

## CURRICULUM VITAE

### **Dr. Sagar Bhattarai**

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### **Fields of Research Interest**

- Photovoltaic devices: Perovskite solar cell, Organic Light Emitting Diode, Mathematical Modeling, Simulations of devices.
- Optoelectronics: III-V inorganic compounds, Quantum dot and Quantum well.

### **Educational Degrees**

- Post-Doctoral Researcher: Technology Innovation and Development Foundation, Indian Institute of Technology Guwahati; 2023-2024 (India)
- Assistant Professor and HoD (Physics), Arunachal University of Studies, Namsai, India. (2022-2023)
- Doctorate (PhD): Department of Basic and Applied Science (Physics), National Institute of Technology, Arunachal Pradesh, 2019-2022. (First Class)  
Title of thesis: "Investigation on Perovskite material for Solar cell application".
- Master Degree (M.Sc.): Department of Basic and Applied Science (Physics), National Institute of Technology, Arunachal Pradesh, 2019. (First Class)
- Graduation (B.Sc.): Pub Kamrup College (Physics), Gauhati University, 2017. (First Class)
- Higher Secondary (12<sup>th</sup>): Sipajhar Higher Secondary and M.P School, Darrang, 2014. (First Class)

- HSLC (10<sup>th</sup>): Khaliyai Anchalik Adarsha Vidyalaya, Sipajhar, 2012. (First Class with Distinction).

### Experience in Research

- I. Worked as HoD and Assistant Professor in Arunachal University of Studies, Namsai, Arunachal Pradesh (India). {From 19/09/2022- till 10/07/2023}
- II. Worked as a Doctoral Research Fellow in Department of Basic and Applied Science (Physics), National Institute of Technology, Arunachal Pradesh (June 2019 – August 2022).
- III. Worked as a Post-Graduate Research Scholar for 6 month in the Basic and Applied Science (Physics) (Dec 2018-June 2019).

### Journal publications (SCI)

1. **Sagar Bhattarai**, Rahul Pandey, Jaya Madan, Deboraj Muchahary “A novel graded approach for improving the efficiency of lead-free perovskite solar cells”, Solar Energy, **244**, 255-263(2022) (**I.F- 7.188**).
2. **Sagar Bhattarai**, “Highly efficient lead-free perovskite solar cells design through SCAPS-1D simulations” Indian Journal of Physics, 2023 (**I.F- 2.0**).
3. **Sagar Bhattarai**, T. D. Das, “Optimization of carrier transport materials for the performance enhancement of the  $\text{MAGeI}_3$  based perovskite solar cell”, Solar Energy, **217** (2021), 200 (**I.F- 7.188**).
4. **Sagar Bhattarai**, Asya Mhamdi, Ismail Hossain, Yassine Raoui, Rahul Pandey, Jaya Madan, Abdelaziz Bouazizi, Madhusudan Maiti, Dipankar Gogoi, Arvind Sharma, “A detailed review of perovskite solar cells: Introduction, working principle, modelling, fabrication techniques, future challenges” Micro and Nanostructures, **172**, 2022, 207450. (**I.F- 3.22**).
5. **Sagar Bhattarai**, Arvind Sharma, T. D. Das, “Efficiency enhancement of perovskite solar cell by using doubly carrier transport layers with a distinct bandgap of  $\text{MAPbI}_3$  active layer”, Optik, **224** (2020) 165430 (**I.F- 2.84**).
6. **Sagar Bhattarai**, Rahul Pandey, Jaya Madan, Firdousa Ahmed, Shahnaz Shabnam, “Performance improvement approach of all inorganic perovskite solar cell with numerical simulation”, Material Today Communication, **33** (2022) 104364 (**I.F-3.662**).
7. **Sagar Bhattarai**, T. D. Das, “Optimization of the perovskite solar cell design to achieve a highly improved efficiency”, Optical Materials, **111** (2021), 110661 (**I.F- 3.754**).
8. **Sagar Bhattarai**, Arvind Sharma, Deboraj Muchahary, Dipankar Gogoi, T.D. Das, “Numerical simulation study for efficiency enhancement of doubly graded perovskite solar cell”, Optical Materials, **118** (2021), 111285(**I.F-3.754**).
9. **Sagar Bhattarai**, Arvind Sharma, Deboraj Muchahary, Monika Gogoi, T.D. Das, “Carrier transport layer free perovskite solar cell for enhancing the efficiency: a simulation study”, Optik, **243** (2021), 167492 (**I.F-2.84**).

