



CURRICULUM VITAE

Dr. L.P. Purohit

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ACADEMIC QUALIFICATIONS

-M.Sc. Physics (Specialization in Electronics), JRF (NET) & SRF (NET), CSIR, New Delhi;

-Ph.D. Physics (Condensed Matter Physics-Experimental)

EXPERIENCE

Teaching/Research Experience : **29 Years**

COURSES TAUGHT

Electronic Devices and Circuits, Quantum Mechanics, Communication Electronics (Analog and Digital Communication), Thin Film and Nanostructures, Modern Physics, Optics.

RESEARCH CONTRIBUTIONS

No. of Research Publications ((In Refereed Journals) : **135**

h-index and i-10 index : **h-index-24, i-10 index -45**

Ph.D. Thesis Supervision : **Awarded-17, Undergoing-8**

No. of Dissertation Guided at P.G. Level : **250**

CONFERENCE PARTICIPATION/PRESENTATIONS & ORGANISATION

➤ Participated in more than **100** seminars/workshops/conferences/schools at national and international level and also delivered around **50** Invited Talks.

➤ Organized **18 conferences/seminar/workshop** as convener/organizing secretary etc.

VISIT ABROAD

• Visited **U.S.A, United Kingdom, China** as an invited speaker in International Conferences etc.

ASSOCIATION WITH PROFESSIONAL BODIES /SOCIETIES

1. Member **Semiconductor Society (India)**
2. Member **Indian Association of Physics Teachers (IAPT)**
3. Member **Indian Science Congress Association (ISCA)**
4. Member **Magnetic Society of India (MSI)**
5. Member **Swadeshi Science Congress, Vigyan Bharti, New Delhi**
6. Member, **Editorial Board, J. of Nanoscience & Technology, Illinois, USA**
7. Member, **Editorial Board, Journal of Applied & Natural Science, India**
8. Member, **Editorial Board, Vedic Vag Jyoti, GKV, Haridwar, India**
9. Member Executive Council, Haridwar Chapter-**Indian Science Congress Association**
10. Reviewer of **Science Direct (Elsevier) Journals, Photonics Technology Letters (IEEE), Indian Journal of Engineering & Materials Sciences (IJEMS), etc.**

ASSOCIATION WITH ACADEMIC BODIES AND ADMINISTRATIVE/EXTENSION PROGRAMMES

- (i) Acting as **Member of Governing Body (UGC Nominee)**, CMR Engineering College, Hyderabad for the period of five years (2020-21 to 2024-25).
- (ii) Acted as Member, **Planning and Monitoring Board**, GKV, Haridwar (2016-18)
- (iii) Acting as **Nodal officer**, GKV Haridwar for **All India survey on Higher education (AISHE)**, MHRD, Govt. of India
- (iv) Chairman, **Board of Studies (B.O.S.)** in Physics, GKV Haridwar
- (v) Convenor and Member, **Research Degree Committee (R.D.C.)** in Physics, GKV Haridwar
- (vi) Acted as **Supdt. of Examination**, GKV, Haridwar
- (vii) External Member, **Board of Studies and or Research Degree Committees** of more than 5 Indian Universities (HNBGU Central University Srinagar, CCS Meerut, GRDU Dehradun, KU Nainital, IFM University Moradabad, etc.)
- (viii) Acting as Convenor /Member of various committees regarding **Symposia/Seminars/workshop** etc. of GKV, Haridwar.

DST FIST PROJECT IMPLEMENTATION

- ❖ Acted as a member and Project P.I. of FIST implementation committee, Dept. of Physics, GKV Haridwar. The Department of Physics, GKV, Haridwar received financial assistance with a total outlay of Rs. 81 Lakhs in 2012 for five years under the DST FIST programme supported by the Department of Science and Technology (DST), Govt. of India.
- ❖ Co-PI UGC Project-1
- ❖ PI-UCOST Project, under DST-1

RESEARCH ACTIVITIES

Main Area of Research:

