

# Profile

**PROF. DR. ARVIND SHARMA,  
PROFESSOR IN PHYSICS,  
P. G. DEPARTMENT OF PHYSICS  
GOVERNMENT LOHIA COLLEGE, CHURU  
RAJASTHAN (INDIA)**



## **Personal Information**

First Name- Arvind

Last Name- Sharma

Fathers Name- Late Sh. Madan Lal Sharma

Designation- Professor in Physics

Working Place - Govt. Lohia College, Churu, Rajasthan, India.

Qualification – M.Sc., M.Phil., Ph.D. in Physics

Area of Specialization –Nonlinear Optics, Photonic Crystal, PEM Fuel Cell, High Energy Physics.

Department Services Date- 01/11/1995

College joining Date- 02/01/2023

Teaching Experience- UG – 30 Years, PG – 18Years

Date of Birth- 23/07/1971

Nationality- Indian

Gender- Male

Contact-Address- H.O.D., Department of Physics, Govt. Lohia College,

Churu, Rajasthan, India. Pin Code – 331001.

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## Homepages

**ORCID ID:** <https://orcid.org/0000-0001-5526-858X>

**Google Scholar ID:** <https://scholar.google.co.in/citations?user=rpiPdVQAAAAJ&hl=en>

**Research Gate ID:** <https://www.researchgate.net/profile/Arvind-Sharma-25>

**Vidwan ID:** <https://vidwan.inflibnet.ac.in/profile/603982>

**Scopus ID:** 57199494288

**Reaseacher ID-** MFK-2571-2025

## Work Experiences-

1 November 1995 to 31 October 2011- Assistant Professor in Physics, Department of College Education, Rajasthan, Jaipur, India.

1 November 2011 to 19/07/2018- Associate Professor in Physics, Department of College Education, Rajasthan, Jaipur, India.

19/07/2018 to Continuously - Presently H.O.D., Physics, Professor in Physics, Govt. Lohia College, Churu, Rajasthan, India-331001.

### Education-

Ph.D.- Ph.D. in Physics, M.G.S. University, Bikaner ( From 23/07/2012 to 19/07/2018), Rajasthan, India.

M.Sc. – M.Sc. in Physics, Govt. Dungar College, Bikaner, Affliated to M.D.S. University, Ajmer (1990-1992), Rajasthan, India.

B.Sc.- B.Sc. in Science Maths from University of Rajasthan, Jaipur, India.

### The Awards/Hounors are as follows-

1. Best paper poster presentation award for paper Structural Transition Expansion of Photonic band gap for a Nonlinear one dimensional Photonic crystal in 3rd International Conference on “Condensed matter & Applied Physics (ICC 2019)”, organized by Department of Physics Government Engineering College, Bikaner, Rajasthan, India on 14-15 Oct, 2019.
2. Best paper presentation award for paper Temperature Tunable Silica Liquid Gallium Nonlinear Omnidirectional One Dimensional Photonic crystal” in National Conference on Science, Technology and Engineering (NCFDSTE-2019)’ organized by Government Polytechnic College, Bikaner & Auricle Global Society of Education and Research, India on 7, Dec., 2019.
3. Best paper presentation award for paper “Liquid Gallium and Tin Binary Defective One Dimensional photonic crystal as a Gas Sensor” in International Conference on “Recent Developments in Science and Impacts on Managements, Art and Culture, Social Sciences and Education ( CRISE 2023)”, organized by Government College , Jaipur, Rajasthan, India ,23-24, January, 2023.
4. Overall active participation SciTech 2024 award for participation and paper “Pressure tunable dual wavelength sensing by using one dimensional Photonic crystal” presented in International Conference on “An International Conference on Sustainable Science and Technology for Tomorrow (SciTech 2024)”, organized by School of Science, Woxsen University, Hyderabad during 16-20, September, 2024, Telangana, India.
5. Best paper presentation award for paper “Voltage Controllable Smart Windows using One Dimensional Photonic Crystal” in **International Conference** on “Recent advances on Science,

Commerce and Humanities” (ICRASCH 2025)”, organized by S.N.K.P.Govt. College Neem Ka Thana (Raj., India) during 3-4, Oct., 2025, Rajasthan, India.

## LIST OF FULL PAPER PUBLICATIONS

1. Arvind Sharma, Vijendra Kumar, and A. K. Nagar, “Stability of discrete solitons in a hexagonal lattice” AIP Conf. Proc. 1536, 761 (2013); doi: 10.1063/1.4810450.
2. O. P. Swami, A. Sharma, and A. K. Nagar, “Discrete modulational instability in parametrically driven optical lattices” AIP Conf. Proc. 1536, 757 (2013); doi: 10.1063/1.4810448.
3. Arvind Sharma and A.K. Nagar, “On the Existence of Discrete Solitons in a Hexagonal Lattice” International Journal on Recent and Innovation Trends in Computing and Communication, **1(12)**, 913-914, (2013).
4. Arvind Sharma, P. K. Upadhyay and A.K. Nagar, “Soliton Pulse analysis in Ag-As<sub>2</sub>Se<sub>3</sub> Photonic Crystal Waveguide” International Journal of Advanced Research in Computer Science, **4(11)**, 218, (2013).
5. Arvind Sharma and A. K. Nagar, “Propagation of discrete solitons in Graphene” Proceedings of National Conference on "Recent Advances in Materials Science and Technology", Bhilwara, Rajasthan, India, ISBN: 978-81-930586-02(88-92), (2015).
6. Arvind Sharma and A. K. Nagar, “Due to Nonlinear Processes Optical Bistability and Hysteretic Reflectivity at Optically Induced Gallium-Zinc Selenide Interface” Proceedings of National Conference on "Advanced Functional Materials and Their Applications"(AFMA-2015),Ajmer, India. ISBN: 978-81-7233-976-0,(32-35), (2015).
7. Arvind Sharma and A. K. Nagar, “Origin of optical bistability and hysteretic reflectivity on account of nonlinearity at optically induced gallium silica interface” AIP Conference Proceedings **1728**, 020183 (2016); doi: 10.1063/1.4946234.
8. Arvind Sharma and A. K. Nagar, “Interaction of vector solitons and beam break up at thin film gallium-silica waveguide structure” AIP Conference Proceedings,**1728**, 020450 (2016); doi: 10.1063/1.4946501.
9. Arvind Sharma and A.K. Nagar, “Multi Photonic Band Gap Silica Gallium Nonlinear Omnidirectional 1-D Photonic Crystal”, International Research Journal of Engineering and Technology, Vol. **04**, Issue 01, 976-984, (Jan. 2017).
10. Arvind Sharma and A.K. Nagar, “A phase plane analysis of discrete breathers in carbon nanotube” International Research Journal of Engineering and Technology, Vol. **04**, Issue 01,1333-1336, (Jan. 2017).
11. Arvind Sharma and A.K. Nagar, “A mathematical model for performance of Proton exchange membrane fuel cell as a nonlinear voltage processes ” International Journal of Advanced Research in Computer Science, Vol. **8**, Issue 1, 27-33 , (Jan.- Feb.2017).
12. Dr. Arvind Sharma “Temperature Tunable Silica Liquid Gallium Nonlinear Omnidirectional One Dimensional Photonic crystal” Journal of the Gujrat Research Society, ISSN: 0374-8588 Volume 21 Issue 15, December 2019.

