

# Deepak Kumar

Male, 23



Email: deepakkumar\_2k20mscphy41@dtu.ac.in

Contact: +919123255349

karndeepak11@gmail.com

EDUCATION QUALIFICATIONS			
<b>P.hd Physics</b>	Indian Institute of Technology Delhi (IITD)	-	2023-present
<b>M.Sc. Physics</b>	Delhi Technological University (formerly DCE)	9.31/10 (University Topper)	2020-22
<b>B.Sc.(Hons.) Electronic Science</b>	Deen Dayal Upadhyaya College University of Delhi.	7.081/10	2017-20
<b>Class XII</b>	Jesus and Mary Academy, Darbhanga Bihar.	91.60 %	2017
<b>Class X</b>	Public School Darbhanga, Bihar.	95%	2015

## RESEARCH INTERESTS

- Thin films and Nanostructures deposition techniques, Carbon nanotubes, Surface Plasmon Resonance based Sensors, synthesis using CVD, Material Science, Semiconductor device modeling and simulation, Photonic Crystal Fiber, Optical Communication.

## PUBLICATION

- Research paper titled “Surface Plasmon Resonance Implemented Silver with Multiple-Hole Microstructure for wide-ranged Refractive Index Detection” published in **Materials Today Proceedings, April (2022)**.
- Research paper titled “Gold/ZnO Interface Based D- Shaped PCF Surface Plasmon Resonance Sensor with Micro-openings, analytic Designing, and Some Applications” accepted for publication in **Springer Proceedings in Materials, April (2022)**.
- Research paper titled “Designing and Analysis of Different Modes of Triboelectric Nanogenerator based Sensors for IOT” published in **IEEE Xplore, March 2023**.
- Research paper titled “Analogy of gold, silver, copper and aluminum based ultra-sensitive surface plasmon resonance photonic crystal fiber biosensors” published in **Materials today proceedings (Scopus indexed), March 2023**.
- Research paper titled “Monitoring and sensing of glucose molecule by micropillar coated electrochemical biosensor via  $\text{CuO}/[\text{Fe}(\text{CN})_6]^{3-}$  and its applications” published in **Materials today proceedings (Scopus indexed), March 2023**.

## GRADUATION DISSERTATION WORK ( August 2021-May 2022)

- Supervised by Dr. Vinod Singh , Professor, DTU, Delhi synthesizing Carbon Nanotubes Molybdenum oxide composite ( $\text{MoO}_3$ ) using single furnace **Thermal chemical vapor deposition technique (CVD)** by varying different parameters including temperature, the concentration of precursors, distance between precursors and reaction time and explored its applications in **hydrogen** and **ammonia gas sensing**.
- Surface Plasmon Resonance** investigated and analysed using **COMSOL Multiphysics** and sensors based on **Plasmonic Crystal Fibers** following Surface Plasmon Resonance has been designed and the results have been compared for different materials.

## GRADUATE LEVEL COURSES

- Advanced Semiconductor Physics, Nanoscience and Technology, Space and Atmospheric science, Characterization Techniques, Solid State Physics, Advanced Quantum Mechanics, Electrodynamics, Mathematical Physics, Statistical Physics, Atomic and Molecular Physics, Nuclear and Particle Physics, Electronics, Classical Mechanics, Applied Optics.
- MOOC: Astronomy: Exploring Time and Space, Offered by the University of Arizona; Crash course on Python, Offered by Google.

## UNDERGRADUATE LEVEL COURSES

- Basic Circuit Theory and Network Analysis, Semiconductor Devices, Digital Electronics and VHDL, Electronic Circuits, C Programming and Data Structures, Operational Amplifiers and Applications, Signals and Systems, Electronic Instrumentation, Microprocessors and Microcontrollers, Communication Electronics, Digital Signal Processing, Embedded Systems, Robotics, Semiconductor fabrication, Electromagnetics.

## WORKSHOPS

- Organized and Attended a Workshop on “Getting started on **Arduino**”.
- Attended Workshop on VHDL programming and Digital Circuit Designing.
- Attended **Online Summer School on Advances in Signal Processing and Machine Learning** organized jointly by MHRD- Institution Innovation Council, DDUC Chapter, Deen Dayal Upadhyaya College, DU.

