

DR. KHEM BAHADUR THAPA

Assistant Professor
 Department of Physics
 School of Physical & Decision Sciences
 Babasaheb Bhimrao Ambedkar University, Lucknow

Tel No: NA

Mob No.: +91-9450871807

Email: khem.bhu@gmail.com, kbthapa@bbau.ac.in

Webpage:

<https://sites.google.com/view/kbthapadopbbau/home>

**Education Qualification**

	Organization	Year of award
Under-graduate	VBS Purvanchal University, Jaunpur	1995
Post-graduation	Banaras Hindu University, Varanasi	1998
Ph.D.	Indian Institute of Technology (BHU), Varansi	2006
Post-Doctoral Training	NA	

Professional Experience (In Years)

Teaching Experience: More than 14 years

Research Experience: More than 18 years

Areas of Research (Maximum Five Bullet Points)

- **Photonics**
- **Metamaterials**
- **Condensed Matter Physics**

Research/Consultancy Grants

Title of Projects	Funding Agency	Duration (Specific Dates)	Total grant	Role (PI/CO-PI)
Design and evaluation of the periodic structure for electromagnetic devices	BSR-UGC, New Delhi	2017-2019	10 Lac	PI

Publications

International (Last Five Years)

For more details visit Google Scholar:

<http://scholar.google.co.in/citations?user=Az9zr9wAAAAJ&hl=en>

- Narinder Kumar, Pawan Singh, *Khem B. Thapa*, and Devesh Kumar (2020), Odd-Even effect observed in the electro-optical properties of the homologous series of HnCBP liquid crystal studied under the impact of the electric field: A theoretical approach, *Iranian Journal of Mathematical Chemistry*, (**Accepted**).
- N Kumar, P Singh, KB Thapa, P Upadhyay, D Kumar (2021) Molecular spectroscopy and electro-optical effect of I52 liquid crystal molecules studied under the influence of an external electric field (THz): a theoretical approach, *Journal of Molecular Modeling*, 27 (1), 1-7.
- Abhisikta Bhaduri, Shakti Singh, Ravi Kant Tripathi, *Khem B Thapa*, Rajeev Kumar, Bal C. Yadav, (2021) Healable, ultrasensitive LPG sensor based on Ni_{0.4}Zn_{0.6}Fe₂O₄ nanohybrid grown by autocombustion process, *Sensor and Actuator B: Chemical*, 327, 128840-14.
- Narinder Kumar, Bhavna Pal, Pawan Singh, *Khem B. Thapa*, Devendra Singh, Devesh Kumar (2020); Electro-optical effect of E7 liquid crystal molecule studied under the impact of an external electric field (THz): A theoretical approach, *Jordan Journal of chemistry*, 15, 95-101.
- N Kumar, P Singh, S Chaudhary, K B Thapa, P Upadhyay, AK Dwivedi, D Kumar (2020) Spectroscopy Existing behind the Electro-Optical Properties with an Even-Odd Effect of nCB Liquid Crystal Molecules: A Theoretical Approach, *Acta Physica Polonica, A*, 137 (6)
- N Kumar, P Singh, *K B Thapa*, D Kumar, (2020) Molecular spectroscopy and adverse optical properties of N-(p-hexyloxy-benzylidene)-p-toluidine (HBT) liquid crystal molecule studied by DFT methodology, *IOP SciNotes* 1 (1), 015202.
- Pawan Singh, *Khem B. Thapa*, Sudesh K. Singh & Alok K. Gupta (2020) Study of Design 2 Tunable Optical Sensor and Monochromatic Filter of the One-Dimensional Periodic Structure of TiO₂/MgF₂ with Defect Layer of Liquid Crystal (LC) Sandwiched with Two Silver Layers, *Plasmonics*. <https://doi.org/10.1007/s11468-020-01210-x>.
- P Singh, VK Nautiyal, R Janma, *K B Thapa* (2020) Theoretical investigation of enhanced sensing property in 1D TiO₂/SiO₂ periodic layers containing a defect layer of the nanocomposite with different radii of silver nanoparticles in the host liquid crystal, *Physica Scripta*, 95 (6), 065507.
- Narinder Kumar, Pawan Singh, Pranav Upadhyay, Shivani Chaudhary, *Khem B Thapa*, AK Dwivedi, Devesh Kumar, (2020) Odd-even effect of 7O. m liquid crystal compound series studied under the effect of the electric field by density functional theory (DFT) methods, *The European Physical Journal Plus*, 135 (5), 388.
- Asish Kumar, Narendra Kumar, Girijesh Narayan Pandey, Devendra Singh, *Khem B Thapa* (2020) Metamaterial-plasma based hyperbolic material for sensor, detector and switching application at microwave region, *J. Phys.: Condens. Matter*, 32, 325701.
- A Kumar, P Singh, K Pal, N Kumar, *K B Thapa* (2020) Broadband reflector of 1D photonic crystal containing TiO₂/SiO₂ material at visible region, *AIP Conference Proceedings*, 2220 (1), 020068.
- N Kumar, S Ray, J Saraf, R Janma, B Suthar, *K B Thapa*, (2020) Tunability of band structures in a 1-D magnetized plasma photonic crystal, *AIP Conference Proceedings* 2220 (1), 020177.
- N Kumar, AK Poonia, A Kumar, *K B Thapa*, GN Pandey, B Suthar, (2020) Analysis of the impact of graphene coating on reflectivity of a silicon substrate for optoelectronic devices, *AIP Conference Proceedings* 2220 (1), 020038.