13. Dr. Arvind Sharma “Structural Transition Expansion of Photonic band gap for a Nonlinear one dimensional Photonic crystal ” AIP Conference Proceedings **2220**, 050005 (2020); <https://doi.org/10.1063/5.0001558> .
14. Dr. Arvind Sharma “A New Mathematical Model to Enhance the Performance of Proton Exchange Membrane Fuel Cell” AIP Conference Proceedings **2220**, 130041 (2020); <https://doi.org/10.1063/5.0001559>.
15. Arvind Sharma “Investigation of Defect Mode Properties for Defective Gallium Arsenide Based One Dimensional Photonic Crystal”, International Research Journal of Engineering and Technology, Vol. **08**, Issue 03, 2158-2162, (March 2021).
16. Arvind Sharma “Improvement in the Performance of Proton exchange membrane fuel cell with effects of the thickness and conductivity of the membrane”, International Research Journal of Engineering and Technology, Vol. **08**, Issue 03, 1104-1107, (March 2021).
17. MT Tammam, Zaky A Zaky, Arvind Sharma, ZS Matar, Arafah H Aly, MA Mohaseb, Defected Photonic Crystal Array Using Porous GaN as Malaria Sensor, IOP Conf. Series Materials Science and Engineering **1171** (2021) 012005 [doi:10.1088/1757-899X/1171/1/012005](https://doi.org/10.1088/1757-899X/1171/1/012005)
18. Zaky, Z.A., Sharma, A., Alamri, S., Aly, A.H.: Theoretical evaluation of the refractive index sensing capability using the coupling of Tamm-Fano resonance in one-dimensional photonic crystals. *Appl. Nanosci.* **11**, 2261–2270 (2021f).
19. Hussein A Elsayed, Arvind Sharma, ZA Alrowaili, TA Taha, Theoretical investigation of pressure sensing using a defect of polystyrene inside photonic crystals, *Materials chemistry and Physics*, Vol.270, 124853, (2021).
20. Zaky, Z.A., Sharma, A., Alamri, S. et al. Detection of Fat Concentration in Milk Using Ternary Photonic Crystal. *Silicon* (2021). <https://doi.org/10.1007/s12633-021-01379-8>
21. Zaky, Z.A., Sharma, A., Aly, A.H.: Tamm plasmon polariton as refractive index sensor excited by gyroid metals/porous Ta<sub>2</sub>O<sub>5</sub> photonic crystal. *Plasmonics* (2021).
22. HA Elsayed, A Sharma, F Segovia-Chaves, W Sabra, Multi passbands filter for THz applications based on the one-dimensional photonic crystals heterostructure, *Optik* **248**, 168056 (2021).
23. Zaky, Z.A., Sharma, A., Aly, A.H., Gyroidal graphene for exciting Tamm plasmon polariton as refractive index sensor: theoretical study. *Opt. Mater.* **122**, 111684 (2021c).
24. Sofyan A Taya, Arvind Sharma, Nael Doghmosh, Ilhami Colak, Detection of water concentration in ethanol solution using a ternary photonic crystal-based sensor, *Materials Chemistry and Physics*, Vol. 279, 125772, (2022).
25. [Abdulkarem H. M. Almawgani](#), [Dana N. Alhamss](#), [Sofyan A. Taya](#), [Ilhami Colak](#), [Arvind Sharma](#), [Adam R. H. Alhawari](#), and [Shobhit K. Patel](#), The properties of a tunable terahertz filter based on a photonic crystal with a magnetized plasma defect layer, [Physics of Fluids](#) . [Volume 34, Issue 8](#) , 10.1063/5.0106995
26. Almawgani, A.H.M., Sharma, A., Daher, M.G. *et al.* Tunable properties of the absorption in a binary photonic crystal having a metamaterial as a defect layer and two graphene sheets in the range of GHz. *Opt Quant Electron* **54**, 670 (2022). <https://doi.org/10.1007/s11082-022-04084-x>

