.)

Area of Interest/Specialization: Two Dimensional Materials, Graphene Oxide, Nano Material, Energy Materials, Nano phosphors and Bio-imaging , Thermoelectric Materials, Multiferroic

Experience: More than 12 years

Research Projects:

Project Details	Name of the organization	Period	Position and No. of Yrs.	Value of the project
Synthesis, Characterization and Application of Bulk Nanostructured Thermoelectric Materials as a foundation of Sustainable Energy”	Dr. Harisingh Gour Central University, Sagar, M.P.	2015-2018	PI & 3 yrs.	INR ~20 lakhs
Growth of Large-Area, Highly Crystalline Single -layer MoS ₂ Thin film on Insulating Substrates for Transparent Electronics	Dr. Harisingh Gour Central University, Sagar, M.P.	2013-2015	PI & 2 yrs	INR 6 lakhs
Development of CNT based Sensors” for the Business Incubation Centre approved to Ram-Eesh Group of Institutions, Gr. Noida by Ministry of Micro Small and Medium Enterprises (MSME), Govt. of India	Dr. Harisingh Gour Central University, Sagar, M.P.	2015-2016	PI & 1 yr	INR 7.75 lakhs (decline)
Under bilateral joint program for scientific collaboration Bulgaria-India for the project proposal "Ultrahigh (efficient lead-free perovskite solar cells	Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur-495009, Chhattisgarh	2019-2021	CO-PI & 3 yrs.	~22 Lakh INR
Elucidating the NIR-to-Visible up-conversion of innovative	Guru Ghasidas Vishwavidyalaya	2021-2024	PI & 3 yrs.	~44 Lakh INR

molybdate nano-phosphors for bio-imaging applications	(A Central University) Bilaspur-495009, Chhattisgarh			
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International Collaboration/Consultancy:

Under bilateral joint program for scientific collaboration Bulgaria-India

Best Peer Reviewed Publication (up-to 10)

Sr. No.	Full Reference of Research Papers	ISSN No. and Publisher Name	Impact Factor
1.	Formation of Aligned ZnO Nanorods on Self- grown ZnO Template and its Enhanced Field Emission Characteristics, <i>Applied Surface Science</i> 256 (2010) 6157. Jai Singh , SS Patil, MA More, DS Joag, RS Tiwari, ON Srivastava	01694332 	6.155
2.	Ultraviolet-Light- Induced Reversible and Stable Carrier Modulation in MoS ₂ Field-Effect Transistors, <i>Advanced Functional Materials</i> 24.45 (2014): 7125-7132. A .K. Singh, Jai Singh	1616-3028 	15.621
3.	Role of Metal Oxide Electron- Transport Layer Modification on the Stability of High Performing Perovskite Solar Cells, <i>ChemSusChem</i> , 9.18 (2016): 2559-2566. Trilok Singh, Jai Singh	1864-564X 	7.804
4.	Synthesis and characterization of large area and continuous MoS ₂ atomic layers by RF Magnetron Sputtering, <i>Nanoscale</i> , 8.7 (2016): 4340-4347. Sajjad Hussain, Shehzad, D Vikraman, Jai Singh , Dong-Chul Choi, Y Seo, J Eom, Wan-Gyu Lee and Jongwan Jung	2040-3372 	6.970
5.	Large-area, continuous and high electrical performances of bilayer to few layers MoS ₂ fabricated by RF sputtering via postdeposition annealing method, <i>Scientific Reports</i> , 6 (2016): 30791. Jai Singh , S Hussain, , D Vikraman, AK Singh, MZ Iqbal, MF Khan, P Kumar,	2045-2322 	4.525