❖ **Condensed Matter Physics/ Material Science:**

1. Development and Characterization of p-ZnO nano-structures using sol-gel and sputtering method for Optoelectronic applications:
 2. Synthesis and characterization of II-VI quantum dots
 3. Synthesis and characterisation of Metal Oxide Nanocomposites for gas sensing applications
 4. Synthesis and characterisation of Metal Oxide Nanocomposites for gas photocatalytic applications
 5. Development and characterization of Amorphous Chalcogenide Materials
 6. Development and characterization of Graphene Oxide Metal Oxide nanocomposite based Photocatalytics for phenolic compounds
- ❖ We have synthesized stable p-type ZnO on plane glass substrate by various techniques for future generation of p-n junction using ZnO as base material.
 - ❖ We have developed oxygen and nitrogen gas sensors near room temperature by using Metal Oxide nanocomposites.
 - ❖ We have developed Metal Oxide nanocomposite based Photocatalytics (water purifier) under visible light using Advance Oxidation Process (AOP).
 - ❖ We have developed Graphene Oxide Metal Oxide nanocomposite based Photocatalytics for phenolic compounds

Recent Publications (2021-22)

Scopus

- 1) Raj, R., Gupta, H., **Purohit, L.P.**, Performance of V₂O₅ hole selective layer in CdS/CdTe heterostructure solar cell (2022). *Journal of Alloys and Compounds*, 907, art. no. 164408. DOI: 10.1016/j.jallcom.2022.164408
- 2) Panday, M., Upadhyay, G.K., **Purohit, L.P.**, Sb incorporated SnO₂ nanostructured thin films for CO₂ gas sensing and humidity sensing applications (2022) *Journal of Alloys and Compounds*, 904, art. no. 164053, DOI: 10.1016/j.jallcom.2022.164053
- 3) Raj, R., Gupta, H., **Purohit, L.P.**, Performance of RF sputtered V₂O₅ interface layer in p-type CdTe/Ag Schottky diode (2022) *Optical Materials*, 126, art. no. 112176 . DOI: 10.1016/j.optmat.2022.112176
- 4) Kumar (S. Kumar), S., Kaushik, R.D. , **Purohit, L.P.**, ZnO-CdO nanocomposites incorporated with graphene oxide nanosheets for efficient photocatalytic degradation of bisphenol A, thymol blue and ciprofloxacin (2022) *Journal of Hazardous Materials*. DOI: 10.1016/j.jhazmat.2021.127332
- 5) Panwar, S., Upadhyay, G.K., **Purohit, L.P.**, Gd-doped ZnO:TiO₂ heterogenous nanocomposites for advance oxidation process (2022) *Materials Research Bulletin*, 145, art. no. 111534 . DOI: 10.1016/j.materresbull.2021.111534
- 6) Pandey, A. , Kumar, V. , Kumar, S., Jule, L.T. , Ramaswamy, K. , **Purohit, L.P.** , Kroon, R.E. , Swart, H.C., Interface analysis of SrWO₄:Er³⁺-Yb³⁺/Si thin films prepared by radio frequency magnetron sputtering for upconversion emission (2021) *Physica B: Condensed Matter*, 623, art. no. 413349. DOI: 10.1016/j.physb.2021.413349
- 7) Kumar, S. , Kaushik, R.D., **Purohit, L.P.**, Hetro-nanostructured Se-ZnO sustained with RGO nanosheets for enhanced photocatalytic degradation of p-Chlorophenol, p-Nitrophenol and Methylene blue (2021) *Separation and Purification Technology*, 275, art. no. 119219, . DOI: 10.1016/j.seppur.2021.119219
- 8) Tyagi, J., Gupta, H., **Purohit, L.P.**, Ternary alloyed CdS_{1-x}Se_x quantum dots on TiO₂/ZnS electrodes for quantum dots-sensitized solar cells (2021) *Journal of Alloys and Compounds*, 880, art. no. 160480, Cited 4 times. DOI: 10.1016/j.jallcom.2021.160480
- 9) Choudhary, K., Saini, R., Upadhyay, G.K., **Purohit, L.P.**, Sustainable behavior of cauliflower like morphology of Y-doped ZnO:CdO nanocomposite thin films for CO₂ gas sensing application at low operating temperature (2021) *Journal of Alloys and Compounds*, 879, art. no. 160479. DOI: 10.1016/j.jallcom.2021.160479
- 10) Joshi, G , Rajput, J.K. , **Purohit, L.P.**, SnO₂-Co₃O₄ pores composites for CO₂ gas sensing at low operating temperature (2021) *Microporous and Mesoporous Materials*, 326, art. no. 111343 . DOI: 10.1016/j.micromeso.2021.111343
- 11) Panday, M., Upadhyay, G.K., **Purohit, L.P.**, Effect of Li doping on passivation of trap states and improvement in charge transport in TiO₂ thin films (2021) *Pramana - Journal of Physics*, 95 (3), art. no. 132, . DOI: 10.1007/s12043-021-02167-0
- 12) Choudhary, K., Saini, R., Upadhyay, G.K., Rana, V.S., **Purohit, L.P.**, Wrinkle type nanostructured Y-doped ZnO thin films for oxygen gas sensing at lower operating temperature (2021) *Materials Research Bulletin*, 141, art. no. 111342. DOI: 10.1016/j.materresbull.2021.111342

