Shivaji College Faculty Details

Title	Dr.	First Name	Harsh	Last Name	Yadav	Photograph
Designation		Assistant Professor				
Address		Department of Physics Shivaji College University of Delhi				
OfficePhone No.		011-25116644				
Residence						
Mobile		+91-8802273723				
Email		harshcive@gmail.com				
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Educational Qualifications

Degree	University/Institute	Year
Ph.D.	Crystal Lab, University of Delhi	2017
M.Phil./M.Tech.		
PG	Indian Institute of Technology Delhi	2012
UG	Rajdhani College, University of Delhi	2009
Any Other Qualification		

Career Profile

Assistant Professor: Department of Physics, Shivaji College, University of Delhi, August 2017 to till date.

Administrative Assignments

Areas of Interest/Specialisation

Single Crystal Growth, X-ray Crystallography, Ferroelectric, Piezoelectric, Nonlinear-optics, Nanoscience, Liquid Crystal, RF Devices

Subjects Taught

- **Electricity & Magnetism**
- **Classical Dynamics**
- **Solid State Physics**
- **Modern Physics**
- **Basic Instrumentation Skills**

Innovation Project/Research Projects (Major Grants/Research Collaboration)

Publications Profile (*Research Papers/Books)*

➢ ***Research Papers***

1) "Enhancement of optical, piezoelectric, and mechanical properties in crystal violet dye-doped benzophenone crystals grown by Czochralski technique" **Harsh Yadav**, Nidhi Sinha, Nidhi Tyagi, Binay Kumar, *Cryst. Growth Des.*, 2015, 15, 4908-4917. (IF: 4.891)

2) "New geometrical modeling to study crystal morphology" **Harsh Yadav**, Nidhi Sinha, Binay Kumar, *Cryst. Growth Des.*, 2016, 16, 4559-4566. (IF: 4.891)

3) "Growth and characterization of piezoelectric benzil single crystals and its application in microstrip patch antenna" **Harsh Yadav**, Nidhi Sinha, Binay Kumar, *CrystEngComm*, 2014, 16, 10700-10710. (IF: 4.034)

4) "Modified low temperature Czochralski growth of xylenol orange doped benzopheone single crystal for fabricating dual band patch antenna" **Harsh Yadav**, Nidhi Sinha, Binay Kumar, *J. Cryst. Growth*, 2016, 450, 74-80. (IF: 1.481)

5) "Growth, structural and physical properties of diisopropylammonium bromide molecular single crystal" **Harsh Yadav**, Nidhi Sinha, Sahil Goel, Abid Hussain, Binay Kumar, *J. Appl. Cryst.*, 2016, 49, 2053-2062. (IF: 2.570) ***"Published as Cover Page in Journal of Applied Crystallography"***

6) "Eu-doped ZnO nanoparticles for dielectric, ferroelectric and piezoelectric applications" **Harsh Yadav**, Nidhi Sinha, Sahil Goel, Binay Kumar, *J. Alloys Compd.*, 2016, 689, 333-341. (IF: 3.014)

7) "Growth and characterization of new semiorganic nonlinear optical and piezoelectric lithium sulfate monohydrate oxalate single crystals" **Harsh Yadav**, Nidhi Sinha, Binay Kumar, *Mater. Res. Bull.*, 2015, 64, 194-199. (IF: 2.435)

8) "Performance of crystal violet doped triglycine sulfate single crystals for optical and communication applications" Nidhi Sinha, Sonia Bhandari, **Harsh Yadav**, Geeta Ray,

Sanjay Godara, Nidhi Tyagi, Jyoti Dalal, Sonu Kumar, Binay Kumar. *CrystEngComm*, 2015, 17, 5757-5767. (IF: 4.034)

9) "Structural, electrical, ferroelectric and mechanical properties with Hirshfeld surface analysis of novel NLO semiorganic sodium p-nitrophenolate dehydrate piezoelectric single crystal" Jyoti Dalal, Nidhi Sinha, **Harsh Yadav**, Binay Kumar, *RSC Adv*., 2015, 5, 57735–57748. (IF: 3.840)

10) "Pyroelectric properties and conduction mechanism in solution grown glycine sodium nitrate single crystal" Nidhi Tyagi, Nidhi Sinha, **Harsh Yadav,** Binay Kumar, *Phys. B Condens. Matter.*, 2015, 462 18-24. (IF: 1.319)

11) "Enhancement in semiconducting and optical properties in $CuCl_2$ doped anthracene micro crystals" Nidhi Sinha, Geeta Ray, **Harsh Yadav**, Sanjay Godara, Binay Kumar, *Phys. B Condens. Matter.*, 2015, 470 15-20. (IF: 1.319)