- GN Pandey, N Kumar, JP Pandey, *K B Thapa* (2020) Temperature dependent band structure behavior of superconductor-dielectric photonic crystal, *AIP Conference Proceedings* 2220 (1), 050014.
- V Gautam, K Pal, N Kumar, GN Pandey, B Suthar, *K B Thapa*, SP Ojha (2020) Low cost synthesis of ZnO nano-particles, and characterization study for the device of water disinfection, *AIP Conference Proceedings* 2220 (1), 020170.
- GN Pandey, AK Shukla, AK Mishra, *K B Thapa*, JP Pandey (2020) Reflectance and transmittance behavior of BSCCO/gallium one dimensional superconductor-dielectric photonic crystal, *AIP Conference Proceedings* 2220 (1), 050015.
- R Maurya, P Singh, PP Singh, K Pal, GN Pandey, *K B Thapa* (2020) Absorption and bandwidth properties of graphene based 1D-photonic crystal for THz devices, *AIP Conference Proceedings* 2220 (1), 020084.
- P Singh, *K B Thapa*, N Kumar, D Kumar (2019) Omnidirectional Reflection Band of Onedimensional Periodic Structure (1DPS) of Si/SiO₂ with Defect Mode of Nematic Liquid Crystal (5CB), *Journal of Physical Science* 30 (3).
- P Singh, K Pal, N Kumar, SK Singh, *K B Thapa*, D Kumar, (2019) Tunable Sensing Property of 1D Periodic Structure with Defect of Liquid Crystal Sandwiched by Metallic Layers, *Sensor Letters* 17 (10), 800-803
- A Kumar and *K B Thapa* (2019) Multichannel filter application of a magnetized cold plasma defect in periodic structure of ZnS/TiO₂ materials, *Optical and Quantum Electronics* 51 (11), 355.
- Asish Kumar, *Khem B Thapa* and Anil K Yadav, (2019) Enhancement of absorption property of one-dimensional ternary periodic structure containing plasma based hyperbolic material for the application of microwave devices, *J. Magnetism and Magnetic materials*, Vol. 489, pp 105371-7. (ISSN: 0304-8853, 27 May, 2019).
- Krishan Pal, Pawan Singh, AbhishiktaBhaduri and *Khem B Thapa* (2019) Current challenges and future prospects for a highly efficient (> 20%) kesterite CZTS solar cell: A review, *Solar Energy, Materials and Solar Cells*, Vol. 196, pp. 138-156, (ISSN: 0927-0248, 02 March, 2019).
- Shakti Singh, Abhisikta Bhaduri, Ravi Kant Tripathi, *Khem B Thapa*, Rajeev Kumar and Bal C. Yadav (2019) Improved sensing behavior of self-heable solar light photodetector based on coreshell tyoe Ni_{0.2}Zn_{0.8} Fe₂O₃@Poly (Urea-Formaldehyde), *Soar Energy*, Vol. 188, pp.278-290. (ISSN: 0038-092X, 03 June, 2019),
- Pawan Singh, *Khem B. Thapa*, Narinder Kumar, Devendra Singh, Devesh Kumar (2019) 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, *Results in Physics*, Vol. 13, pp 102346-8. (ISSN: 2211-3797, 10 May 2019).
- Pawan Singh, *Khem B. Thapa*, Narinder Kumar, Krishan Pal, DeveshKumar (2019) Graphene layers on semi-finite 1D asymmetric periodic structure of Si/Glass materials with defect of nematic liquid crystal for a sensor device, *Materials Research Express*, Vol. 6(6), pp. 066209. (ISSN: 2053-1591, 29 March 2019).
- Asish Kumar, Narendra Kumar, *Khem B. Thapa* (2018) Tunable broadband reflector and narrowband filter of a dielectric and magnetized cold plasma photonic crystal, *The European Physical Journal Plus*, Vol. 133 (7), pp. 250-259, (2018). (ISSN: 2190-5444).
- Pawan Singh, *Khem B. Thapa*, Narinder Kumar, Devesh Kumar (2018) 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, *The European Physical Journal E*, Vol. 41(9), pp. 100- 111. (ISSN (Print Edition): 1292-8941).

