

Curriculum Vitae

Personal Details:

Name in Full: Alok Kumar Patel

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Educational Qualification:

Degree/Examination	University/Institution	Year	Div/Percen	Discipline
Ph. D	MMMUT, Gorakhpur	2024	Awarded	Solar Photovoltaic
M. Tech.	MMMUT, Gorakhpur	2020	8.40 (CGPA)	Digital Systems
B. Tech.	FGIET, (AKTU)	2014	66.54%	Electronics & Communication Engineering
Intermediate	Children Sr. Sec. School, Kota (Rajasthan Board)	2009	60.92%	Physics, Chemistry & Mathematics
High School	M. G. Inter College, Gorakhpur (UP Board)	2007	74.50%	Science

Work Experience:

Name of Employer	Designation	Years	Duration
DDU Gorakhpur University, Gorakhpur	Assistant Professor	(ongoing)	From 10/09/2024
I.T.M. Maharajganj, (AKTU)	Assistant Professor	3	From 05/8/2015 To 11/8/2018

Research Area:

Solar Photovoltaic, CIGS Solar Cell, Perovskite Solar Cell

Publications

- **International Journals: 23**
(18-SCI/SCIE/ESCI and 05-SCOPUS)
- **International Conference: 05**

Journal Publications

1. Bhasker Pandey, Rajan Mishra, RK Chauhan, Alok Kumar Patel, Performance investigation of double absorber based thin film solar cell with MoS₂ and WS₂ as absorber layers, *Phys. Scr.* **100** (2025) p. 055529 <https://10.1088/1402-4896/adc84d> (SCIE, Impact Factor: 2.6)
2. Alok Kumar, Sushama M Giripunje, Alok Kumar Patel, Shivani Gohri, A comprehensive numerical simulation analysis of back surface passivated CIGS solar cells for efficiency enhancement, *Phys. Scr.* **100** (2025) p.035938 <https://10.1088/1402-4896/adb2ed> (SCIE, Impact Factor: 2.6)
3. Sweetey Chauhan, Anuj K Sharma, Nitin Singh Singha, Alok Kumar Patel, Yogendra Kumar Prajapati, Simulation of ZnO (window layer)-ZnS (buffer)-SDL-CIGS (absorber)-Sb₂S₃ (back surface field layer) solar cell design achieving 35.82% power conversion efficiency with low thermal effect, *Journal of Optics* (2025) p. 1-9 <https://doi.org/10.1007/s12596-025-02514-z> (ESCI, Impact Factor: 1.6)
4. Alok Kumar Patel, Rajan Mishra, Sanjay Kumar Soni, Praveen Kumar Rao, Om Mishra, Design and performance investigation of CIGS/SWCNT tandem solar cell for efficiency improvement, *Optics Communications* **559** (2024) p. 130392 <https://doi.org/10.1016/j.optcom.2024.130392> (ESCI, Impact Factor: 2.2)
5. Alok Kumar, Sushama M Giripunje, Alok Kumar Patel, Shivani Gohri, Simulation study of cadmium-free CIGS solar cell for efficiency enhancement by minimizing

