

DR. KHEM BAHADUR THAPA

Assistant Professor
Ph. D. (IIT, BHU)

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ACADEMIC QUALIFICATIONS:

S. No.	Degree/Position held	Institution	Year
1.	B.Sc.	HCPGC, PU	1995
2.	M.Sc.	BHU	1998
3.	Ph. D.	IIT(BHU)	2006

RESEARCH FIELD(S) OF SPECIALIZATION:

1. Solid State Physics and Nano-structure Materials
2. Photonics and Meta-materials

AREA OF SPECIALIZATION:

Our field of research is basically focused on both theoretically and experimentally to develop high efficiency, stable and low-cost CZTS for solar cell applications for effectively harvesting solar energy; and synthesis and fabrication of ferrite core-shell nano-structure for potential applications in electromagnetic wave absorbent, sensor and medical diagnosis. Synthesizing and characterizing CZTS as photovoltaic cell developing routes for preparing thin semiconductor(s) films and fabrication of stable Ferrite core-shell nano-structure for sensors and electromagnetic wave absorbent are the key components of investigations.

PROJECTS UNDERTAKEN AS PI:

Name of the Project	Duration	Source of Funding	Amount of Funding (Rs)
Design and evaluation of the periodic structure for electromagnetic devices	2017-2019	BSR-UGC	10 lacs

ANY ADDITIONAL INFORMATION:

1. Junior Research Fellowship (UGC), (2006-2007)
2. Lecturer, CSJM University, Kanpur (March, 2007-Nov., 2015)

CONFERENCES/SCHOOL ORGANIZED:

1. Organizing Secretary, 2nd International Conference on Nanoscience & Nanotechnology, ICNN-2017, 22-24, Sept. 2017, BBAU, Lucknow (U.P.), India.
2. Organizing Secretary, National Conference on Nanomaterials & Associated Conscious Energy, सूक्ष्म पदार्थ-2019, 1-3, Feb. 2019, BBAU, Lucknow (U.P.), India.

MEMBERSHIP OF ACADEMIC BODIES:

1. Member MRSI, USI, India
2. Member OSA, India

BRIEF ACADEMIC RESEARCH DETAILS:

CONFERENCE/ WORKSHOP ATTENDED (Last five years):

International: 01

National: 02

1. **International Conference on Nanoscience and Nanotechnology (ICNN)-2017, 22-24, Sept., 2017**, Department of Physics, SPDS, BBA University, Lucknow (UP).
2. **International Conference on Condensed Matter & Applied Physics (ICC)-2017, 24-25, Nov., 2017**, Govt. Engg. College, Bikaner, Rajasthan.
3. **National Conference on Nanomaterials & Associated Conscious Energy, सूक्ष्म पदार्थ-2019, 1-3, Feb. 2019**, BBA University, Lucknow (U.P.).

INVITED TALK (Last five years):

1. National Seminar on Advances of Material Science in Physics, 20 & 21 December, 2014, organized by Department of Physics, Janta College, Bakewar, Etawah (UP) sponsored by UGC, New Delhi.
2. One-day workshop was organized by "SPECTRUM", a student society, department of physics on FEBRUARY 20, 2016 organized by Department of Physics, Integral University, Lucknow
3. International Conference on Condensed Matter & Applied Physics (ICC)-2017, 24-25, Nov., 2017), Govt. Engg. College, Bikaner, Rajasthan.
4. 1st North Indian Science Congress (NISC)-2018, 10-11 Jan., 2018 organized by BabasahebBhimraoAmbedkar University, Lucknow.

BOOKS: 01

1. Photonic Crystals: Features and Applications (ISBN: 978-1-62417-668-5), Nova Science Publisher, 2013, USA.

BOOK CHAPTERS: 05

1. Novel Features and Perspectives of Photonic Crystals by N. Kumar, LAP LAMBERT Academic Publishing (978-3-659-26264-7), Germany (Two Chapters).
2. Photonic Crystals: Features and Applications (ISBN: 978-1-62417-668-5), Nova Science Publisher, 2013, USA (One Chapter).
3. Advances in Photonic Crystals and Devices by Narendra Kumar and Bhuvneshwer Suthar, CRC Press Taylor & Francis Group (978-1-138-55246-3), India (Two Chapters)

PUBLICATION (Last five years):

29 (Published) & 02 (Accepted)