- 13) Raj, R., Gupta, H., **Purohit, L.P.**, ZTO transparent conducting thin films for optoelectronic applications (2021) *Bulletin of Materials Science*, 44 (2), art. no. 165. DOI: 10.1007/s12034-021-02480-9
- 14) Kumar, S., Sharma, S.K., Kaushik, R.D., **Purohit, L.P.**, Chalcogen-doped zinc oxide nanoparticles for photocatalytic degradation of Rhodamine B under the irradiation of ultraviolet light (2021) *Materials Today Chemistry*, 20, art. no. 100464, . DOI: 10.1016/j.mtchem.2021.100464
- 15) Raj, R., Gupta, H., **Purohit, L.P.**, Highly transparent and conducting Al-doped ZnO as a promising material for optoelectronic applications (2021) *Pramana - Journal of Physics*, 95 (2), art. no. 87. DOI: 10.1007/s12043-021-02123-y
- 16) Sharma, S.K., Gupta, R., Sharma, G., Vemula, K., Koirala, A.R., Kaushik, N.K., Choi, E.H., Kim, D.Y., **Purohit, L.P.**, Singh, B.P., Photocatalytic performance of yttrium-doped CNT-ZnO nanoflowers synthesized from hydrothermal method (2021) *Materials Today Chemistry*, 20, art. no. 100452, .DOI: 10.1016/j.mtchem.2021.100452
- 17) Tyagi, J., Gupta, H., **Purohit, L.P.**, Mesoporous ZnO/TiO₂ photoanodes for quantum dot sensitized solar cell (2021) *Optical Materials*, 115, art. no. 111014, . DOI: 10.1016/j.optmat.2021.111014.
18. Novel ZnO tetrapod-reduced graphene oxide nanocomposites for enhanced photocatalytic degradation of phenolic compounds and MB dye, Kumar, S., Kaushik, R.D., Purohit, L.P. *Journal of Molecular Liquids*, 2021, 327, 114814. Porous-shaped n-CdZnO/p-Si heterojunctions for UV photodetectors, Rana, V.S., Rajput, J.K., Pathak, T.K., **Purohit, L.P.**, *Applied Physics A: Materials Science and Processing*, 2021, 127(4), 215.
19. rGO-ZnO nanocomposites as efficient photocatalyst for degradation of 4-BP and DEP using high temperature refluxing method in in-situ condition, Kumar, S., Kaushik, R.D., Upadhyay, G.K., **Purohit, L.P.**, *Journal of Hazardous Materials*, 2021, 406, 124300.
20. Optimized CdO:TiO₂ nanocomposites for heterojunction solar cell applications, Upadhyay, G.K., Kumar, V., **Purohit, L.P.**, *Journal of Alloys and compounds*, 2021, 856, 157453.
21. Impact of RF Sputtering Power on AZO Thin Films for Flexible Electro-Optical Applications Rana, V.S., Rajput, J.K., Pathak, T.K., Pal, P.K., **Purohit, L.P.**, *Crystal Research and Technology*, 2021.
22. Heterogeneous Ternary Metal Oxide Nanocomposites for Improved Advanced Oxidation Process under Visible Light, Upadhyay, G.K., Pathak, T.K., **Purohit, L.P.**, *Crystal Research and Technology*, 2021, 55(11), 2000099.

Publications (2015-20)

Scopus

- Upadhyay, G.K., Rajput, J.K., Pathak, T.K., Swart, H.C., **Purohit, L.P.**, Photoactive CdO:TiO₂ nanocomposites for dyes degradation under visible light, (2020) *Materials Chemistry and Physics*, 253, art. no. 123191.
- Joshi, G., Rajput, J.K., **Purohit, L.P.**, Improved stability of gas sensor by inclusion of Sb in nanostructured SnO₂ thin films grown on sodalime, (2020) *Journal of Alloys and Compounds*, 830, art. no. 154659.
- Upadhyay, G.K., Rajput, J.K., Pathak, T.K., Pal, P.K., **Purohit, L.P.**, Tailoring and optimization of hybrid ZnO:TiO₂:CdO nanomaterials for advance oxidation process under visible light (2020) *Applied Surface Science*, 509, art. no. 145326.