27. Zaky A. Zaky, M. Al-Dossari, Arvind Sharma and Arafa H. Aly, Effective pressure sensor using the parity-time symmetric photonic crystal, 2023 *Phys. Scr.* in press <https://doi.org/10.1088/1402-4896/acbcae>
28. A. H. M. Alkawgani et al., "A photonic crystal based on porous silicon as a chemical sensor for the detection of methanol compound," *Indian J. Phys.*, 2023, doi: 10.1007/s12648-023-02665-4.
29. Zaky A. Zaky et al, Photonic crystal with magnified resonant peak for biosensing applications, 2023 *Phys. Scr.* in press <https://doi.org/10.1088/1402-4896/accbfl>
30. Alkawgani, Abdulkarem HM, Hussein A. Elsayed, Ahmed Mehaney, Arvind Sharma, Ashour M. Ahmed, Ghassan Ahmed Ali, and Walied Sabra. "Total reflectivity for infrared radiation based on one-dimensional gyroidal metallic photonic crystals." *International Journal of Modern Physics B* (2023): 2450186.
31. Zaky, Zaky A., M. Al-Dossari, Arvind Sharma, Ahmed S. Hendy, and Arafa H. Aly. "Theoretical optimisation of a novel gas sensor using periodically closed resonators." *Scientific Reports* 14, no. 1 (2024): 2462.
32. Baraket, Z., Sharma, A., Soltani, O. *et al.* The role of the chirping process in optimizing the tunability of pressure sensing performance. *J Opt* (2024). <https://doi.org/10.1007/s12596-024-01918-7>
33. Baraket, Z., Soltani, O., Sharma, A. *et al.* Design of a pressure sensor based on the 1D ternary Octonacci photonic crystal configurations. *J Opt* (2024). <https://doi.org/10.1007/s12596-024-01788-z>
34. Sharma, Arvind, Yogesh Sharma, and Mirza Tanweer Ahmad Beig. "Tunable defect mode properties in ternary photonic crystals: the role of nanocomposite defect layer position." *Journal of Modern Optics* 72, no. 10-12 (2025): 329-352. <https://doi.org/10.1080/09500340.2025.2487895>
35. Sharma, Arvind, Yogesh Sharma, and Mirza Tanweer Ahmad Beig. "Photoelastic-Induced Dual Spectral Shift for Pressure Sensing in a Defective 1D Photonic Crystal." *Optik* (2026): 172722. <https://doi.org/10.1016/j.ijleo.2026.172722>
36. Sharma, A., Sharma, Y., Beig, M.T.A. *et al.* Pressure-controlled IR filtering via acrylate-embedded nanocomposite defect layers in photonic crystals. *J Opt* (2026). <https://doi.org/10.1007/s12596-026-03133-y>

## LIST OF ABSTRACT PUBLICATIONS

1. Arvind Sharma and A. K. Nagar, "Optical pulse propagation at discrete thin film waveguide structure" Book of Abstract of **International seminar** on "Current trends in quantum gases, BEC and solitons"(QGBECS2014) held at the Department of Physics, Panjab University, Chandigarh, 3–6 March (2014).
2. Arvind Sharma and A. K. Nagar, "Vector Soliton scattering from a Gallium- Silica interface" Proceedings of **National Conference** on "Recent Advances in Materials Science and Technology", (Dec. 22-23, 2014), Bhilwara, Rajasthan, India, ISBN: 978-81-930586-02(93), (2015).
3. Arvind Sharma and A. K. Nagar, " On the existence and stability of spatially localized nonlinear modes in Carbon Nanotubes" Proceedings of **National Conference** on "Recent Advances in Materials Science and Technology", (Dec. 22-23, 2014), Bhilwara, Rajasthan, India, ISBN: 978-81-930586-02(94), (2015).
4. Arvind Sharma and A. K. Nagar, "Transmission of Vector soliton through Gallium-Silica discrete thin film wave guide structure", Proceedings of Conference on nonlinear systems and dynamics (Page No. 41, CNSD 2015) held at IISER Mohalli, 13-15 March (2015).
5. Arvind Sharma and A. K. Nagar, "Effect of perturbation potential on the existence and stability of discrete solitons in carbon nanotubes" Book of Abstract **National Workshop** on "Recent advances in Photonics and optics"(Page No. 30, RAPO-2015) organized by Govt. Women Engineering college ,Ajmer 24-25 Nov. (2015).
6. Arvind Sharma and A. K. Nagar, "Narrow Photonic Band Gap Omnidirectional Nonlinear 1 D Silica Zinc Telluride Photonic Crystal" Abstract book ISBN No.978-93-85777-38-7,20,(2016 ),Workshop on Fiber optics and optical communications organized by Govt. Women Engineering college, Ajmer , 02-06 March 2016.
7. Arvind Sharma and A. K. Nagar, "Theoretical Prediction of the performance of Proton exchange membrane fuel cell with effects of the thickness and conductivity of the membrane " Proceedings of "**International Conference** on Recent trends in chemical Sciences ", ICRCs-2017, Bikaner, Rajasthan, India, Publisher-International E-Publication, ISBN: 978-93-84659-86-8,12-13, Jan. 2017.
8. Arvind Sharma and A. K. Nagar, " Modeling and Analysis of Performance of PEM Fuel Cell as an Alternative Renewable Clean Energy Source for the Future" Abstract Book (Souvenir) of **National conference** in Innovative trends in Physics and futuristic engineering-Vision2030, ITPFE 2017, held at the Department of Physics, MIT, Bikaner, 20-21 Jan (2017).
9. A. K. Nagar and Arvind Sharma , " Nonlinear Optical Effects in Optical Fibers and their use in Advancement of Optical Communication Technology" Abstract Book (Souvenir) of **National conference** in Innovative trends in Physics and futuristic engineering-Vision2030, ITPFE 2017, held at the Department of Physics, MIT, Bikaner, 20-21 Jan (2017).
10. Dr. Arvind Sharma "Improvement possibilities in performance of Polymer Electrolyte Membrane Fuel Cell : Green , Clean and Renewable energy source" E-Book of Abstract of **International Workshop and Symposium** on Green Chemistry and Technology

