

Dr. Ram Gopal

**Assistant Professor, Department of Physics,
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Research Interests

Laser and Photonics, Plasmonics, Perovskite Solar Cell, Photodetector, OLED, Nanomaterial, Luminescent materials, Up Conversion Nanomaterials, Optical Thermometry, Solid State Lighting, Bio-imaging

Educational Details

- **Ph.D.** (July 2018 - May 2023) ; Indian Institute of Technology (Indian School of Mines) Dhanbad, Dhanbad, Jharkhand, India
- **M.Sc.** (2016 – 2018) : National Institute of Technology Durgapur, Durgapur, West Bengal, India
- **B.Sc.** (2013 – 2016) : Patna University Patna, Bihar, India

Work Experience

- **September 2024 to till date:** Assistant Professor, Department of Physics, Panjab University Chandigarh, India
- **2024 February to August 2024:** Post-Doctoral Fellow, Department of Physics, Indian Institute of Technology Guwahati, Assam, India.

- **2023 August to 2024 January:** Post-Doctoral Fellow, IIT Guwahati Technology Innovation and Development Foundation, Indian Institute of Technology Guwahati, Assam, India.

Research Expertise:

- Expertise in Perovskite solar cell and photo-detector fabrication
- Experience in nanomaterials' synthesis by wet chemical methods.
- Nanoparticles synthesis by laser ablation in liquid
- Analytical knowledge of luminescent materials and long persistent phosphors.
- Well experienced (Operational and interpretational) with the conventional and modern characterization techniques usable in nanomaterials UV-Visible, Photoluminescence, FTIR and Thermo-luminescence spectroscopy.
- Data analysis expertise in important characterization techniques like XRD, XPS, FESEM, HRTEM and Raman spectroscopy.
- Well equipped with the knowledge of software like COMSOL Multiphysics, Fullprof Suite, Origin pro, X'Pert Highscore Plus, ImageJ, Topas, Vesta and other basic computer tools

Teaching Experience:

Completed (as head instructor and coordinator) a 600 hrs course on solar panel installation technician at IIT Guwahati Technology Innovation and Development Foundation in association with Indian Institute of Entrepreneurship under Prime Minister Skill Development Mission of Government of India.

List of Publications:

Research Articles:

1. **Ram Gopal**, Amalesh Kumar and J. Manam, "Enhanced photoluminescence and

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- abnormal temperature dependent photoluminescence property of SrWO₄:Dy³⁺ phosphor by the incorporation of Li⁺ ion”, **Materials Chemistry and Physics**, (2021) 272 124960 [Impact Factor: 4.778]. <https://doi.org/10.1016/j.matchemphys.2021.124960>
2. **Ram Gopal** and J. Manam, “A novel blue excited white light emitting SrWO₄: Pr³⁺ phosphor for single phase white-LED applications”, **Ceramics International**, (2022) 48 3.724-30733 [Impact Factor: 5.532]. <https://doi.org/10.1016/J.CERAMINT.2022.07.023>
 3. **Ram Gopal** and J. Manam, “Study of the up/down conversion green luminescence of BaWO₄: Er³⁺ phosphors for non-contact temperature sensing and solid state lighting applications”, **Applied Physics A Materials Science & Processing**, (2022) 128 772 [Impact Factor: 2.983]. <https://doi.org/10.1007/S00339-022-05916-Z>
 4. **Ram Gopal** and J. Manam, “SrWO₄: Er³⁺; an efficient green phosphor for LED and optical thermometry applications”, **Journal of Materials Science Materials in Electronics** (2022) 33 21746-24761 [Impact Factor: 2.401]. <https://doi.org/10.1007/S10854-022-08964-6>
 5. **Ram Gopal** and J. Manam, “The photoluminescence and Judd-Ofelt investigations of UV, near-UV and blue excited highly pure red emitting BaWO₄: Eu³⁺ phosphor for solid state lighting” **Ceramics International**, (2023) 49 28118-28129 [Impact Factor: 5.532]. <https://doi.org/10.1016/j.ceramint.2023.06.063>
 6. **Ram Gopal** and J. Manam, “UV irradiated thermally stimulated luminescence investigation of SrWO₄: Pr³⁺ phosphor” **Solid State Communications**, (2023), 373-374, 115329, [Impact Factor: 2.1]. <https://doi.org/10.1016/j.ssc.2023.115329>
 7. **Ram Gopal**, Chandni Kumari and J. Manam, “Development of SrWO₄:Ho³⁺/Yb³⁺ green phosphor for optical thermometry application” **Physical Chemistry Chemical Physics**, (2023) 25 32184-32195, <https://doi.org/10.1039/D3CP04574A>
 8. Chandni Kumari, **Ram Gopal***, Himanshu Yadav and J. Manam, “SrNb₂O₆: Dy³⁺: a single phase warm white light emitting phosphor for solid-state lighting” **Journal of Materials Science Materials in Electronics** (2024) 35 638 [Impact Factor: 2.401] <https://doi.org/10.1007/s10854-024-12396-9>
 9. **Ram Gopal**, V.L. Narayanan, Dheeraj Kumar Dhaked and Ankur Gupta, “Performance enhancement of inorganic Cs₂AgInBr₆-based perovskite solar cell by numerical simulation” **Journal of Physics and Chemistry of Solids** (2024) [Impact Factor: 4.00]