12) "Growth, crystal structure, Hirshfeld surface, dielectric and mechanical properties of a new organic single crystal: 'Bis glycine' squarate", Nidhi Tyagi, Nidhi Sinha, **Harsh Yadav,** Binay Kumar, *RSC Adv*., 2016, 6, 24565-24576. (IF: 3.840)

13) "Growth, structural, dielectric, ferroelectric and mechanical properties of L-prolinium tartrate single crystal" Sonu Kumar, Nidhi Sinha, **Harsh Yadav**, Binay Kumar, *J. Mater. Sci*., 2016, 51, 7614-7623. (IF: 2.371)

14) "Growth, morphology, structure and characterization of L-histidinium dihydrogen arsenate orthoarsenic acid (LHAS) single crystal" Nidhi Tyagi, Nidhi Sinha, **Harsh Yadav**, Binay Kumar, *Acta Cryst. B*, 2016, B72, 593-601. (IF: 2.892)

15) "Effect of crystal violet dye on the structural, optical, mechanical and piezoelectric properties of ADP single crystal" Sahil Goel, Nidhi Sinha, **Harsh Yadav**, Abid Hussain, Binay Kumar, *Mater. Res. Bull.*, 2016, 83, 77-87. (IF: 2.435)

16) "Synthesis of $0.64Pb(Mg_{1/3}Nb_{2/3})O_3–0.36PbTiO_3$ ceramic near Morphotropic Phase Boundary for high performance piezoelectric, ferroelectric and pyroelectric applications" Abid Hussain, Nidhi Sinha, Sonia Bhandari, **Harsh Yadav**, Binay Kumar, *J. As. Ceram. Soc.*, 2017, 4, 337-343.

17) "Copper-Catalyzed Aerobic Oxidative Coupling of *o*-Phenylenediamines with 2-Aryl/Heteroarylethylamines: Direct Access to Construct Quinoxalines" Kovuru Gopalaiah, Anupama Saini, Sankala Naga Chandrudu, Devarapalli Chenna Rao, **Harsh Yadav**, Binay Kumar, ***Org. Biomol. Chem.,*** 2017, 15, 2259-2268. (IF: 3.559)

18) "Growth, crystal structure, Hirshfeld surface, optical, piezoelectric, dielectric and

mechanical properties of bis(L-asparaginium hydrogensquarate) single crystal" **Harsh Yadav**, Nidhi Sinha, Sahil Goel, Budhendra Singh, Igor Bdikin, Anupama Saini, Kovuru Gopalaiah, Binay Kumar, *Acta Cryst. B*, 2017, B73, 347-359. (IF: 2.892)

19) "Optical, piezoelectric and mechanical properties of xylenol orange doped ADP single crystal for NLO applications" Sahil Goel, Nidhi Sinha, **Harsh Yadav**, Abhilash J. Joseph, Abid Hussain, Binay Kumar, *Arab. J. Chem.*, 2017, Accepted Manuscript. DOI: http://dx.doi.org/10.1016/j.arabjc.2017.03.003 (IF: 5.388)

20) "Experimental investigation on the structural, dielectric, ferroelectric and piezoelectric properties of La doped ZnO nanoparticles and their application in dye-sensitized solar cells" Sahil Goel, Nidhi Sinha, **Harsh Yadav**, Abhilash J. Joseph, Binay Kumar, *Phys. E Low-Dimensional Syst. Nanostructures*, 2017, 91, 72-81. (IF: 1.904)

21) "An insight into the synthesis, crystal structure, geometrical modelling of crystal morphology, Hirshfeld surface analysis and characterizations of N-(4-methylbenzyl)benzamide single crystal" Sahil Goel, **Harsh Yadav**, Nidhi Sinha, Budhendra Singh, Igor Bdikin, Devarapalli Chenna Rao, Kovuru Gopalaiah, Binay Kumar, *J. Appl. Cryst*., 2017, 50, 1498-1511. (IF: 2.617)

22) "Ferroelectric Gd-doped ZnO nanostructures: Enhanced dielectric, ferroelectric and piezoelectric properties" Sahil Goel, Nidhi Sinha, **Harsh Yadav**, Sanjay Godara, Abhilash J. Joseph, Binay Kumar, *Mater. Chem. Phys.*, 2017, 202, 56-64. (IF: 2.283)

23) "X-ray, dielectric, piezoelectric and optical analysis of a new NLO 8-hydroxyquinolinium hydrogen squarate crystal" Sahil Goel, **Harsh Yadav**, Nidhi Sinha, Budhendra Singh, Igor Bdikin, Binay Kumar, *Acta Cryst. B*, 2018, B74, 12-23. (IF: 2.032)

