

NIKHIL SRIVASTAV

Research Scholar **PMRF Fellow**

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NATIONAL QUALIFICATIONS

GATE-2023 (AIR-647)

GATE-2021 • IIT-JAM 2018

ORCID

ResearchGate

LinkedIn

CURRENT ROLE & RESEARCH OBJECTIVE

I am currently pursuing the Ph.D. program at the Department of Chemistry, Institute of Science, BHU (March 2022 Term), under the supervision of Prof. Pankaj Srivastava. My research topic is "Studies on materials development for solar energy harvesting through DSSC". My research goal is to design cost-effective, sustainable, durable, and remote area deployment through 3rd-gen solar cells (such as DSSC) using ultrathin thin-film and multilayer junction strategies.

Research area/keyword: 3rd gen Solar cell, Dye-Sensitized Solar Cells (DSSCs), Thin-Film Deposition Techniques, Electrochemical Characterization (CV, EIS, Mott-Schottky), Solar Modules, Renewable Energy, Solar Cell, DSSC, ultra thin film, Electrochemistry, Nanomaterials, etc.

As I am currently in the 5th year of my Ph.D., I am seeking an internship, research fellowship, or early postdoctoral opportunity to broaden my expertise in electrochemistry, nanomaterials, advanced functional materials, thin-film and interface engineering, optoelectronic devices, photovoltaic technologies (DSSC, Perovskite, Tandem, multi-junction solar cells), device fabrication, and other related areas of materials science (battery research, energy storage systems).

ACADEMIC CREDENTIALS

QUALIFICATION	BOARD / UNIVERSITY & DETAILS	YEAR	CGPA	%
Ph. D. Title: Studies on materials development for solar energy harvesting through DSSC.	Supervisor: Prof. Pankaj Srivastav, Department of Chemistry, Banaras Hindu University, Institute of Science, Varanasi, UP, India	March 2022 (continued)	9.25	88.0
M.Sc. (Master's of Science) Specialization: Analytical Chemistry	National Institute of Technology Warangal, Telangana, India	2018-2020	8.10	76.0
B.Sc. (Hons.) Chemistry (Bachelor of Sciences) Subjects: Chemistry, Physics, Mathematics	Banaras Hindu University, Varanasi, Uttar Pradesh, India	2014-2017	7.14	66.9
Intermediate Subjects: Chemistry, Physics, Mathematics, English, Hindi	CBSE, New Delhi, India St. Patrick's Sr. Sec School	2014	-	75.4
High School Subjects: Science, Mathematics, Social Science, English, Hindi	CBSE, New Delhi, India Radhika Bal Vidya Mandir	2011	8.2	77.9

HANDS-ON TRAINING (SOFTWARE/SIMULATION/TECHNIQUE)

Instruments: Potentiostat (Metrohm Autolab: AUT 302 N); AFRDE 4E, Pine Instruments, USA; e-corder 201, Australia; Biologic: SP-150e; Kiethly PET: Photo Emission Tech (Solar Simulator); Labman pH model No. LMPH10; Deltascientific Spin Coater, Nima Dip-Coater; muffle Furnace, Tubular Furnace, etc.

Material characterization: MS, SEM, TEM, PXRD, BET, FTIR, UV-Visible, PL, TR-PL, XPS

Instrument Software: E-chem, Nova 2.1, EC-lab (CV, LSV, EIS, FRA potential scan); Chemdraw, Origin,

Other Software: MS Office. Free Cad for 3d design

Computational: Gaussian09, Gauss View 5.0, Basic Linux,

PEER REVIEWED PUBLICATION

1. **Srivastav, N.**, Vishwakarma, S., Singh, S., Patel, H., Singh, Y., and Srivastava, **2026** Column chromatography-assisted separation of Petunia pigments for dye-sensitized solar cell applications: a systematic way for natural dye incorporation in DSSC, (Manuscript No. ae-2026-01085h, **communicated**).
2. **Srivastav, N.**, Dihingia, K., Patel, H., Singh, Y., Rai, A., Maiti, B. and Srivastava, P., **2025**. Improved DSSC performance with acidic extract of Euphorbia milii red flower, the effect of pH variation and DFT analysis of phytoconstituents. **Next Materials**, 8, p.100793.
3. **Srivastav, N.**, Vishwakarma, S., Patel, H., Singh, Y., Rai, Singh, S., and Srivastava, P., **2025** Carica Papaya Seed Extract (PSE)-capped TiO₂ NPs: Synergistic applications in DSSCs with charge transport dynamics explored via EIS and antibacterial activity, (Manuscript No. OM-D-25-02465R1, **under revision**).
4. Patel, H., Singh, S., **Srivastav, N.**, Singh, Y. and Srivastava, P., **2025**. Green synthesis of titanium dioxide (TiO₂) using Vitex Negundo (Nirgundi) leaf extract potentially leading to improved efficiency in DSSC. **Ionics**, pp.1–16.
5. Patel, H., Sharma, S., Singh, S., **Srivastav, N.**, Singh, Y., Rai, A. and Srivastava, P., **2025**. Tagetes erecta (marigold) flower extract in the different solvents used as a capping agent and sensitizer for TiO₂ photoanode based DSSC. **Next Materials**, 8, p.100875.
6. Singh, Y., Patel, H., Rai, A., Singh, S., **Srivastav, N.** and Srivastava, P., **2025**. Bio-capped synthesis of TiO₂ nanoparticle using Murraya koenigii leaf extract via ultrasonication assisted sol-gel method and its advanced DSSC performance. **Next Materials**, 8, p.100680.
7. Tiwari, A., Sharma, S., **Srivastav, N.** and Srivastava, P., **2024**. Comparative study of natural dyes extracted from dark red and yellow Frangipani flowers (Plumeria rubra L.) as DSSC sensitizer. **Optik**, 317, p.172055.
8. Tiwari, A., **Srivastav, N.** and Srivastava, P., **2024**. Utilization of natural dyes extracted from mustard flower (Genus: Brassica, Species: Napus) as photosensitizer for DSSC: Experimental and computational studies. **Results in Optics**, 15, p.100631.
9. Faizan, M., **Srivastav, N.** and Pawar, R., **2022**. Azaboratrane as an exceptionally potential organocatalyst for the activation of CO₂ and coupling with epoxide. **Molecular Catalysis**, 521, p.112201.