- (IWSGCT-18) , organized by Department of Chemistry, Government Dungar College, Bikaner in association with Green Chemistry Network center , University of Delhi , Royal Society of Chemistry , London on 15-17 Oct, 2018.
11. Dr. Arvind Sharma “Membrane Material based Enhancement of Proton Exchange Membrane Fuel Cell: A Review ” E-Book of Abstract of **International Workshop and Symposium** on Green Chemistry and Technology (IWSGCT-18) , organized by Department of Chemistry, Government Dungar College, Bikaner in association with Green Chemistry Network center , University of Delhi , Royal Society of Chemistry , London on 15-17 Oct, 2018.
  12. Dr. Arvind Sharma “Linear and Nonlinear Dispersions in an Optical Fiber and their limit and Compensation” Abstract of **National Conference** on ‘Science and Engineering Education ( SEE-2019 under TEQIP-3)’ organized by Government Engineering College ,Bikaner ,Rajasthan, India on 27-28 Feb, 2019. ISBN: 978-81-88117-90-1.
  13. Dr. Arvind Sharma “Structural Transition Expansion of Photonic band gap for a Nonlinear one dimensional Photonic crystal ” Abstract Book of **International Conference** on “Condensed matter & Applied Physics (ICC 2019)”, organized by Department of Physics Government Engineering College, Bikaner, Rajasthan, India on 14-15 Oct, 2019.ISBN:97893-89008-10-4.
  14. Dr. Arvind Sharma “A New Mathematical Model to Enhance the Performance of Proton Exchange Membrane Fuel Cell” Abstract Book of **International Conference** on “Condensed matter & Applied Physics (ICC 2019)”, organized by Department of Physics Government Engineering College, Bikaner, Rajasthan, India on 14-15 Oct, 2019. ISBN: 97893-89008-10-4.
  15. Dr. Arvind Sharma “Temperature Tunable Silica Liquid Gallium Nonlinear Omnidirectional One Dimensional Photonic crystal” Abstract Book of **National Conference** on Science, Technology and Engineering (NCFDSTE-2019)’ organized by Government Polytechnic College, Bikaner & Auricle Global Society of Education and Research, India on 7,Dec., 2019. ISBN: 978-81-940959-6-5.
  16. Dr. Arvind Sharma “Specific Absorption rate of mobile radiation and its reduction methods to protect human body” Abstract Book of **International Conference** on “Radiation biology (ICRB 2022)”, organized by Department of Zoology, Government Dungar College, Bikaner, Rajasthan, India on 19-20 Jan., 2022.
  17. Dr. Arvind Sharma “One Dimensional photonic crystal as a Radiation protector: A Review” Abstract Book (Souvenir) of **National Symposium** on “Health Hazards of Radiation”, organized by Department of Zoology, Government Dungar College, Bikaner, Rajasthan, India under the auspices of Indian Society for Radiation Biology, on 06, August, 2022.
  18. Dr. Arvind Sharma “One Dimensional photonic crystal as an Environmental Monitoring: A Review” Abstract Book (Souvenir) of **International Conference** on “Multidisciplinary Aspects of Human Rights and the Environment( ICMAHRE 2023)”, organized by Government Maharani Sudharshan for Women College , Bikaner, and Rajrishi Govt. Autonomous College ,Alwar, Rajasthan, India ,18-20, January, 2023.
  19. Dr. Arvind Sharma “Liquid Gallium and Tin Binary Defective One Dimensional photonic crystal as a Gas Sensor” Abstract Book (Souvenir) of **International Conference** on “Recent Developments in Science and Impacts on Managements, Art and

- Culture, Social Sciences and Education ( CRISE 2023)”, organized by Government College , Jaipur, Rajasthan, India ,23-24, January, 2023.
20. Prof. Dr. Arvind Sharma “Pressure tunable dual wavelength sensing by using one dimensional Photonic crystal” Abstract Book (Souvenir) of **International Conference** on “An International Conference on Sustainable Science and Technology for Tomorrow (SciTech 2024)”, organized by School of Science,Woxsen University, Hyderabad during16-20, September, 2024,Telangana, India.
  21. Prof. Dr. Arvind Sharma “Pressure sensing dual optical channel by using one dimensional Photonic crystal” Abstract Book (Souvenir) of **Second International Conference** on “Recent trends in Applied Physics and Material Science (RAM 2024)”, organized by Bikaner Technical University, Bikaner in joint auspices of Condensed Matter Research Society (CMRR) during15-16, November, 2024, Rajasthan, India.
  22. Prof. Dr. Arvind Sharma “One dimensional Photonic crystals windows to protect from UV and IR radiations” Abstract Book (Souvenir) of **National Conference** on “New education policy 2020: To promote Holistic, Multidisciplinary and technology lead digital education (NCNEP 2020)”, organized by Govt. College, Karauli (Raj.), during16-17, December, 2024, Rajasthan, India.
  23. Prof. Dr. Arvind Sharma “Smart windows using Germanium in One dimensional Photonic crystals” Abstract Book (Souvenir) of **International Conference** on “Innovation and Entrepreneurship: Social , Economic and Technological perspective”, organized by Basic P.G. College in association with M.G.S. University Bikaner (Raj., India) during19-20, December, 2024, Rajasthan, India.
  24. Prof. Dr. Arvind Sharma “One dimensional Photonic crystals as a sensor to detect Cancer cells” Abstract Book (Souvenir) of **International Conference** on “Futuristic approach for Viksit Bharat (ICFAVB 2047)”, organized by Govt. College, Dholpur (Raj., India) during 23-24, December, 2024, Rajasthan, India.
  25. Prof. Dr. Arvind Sharma “Pressure sensing Multiple optical channel by using one dimensional Photonic crystal” Abstract Book (Souvenir) of **Second International Conference** on “Materials and Applied Science for Society (MASS 2024)”, organized by Anand Niketan College of Science, Arts, and Commerce in joint auspices of Condensed Matter Research Society (CMRR) during30-31, December,2024, Rajasthan, India.
  26. Prof. Dr. Arvind Sharma “One dimensional Photonic crystals as a chemical sensor to detect chemicals” Abstract Book (Souvenir) of **International Conference** on “Multidisciplinary approach to navigating emerging trends and challenges in global commerce, Humanities and Science for Sustainable Development” (ICMANETC 2025)”, organized by S.N.K.P.Govt. College Neem Ka Thana (Raj., India) during13-14, January, 2025, Rajasthan, India.
  27. Prof. Dr. Arvind Sharma “UV and IR radiation protection using One dimensional Photonic crystals windows” Abstract Book (Souvenir) of **International Multidisciplinary Conference** on “Emerging trends in Science, Commerce and Humanities (IMCETSCH 2025)”, organized by G.H.S. Govt. College Sujangargh, Churu (Raj., India) during17-18, January, 2025, Rajasthan, India.
  28. Prof. Dr. Arvind Sharma “One Dimensional Photonic Crystals As a Tool For Environmental Monitoring And To Protect Human Beings From Health Hazards: A Review” Abstract Book (Souvenir) of **International Conference** on “Emerging