## INTERNSHIPS

- Winter Internship in the analytical study of the threshold voltage with respect to various physical parameters of cylindrical Gate all around MOSFET by solving two dimensional Poisson under the guidance of Dr. Manoj Saxena, Associate Professor, Deen Dayal Upadhyaya College, University of Delhi at MHRD institution innovation council/DBT star college lab.
- Operation Intern (Subject Matter Expert) Physics at **UMRA Tech Solutions Private Limited** ( Jan’21 -Jun’21).  
A Startup (2017) with a mission to provide quality education and step-by-step solution to Academic problems.
- Subject Matter Expert at **Rancike solutions Pvt. Ltd.** A startup based on generating JEE Advanced Problems and Solutions for Mathematics and Physics (Nov’21 -Jan’22).
- Managed Network Expert Intern- Advanced Physics at **Chegg India Pvt. Ltd.** (September’2020-February’2021).
- Quality Analyst at **Iprep Solutions Private Limited(Cerebry)** (July’2021-June’2022)
- Senior Subject Matter Expert at **Vaidik Eduserv Private Limited** (July’2022-June’2023)

## POSITION OF RESPONSIBILITY

- Student coordinator, One-day E-workshop on “ **Orientation session for all students and faculties of Institute by Innovation Ambassador**” conducted by **Department of Applied Physics, Delhi Technological University** in collaboration with **Institute’s Innovation Council** and **DTU Innovation and Incubation Foundation**.( Hosted the whole event and managed pre and post-event duties.)
- Student coordinator, , Two-day workshop on “**Atomic energy: Peaceful use and job opportunities**” conducted by **HRDC- Delhi Technological University** in collaboration with **NPCIL** and **HBUTU, Kanpur** .( Hosted the whole event and managed pre and post-event duties.)
- Student coordinator, Host, one-day webinar on “**National Education Day on Futuristic Roadmap for Technical HEIs through NEP2020**” conducted by **HRDC- Delhi Technological University** .( Hosted the whole event and managed pre and post-event duties.)
- Event Head, ROFSOC-19, **Robotics Club, DDUC**
- Vice President, 2018-19, **Kalamkaar, Literary and Art society, Deen Dayal Upadhyay College, DU**. • Organized the **Kavi Sammelan Cultural Fest and Art Exhibition**. (Secured Second rank in Art Exhibition, IIT Delhi).
- Coordinator, 2017-18, **Kalamkaar, Literary and Art society, Deen Dayal Upadhyay College, DU**.
- Volunteer, **URJASVA 2018**, annual electronics festival organized by **SILIZIUM, Department of Electronics, Deen Dayal Upadhyaya College, DU**.

## SKILLS AND ACHIEVEMENTS

Academic Achievements	<ul style="list-style-type: none"> <li>• <b>Gold Medalist</b> in Masters of Physics at <b>Delhi Technological University</b>(2022).</li> <li>• Acquired first position in the class, secured 157 state rank and achieved 743 international rank, International Olympiad of Science, 2013.</li> <li>• Acquired 264 state rank and 1449 international rank in International Olympiad of Mathematics , 2013.</li> <li>• Gold Medalist in Hindustan Pratibha Sammaan, 2012.</li> <li>• Scholarship by Delhi Institute of Technology and Management, for the result of Aptitude Test.</li> <li>• IIT- JEE Mains qualified.</li> <li>• Qualified WBJEE, West Bengal examination.</li> <li>• Certificate of merit by CBSE in 2015.</li> </ul>
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	. • Cleared WIPRO Talent Hunt Examination and got placed with stipend.
Software skills	Python, SQL, COMSOL Multiphysics, Gaussian View, Origin Pro, MountainR, ImageJ, Gatan Microscopy Suite Software, SOLIDWORKS, Multisim, Blender 3D, Adobe Photoshop, Arduino UNO, 3D Sculpturing, Neural Networks, and Deep Learning (Certified by Coursera Deep Learning).
Tools	Matlab, LaTeX, Mathcad, Ms Office, Tableau, Microsoft Power BI

#### REFEREES

<ul style="list-style-type: none"> <li>Dr. Vinod Singh, Professor, Delhi Technological University, New Delhi, India</li> </ul>	E-mail ID: <a href="mailto:vinodsingh@dtu.ac.in">vinodsingh@dtu.ac.in</a> Phone: +919811701225
<ul style="list-style-type: none"> <li>Dr. Bharti Singh, Assistant Professor, Delhi Technological University, New Delhi, India</li> </ul>	E-mail ID: <a href="mailto:bhartisingh@dtu.ac.in">bhartisingh@dtu.ac.in</a> Phone: +919873275256