24) "Y-doped ZnO nanosheets: Gigantic piezoelectric response for an ultra-sensitive flexible piezoelectric nanogenerator" Nidhi Sinha, Sahil Goel, Abhilash J. Joseph, **Harsh Yadav**, Kriti Batra, Manoj Kumar Gupta, Binay Kumar, *Ceram. Int.*, 2018, 44, 8582-8590. (IF: 2.986)

25) "Glycine glutaric acid single crystal: Morphological, optical, dielectric and mechanical properties via nanoindentation" Sumit Bhukkal, Nidhi Sinha, **Harsh Yadav**, Sahil Goel, Budhendra Singh, Igor Bdikin, Binay Kumar, *Vacuum*, 2018, 154, 90-100. (IF: 1.553)

26) "Sunset yellow dyed triglycine sulfate single crystals: Enhanced thermal, mechanical, optical and di-/piezo-/ferro-electric properties with determination of true switchable polarization" Sahil Goel, Nidhi Sinha, Abid Hussain, Abhilash J. Joseph, **Harsh Yadav**, Binay Kumar, *J. Mater. Sci. Mater. Electron.*, 2018, 29, 13449-13463. (IF: 2.019)

27) "2D porous nanosheets of Y-doped ZnO for dielectric and ferroelectric applications" Sahil Goel, Nidhi Sinha, **Harsh Yadav**, Abhilash J. Joseph, Binay Kumar, *J. Mater. Sci. Mater. Electron.*, 2018, 29, 13818-13832. (IF: 2.019)

28) "Enhanced dielectric, ferroelectric and piezoelectric performance of Nd-ZnO nanorods and their application in flexible piezoelectric nanogenerator" Kriti Batra, Nidhi Sinha, Sahil Goel, **Harsh Yadav**, Abhilash J. Joseph, Binay Kumar, *J. Alloys Compd*., 2018, 767, 1003-1011. (IF: 3.779)

29) "On the prediction of external shape of ZnO nanocrystals" Sahil Goel, Nidhi Sinha, **Harsh Yadav**, Binay Kumar, *Phys. E Low-Dimensional Syst. Nanostructures*, 2018, 106, 291-297. (IF: 2.399)

30) "Evaluation of structural, optical and mechanical behaviour of L-argininium bis(trifluoroacetate) single crystal: An efficient organic material for second harmonic generation applications" Sonia, N. Vijayan, Mahak Vij, **Harsh Yadav**, Ravinder Kumar, Debashish Sur, Budhendra Singh, S.A. Martin Britto Dhas, Sunil Verma, *J. Phys. Chem. Solids*, 2019, 129, 401-412. (IF: 2.048)

31) "An efficient piezoelectric single-crystal l-argininium phosphite: structural, Hirshfeld, electrical and mechanical analyses for NLO applications" Sonia, N. Vijayan, Mahak Vij, Anuj Krishna, **Harsh Yadav**, K. K. Maurya, S. A. Martin Britto Dhas, Prashant Kumar, *Appl. Phys. A*, 2019, 125:363, 1-14. (IF: 1.604)

32) "New quaternary BNT–BT–PMN–PT ceramic: ferro-/piezo-/pyroelectric characterizations" Abhilash J. Joseph, Nidhi Sinha, Sahil Goel, Abid Hussain, **Harsh Yadav**, Binay Kumar, *J. Mater. Sci.: Mater. Electron.*, 2019, 30, 12729-12738. (IF: 2.324)

33) "Crystal growth, structure and Z-scan studies of novel diisopropylammonium nicotinate crystal" Mahak Vij, Sonia, **Harsh Yadav**, Nikita Vashistha, Prashant Kumar, K.K. Maurya, *J. Mol. Struct.*, 2020, 1206, 127759. (IF: 2.120)

- ***Book***

1) "Liquid Crystal Based Patch Antenna: Tunable Patch antenna at 10 GHz frequency" **Harsh Yadav**, Afaque Karim, Aloka Sinha, *LAP LAMBERT Academic Publishing house*, Germany, 10/2013, ISBN: 978-3-659-466939.

- ***Conference Proceedings***

1) "Design and Simulation of LC Based Patch Antenna @ 20 GHz frequency" Afaque Karim,

Harsh Yadav and Shakeb Ahmad, *AIP 1620*, 2014, 15.

2) "Tunable Nano Dispersed LC Based Patch Antenna" Afaque Karim, **Harsh Yadav** and Shakeb Ahmad, *AIP 1665*, 2015, 060005.
3) "LC Nano composites Based Patch Antenna @ 12 GHz frequency" Afaque Karim, **Harsh Yadav,** Shakebul Hasan and Shakeb Ahmad, *AIP 1731*, 2016, 060002.