- recombination losses through back surface field mechanism, *Solid State Communications* 394 (2024) p. 115694 <https://doi.org/10.1016/j.ssc.2024.115694> **(ESCI, Impact Factor: 2.1)**
6. Alok Kumar, Sushama M Giripunje, Alok Kumar Patel, Shivani Gohri, A computational analysis to enhance performance of CIGS solar cells using back surface field and ZnSe buffer layer approach, *Semicond. Sci. Technol* 40 (2024) p. 015014 <https://doi.org/10.1088/1361-6641/ad96dd> **(SCIE, Impact Factor: 1.9)**
 7. Vaibhava Srivastava, Mohit Srivastava, Aryan Kannaujiya, Alok Kumar Patel, RK Chauhan, RS Bajpai, Enhancing CsSn_{0.5}Ge_{0.5}I₃ perovskite solar cell efficiency: role of Cl-doped SnO₂ layer and absorber properties, *Journal of Optics* (2024) p. 1-9 <https://doi.org/10.1007/s12596-024-02360-5> **(ESCI, Impact Factor: 1.6)**
 8. Alok Kumar, Sushama M Giripunje, Alok Kumar Patel, Shivani Gohri, Designing and simulating of new highly efficient ultra-thin CIGS solar cell device structure: Plan to minimize cost per watt price, *Journal of Physics and Chemistry of Solids* 193 (2024) p. 112194 <https://doi.org/10.1016/j.jpics.2024.112194> **(SCIE, Impact Factor: 4.3)**
 9. Bhasker Pandey, Rajan Mishra, RK Chauhan, Alok Kumar Patel, Investigating improvement in the performance of WS₂ absorber layer based thin film solar cell with a hole transport layer of Indium Telluride, *Phys. Scr.* **99** (2024) p. 085539 <https://doi.org/10.1088/1402-4896/ad624c> **(SCIE, Impact Factor: 2.6)**
 10. Ambrish Yadav, Alok Kumar Patel, Rajan Mishra, Modeling and Simulation of CZTS Solar Cell using Zn_{1-x}Mg_xO as a buffer layer and CuI as a hole transport layer for efficiency improvement, *Eng. Res. Express* 6 (2023) p. 015031 <https://doi.org/10.1088/2631-8695/ad1849> **(ESCI, Impact Factor: 1.5)**
 11. Pallavi Shah, Alok Kumar Patel, Rajan Mishra, Praveen Kumar Rao, Om Mishra, Impact of electrical and optical parameters on performance of CdTe solar cell with a-Si as a hole transport layer, *Journal of Optics* 52 (2023) p. 2323-2332 <https://doi.org/10.1007/s12596-023-01251-5> **(ESCI, Impact Factor: 1.6)**
 12. A. K. Patel, R. Mishra, S. K. Soni, “Efficiency improvement of Cu(In_{1-x}Ga_x)Se₂ solar cell using copper barium tin sulphide as back surface field layer and bandgap grading technique”, *Semiconductor Science & Technology* 39 (2023) p. 015005, **(SCIE, Impact Factor: 1.9)**

13. A. K. Patel, R. Mishra, S. K. Soni, “Electrical and optical parameters optimization and interface engineering for efficiency improvement of double CIGS absorber based solar cell”, Solar Energy, (2023) p. 125-136, (**SCIE, Impact Factor: 6.7**)
14. K. Pandey, A. K. Patel, R. Mishra, “Numerical study on performance enhancement of CZTSSe solar cells with Cu₂O and MoTe₂ as hole transport layer”, J Comput Electron vol. 21, pp. 895–904 (2022). <https://doi.org/10.1007/s10825-022-01900-1> (**SCIE, Impact Factor: 2.2**)
15. A. Kannaujiya, A. K. Patel, A. P. Shah, Efficient CZTSSe thin film solar cell employing MoTe₂/MoS₂ as hole transport layer, Micro and Nanostructures, vol. 169, 2022, pp. 207356, <https://doi.org/10.1016/j.micrna.2022.207356> (**SCIE, Impact Factor: 3.1**)
16. S. Gautam, A. K. Patel, R. Mishra, S. K. Soni, “Performance analysis of WSe₂ solar cell with Cu₂O hole transport layer by optimization of electrical and optical properties”, J Comput Electron, vol. 21, pp. 1373–1385 (2022). <https://doi.org/10.1007/s10825-022-01941-6> (**SCIE, Impact Factor: 2.2**)
17. A. K. Patel, R. Mishra, S. K. Soni “Performance Analysis of a Cu(In_{1-x}Ga_x)Se₂ Solar Cell with Nontoxic WS₂ and WSSe Buffer Layers”, Journal of Electronic Materials, (2022) p. 6168-6179, (**SCI, Impact Factor: 2.1**)
18. A. K. Patel, R. Mishra, S. K. Soni, “Performance enhancement of CIGS solar cell with two dimensional MoS₂ hole transport layer, Micro and Nanostructures”, (2022) p. 207195, (**SCIE, Impact Factor: 3.1**)
19. Sakshi Gautam, Alok Kumar Patel, Rajan Mishra, Solar cell performance based on WSe₂ absorber layer using Cu₂O as hole transport layer, Procedia Environmental Science, Engineering and Management, 10 (2023) p. 1-7 (**SCOPUS**)
20. Khushi Pandey, Alok Kumar Patel, Rajan Mishra, Improvement of CZTSSe solar cell performance with MoS₂ buffer layer, Procedia Environmental Science, Engineering and Management, 10 (2023) p. 53-59 (**SCOPUS**)
21. Chandrama Ghosh, Sanjay Kumar Soni, Alok Kumar Patel, Numerical simulation of CuSbS₂ solar cell with WS₂ used as buffer layer and MoTe₂ hole transport layer for high efficiency performance, Procedia Environmental Science, Engineering and Management, 10 (2023) p. 213-220 (**SCOPUS**)
22. Pallavi Shah, Alok Kumar Patel, Rajan Mishra, Performance analysis of CdTe based solar cell with a-Si hole transport layer, Procedia Environmental Science, Engineering and Management, 10 (2023) p. 71-77 (**SCOPUS**)