- S P Goutam, G Saxena, V Singh, A K Yadav, R N Bharagava, *Khem B. Thapa* (2018) Green synthesis of TiO₂ nanoparticles using leaf extract of *Jatropha curcas* L. for photocatalytic degradation of tannery wastewater, *Chemical Engineering Journal*, Vol. 336, pp. 386-39. (ISSN: 1385- 8947).
- Asish Kumar and *Khem B Thapa* (2018) Study of Optical Property of Defect Mode in OneDimensional Double Negative Photonic Crystal with Plasma, *Adv. Sci. Egg. & Medic.*, Vol. 10, Vol. 1-5. (ISSN: 2164-6627).
- Krishan Pal, *Khem B Thapa* and Abhishikta Bhaduri (2018) A review on the current and future possibilities of Copper-Zinc Tin Sulpher thin film solar cell to increase more than > 20% efficiency, *Adv. Sci. Egg. & Medic.*, Vol. 10, Vol. 1-7. (ISSN: 2164-6627).
- PrabalPratap Singh, Vishal Singh Chandel, *Khem B. Thapa* (2018) Comparative Study of P2 1DFFPC Containing Dielectric, SiO₂ and TiO₂ Materials and Air/TiO₂ P2 1-D FFPC for Micro Cavities and Ultra Sensitive Optical Sensors, *Int. Conf. Sustainable Energy, Electronics and Computing Systems (SEEMS), IEEE*, pp. 1-6. (ISBN 978-80-7043-987-6).
- Prabal Pratap Singh, Vishal Singh Chandel, *Khem B. Thapa*, Narendra Kumar, Vishal Kumar Singh (2018) Analysis of Omni-Directional Reflection (ODR) Band Gap in an Extrinsic Plasma Photonic Crystal, *Inter. Conf. on Computational and Characterization Techniques in Engineering & Sciences (CTES), IEEE*, pp. 267-271, (ISBN 978-80-7043-987-6).
- P Athe, S Srivastava, *Khem B Thapa*, (2018) Electromagnetically induced reflectance and Fano resonance in one dimensional superconducting photonic crystal, *Physica C: Superconductivity and its Applications* 547, 36-40. (ISSN: 0921-4534).
- N Kumar, P P Singh, B Suthar, A Kumar, *Khem B Thapa*, (2018) External control of photonic bands in a magnetized cold plasma, *AIP Conference Proceedings*, Vol 1953 (1), pp. 060047-3, (ISBN: 978-0-7354-1648-2).
- GN Pandey and *Khem B Thapa*, (2018) Extension of photonic band gap in one-dimensional ternary metal-dielectric photonic crystal, *AIP Conference Proceedings* Vol. 1953 (1), pp. 060032-3, (ISBN: 978-0-7354-1648-2).
- A Kumar, P P Singh, *Khem B Thapa*, (2018) A new idea for broad band reflector and tunable 4 multichannel filter of one dimensional symmetric photonic crystal with magnetized cold plasma defects, *AIP Conference Proceedings* Vol. 1953 (1), pp. 060043-3, (ISBN: 978-0-7354-1648-2).
- GN Pandey and *Khem B Thapa*, (2018) Some optical properties of one dimensional annular photonic crystal with plasma frequency, *AIP Conference Proceedings*, 1953 (1), 060031, (ISBN: 978-0- 7354-1648-2).
- GN Pandey, Narendra Kumar, *Khem B Thapa* and S P Ojha (2018) Reflectance properties of one dimensional metal-dielectric ternary photonic crystal, *AIP Conference Proceedings*, 1953 (1), 020310. (ISBN: 978-0-7354-1648-2).
- Pabal P Singh, Vishal S Chandel, *Khem B Thapa*, Narendra Kumar (2017) Optics of single cold plasma for photonic applications, *Journal of Science and Arts*, Vol 04 (41), pp. 829-83. (ISSN 1844- 9581).
- G N Pandey, A K Shukla, *Khem B Thapa*, JP Pandey, (2017) Enhanced of Photonic Bandgaps in One-Dimensional Plasma Photonic Crystal with Defect,