6.	pH Dependent Optical Switching and Fluorescence Modulation of Molybdenum Sulfide Quantum Dots, <i>Advanced Optical Materials</i> , 5.9 (2017): 1601021. H. Mishra, Sima Umrao, Jai Singh , and Anchal Srivastava	2195-1071 	7.43
7.	2D layered transition metal dichalcogenides (MoS ₂): synthesis, applications and theoretical aspects, <i>Applied Materials Today</i> , 13 (2018): 242-270. AK Singh, P Kumar, DJ Late, A Kumar, S Patel, Jai Singh	2352-9407 	8.013
8.	Synthesis and Rational design of Europium and Lithium Doped Sodium Zinc Molybdate with Red Emission for Optical Imaging, <i>Scientific Reports</i> 9.1 (2019): 2472. Neha, P Ruchi, RK Singh, SK Mishra, SK Chaurasiya, RA Singh, Jai Singh	2045-2322 	4.525
9.	Electrochemical performance of pre-lithiated ZnMoO ₄ and r- GO@ZnMoO ₄ composite anode for lithium-ion battery application <i>Journal of the Taiwan Institute of Chemical Engineers</i> , 112 (2020), 60-66. KB Masood, G Parte, N Jain, P K Dwivedi, P Kumar, MV Shelke, RP Patel, Jai Singh	1876-1070 	5.8
10.	Incorporation of zinc ions towards low toxicity and high stability of organic-inorganic methyl ammonium lead bromide perovskite QDs via ultrasonication route for white-LEDs. <i>Journal of Molecular Liquids</i> (2021), 3, 116557. Rajan Kumar Singh, Neha Jain, Mohan Lal Meena, Jai Singh, Teng-Ming Chen		6.2

Recent Books/Book Chapters/Monographs etc.:

S. N.	BOOK CHAPTERS DETAILS	Publisher Name
1.	Metal Oxide Nanostructures and Their Applications Edited by Ahmad Umar and Yoon-Bong Hahn “Zinc Oxide Nanostructures Synthesized by Pulsed- Laser Ablation and Thermal Evaporation” 1-58883-001- 2 American Scientific Publishers, Los Angeles, USA Volume 5 (2010) 1–47 , 2010. S.C. Singh, Ram Gopal. O. N. Srivastava, Jai Singh	
2.	Synthesis, characterization and application of multifunctional materials Edited by S.B.Rai “Structural and Microstructural characterization of	

	Nanomaterials, 978-1-61470-618-2 NOVA Publication USA, (2012), Jai Singh , R. S. Tiwari, O. N. Srivastava	
3.	Encyclopedia of Semiconductor Nanotechnology Edited by Ahmad Umar “Metal Oxide (ZnO, TiO ₂ , CuO and Fe ₃ O ₄) Nanostructures; Synthesis, Characterizations and Applications 1-58883-001- 2 American Scientific Publishers, Los Angeles ,USA, (2017)D. P. Singh ,Ram Manohar, Jai Singh	
4.	Encyclopedia of Semiconductor Nanotechnology Edited by Ahmad Umar “Metal Oxide Nanostructures; Synthesis, Characterizations and Applications 1-58883-001- 2, American Scientific Publishers, Los Angeles, USA (2017) S. C. Singh, Ram Gopal. O. N. Srivastava, Jai Singh	
5.	Lead-free hybrid perovskite light- harvesting material for QD-LED application, 978-1-78985-072-7 Intech Open, London, United Kingdom, (2019), Rajan Kumar Singh, Neha Jain, Sudipta Som, Somrita Dutta, Jai Singh and Ranveer Kumar	
6.	Development in the innovation of lead halide based perovskite quantum dots from rare earth doped garnet based phosphors for light-emitting diodes 978008102935 , Elsevier Publication (Woodhead Publishing, Cambridge, UK) (2019) Rajan Kumar Singh, Neha Jain, Sudipta Som, Somrita Dutta, Jai Singh and Ranveer Kumar	
7.	Functionalized nanomaterials (FNMs) based catalytic materials for water resources Scrivener Publishing Scrivener Publishing LLC, 100 Cummings Center, Suite 541J, Beverly, MA 01915-6106 (2020). A.K.Singh ,B. Jain, Jai Singh	
8.	Photoluminescence Mechanism and Key Factors to Improve Intensity of Lanthanide Doped Tungstate/Molybdate Phosphors with Their Applications Luminescent Materials in Display and Biomedical Applications, 41-72 CRC Press.(2020) N Jain, RK Singh, RA Singh, S Som, CH Lu, Jai Singh	
9.	Synthesis of Two-Dimensional (2D) Graphene , Jenny Stanford Publishing Pte. Ltd. ISBN 978-981-4877-60-2 (2021) Neha Jain,a Praveen K. Litoriya,a Khalid Bin Masood,a Sanjay Pathak, and Jai Singh	
10.	Thermoelectricity and Advanced Thermoelectric Materials, Chapter 11: Nanostructured materials for Thermoelectric Elsevier Jai Singh (2021) Elsevier Publication (Woodhead Publishing, Cambridge, UK (2021) , Khalid Bin Masood, and Jai Singh	
11.	Green Nanostructures Synthesis and Spectroscopic Characterizations , Kirtana Sankara Subramanian, Yokraj Katre, Jai Singh, Ajaya Kumar Singh, Mariya Aleksandrova, and Rabah Khenata ISBN 978-981-0000-00-0	