23. A. K. Patel, P. K. Rao, R. Mishra, S. K. Soni “Numerical study of a high-performance thin film CIGS solar cell with a-Si and MoTe₂ hole transport layer”, Optik, vol. 243 (2021) p.167498, (SCI, Impact Factor: 3.1)

International Conferences/National Conference/Symposium

1. A. K. Patel, R. Mishra, S. K. Soni, “Efficiency enhancement of CIGS solar cell with C₂N buffer layer: A simulation approach by SCAP-1D,” First International Conference on Microwave, Antenna and Communication (MAC), 2023 pp. 1-5, Prayagraj, India <https://doi.org/10.1109/MAC58191.2023.10177090>
2. A. K. Patel and B. P. Pandey, "Performance Analysis of WS₂ TMD Material as an Absorber layer used in Solar Cell," 2020 International Conference on Electrical and Electronics Engineering (ICE3), Gorakhpur, India, 2020, pp. 382-384, <https://doi.org/10.1109/ICE348803.2020.9122856>
3. Aman Paswan, Rajan Mishra, Alok Kumar Patel, "Performance Analysis of Mg Doped CuAlO₂ HTL Based Organic Perovskite Solar Cell," 2024 IEEE Students Conference on Engineering and Systems (SCES), Prayagraj, India, 2024, pp. 1-5, <https://doi.org/10.1109/SCES61914.2024.10652282>.
4. Ambrish Yadav, Alok Kumar Patel, Rajan Mishra, Electrical and Optical Properties Optimization for Efficiency Improvement of CZTSSe Solar Cell, International Conference on Electric Power and Renewable Energy vol 1128. Jamshedpur, India, https://doi.org/10.1007/978-981-99-9054-2_10
5. Abhimanyu Chaudhari, Rajan Mishra, Alok Kumar Patel, Perovskite CH₃NH₃SnI₃ Solar Cell Performance Investigation with SnS₂ Buffer Layer, International Conference on Electric Power and Renewable Energy vol 1128. Jamshedpur, India, https://doi.org/10.1007/978-981-99-9054-2_11

Reviewer

- Solar Energy (Elsevier)
- Results in Physics (Elsevier)
- International Journal of Green Energy (Taylor & Francis)
- Journal of Optics (Springer Nature)
- Scientific Reports (Springer Nature)
- Optical and Quantum Electronics (Springer Nature)
- Journal of Renewable and Sustainable Energy (AIP Publishing)

Teaching Experience: (Subject Taught at Undergraduate Level):

- Basic Electronics

- Digital Electronics
- Microprocessor and Microcontroller
- Computer Architecture and Organization
- Analog Electronics

Awards/Recognition/Appreciation:

- Commendable Research Award (MMMUT, Gorakhpur, 2025)
- Invited for “Expert-Led Training and Hands-On Session in Solar Cell” (HBTU, Kanpur, 2024)
- UGC-NET, 2022
- National Fellowship (NBCFDC)

(Alok Kumar Patel)