10. **Sagar Bhattarai**, Arvind Sharma, PK Swain, T.D. Das, “Numerical Simulation to Design an Efficient Perovskite Solar Cell Through Triple-Graded Approach”, *Journal of Electronic Materials*, **50**(2021), 6756–6765 (**I.F-2.047**).
11. **Sagar Bhattarai**, Rahul Pandey, Jaya Madan, Asya Mhamdi, Abdelaziz Bouazizi, Debora Muchahary, Dipankar Gogoi, Arvind Sharma and T. D. Das, “Investigation of Carrier Transport Materials for Performance Assessment of Lead-Free Perovskite Solar Cells” *IEEE Transactions on Electron Devices* 2022 (0018-9383), 1-8 (**I.F- 3.221**).
12. Debora Muchahary, Lakum Sai Ram, Rewrewa Narzary, Partha Pratim Sahu, **Sagar Bhattarai**, Shubham Tayal, “Heterojunction between crystalline silicon and nanocomposite coupled ZnO· SnO<sub>2</sub> and optimization of its photovoltaic performance” *Current Applied Physics*, **38** (2022) 15-21(**I.F- 2.856**).
13. Arvind Sharma, **Sagar Bhattarai** & T. D. Das, “Efficiency improvement of organic light-emitting diodes device by attaching microlens arrays and dependencies on the aspect ratio”, *Indian Journal of Physics* (2022) (**I.F- 1.9**).
14. Rahul Pandey, **Sagar Bhattarai**, Kulbhushan Sharma, M. Khalid Hossain “Halide Composition Engineered Non-Toxic Perovskite-Silicon Tandem Solar Cell with 30.7% Conversion Efficiency” *ACS Applied Electronic Materials* DOI: 10.1021/acsaelm.2c01574 (2023) (**I.F- 4.494**).
15. **Sagar Bhattarai**, GF Ishraque Toki, Jaya Madan, Mongi Amami, Rahul Pandey, DP Samajdar, Safa Ezzine, Mohd Zahid Ansari, M Khalid Hossain, “Design Principles of a Novel Triple Perovskite Absorber for Efficiency Enhancement: An Optimization Study” *Energy & Fuels*, (2023) (**I.F- 5.3**).
16. **Sagar Bhattarai** Rahul Pandey, “Performance analysis and optimization of all-inorganic CsPbI<sub>3</sub> based perovskite solar cell”, *Indian Journal of Physics* (2023) (**I.F- 1.938**).
17. **Sagar Bhattarai**, Rahul Pandey, Jaya Madan, Girija Shankar Sahoo, Ismail Hossain, Saikh Mohammad Wabaidur, Mohd Zahid Ansari, Numerical investigation of toxic free perovskite solar cells for achieving high efficiency, *Materials Today Communication* 35(105893). (**I.F- 3.8**).
18. **Sagar Bhattarai**, Deepthi Jayan K, Rahul Pandey, Jaya Madan, Mohd Zahid Ansari, Mongi Amami, M Khalid Hossain, “Optimized High-Efficiency Solar Cells with Dual Hybrid Halide Perovskite Absorber Layers” *Energy & Fuels*, (2023) (**I.F- 5.3**).
19. M Khalid Hossain, GF Ishraque Toki, DP Samajdar, MHK Rubel, M Mushtaq, Md Rasidul Islam, Md Ferdous Rahman, **Sagar Bhattarai**, H Bencherif, Mustafa KA Mohammed, Rahul Pandey, Jaya Madan, Photovoltaic Performance Investigation of Cs<sub>3</sub>Bi<sub>2</sub>I<sub>9</sub>-Based Perovskite Solar Cells with Various Charge Transport Channels Using DFT and SCAPS-1D Frameworks, 2023, *Energy & Fuels*.
20. M Khalid Hossain, GF Ishraque Toki, Jaya Madan, Rahul Pandey, H Bencherif, Mustafa KA Mohammed, Md Rasidul Islam, MHK Rubel, Md Ferdous Rahman, **Sagar Bhattarai**, DP Samajdar, “A comprehensive study of the optimization and comparison of cesium halide perovskite solar cells using ZnO and Cu<sub>2</sub>FeSnS<sub>4</sub> as charge transport layers” *New Journal of Chemistry*, 2023.
21. M Khalid Hossain, Mustafa KA Mohammed, Rahul Pandey, AA Arnab, MHK Rubel, KM Hossain, Md Hasan Ali, Md Ferdous Rahman, H Bencherif, Jaya Madan, Md