CONFERENCES & SEMINAR

1. Participated in "International Conference on Energy Conversion and Storage (IECS-2026)" organized by IIT Madras, held on July 13–17, 2026.
2. Participated in "International Conference on Fundamental and Advanced Research in Chemistry (FARC-2026)" organized by IIT-Mandi held on June 8–10, 2026.
3. Participated in "Harnessing the Sun for 50 Years- Golden Jubilee of Solar Photovoltaics in India" organized by NCPRE - PoTIC; held at Victor Menezes Convention Centre, IIT Bombay; January 28, 2026
4. Participated and hosted "RSC Meet The Editors at Banaras Hindu University – 2026" organized by the Royal Society of Chemistry; held on January 16, 2026.
5. Participated in two days workshop on "Electrochemical Impedance Spectroscopy Workshop" organized by Metachem Academy; held online on October 16–17, 2025
6. Poster presented on "Computational studies of natural pigments from Euphorbia Milii Red Flower and Experimental correlation for DSSC application" at symposium on "Physical Chemistry Symposium SoPhyC 2024, Society of Physical Chemistry; held at Victor Menezes Convention Centre, IIT Bombay; October 22–25, 2024.
7. Poster presented on "Synthesis of TiO₂ nanocrystalline using EDTA as a capping agent its application in DSSC." at conference on "The role of Science and Humanities in Environmental Safety" organized by Department of Chemistry, Janta Mahavidyalaya, Ajitmal, U.P. sponsored by C.S.J.M. University, Kanpur; 24–25 February, 2024.
8. Poster presented on "Green Synthesis of Titanium Dioxide Nanoparticles and its Integration into Dye-Sensitized Solar Cells for Enhanced Photovoltaic Performance" Nikhil Srivastav, Sakshi Singh, Himanshu Patel, Yoganand Singh, Pankaj Srivastava at conference on National Symposium On Emerging Trends In Chemical Sciences (ETCS-2023). Organized by Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi; 15–16 December, 2023.
9. Poster presented on "Experimental and theoretical studies of natural dyes extracted from dark red and yellow Frangipani flowers (Plumeria Rubra L.) as photosensitizer in dye-sensitized solar cells" Abhilasha Tiwari, Nikhil Srivastav, Pankaj Srivastava at conference on 'Emerging Materials 2023' organized by Department of Chemistry IISER-Pune; 13–15 July, 2023.

CONFERENCES & SEMINAR (CONTINUED)

10. Participated in five days' workshop on Molecular Materials and Engineering organized by Department of Chemistry, NIT Warangal on 27–31 March, 2023 sponsored by SPARC, Ministry of Education, Government of India.
11. Poster presented on "Experimental and theoretical investigations of Nyctanthes arbour-tristis flower extract as a sensitizer dye for TiO₂ based DSSC", Shubham Sharma, Nikhil Srivastav at National Symposium on Brainstorming Meeting on Chemistry at the interface (BSCI-2022) Department of Chemistry, Institute of Science, BHU; 26–27 December, 2022.
12. Poster presented on "Synthesis of TiO₂ assisted with black grape juice extract and its application in dye-sensitized solar cells", Abhilasha Tiwari, Sakshi Singh, Nikhil Srivastav at National Symposium on Brainstorming Meeting on Chemistry at the interface (BSCI-2022) Department of Chemistry, Institute of Science, BHU; 26–27 December, 2022.
13. Master's project (Dissertation) on "Ambimodal Reaction in Cross-Conjugated organic molecules: A Density Functional Theory Calculations." under the supervision of Dr. Ravinder Pawar (2020).
14. Presented a seminar report on Radialene a New Class of Organic Molecules at NIT Warangal, 2020.
15. Attended International Conference on ACST (Advances in Chemical Sciences and Technologies) at NIT Warangal, September, 2019.
16. Attended National Conference on ETIMCA (Emerging Trends in Instrumental Methods in Chemical Analysis) held at NIT Warangal, January 2019.
17. Presented a seminar report on Surface Modification of Nanoparticles in INTERNADO (DMSRDE) organized by IIT BHU under the ANVESHAN'17 program, 2017.

AWARDS, EXTRA-CURRICULAR ACTIVITIES & RESPONSIBILITIES

1. **GATE-2023 (Air-647), GATE-2021, IIT-JAM 2018** qualified
2. Recipient of "**Prime Minister Research Fellowship**" (PMRF Cycle-11) 2023 - continued.
3. **Best summer intern award** at Malviya Children Welfare Foundation (MCWF-2019), Varanasi.
4. **Placement Co-ordinator & Class Representative**, M.Sc. Chemistry NIT Warangal
5. Volunteered and participated in '**Chekumuki**' program, a children's festival organized under Jan Vignana Vedika 2019.
6. **1st Position** in Science & Art Exhibition -2011, organized by St. Patrick's Sr. Sec. School (Jaunpur).
7. **Inspire Award 2010** (Funded Project) Performed at District and State Level, Organised by IIIT Allahabad.

REFEREES

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