<p><i>Advances in Optical Science and Engineering</i>, pp. 219-225, (ISBN 978-981-10-3908-9).</p> <ul style="list-style-type: none"> ➤ B K Singh, A K Dikshit, <i>K B Thapa</i>, PC Pandey, (2016) Photonic and omnidirectional band gap engineering in stack of exponential graded index material and negative index material, <i>Journal of Modern Optics</i> 63 (9), 826-834. ➤ Ankit Singh, <i>Khem B. Thapa</i> and Narendra Kumar, (2015) Analysis and design of optical biosensors using one dimensional photonic crystals, <i>OPTIK- International Journal for light and electron Optics</i>, Vol. 126 (2), pp.244-250. ➤ Bipin K. Singh, A. K. Dikshit, <i>Khem B. Thapa</i> and P. C. Pandey, (2015) Photonics and omnidirectional band engineering in stack of exponential graded index material and negative index material, <i>Journal of Modern Optics</i>, Vol. 56, pp.1-9. ➤ G. N. Pandey, N. Kumar, <i>Khem B. Thapa</i>, and S. P. Ojha, (2015) Reflectance properties of one dimensional metal-dielectric ternary photonic crystal, <i>Proceedings of the International Conference on Condensed Matter and Applied Physics</i> (ICCMAP-2015). 			
National			
<ul style="list-style-type: none"> ➤ Pawan Singh, <i>Khem B Thapa</i>, Narinder Kumar, Devendra Singh, Devesh Kumar, (2019) Effective optical properties of the one-dimensional periodic structure of TiO₂/TiO₂ and SiO₂/SiO₂ layers with a defect layer of nanocomposite consisting of silver nanoparticle and E7 liquid crystal, <i>Pramana</i>, 93 (3), 1-14. ➤ Asish Kumar, <i>Khem B. Thapa</i>, Sant P Ojha (2018) A tunable broadband filter of ternary photonic crystal containing plasma and superconducting material, <i>Indian Journal of Physics</i>, 1-8, https://doi.org/10.1007/s12648-018-1335-9 (ISSN: 0973-1458). ➤ Narinder Kumar, Pawan Singh, <i>Khem B Thapa</i>, Devesh Kumar (2020) A DFT-based numerical study of the re-entrant phase and optical parameters of the homologous series of MBC liquid crystal molecules studied under the influence of an electric field, <i>Bulletin of Material Science</i>, (Accepted). 			
Book Chapters			
<ul style="list-style-type: none"> ➤ P Singh, K Pal, <i>K B Thapa</i>, N Kumar, D Kumar, (2019) Embedded Liquid Crystal Defect with Graphene Layers in Asymmetric One-Dimensional Photonic Crystal as Sensor Application, <i>Advances in Photonic Crystals and Devices</i>, 121-142. ➤ A Kumar, <i>K B Thapa</i>, N Kumar, AK Yadav (2019) Tunable Broadband Reflector Using a One-Dimensional Photonic Crystal Containing Metamaterial with Symmetrically Introduced Magnetized Cold Plasma Defect, <i>Advances in Photonic Crystals and Devices</i>, 143-159. ➤ Book's chapter-8 and 9 "Advances in Photonic Crystals and Devices" by Narendra Kumar and Bhuvneshwer Suthar, <i>CRC Press Taylor & Francis Group</i> (978-1-138-55246-3). ➤ 4) Book's chapter-2 and 5 "Novel Features and Perspectives of Photonic Crystals", edited by N. Kumar and A. Rostami, <i>LAP LAMBERT Academic Publishing</i>, Germany, 2012, ISBN: 978-3-659-26264-7. 			
Authored Books			
NA			
Edited Books			
N. Kumar, B.	<i>Photonic Crystals:</i>	Nova Science	ISBN: 978-1- 200