- Rasidul Islam, DP Samajdar, **Sagar Bhattarai**, Numerical Analysis in DFT and SCAPS-1D on the Influence of Different Charge Transport Layers of CsPbBr<sub>3</sub> Perovskite Solar Cells, 2023.
22. Deboraj Muchahary, **Sagar Bhattarai**, Arvind Sharma, Ajay Kumar, Fundamental Physics of Light Emitting Diodes, Organic and Inorganic Light Emitting Diodes: Reliability Issues and Performance Enhancement (Book chapter) 2023.
  23. **Sagar Bhattarai**, M Khalid Hossain, Rahul Pandey, Jaya Madan, DP Samajdar, Md Ferdous Rahman, Mohd Zahid Ansari, Mongi Amami, “Perovskite Solar Cells with Dual Light Absorber Layers for Performance Efficiency Exceeding 30%”, Energy & Fuels, (2023) (**I.F- 5.3**).
  24. **Sagar Bhattarai**, Dipankar Gogoi, Arvind Sharma, TD Das, “Performance enhancement by an embedded microlens array in perovskite solar cells” Indian Journal of Physics , 2023. (**I.F- 2.0**)
  25. **Sagar Bhattarai**, M Khalid Hossain, GF Ishraque Toki, DP Samajdar, Rahul Pandey, Jaya Madan, Mongi Amami, “Comparative Study of Distinct Halide Composites for Highly Efficient Cesium-Based Perovskite Solar Cells” Energy & Fuels, (**I.F- 5.3**).
  26. **Sagar Bhattarai**, M Khalid Hossain, Jaya Madan, Rahul Pandey, DP Samajdar, PK Kalita, Ahmed Nabih Zaki Rashed, Mohd Zahid Ansari, Mongi Amami, “Performance improvement of CZTS-based hybrid solar cell with double hole transport layer using extensive simulation”, Journal of Physics and Chemistry of Solids (**IF: 4**).
  27. **Sagar Bhattarai**, Jaya Madan, Rahul Pandey, Dip Prakash Samajdar, Deboraj Muchahary, Mongi Amami, Safa Ezzine, M Khalid Hossain, “Performance Improvement of Hybrid-Perovskite Solar Cells with Double Active Layer Design Using Extensive Simulation”, Energy & Fuels (**I.F- 5.3**).
  28. **Sagar Bhattarai**, M Khalid Hossain, Jaya Madan, Rahul Pandey, DP Samajdar, Mohd Zahid Ansari, Ismail Hossain, Safa Ezzine, Mongi Amami, “Performance improvement of HTL-free perovskite solar cells with the graded approach by numerical simulation” Journal of Physics and Chemistry of Solids (**IF: 4**).
  29. **Sagar Bhattarai**, Dharitri Borah, Jayashree Rout, Rahul Pandey, Jaya Madan, Ismail Hossain, Palky Handique, Mohd Zahid Ansari, M Khalid Hossain, Md Ferdous Rahman, “Designing an efficient lead-free perovskite solar cell with green-synthesized CuCrO<sub>2</sub> and CeO<sub>2</sub> as carrier transport materials”, RSC advances, (**IF: 3.9**).
  30. **Sagar Bhattarai**, Rahul Pandey, Jaya Madan, Firdausa Ahmed, Shahnaz Shabnam, Performance improvement approach of all inorganic perovskite solar cell with numerical simulation, Materials Today Communication 35(105893). (**I.F- 3.8**).
  31. Nikhil Shrivastav, Jaya Madan, Mustafa KA Mohammed, Ali K Al-Mousoi, M Khalid Hossain, Mongi Amami, Md Ferdous Rahman, DP Samajdar, **Sagar Bhattarai**, Rahul Pandey, Optimizing the performance of Cs<sub>2</sub>AgBiBr<sub>6</sub> based solar cell through modification of electron and hole transport layers, Materials Today Communication 35(105893). (**I.F- 3.8**).
  32. **Sagar Bhattarai**, M Khalid Hossain, GF Ishraque Toki, DP Samajdar, Rahul Pandey, Jaya Madan, Mongi Amami, “Comparative Study of Distinct Halide Composites for Highly Efficient Cesium-Based Perovskite Solar Cells” Energy & Fuels, (**I.F- 5.3**).
  33. **Sagar Bhattarai**, Mustafa KA Mohammed, Jaya Madan, Rahul Pandey, Hima Abdelkader, Lamia Ben Farhat, Mongi Amami, M Khalid Hossain, “Comparative Study of Different Perovskite Active Layers for Attaining Higher Efficiency Solar Cells: Numerical Simulation Approach”, Sustainability (**I.F- 3.9**).