4. Tyagi, J., Gupta, H., **Purohit, L.P.**, Cascade Structured ZnO/TiO₂/CdS quantum dot sensitized solar cell, (2020) *Solid State Sciences*, 102, art. no. 106176.
5. Rana, V.S., Rajput, J.K., Pathak, T.K., **Purohit, L.P.**, Influence of N₂ flow rate on UV photodetection properties of sputtered p-ZnO/n-Si heterojunctions (2020) *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 586, art. no. 124103.
6. Yadav, R.S., Monika, Rai, E., **Purohit, L.P.**, Rai, S.B. Realizing enhanced downconversion photoluminescence and color purity in Dy³⁺ doped MgTiO₃ phosphor in presence of Li⁺ ion (2020) *Journal of Luminescence*, 217, art. no. 116810.
7. Rajput, J.K., Pathak, T.K., **Purohit, L.P.** Impact of Sputtering Power on Properties of CdO:ZnO Thin Films Synthesized by Composite Method for Oxygen Gas Sensing Application (2019) *Journal of Electronic Materials*, 48 (10), pp. 6640-6646.
8. Rajput, J.K., Pathak, T.K., Swart, H.C., **Purohit, L.P.** , Synthesis of CdO Nanoflowers by Sol-Gel Method on Different Substrates with Photodetection Application (2019) *Physica Status Solidi (A) Applications and Materials Science*, 216 (20), art. no. 1900093.
9. Rana, V.S., Rajput, J.K., Pathak, T.K., **Purohit, L.P.**, Cu sputtered Cu/ZnO Schottky diodes on fluorine doped tin oxide substrate for optoelectronic applications, (2019) *Thin Solid Films*, 679, pp. 79-85.
10. Gairola, P., **Purohit, L.P.**, Gairola, S.P., Bhardwaj, P., Kaushik, S., Enhanced electromagnetic absorption in ferrite and tantalum pentoxide based polypyrrole nanocomposite (2019) *Progress in Natural Science: Materials International*, 29 (2), pp. 170-176.
11. Upadhyay, G.K., Rajput, J.K., Pathak, T.K., Kumar, V., **Purohit, L.P.**, Synthesis of ZnO:TiO₂ nanocomposites for photocatalyst application in visible light, (2019) *Vacuum*, 160, pp. 154-163.
12. Rajput, J.K., Pathak, T.K., Kumar, V., Swart, H.C., Purohit, L.P., **Controlled sol-gel synthesis of oxygen sensing CdO : ZnO hexagonal particles for different annealing temperatures**, (2019) *RSC Advances*, 9 (54), pp. 31316-31324.
13. Gangwar, H., Singh, V., Tewari, B.S., Gupta, H., Purohit, L.P., **Study of zinc doped tellurite glasses using XRD, UV-Vis and FTIR** (2019) *Materials Today: Proceedings*, 17, pp. 329-337.
14. Kumar, N., Pathak, T.K., **Purohit, L.P.**, Swart, H.C., Goswami, Y.C., Self-assembled Cu doped CdS nanostructures on flexible cellulose acetate substrates using low cost sol-gel route, (2018) *Nano-Structures and Nano-Objects*, 16, pp. 1-8.
15. Rajput, J.K., Pathak, T.K., Kumar, V., Swart, H.C., **Purohit, L.P.**, Tailoring and optimization of optical properties of CdO thin films for gas sensing applications, (2018) *Physica B: Condensed Matter*, 535, pp. 314-318.
16. Rajput, J.K., Pathak, T.K., Kumar, V., Swart, H.C., **Purohit, L.P.**, Liquid petroleum gas sensing application of ZnO/CdO:ZnO nanocomposites at low temperature, (2018) *AIP Conference Proceedings*, 1942, art. no. 080035.
17. Rajput, J.K., Pathak, T.K., Kumar, V., Swart, H.C., **Purohit, L.P.**, CdO:ZnO nanocomposite thin films for oxygen gas sensing at low temperature, (2018) *Materials Science and Engineering B: Solid-State Materials for Advanced Technology*, 228, pp. 241-248.
18. Gairola, P., Gairola, S.P., Dhawan, S.K., Tandon, R.P., Gupta, V., **Purohit, L.P.**, Sharma, S., Carbon material-nanoferrite composite for radiation shielding in microwave frequency (2018) *Integrated Ferroelectrics*, 186 (1), pp. 40-48.
19. Rajput, J.K., Pathak, T.K., Kumar, V., **Purohit, L.P.**, Influence of sol concentration on CdO nanostructure with gas sensing application, (2017) *Applied Surface Science*, 409, pp. 8-16. DOI: 10.1016/j.apsusc.2017.03.019.
20. Rajput, J.K., Pathak, T.K., Kumar, V., Kumar, M., **Purohit, L.P.**, Annealing temperature dependent investigations on nano-cauliflower like structure of CdO thin film grown by sol-gel method (2017) *Surfaces and Interfaces*, 6, pp. 11-17. DOI: 10.1016/j.surfin.2016.11.005.
21. Pathak, T.K., Rajput, J.K., Kumar, V., **Purohit, L.P.**, Swart, H.C., Kroon, R.E., Transparent conducting ZnO-CdO mixed oxide thin films grown by the sol-gel method, (2017) *Journal of Colloid and Interface Science*, 487, pp. 378-387. Cited 1 time. DOI: 10.1016/j.jcis.2016.10.062.