- Challenges in Sustainable Development and Environmental Conservation (ICECSDEC-2025)”, organized by M.G.S. University , Bikaner (Raj., India) during 25-27, May, 2025, Rajasthan, India.
29. Prof. Dr. Arvind Sharma “Amazing Innovative Applications of One Dimensional Photonic Crystals for Society as a Sustainable Development: A Review” Abstract Book (Souvenir) of **International Conference** on “Emerging trends in pedagogy for sustainable development”, organized by S.N.D.B. Govt. P.G. College, Nohar, 6 Sep., 2025 Rajasthan, India.
  30. Prof. Dr. Arvind Sharma “Voltage Controllable Smart Windows using One Dimensional Photonic Crystal” Abstract Book (Souvenir) of **International Conference** on “Recent advances on Science, Commerce and Humanities” (ICRASCH 2025)”, organized by S.N.K.P.Govt. College Neem Ka Thana (Raj., India) during 3-4, Oct., 2025, Rajasthan, India.
  31. Prof. Dr. Arvind Sharma “Natural Green House Gases Sensor using One Dimensional Photonic Crystal” Abstract Book (Souvenir) of **National Seminar** on “SYNERGY 2025:Merging Science, Society and Sustainability for Climate Action (SYNERGY 2025)”, Organized by Govt. Kamala Modi Girls College, Neem Ka Thana, Sikar (Raj., India), during 7-8, Nov., 2025, Rajasthan, India.
  32. Prof. Dr. Arvind Sharma “Detection of Waterborne Pathogens using One Dimensional Photonic Crystal” Abstract Book (Souvenir) of **International Conference** on “Knowledge beyond boundaries :Integrating disciplines for a resilient future”, organized by S.S.K.M.Govt. College, Gudha, Jhunjhunu (Raj., India), during 14-15, Nov., 2025, Rajasthan, India.
  33. Prof. Dr. Arvind Sharma “Detecting the effect of potential of hydrogen on the Zinc selenide optical properties using One Dimensional Photonic Crystal” Abstract Book (Souvenir) of **International Conference** on “Socio Cultural Evolution, Technological Progress and Environmental Reforms: Challenges and Opportunities (STECO 2025)”, organized by B.G.Govt. College, Shahpura, Jaipur (Raj., India), during 28-29, Nov., 2025, Rajasthan, India.
  34. Prof. Dr. Arvind Sharma “Cancer Cells Using Indium Arsenide and Silica Based 1D Photonic Crystal” Abstract Book (Souvenir) of **International Conference** on “Condensed matter & Applied Physics (ICC 2025)”, organized by Department of Physics Government Engineering College, Bikaner, Rajasthan, India on 12-15 Dec., 2025.
  35. Prof. Dr. Arvind Sharma “Nature and Quality Detection of the Soft Drinks using One Dimensional Photonic Crystals” Abstract Book (Souvenir) of **International Conference** on “Sustainable Development , Humanity and Artificial Intelligence: Challenges and Solutions” (SDHAI 2025)”, organized by Govt. College , Phalodi (Raj., India), during 22-24 Dec., 2025, Rajasthan, India.
  36. Prof. Dr. Arvind Sharma “Detection of various Cancers in Human Beings using Gallium Phosphide and Magnesium fluoride in 1D Photonic crystals” Abstract Book (Souvenir) of **International Conference** on “International Conference on frontiers in Radiation Biology and Cancer Research” (ICRASCH 2025)”, organized by Govt. Dungar College , Bikaner (Raj., India), under the auspices of Indian Society for Radiation biology, during 19-20, Jan., 2026, Rajasthan, India.

## **List of International/National Conferences/Workshops/Seminars/Symposia Research Papers Presented/Participation**

1. **Participated and presented a research paper** “Relativistic Law of Addition of Velocities and Principle of Superposition” in the **International conference** on Physics for world and society celebration of world year of Physics-2005(PWS & WYP-2005), organized by joint auspicious of University of Rajasthan, Jaipur and Government Engineering College, Bikaner, Rajasthan, India on Dec. 2-4, 2005.
2. **Participated** in the **International workshop** on Laboratory innovations in Physics organized by Government College, Ajmer Rajasthan, India on August 11-12, 2006.
3. **Participated and presented a research paper** “Stability of discrete solitons in a hexagonal lattice” in the **International Conference** on “Recent Trends in Applied Physics & Materials Science (RAM-2013)” organized by Government College of Engineering & Technology, Bikaner, Rajasthan, India on 1-2 Feb, 2013.
4. **Participated and presented a research paper** “ Soliton Pulse Analysis in  $\text{AgAs}_2\text{Se}_3$  Photonic crystal waveguide” in the **International Conference** on Advance Innovation in Management, Science and Technology ( AIMS Tech – 2013 ) organized by Jenith infotech at Bikaner on Nov. 16, 2013.
5. **Participated and presented a research paper** "Optical pulse propagation at discrete thin film waveguide structure" in the **International seminar** on "Current trends in quantum gases, BEC and Solitons (QGBECS2014)” held at the Department of Physics, Punjab University, Chandigarh, Rajasthan, India 3–6 March (2014).
6. **Participated and presented a research paper** “Propagation of discrete Solitons in Graphene” in the **National Conference** on "Recent Advances in Materials Science and Technology", organized by Deptt. of Physics Sh. M. L. V. Govt. College, Bhilwara, Rajasthan, India (Dec. 22-23, 2014).
7. **Participated and presented a research paper** “Vector Soliton scattering from a Gallium- Silica interface” in **National Conference** on "Recent Advances in Materials Science and Technology” organized by Deptt. of Physics Sh. M. L. V. Govt. College, Bhilwara, Rajasthan, India (Dec. 22-23, 2014).
8. **Participated and presented a research paper** “On the existence and stability of spatially localized nonlinear modes in Carbon Nanotubes” in **National Conference** on "Recent Advances in Materials Science and Technology", organized by Deptt. of Physics Sh. M. L. V. Govt. College, Bhilwara, Rajasthan, India (Dec. 22-23, 2014).
9. **Participated and presented a research paper** “Transmission of Vector soliton through Gallium-Silica discrete thin film wave guide structure”, in the **Conference** on nonlinear systems and dynamics (CNSD 2015) held at IISER Mohalli, Rajasthan, India 13-15 March (2015).
10. **Participated** in **National Workshop** on “Microwave engineering and Antenna Design” held at the Department of Physics, Government Engineering College, Bikaner, Rajasthan, India on March 28-29, 2015.