34. **Sagar Bhattarai**, PK Kalita, Ismail Hossain, Abdullah Saad Alsubaie, Khaled Hussein Mahmoud, Mohd Zahid Ansari, Petr Janicek, “Designing an Efficient Lead-Free Perovskite Solar Cell through a Computational Method” *Crystals*, **(I.F- 2.7)**.
35. **Sagar Bhattarai**, M Khalid Hossain, Rahul Pandey, Jaya Madan, DP Samajdar, Mithun Chowdhury, Ferdous Rahman, Mohd Zahid Ansari, Munirah D Albaqami, “Enhancement of efficiency in CsSnI<sub>3</sub> based perovskite solar cell by numerical modeling of graphene oxide as HTL and ZnMgO as ETL”, *Heliyon* **(IF: 4)**.
36. **Sagar Bhattarai**, Rahul Pandey, Jaya Madan, Soney Tayeng, PK Kalita, Mohd Zahid Ansari, Lamia Ben Farhat, Mongi Amami, M Khalid Hossain, “Comparative study of distinct halide composites for highly efficient perovskite solar cells using a SCAPS-1D simulator”, *RSC Advances*, **(I.F- 3.9)**.
37. Debashish Pal, Abdulkarem HM Almawgani, Soumee Das, Amrindra Pal, Md Ferdous Rahman, Adam RH Alhawari, **Sagar Bhattarai**, “Numerical investigation of a high efficiency BaZrxTi1-xS3 chalcogenide perovskite solar cell”, *New Journal of Chemistry*, **((I.F- 3.9))**.
38. Debashish Pal, Abdulkarem HM Almawgani, Soumee Das, Amrindra Pal, Md Ferdous Rahman, Adam RH Alhawari, **Sagar Bhattarai**, “Numerical investigation of a high efficiency BaZrxTi1-xS3 chalcogenide perovskite solar cell”, *New Journal of Chemistry*, **(I.F- 3.3)**.
39. Rahul Pandey, **Sagar Bhattarai**, Kulbhushan Sharma, M. Khalid Hossain “Halide Composition Engineered Non-Toxic Perovskite-Silicon Tandem Solar Cell with 30.7% Conversion Efficiency” *ACS Applied Electronic Materials* (2023) **(I.F- 4.7)**.
40. M Khalid Hossain, **Sagar Bhattarai**, AA Arnab, Mustafa KA Mohammed, Rahul Pandey, Md Hasan Ali, Md Ferdous Rahman, Md Rasidul Islam, DP Samajdar, Jaya Madan, H Bencherif, DK Dwivedi, Mongi Amami, “Harnessing the potential of CsPbBr<sub>3</sub>-based perovskite solar cells using efficient charge transport materials and global optimization”, *RSC advances*, **13**, 21044-21062 (2023). **(I.F- 3.9)**
41. M Khalid Hossain, GF Ishraque Toki, DP Samajdar, MHK Rubel, M Mushtaq, Md Rasidul Islam, Md Ferdous Rahman, **Sagar Bhattarai**, H Bencherif, Mustafa KA Mohammed, Rahul Pandey, Jaya Madan, “Photovoltaic Performance Investigation of Cs<sub>3</sub>Bi<sub>2</sub>I<sub>9</sub>-Based Perovskite Solar Cells with Various Charge Transport Channels Using DFT and SCAPS-1D Frameworks”, *Energy & Fuels*, **37**, 7380–7400 (2023). **(I.F- 5.3)**
42. Dipankar Gogoi, **Sagar Bhattarai**, TD Das, “A numerical investigation for performance enhancement of organic solar cell using Al-doped zinc oxide anode” *Indian Journal of Physics*, **(I.F- 2)**.
43. **Sagar Bhattarai**, M Khalid Hossain, GF Ishraque Toki, Rahul Pandey, Jaya Madan, DP Samajdar, Safa Ezzine, Lamia Ben Farhat, Mohd Zahid Ansari, Shaik Hasane Ahammad, Ahmed Nabih Zaki Rashed, “Efficiency enhancement of perovskite solar cell devices utilizing MXene and TiO<sub>2</sub> as an electron transport layer”, *New Journal of Chemistry*, **((I.F- 3.9))**.
44. Md Ferdous Rahman, Md Naim Hasan Toki, Abdul Kuddus, Mustafa KA Mohammed, Md Rasidul Islam, **Sagar Bhattarai**, Jaya Madan, Rahul Pandey, Riadh Marzouki, Mosbah Jemmali, “Boosting efficiency above 30% of novel inorganic Ba<sub>3</sub>SbI<sub>3</sub> perovskite solar cells with potential ZnS electron transport layer (ETL)” *Materials Science and Engineering: B*, **(I.F- 3.6)**
45. M Khalid Hossain, GF Ishraque Toki, Jaya Madan, Rahul Pandey, H Bencherif, Mustafa KA Mohammed, Md Rasidul Islam, MHK Rubel, Md Ferdous Rahman, **Sagar Bhattarai**, DP Samajdar, “A comprehensive study of the optimization and comparison of cesium halide perovskite solar cells using ZnO and Cu<sub>2</sub>FeSnS<sub>4</sub> as charge transport layers” *New Journal of Chemistry*, **47**, 8602-8624(2023). **(I.F- 3.3)**