22. Rajput, J.K., Pathak, T.K., Kumar, V., Swart, H.C., **Purohit, L.P.**, Tailoring and optimization of properties of CdO thin films for gas sensing applications, (2017) *Physica B: Condensed Matter*, DOI: 10.1016/j.physb.2017.08.014.
23. Sankar, S., Sharma, S.K., An, N., Lee, H., Kim, D.Y., Im, Y.B., Cho, Y.D., Ganesh, R.S., Ponnusamy, S., Raji, P., **Purohit, L.P.**, Photocatalytic properties of Mn-doped NiO spherical nanoparticles synthesized from sol-gel method, (2016) *Optik*, 127 (22), pp. 10727-10734.
24. Jafer, R.M., Yousif, A., Kumar, V., Pathak, T.K., **Purohit, L.P.**, Swart, H.C., Coetsee, E., Comparison of $Y_2O_3:Bi_3^+$ phosphor thin films fabricated by the spin coating and radio frequency magnetron techniques, (2016) *Physica B: Condensed Matter*, 497, pp. 39-44.
25. Pathak, T.K., Kumar, V., Prakash, J., **Purohit, L.P.**, Swart, H.C., Kroon, R.E., Fabrication and characterization of nitrogen doped p-ZnO on n-Si heterojunctions, (2016) *Sensors and Actuators, A: Physical*, 247, pp. 475-481.
26. Chandra, S., Kalra, G.S., Pushkar, V.K., Panwar, V., Gill, F.S., Gupta, H., Pal, P.K., Pathak, T.K., **Purohit, L.P.**, Improved conductivity of carbon-nano-fiber (CNF)/polytetrafluoroethylene (PTFE) composite, (2016) *AIP Conference Proceedings*, 1731, art. no. 060006.
27. Pathak, T.K., Kumar, V., **Purohit, L.P.**, Swart, H.C., Kroon, R.E., Substrate dependent structural, optical and electrical properties of ZnS thin films grown by RF sputtering, (2016) *Physica E: Low-Dimensional Systems and Nanostructures*, 84, pp. 530-536. Cited 3 times.
28. Pathak, T.K., Kumar, V., Swart, H.C., **Purohit, L.P.**, Electrical and optical properties of p-type codoped ZnO thin films prepared by spin coating technique, (2016) *Physica E: Low-Dimensional Systems and Nanostructures*, 77, pp. 1-6. Cited 4 times.
29. Kumar, N., **Purohit, L.P.**, Goswami, Y.C., Spin coating of ZnS nanostructures on filter paper and their characterization, (2016) *Physica E: Low-Dimensional Systems and Nanostructures*.
30. Pathak, T.K., Kumar, V., **Purohit, L.P.**, Sputtered Al-N codoped p-type transparent ZnO thin films suitable for optoelectronic devices, (2016) *Optik*, 127 (2), pp. 603-607.
31. Pathak, T.K., Kumar, V., Swart, H.C., **Purohit, L.P.**, Effect of doping concentration on the conductivity and optical properties of p-type ZnO thin films, (2016) *Physica B: Condensed Matter*, 480, pp. 31-35.