Suther and K. B. Thapa (2013)	Features and Applications	Publisher, USA	62417-668-5	
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Patents

	Inventors	Title and Award/Application no.
Awarded	NA	
Published	NA	
Filed	NA	

Research Supervision

	Completed	Ongoing
PG/M.Phil	17/01	05/01
Ph. D	02	02
Post-Doctoral	NA	NA

Honors, Recognition and Awards

- Research & Academic Excellence Award-2019, BBA University, Lucknow, U.P., India

Membership of Professional Bodies

- Member MRSI, USI, India.
- Member OSI, India.

Seminar/Conference/Symposia /Workshops Organised

- International Conference on Nanoscience and Nanotechnology (ICNN)-2017, 22-24, Sept., 2017, Department of Physics, SPDS, BBA University, Lucknow (U.P.).
- International Conference on Condensed Matter & Applied Physics (ICC)-2017, 24-25, Nov., 2017), Govt. Engg. College, Bikaner, Rajasthan.
- National Conference on Nanomaterials & Associated Conscious Energy, सूक्ष्म पदार्थ-2019, 1-3, Feb. 2019, BBA University, Lucknow (U.P.).
- National Online Conference on Nanomaterials & Associated Conscious Energy, सूक्ष्म पदार्थ-2020, 27-29, Sept. 2020, BBA University, Lucknow (U.P.).
- International Webinar on Nanoscience and Nanotechnology (IWNN)-2020, 27-29, Nov., 2020, Department of Physics, SPDS, BBA University, Lucknow (U.P.).

Countries Visited

NA

Invited Lectures/Talks/Chair/Co-Chair in Seminar/Conference/Symposia /Workshops

- 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.
- 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
- International Conference on Condensed Matter & Applied Physics (ICC)-2017, 24-25, Nov., 2017), Govt. Engg. College, Bikaner, Rajsthan.
- 1st North Indian Science Congress (NISC)-2018, 10-11 Jan., 2018 organized by BabasahebBhimraoAmbedkar University, Lucknow.
- International Conference on Ultrasonics and Materials Science for Advanced Technology (ICUMAST)-2019, 16-19, Nov., 2019), Department of Physics, VBS Purvanchal University, Jaunpur.

Additional Information (If Any)

NA