11. **Participated** in two days Workshop on “Control Systems and Automation using MATLAB” held in the LNM Institute of Information Technology, Jaipur, Rajasthan, India on August 21-22, 2015 .
12. **Participated** in Workshop on “Nanoscience and Nanomaterials” held at the Department of Physics, Government Engineering College , Bikaner, Rajasthan, India on Oct. 19-20, 2015.
13. **Participated and presented a research paper** “Origin of Optical Bistability and Hysteretic Reflectivity on Account of Nonlinearity at Optically Induced Gallium Silica Interface” in the **International Conference** on “Condensed matter & Applied Physics (ICC 2015)”, organized by Department of Physics Government Engineering College, Bikaner, Rajasthan, India on 30-31 Oct, 2015.
14. **Participated and presented a research paper** “Interaction of vector solitons and beam break up at thin film gallium-silica waveguide structure” in the **International Conference** on “Condensed matter & Applied Physics (ICC 2015)”, organized by Department of Physics, Government Engineering College, Bikaner, Rajasthan, India on 30-31 Oct, 2015.
15. **Participated and presented a research paper** "Effect of perturbation potential on the existence and stability of discrete solitons in carbon nanotubes" in the **National Workshop** on "Recent advances in Photonics and optics( RAPO-2015)" organized by Govt. Women Engineering college ,Ajmer, Rajasthan, India 24-25 Nov. (2015).
16. **Participated and presented a research paper** “ Due to Nonlinear Processes Optical Bistability and Hysteretic Reflectivity at Optically Induced Gallium-Zinc Selenide Interface” in the **National Conference** on "Advanced Functional Materials and Their Applications(AFMA-2015)",Ajmer, Rajasthan ,India on Dec. 11-12, 2015.
17. **Participated and presented a research paper** “Narrow Photonic Band Gap Omnidirectional Nonlinear 1 D Silica Zinc Telluride Photonic Crystal” in the **Workshop** on Fiber optics and optical communications (FOCO-2016) organized by Govt. Women Engineering college, Ajmer , Rajasthan, India 02-06 March 2016.
18. **Participated and presented a research paper** “Theoretical Prediction of the Performance of Proton Exchange Membrane Fuel Cell with effect of the thickness and conductivity of the membrane” in the **International Conference** on “Recent Trends in Chemical Sciences (ICRCS 2017)”, organized by Department of Chemistry, Government Engineering College, Bikaner in association with Indian Chemical Society, Kolkata, Rajasthan, India on 12-13, Jan. 2017.
19. **Participated and presented a research paper** " Modeling and Analysis of Performance of PEM Fuel Cell as an Alternative Renewable Clean Energy Source for the Future" in **National conference** on Innovative trends in Physics and futuristic engineering-Vision 2030, ITPFE 2017, held at the Department of Physics, MIT, Bikaner, Rajasthan, India ( 20-21 Jan 2017).
20. **Participated** in **International Workshop** on “Modeling and Simulation of Next Generation Optical Networks ( NGON- 2017)” organized by Department of Electronics and Communication Engineering, Govt. Women Engineering college ,Ajmer, Rajasthan, India March 20-22 ,2017.
21. **Participated** in **One Week Workshop** on “Advance Antenna , Frequency Selective Surface and Metamaterials ( AAFM- 2017)” organized by Department of Electronics and

Communication Engineering, Govt. Women Engineering college ,Ajmer, Rajasthan, India March 22-26,2017.

22. **Participated** in INUP Familiarization **Workshop** on “Nanofabrication Technologies” held at MNIT, Jaipur, Rajasthan, India, August, 26-27, 2017.
23. **Participated and presented a research paper** “Improvement possibilities in performance of Polymer Electrolyte Membrane Fuel Cell: Green, Clean and Renewable energy source” in the **International Workshop and Symposium** on Green Chemistry and Technology (IWSGCT-18) , organized by Department of Chemistry, Government Dungar College, Bikaner in association with Green Chemistry Network center , University of Delhi , Royal Society of Chemistry , London on 15-17 Oct, 2018.
24. **Participated and presented a research paper** “Membrane Material based Enhancement of Proton Exchange Membrane Fuel Cell: A Review ” in the **International Workshop and Symposium** on Green Chemistry and Technology (IWSGCT-18) , organized by Department of Chemistry, Government Dungar College, Bikaner in association with Green Chemistry Network center , University of Delhi , Royal Society of Chemistry , London on 15-17 Oct, 2018.
25. **Presented a research paper** “Linear and Nonlinear Dispersions in an Optical Fiber and their limit and Compensation” in the **National Conference** on ‘Science and Engineering Education ( SEE-2019 under TEQIP-3)’ organized by Government Engineering College ,Bikaner ,Rajasthan, India on 27-28 Feb, 2019. ISBN: 978-81-88117-90-1.
26. **Participated and presented a research paper** “Structural Transition Expansion of Photonic band gap for a Nonlinear one dimensional Photonic crystal ” in the **International Conference** on “Condensed matter & Applied Physics (ICC 2019)”, organized by Department of Physics Government Engineering College, Bikaner, Rajasthan, India on 14-15 Oct, 2019.
27. **Participated and presented a research paper** “A New Mathematical Model to Enhance the Performance of Proton Exchange Membrane Fuel Cell” in the **International Conference** on “Condensed matter & Applied Physics (ICC 2019)”, organized by Department of Physics Government Engineering College, Bikaner, Rajasthan, India on 14-15 Oct, 2019.
28. **Participated and presented a research paper** “Temperature Tunable Silica Liquid Gallium Nonlinear Omnidirectional One Dimensional Photonic crystal” **National Conference** on Science, Technology and Engineering (NCFDSTE-2019)’ organized by Government Polytechnic College, Bikaner & Auricle Global Society of Education and Research, India on 7, Dec., 2019.
29. **Participated and presented a research paper** “Specific Absorption rate of mobile radiation and its reduction methods to protect human body” **International Conference** on “Radiation biology (ICRB 2022)”, organized by Department of Zoology, Government Dungar College, Bikaner, Rajasthan, India on 19-20 Jan., 2022.
30. **Participated and presented a research paper** “Wavelength, Angular and Polarization Tunable Liquid Gallium Based One Dimensional Photonic Crystal” **International Conference** on “Advancement in core and frontier of Physics (ACFP 2022)”, organized by Department of Physics, GLA University, Mathura, India on 5-7 Feb., 2022.
31. **Participated and presented a research paper** “One Dimensional photonic crystal as a Radiation protector: A Review” **National Symposium** on “Health Hazards of Radiation”,