46. Arvind Sharma, Gaurav Gupta, **Sagar Bhattarai**, “Theoretical electronic and optical properties of AlGaAsN/GaAs quantum well using 10 band kp approach” *Indian Journal of Physics*, 2023. (I.F- 2.0)
47. M Khalid Hossain, Mustafa KA Mohammed, Rahul Pandey, AA Arnab, MHK Rubel, KM Hossain, Md Hasan Ali, Md Ferdous Rahman, H Bencherif, Jaya Madan, Md Rasidul Islam, DP Samajdar, **Sagar Bhattarai**, “Numerical Analysis in DFT and SCAPS-1D on the Influence of Different Charge Transport Layers of CsPbBr<sub>3</sub> Perovskite Solar Cells””, *Energy Fuels* (I.F- 5.3).
48. Avijit Ghosh, Md Ferdous Rahman, Md Rasidul Islam, Md Shoriful Islam, M Khalid Hossain, **Sagar Bhattarai**, Rahul Pandey, Jaya Madan, Md Atikur Rahman, Abu Bakar Md Ismail, “Structural, electronic and optical characteristics of inorganic cubic perovskite Sr<sub>3</sub>AsI<sub>3</sub>” *Optics Continuum*, Scopus, 2023.
49. M Khalid Hossain, Mustafa KA Mohammed, Rahul Pandey, AA Arnab, MHK Rubel, KM Hossain, Md Hasan Ali, Md Ferdous Rahman, H Bencherif, Jaya Madan, Md Rasidul Islam, DP Samajdar, **Sagar Bhattarai**, “Numerical Analysis in DFT and SCAPS-1D on the Influence of Different Charge Transport Layers of CsPbBr<sub>3</sub> Perovskite Solar Cells”, *Energy Fuels*, **37**, 6078–6098(2023). (I.F- 5.3).
50. M. Khalid Hossain, M. Shihab Uddin, G. F. Ishraque Toki, Mustafa K. A. Mohammed, Rahul Pandey, Jaya Madan, Md. Ferdous Rahman, Md. Rasidul Islam, **Sagar Bhattarai**, H. Bencherif, D. P. Samajdar, Mongi Amami, D. K. Dwivedi “Achieving above 24% efficiency from non-toxic CsSnI<sub>3</sub> perovskite solar cells through harnessing the potential of the absorber and charge transport layers” *RSC advances*, (I.F- 3.9).
51. Gagan Kumar, Babban Kumar Ravidas, **Sagar Bhattarai**, Mukesh Kumar Roy, Dip Prakash Samajdar, “Exploration of the photovoltaic properties of oxide-based double perovskite Bi<sub>2</sub>FeCrO<sub>6</sub> using an amalgamation of DFT with spin–orbit coupling effect and SCAPS-1D simulation”, *New Journal of Chemistry*, ((I.F- 3.9).)
52. **Sagar Bhattarai**, M Khalid Hossain, Lamia Ben Farhat, Riadh Marzouki, Ismail Hossain, Mohd Zahid Ansari, Jaya Madan, Rahul Pandey, “Performance enhancement using an embedded nano-pyramid in a perovskite solar cell with TaTm as a hole transport layer”, *New Journal of Chemistry*, ((I.F- 3.9).)
53. Md. Shamim Reza, Md. Ferdous Rahman, Abdul Kuddus, Md. Selim Reza, Md. Abdul Monnaf Md. Rasidul Islam, **Sagar Bhattarai**, Samah Al-Qaisi, Lamia Ben Farhat, Safa Ezzine, “Improving the efficiency of a new perovskite solar cell based on Sr<sub>3</sub>SbI<sub>3</sub> by optimizing the hole transport layer (HTL)”, *Energy Fuels*, (2023). (I.F- 5.3).
54. Gazi Farhan ISHRAQUE Toki, M. Khalid Hossain, Rahul Pandey, **Sagar Bhattarai**, Ahmed M Tawfeek, Saikh Mohammad, Md. Jamiul Ahsan Habib, Nayeem Mahmud, Md. Ferdous Rahman, P. Sasikumar, Hichem Bencherif, “Optimizing lead-free Cs<sub>3</sub>Bi<sub>2</sub>I<sub>9</sub> perovskite solar cells: Exploring absorber and charge transport layers parameters for improved efficiency” *Journal of Optics* (IF-2.1)
55. Pratap Kumar Dakua, Rajib Kumar Dash, Abdelmoumene Laidouci, **Sagar Bhattarai**, Usen Dudekula, Savita Kashyap, Vipul Agarwal, Ahmed Nabih Zaki Rashed, Evaluating CZTS Solar Cell Performance based on Generation and Recombination Models for Possible ETLs through Numerical Analysis, *Journal of Electronic Materials*, Springer (IF- 2.1).
56. **Sagar Bhattarai**, Rahul Pandey, Jaya Madan, Zahid Ansari, M Khalid Hossain, Mongi Amami, Shaik Hasane Ahammad, Ahmed Nabih Zaki Rashed, Chlorine-doped perovskite materials for highly efficient perovskite solar cell design offering an efficiency of nearly 29%, *Progress in Photovoltaics: Research and Applications*, Wiley (IF- 6.7).
57. **Sagar Bhattarai**, Deepthi Jayan, Abderrahim Yousfi, Mithun Chowdhury, Md Ferdous Rahman, Rahul Pandey, Jaya Madan, Mohd Zahid Ansari, M Khalid Hossain, Novel double