<https://doi.org/10.1016/j.jpccs.2024.112184>

10. **Ram Gopal**, Amalesh Kumar and J. Manam, “Color tunable Eu^{3+} doped SrWO_4 phosphors for solid state lighting”, **AIP Conference Proceedings**, (2020) 2220, 080006.

<https://doi.org/10.1063/5.0001722>

11. **Ram Gopal** and J. Manam, “Thermally static stokes fluorescence based self and Sm^{3+} activated SrWO_4 luminophores for application in LED and visual display unit”.

Materials Today Proceedings, (2021) 46, 6185-9190.

<https://doi.org/10.1016/j.matpr.2020.04.142>

Papers Presented in International Conferences:

1. **Ram Gopal** and J. Manam, “Color tunable Eu^{3+} doped SrWO_4 phosphors for solid state lighting”, International Conference on Condensed Matter & Applied Physics (ICC – 2019) organized by Government Engineering College, Bikaner, Rajasthan during Oct. 14-15, 2019.
2. **Ram Gopal** and J. Manam, “Thermally static stokes fluorescence based self and Sm^{3+} activated SrWO_4 luminophores for application in LED and visual display unit”, International Conference on Material Science (ICMS - 2020) organized by Tripura University, Agartala, Tripura during 04-06 March 2020.
3. **Ram Gopal** and J. Manam, “Temperature dependent photoluminescence study of Li^+ co-doped SrWO_4 : Dy^{3+} phosphor”, International Web Conference on Advanced Materials Science and Engineering (ICAMSE-2020) organized by Department of Physics, Bannari Amman Institute of Technology, Sathyamangalam during 11 - 12 September 2020.
4. **Ram Gopal** and J. Manam, “Photoluminescence study of Dy^{3+} activated SrWO_4 phosphor for lighting applications”, International e-Conference on Materials Processing & Characterization (ICMP & C - 2020) organized by Chaitanya Bharathi Institute of Technology, Telangana during 18 - 19 September 2020.
5. **Ram Gopal** and J. Manam, “Temperature dependent up and down conversion photoluminescence study of BaWO_4 : Er^{3+} phosphor”, 4th International Conference on Science & Engineering of Materials (ICSEM 2021) organized by School of Basic Sciences and Research, Sharda University during 19-22 July 2021.

6. **Ram Gopal** and J. Manam, “Spectroscopic investigations of BaWO₄:Dy³⁺ phosphors for near-UV based solid state lighting”, 7th International Conference on Luminescence and its Applications (ICLA 2023) organized by CSIR-IICT Hyderabad during 3rd-6th July 2023.
7. **Ram Gopal**, “Design optimization of non-toxic Cs₃Bi₂I₉-based perovskite solar cell for achieving high photovoltaic performance”, International Conference on Advances in Spectroscopic Techniques and Materials (ASTM 2024) organized by IIT (ISM) Dhanbad during 18th-20th January 2024.

Professional Membership:

1. Young Professional Member of SPIE- the International Society for Optics and Photonics

Referee Contributions:

- **Royal Society of Chemistry:** Dalton Transactions
- **Elsevier:** Journal of Physics and Chemistry of Solids, Solid State Communications