- organized by Department of Zoology, Government Dungar College, Bikaner, Rajasthan, India under the auspices of Indian Society for Radiation Biology, on 06, August, 2022.
32. **Participated and presented a research paper** “One Dimensional photonic crystal as an Environmental Monitoring: A Review” Abstract Book (Souvenir) of **International Conference** on “Multidisciplinary Aspects of Human Rights and the Environment( ICMAHRE 2023)”, organized by Government Maharani Sudharshan for Women College , Bikaner, and Rajrishi Govt. Autonomous College ,Alwar, Rajasthan, India ,18-20, January, 2023.
  33. **Participated and presented a research paper** “Liquid Gallium and Tin Binary Defective One Dimensional photonic crystal as a Gas Sensor” Abstract Book (Souvenir) of **International Conference** on “Recent Developments in Science and Impacts on Managements, Art and Culture, Social Sciences and Education ( CRISE 2023)”, organized by Government College , Jaipur, Rajasthan, India ,23-24, January, 2023.
  34. **Participated and presented a research paper**“ Pressure tunable dual wavelength sensing by using one dimensional Photonic crystal” Abstract Book (Souvenir) of **International Conference** on “An **International Conference** on Sustainable Science and Technology for Tomorrow (SciTech 2024)”, organized by School of Science, Woxsen University, Hyderabad during 16-20, September, 2024, Telangana, India.
  35. **Participated and presented a research paper** “Pressure sensing dual optical channel by using one dimensional Photonic crystal” Abstract Book (Souvenir) of **Second International Conference** on “Recent trends in Applied Physics and Material Science (RAM 2024)”, organized by Bikaner Technical University, Bikaner in joint auspices of Condensed Matter Research Society (CMRR) during 15-16, November, 2024, Rajasthan, India.
  36. **Participated and presented a research paper** “One dimensional Photonic crystals windows to protect from UV and IR radiations” **National Conference** on “New education policy 2020: To promote Holistic, Multidisciplinary and technology lead digital education (NCNEP 2020)”, organized by Govt. College, Karauli (Raj.), during 16-17, December, 2024, Rajasthan, India.
  37. **Participated and presented a research paper** “Smart windows using Germanium in One dimensional Photonic crystals” **International Conference** on “Innovation and Entrepreneurship: Social , Economic and Technological perspective”, organized by Basic P.G. College in association with M.G.S. University Bikaner (Raj., India) during 19-20, December, 2024, Rajasthan, India.
  38. **Participated and presented a research paper** “One dimensional Photonic crystals as a sensor to detect Cancer cells” **International Conference** on “Futuristic approach for Viksit Bharat (ICFAVB 2047)”, organized by Govt. College, Dholpur (Raj., India) during 23-24, December, 2024, Rajasthan, India.
  39. **Participated and presented a research paper** “Pressure sensing Multiple optical channel by using one dimensional Photonic crystal” Abstract Book (Souvenir) of **Second International Conference** on “Materials and Applied Science for Society (MASS 2024)”, organized by Anand Niketan College of Science, Arts, and Commerce in joint auspices of Condensed Matter Research Society (CMRR) during 30-31, December, 2024, Rajasthan, India.
  40. **Participated and presented a research paper** “One dimensional Photonic crystals as a chemical sensor to detect chemicals” **International Conference** on “Multidisciplinary

approach to navigating emerging trends and challenges in global commerce, Humanities and Science for Sustainable Development” (ICMANETC 2025)”, organized by S.N.K.P.Govt. College Neem Ka Thana (Raj., India) during 13-14, January, 2025, Rajasthan, India.

41. **Participated and presented a research paper** “UV and IR radiation protection using One dimensional Photonic crystals windows” **International Multidisciplinary Conference** on “Emerging trends in Science, Commerce and Humanities (IMCETSCH - 2025)”, organized by G.H.S. Govt. College Sujangarh, Churu (Raj., India) during 17-18, January, 2025, Rajasthan, India.
42. **Participated and presented a research paper** “One Dimensional Photonic Crystals As a Tool For Environmental Monitoring And To Protect Human Beings From Health Hazards: A Review” **International Conference** on “Emerging Challenges in Sustainable Development and Environmental Conservation (ICECSDEC-2025)”, organized by M.G.S. University, Bikaner (Raj., India) during 25-27, May, 2025, Rajasthan, India.
43. **Participated and presented a research paper** “Amazing Innovative Applications of One Dimensional Photonic Crystals for Society as a Sustainable Development: A Review” **International Conference** on “Emerging trends in pedagogy for sustainable development”, organized by S.N.D.B. Govt. P.G. College, Nohar, 6 Sep., 2025 Rajasthan, India.
44. **Participated and presented a research paper** “Voltage Controllable Smart Windows using One Dimensional Photonic Crystal” **International Conference** on “Recent advances on Science, Commerce and Humanities (ICRASCH 2025)”, organized by S.N.K.P.Govt. College ,Neem Ka Thana (Raj., India), during 3-4, Oct., 2025, Rajasthan, India.
45. **Participated and presented a research paper** “Natural Green House Gases Sensor using One Dimensional Photonic Crystal” **National Seminar** on “SYNERGY 2025: Merging Science, Society and Sustainability for Climate Action (SYNERGY 2025)”, Organized by Govt. Kamala Modi Girls College ,Neem Ka Thana, Sikar (Raj., India), during 7-8, Nov., 2025, Rajasthan, India.
46. **Participated and presented a research paper** “Detection of Waterborne Pathogens using One Dimensional Photonic Crystal” **International Conference** on “Knowledge beyond boundaries :Integrating disciplines for a resilient future”, organized by S.S.K.M..Govt. College, Gudha, Jhunjhunu (Raj., India), during 14-15, Nov., 2025, Rajasthan, India.
47. **Participated and presented a research paper** “Detecting the effect of potential of hydrogen on the Zinc selenide optical properties using One Dimensional Photonic Crystal” **International Conference** on “Socio Cultural Evolution, Technological Progress and Environmental Reforms: Challenges and Opportunities (STECO 2025)”, organized by B.G..Govt. College, Shahpura, Jaipur (Raj., India), during 28-29, Nov., 2025, Rajasthan, India.
48. **Participated and presented a research paper** “Cancer Cells Using Indium Arsenide and Silica Based 1D Photonic Crystal” in the **International Conference** on “Condensed matter & Applied Physics (ICC 2025)”, organized by Department of Physics Government Engineering College, Bikaner, Rajasthan, India on 12-15 Dec., 2025.
49. **Participated and presented a research paper** “Nature and Quality Detection of the Soft Drinks using One Dimensional Photonic Crystals” **International Conference** on