12.	Functionalized Nanomaterial (FNM)–Based Catalytic Materials for Water Resources, Sreevidya S , Kirtana Sankara Subramanian , Yokraj Katre , Ajaya Kumar Singh and Jai Singh (2021)	Scrivener
13.	Upconverting Nanoparticles: From Fundamentals and Applications’, Chapter Characterization Techniques and Analysis Neha Jain, Amit Srivastava , Jai Singh (2022)	Wiley-VCH GmbH
14.	Magnetic nanoparticle-polymer nanocomposites for energy storage applications., Vijayasri.K, Alka Tiwari, Ajaya Kumar Singh ,Jai Singh (2022)	ELSEVIER

Research Supervision:

Shika Mishra: Topic -Investigation on Some Rare Earth and Carbon Nanostructures Activated Metal Oxide Nano-phosphors

Sourbh Ghourha : Topic - NIR-to-Visible up-conversion of innovative oxide phosphors for bio-imaging applications

Administrative Responsibilities:

Organization	Nature of Responsibility	Designation
Dr. Harisingh Gour Central University, Sagar, M.P.	Technical and purchasing Responsibility of Sophisticated Instr. (HR-TEM and SEM)	Teacher in-charge
Dr. Harisingh Gour Central University, Sagar, M.P.	Final CBCS examination	Co-coordinator
Dr. Harisingh Gour Central University, Sagar, M.P.	Departmental in-charge and Special Invitee by IQAC (Internal Quality Assurance Cell) board	IQAC Member
Dr. Harisingh Gour Central University, Sagar, M.P.	Admission cell (admission related responsibility)	Member
Dr. Harisingh Gour Central University, Sagar, M.P.	Selection Board Member of Non-teaching	Member
Dr. Harisingh Gour Central University, Sagar, M.P.	Counseling Member of Private College	Member
Dr. Harisingh Gour Central University, Sagar, M.P.	Sophisticated Instrument Centre	Co-coordinator
Dr. Harisingh Gour Central University, Sagar, M.P.	Departmental in-charge for NRF data	NRF Committee
Dr. Harisingh Gour Central University, Sagar, M.P.	NAAC	NAAC core committee

Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur- C.G.	Teacher Recruitment cell (2019-2021)	Coordinator
Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur- C.G.	Departmental in-charge for NAAC	Departmental coordinator

Additional Information

1. **Expert Resource Person for the UGC sponsored Refresher and Orientation Course in “Nano Science & Nano Technology”** organized by Human Resource Development Centre (HRDC), Dr. Harisingh Gour University, Sagar and Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur, Chhattisgarh.
2. Expert Reviewer of the R&D Proposals under DST-CRG Scheme and other Government Scheme.
3. Expert Reviewer of International project under National Science Centre, Poland Government Poland.
4. Third Party Evaluator of Indian Government Project
5. **Outstanding Reviewer Award for Contribution to the quality of the journal “International Journal of Hydrogen Energy”** (Elsevier, Amsterdam, The Netherlands),
6. **Outstanding Reviewer Award for Contribution to the quality of the journal “Solar Energy”** (Elsevier, Amsterdam, The Netherlands),
7. Selected in Top 25 Hottest Article in Applied Surface Science and top downloaded articles (TOP Read) and Journal of Physics Communications (IOP) Journal

Membership of Professional Bodies:

- ❖ Indian Physics Association , Mumbai - Life Membership
- ❖ Fellow of Solar Energy Society of India (SESI)- Life Membership
- ❖ International Association of Advanced Materials (IAAM)- Five years Membership No-77920191694.
- ❖ Advanced Materials word Congress - Five years 2017-2022.
- ❖ American Chemical Society(ACS) Member Number - 30356693