03 Communicated

1. Omnidirectional reflection band of one dimensional periodic structure (1DPS) of Si/SiO₂ with defect mode of nematic liquid crystal (5CB), Pawan Singh, Khem B. Thapa, Narinder Kumar, Devesh Kumar, *Journal of Physical Science (Accepted, 2019)*.
2. Temperature sensor and monochromatic filter based on one-dimensional photonic crystal containing Si and SiO₂ with a defect layer of liquid crystal, PAWAN SINGH 1, KHEM B. THAPA, AND GIRIJESH N. PANDEY, *Optoelectronics and Advanced Materials - Rapid Communications, (Accepted, 2019)*.
3. Physical properties of cyano Bi-Cyclohexanes (CCH) liquid crystal molecule by Quantum mechanical method, A. K. Dwivedi, Shivani Chaudhary, Narinder Kumar, Pawan Singh, Khem B. Thapa, *Compliance Engineering Journal, 10(8), pp.19-25, (2019)*.
4. Spectroscopic Properties of PCH liquid crystal molecule studied by DFT methodology, A. K. Dwivedi, Bhavna Pal, Narinder Kumar, Asheesh Kumar, Pawan Singh, Khem B Thapa, Devendra Singh, *Journal of Information and Computational Science, 9(7), 264-281 (2019)*.
5. Effective optical properties of the one-dimensional periodic structure of TiO₂ and SiO₂ layers with a defect layer of nanocomposite consisting of silver nanoparticle and E7 liquid crystal, PAWAN SINGH, KHEM B THAPA, NARINDER KUMAR, DEVENDRA SINGH and DEVESH KUMAR, *Pramana - J. Phys., 93(3), 50, (2019)*.
6. Improved sensing behaviour of self-healable solar light photodetector based on core-shell type NiO. 2ZnO. 8Fe₂O₄@ poly (Urea-Formaldehyde), Shakti Singh, Abhisikta Bhaduri, Ravi Kant Tripathi, Khem Bahadur Thapa, Rajeev Kumar, Bal Chandra Yadav, *Solar Energy, 188, pp. 278-290, (2019)*.
7. Tunable optical filter based on one-dimensional periodic structure composed of SiO₂ and anisotropic metamaterial (AMM) with a liquid crystal defect layer sandwiched by two SiO₂, Pawan Singh, Khem B Thapa, Narinder Kumar, Anil K Yadav, Devesh Kumar, *International Journal of Modern Physics B, pp. 1950194,*

- (2019).
8. Current challenges and future prospects for a highly efficient ($> 20\%$) kesterite CZTS solar cell: A review, Krishan Pal, Pawan Singh, Abhishikta Bhaduri, Khem B Thapa, *Solar Energy Materials and Solar Cells*, 196, pp. 138-156, (2019).
 9. A tunable broadband filter of ternary photonic crystal containing plasma and superconducting material, Asish Kumar, Khem B Thapa, Sant P Ojha, *Indian Journal of Physics*, 93(6), pp. 791-798, (2019).
 10. Study of transmission property of periodic layer consisting of SiO₂ and TiO₂ layers with anisotropic liquid crystal (LC) and LiNbO₃ as defect layers for optical switching, Pawan Singh, Khem B Thapa, Narinder Kumar, Devendra Singh, Devesh Kumar, *Results in Physics*, 13, pp. 102346, (2019).
 11. Enhancement of absorption property of one-dimensional ternary periodic structure containing plasma based hyperbolic material for the application of microwave devices, Asish Kumar, Khem B Thapa, Anil K Yadav, *Journal of Magnetism and Magnetic Materials*, 489, pp. 165371, (2019).
 12. Graphene layers on semi-finite 1D asymmetric periodic structure of Si/Glass materials with defect of nematic liquid crystal for a sensor device, Pawan Singh, Khem B Thapa, Narinder Kumar, Krishan Pal, Devesh Kumar, *Materials Research Express*, 6(6), pp. 066209, (2019).
 13. Comparative Study of P2 1D-FFPC Containing Dielectric, SiO₂ and TiO₂ Materials and Air/TiO₂ P2 1-D FFPC For Micro-Cavities and Ultra Sensitive Optical Sensors, Prabal Pratap Singh, Vishal Singh Chandel, Khem Bahadur Thapa, International Conference on Sustainable Energy, Electronics, and Computing Systems (SEEMS), *IEEE*, 1-6, (2018).
 14. Study of Optical Property of Defect Mode in One-Dimensional Double Negative Photonic Crystal with Plasma, A Kumar, KB Thapa, *Adv. Sci*, 10, 1-5, (2018)
 15. Green synthesis of TiO₂ nanoparticles using leaf extract of *Jatropha curcas* L. for photocatalytic degradation of tannery wastewater, SP Goutam, G Saxena, V Singh, AK Yadav, RN Bharagava, KB Thapa, *Chemical Engineering Journal* 336, 386-39, (2018)
 16. Electromagnetically induced reflectance and Fano resonance in one dimensional superconducting photonic crystal, P Athe, S Srivastava, KB Thapa, *Physica C: Superconductivity and its Applications* 547, 36-40, (2018)
 17. External control of photonic bands in a magnetized cold plasma, N Kumar, PP Singh, B Suthar, A Kumar, KB Thapa, *AIP Conference Proceedings* 1953 (1), 060047, (2018)
 18. Extension of photonic band gap in one-dimensional ternary metal-dielectric photonic crystal, GN Pandey, KB Thapa, *AIP Conference Proceedings* 1953 (1), 060032, (2018)