“Sustainable Development , Humanity and Artificial Intelligence: Challenges and Solutions” (SDHAI 2025)”, organized by Govt. College , Phalodi (Raj., India), during 22-24 Dec., 2025, Rajasthan, India.

50. **Participated and presented a research paper** “Detection of various Cancers in Human Beings using Gallium Phosphide and Magnesium fluoride in 1D Photonic crystals” **International Conference** on “International Conference on frontiers in Radiation Biology and Cancer Research” (ICRASCH 2025)”, organized by Govt. Dungar College , Bikaner (Raj., India), under the auspices of Indian Society for Radiation biology, during 19-20, Jan., 2026, Rajasthan, India.

### **The Awards/Honors are as follows-**

**1. Best paper poster presentation award for paper Structural Transition Expansion of Photonic band gap for a Nonlinear one dimensional Photonic crystal in 3rd International Conference on “Condensed matter & Applied Physics (ICC 2019)”, organized by Department of Physics Government Engineering College, Bikaner, Rajasthan, India on 14-15 Oct, 2019.**

**2. Best paper presentation award for paper Temperature Tunable Silica Liquid Gallium Nonlinear Omnidirectional One Dimensional Photonic crystal” in National Conference on Science, Technology and Engineering (NCFDSTE-2019)’ organized by Government Polytechnic College, Bikaner & Auricle Global Society of Education and Research, India on 7, Dec., 2019.**

**3. Best paper presentation award for paper “Liquid Gallium and Tin Binary Defective One Dimensional photonic crystal as a Gas Sensor” in International Conference on “Recent Developments in Science and Impacts on Managements, Art and Culture, Social Sciences and Education ( CRISE 2023)”, organized by Government College , Jaipur, Rajasthan, India , 23-24, January, 2023.**

**4. Overall active participation SciTech 2024 award for participation and paper “Pressure tunable dual wavelength sensing by using one dimensional Photonic crystal” presented in International Conference on “An International Conference on Sustainable Science and Technology for Tomorrow (SciTech 2024)”, organized by School of Science, Woxsen University, Hyderabad during 16-20, September, 2024, Telangana, India.**

**5. Best paper presentation award for paper “Voltage Controllable Smart Windows using One Dimensional Photonic Crystal” in International Conference on “Recent advances on Science, Commerce and Humanities” (ICRASCH 2025)”, organized by S.N.K.P. Govt. College Neem Ka Thana (Raj., India) during 3-4, Oct., 2025, Rajasthan, India.**

### **Chess player and coach-**

**I participated and played many Bikaner District, Rajasthan State and National open tournaments. Also played 1<sup>st</sup> Bikaner open International Grandmaster Chess Tournament 2022 (30 September to October 2022) challenger group organized by Rajasthan Chess Association (AICF Event code: Category B-298450/RAJ/2022). I have scored 5 points out of possible 9 rounds and secured 126 places on the merit. Recently I participated in the FIDE rated Rajasthan State Senior Chess Championship 2025 organized by Bikaner District chess association from 31 August to 02 September 2025. I have scored 5 points out of 8 rounds. My present details are as AICF ID 1641412022 and FIDE ID 48751103 and Standard rating 1538.**

**The Govt. Dungar College, Bikaner won continuously 8 times (From 2015 to 2023) the Intercollege Chess tournament of M.G.S. University Bikaner (Rajasthan) . The Govt. Dungar College, Bikaner also wins the runner up trophy of State level Arjun Dristi Chess Tournament organized by CCE, Jaipur. This is the output of my chess coaching and as a team manager skill in my tenure from 05/07/2008 to 29/11/2022 in Govt. Dungar College, Bikaner.**

**In 2023, 2024 and 2025 Govt. Lohia College, Churu Chess team becomes continuously third time Runner up team in the Intercollege chess tournament of M.G.S. University, Bikaner (Rajasthan). In MGSU Bikaner 2025 University Chess team the first and second players are from Govt. Lohia College, Churu.**

**As a Sports Incharge/ Convener/ Member In my tenure in Govt. M. S. College , Bikaner (From 16/07/1996 to 19/11/2005) and from 05/07/2008 to 29/11/2022 in Govt. Dungar College ,Bikaner various players represent M.G.S. University team in Chess, Badminton, Basket Ball, Table Tennis, Shooting Volleyball and Cricket. The Govt. Dungar College, Bikaner also wins the trophy of State level Arjun Dristi Badminton Tournament organized by CCE, Jaipur. The Govt. Dungar College, Bikaner also wins three times the Intercollege Badminton and Table Tennis tournament of M.G.S. University Bikaner (Rajasthan).**