Conference/Seminar/Faculty Development Programme/Workshop

1) "*Growth and Characterization of Nonlinear Glycine Zinc Acetate Single Crystals*" XVII National seminar on Crystal Growth, 2013, Anna University, Chennai.
2) Advance Futuristic Underwater Sensors, Solid State Physics Laboratory, DRDO, March 16-20, 2015, Delhi.
3) "*Design and Simulation of LC Based Patch Antenna @ 20 GHz Frequency*", International Conference on Light, 19-21 March 2014, NIT Calicut, India.
4) "*Study on Dielectric Properties of Nano Dispersed Liquid Crystal*" International Conference on Nanoscience and Nanotechnology, March 8-10, 2014, A.M.U, Aligarh.
5) Workshop on Advance Materials for Future Energy Requirements, University of Delhi, 2013, Delhi.
6) IUCr Workshop on X-ray diffraction systems and related applications organized by PANalytical, 2014.
7) Workshop on Information Literacy & Competency organized by Delhi University Library system, University of Delhi, 2013, Delhi.
8) "*Unidirectional growth of pure and CV doped benzophenone crystal by Modified CZ technique*", XVII National seminar on Crystal Growth, 2016, BARC, Mumbai.
9) "*Simulation and fabrication of TGS crystal based patch antenna for wireless communication and energy harvesting*" Device Presentation, XVII National seminar on Crystal Growth, 2016, BARC, Mumbai.
10) "*Simulation and fabrication of piezoelectric single crystal based patch antenna for wireless communication and energy harvesting*" Poster Presentation, International Conference on Technologically Advanced Materials & Asian Meeting on Ferroelectricity, November 7-11, 2016, University of Delhi, Delhi.
11) "*Rigaku thin film application workshop*" November 18, 2016, Delhi.
12) "*Materials and Devices using Soft Matter: Current Status and Outlook*" November 21, 2016, DAAD Research Seminar, University of Delhi, Delhi.

13) "*Introduction to Scilab*" DBT sponsored Faculty Development Workshop, September 22-23, 2017, Hansraj College, University of Delhi.

14) "*Applied Physics & Embebbed System Design*" Faculty Development Programmme, December 14-15, 2017, Rajdhani College, University of Delhi.

15) "*9th INUP Familiarization Workshop on Nanofabrication Technologies*" May 23-25, 2018, IIT Bombay, Mumbai.

16) "*NCPRE Familiarization Workshop on Photovoltaics*" May 25, 2018, IIT Bombay, Mumbai.

17) "*Growth of semi-organic single crystal of l-argininium phosphate for piezoelectric, optical and communication applications*" Oral Presentation, International Conference on Advances in Smart Materials & Emerging Technologies" ASMET-2020, January 23-24, 2020, organized by Indira Gandhi Delhi Technical University for Women (IGDTUW).

18) "*Multifunctional single crystal growth, Hirshfeld topology analysis of L-Histidinium tetrafluoro borate for piezoelectric and communication applications*" Poster Presentation "New Trends in Nanotechnology & Applications" NTNA-2020, February 6-7, 2020 organized by Atma Ram Sanatan Dharma College, University of Delhi.

Research Guidance (*Supervision of Doctoral Thesis/Dissertations*)

Awards and Distinctions

- **Best Oral Presentation Award in 20th National Seminar on Crystal Growth (XX NSCGA-2016)** organized by Technical Physics Division, BARC, Mumbai, 19-21 January, 2016.
- **Best Poster Award in 2nd National Conference on "New Trends in Nanotechnology & Applications" NTNA-2020,** organized by Atma Ram Sanatan Dharma College, University of Delhi.
- **Best Paper Award in International Conference** on Light, 19-21 March 2014, NIT Calicut, India.
- **First Prize** in Paper Presentation on Topic **"Wireless Power Transmission"** by Physics & Electronics Society of Rajdhani College, University of Delhi, 11 February, 2009.
- **Freeship Scholarship** by Indian Institute of Technology, Delhi.

Memberships

Other Academic Activities

- **Organizing Committe Member in**

- National Conference on Current & Future Perspectives in Nanotechnology "Nanoworld – 2018", April 12-13, 2018.
- Workshop "Spectrum-2018, February 12, 2018, Departement of Physics, Shivaji College.
- Physics Society Event INVENIO on September 30, 2019, at Shivaji College.
- Educational trip to Vigyan Samagam at National Science Centre, Delhi, on February 18, 2020.
- Educational trip to Solid State Physics Laboratory, Defense Research and Development Organization on February 27, 2020.
- One-day workshop for 10 students of B.Sc. (H) Physics II Semester to celebrate the national science day at Inter-University Accelerator Centre on February 28, 2020.

- ***Reviewer of the international journals***

Cultural/Extracurricular Activities

Harsh

Signature of Faculty Member