19. A new idea for broad band reflector and tunable multichannel filter of one dimensional symmetric photonic crystal with magnetized cold plasma defects, A Kumar, PP Singh, KB Thapa, *AIP Conference Proceedings* 1953 (1), 060043, **(2018)**
20. Some optical properties of one dimensional annular photonic crystal with plasma frequency, GN Pandeya, KB Thapa, *AIP Conference Proceedings*, 1953 (1), 060031, **(2018)**
21. Tunable broadband reflector and narrowband filter of a dielectric and magnetized cold plasma photonic crystal, A Kumar, N Kumar, KB Thapa, *The European Physical Journal Plus*, 133 (7), 250, **(2018)**
22. Tunable transmission of a nematic liquid crystal as defect in a 1D periodic structure of dielectric materials by orientation and re-orientation of liquid crystal molecules Pawan Singh, Khem B Thapa, Narinder Kumar, Devesh Kumar *The European Physical Journal E*, 41(9),100, **(2018)**
23. Analysis of Omni-Directional Reflection (ODR) Band Gap in an Extrinsic Plasma Photonic Crystal, Prabal Pratap Singh, Vishal Singh Chandel, Khem Bahadur Thapa, Narendra Kumar, Vishal Kumar Singh, *International Conference on Computational and Characterization Techniques in Engineering & Sciences (CCTES), IEEE*, 267-271, **(2018)**.
24. A Review on the Current and Future Possibilities of Copper-Zinc Tin Sulfur Thin Film Solar Cell to Increase More Than 20% Efficiency, Krishan Pal Khem B Thapa and Abhisikta Bhaduri, 10, pp.1-7, **(2018)**.
25. OPTICS OF SINGLE COLD PLASMA FOR PHOTONIC APPLICATIONS, PP Singh, VS Chandel, KB Thapa, N Kumar, *JOURNAL OF SCIENCE AND ARTS*, 829-838, **(2017)**
26. Enhanced of Photonic Bandgaps in One-Dimensional Plasma Photonic Crystal with Defect GN Pandey, AK Shukla, KB Thapa, JP Pandey, *Advances in Optical Science and Engineering*, 219-225, **(2017)**
27. Photonic and omnidirectional band gap engineering in stack of exponential graded index material and negative index material, BK Singh, AK Dikshit, KB Thapa, PC Pandey, *Journal of Modern Optics* 63 (9), 826-834, **(2016)**
28. Analysis and design of optical biosensors using one dimensional photonic crystals, Ankit Singh, Khem B. Thapa and Narendra Kumar, *OPTIK- International Journal for light and electron Optics*, Vol. 126 (2), pp.244-250, **(2015)**
29. Photonics and omni-directional band engineering in stack of exponential graded index material and negative index material, Bipin K. Singh, A. K. Dikshit, Khem B. Thapa and P. C. Pandey, *Journal of Mordern Optics*, Vol. 56, pp.1-9, **(2015)**
30. Reflectance properties of one dimensional metal-dielectric ternary photonic crystal, G. N. Pandey, N. Kumar, Khem B. Thapa, and S. P. Ojha, *Proceedings of the International Conference on Condensed Matter and Applied Physics (ICCMAP-*

2015), (2015)

31. Omni directional reflectance properties of superconductor-dielectric photonic crystal, GN Pandey, Khem B Thapa, SP Ojha, Optik, 125(1), pp. 252-256, (2014).

Academic / Experience (Teaching and Research experience): More than 12 years

Research Guidance:

1. Ph.D. : NIL (Awarded), 04 (Registered)
2. M. Phil. : 41 (Awarded From 2010-2019)
3. M.Sc. :12 (From 2015-2019)

Google Scholar Citation(up to July 2019):

	All	Since 2014
Citations	463	260
h-index	11	8
i10-index	13	6