graded perovskite materials for performance increment of perovskite solar cell using extensive numerical analysis, 2023 Phys. Scr. 98 095507.

58. Shivani Malhotra, Lipika Gupta, Hritik Nandan, Mustafa K. A. Mohammed, M. Khalid Hossain, Jaya Madan, **Sagar Bhattarai**, Mohd Zahid Ansari, Ayman A. Ghfar and Rahul Pandey, "Tailoring Hole Transport Layer and Understanding the Impact of Sn Oxidation for Different Mixed Halide Perovskite Active Layers: In Quest for the Perfect Match" Energy and Fuels, 2024.
59. Nikhil Shrivastav, Jaya Madan, M Khalid Hossain, Mustafa KA Mohammed, Dip Prakash Samajdar, **Sagar Bhattarai**, Rahul Pandey, "Investigating inorganic perovskite as absorber materials in perovskite solar cells: machine learning analysis and optimization" Physica Scripta, 2024.
60. Avijit Ghosh, Md. Ferdous Rahman, Abdul Kuddus, Mustafa K. A. Mohammed, Md. Rasidul Islam, **Sagar Bhattarai**, Aijaz Rasool Chaudhry, Ahmad Irfan, "Investigating of Novel Inorganic Cubic Perovskites of A<sub>3</sub>BX<sub>3</sub> (A=Ca, Sr, B=P, As, X=I, Br) and Their Photovoltaic Performance with Efficiency over 28%, Journal of Alloys and Compounds, 2024.

### Conference publications (Scopus indexed)

1. **Sagar Bhattarai**, Arvind Sharma, and T. D. Das, "Factor affecting the performance of perovskite solar cell for distinct MAPI layer thickness", AIP Conference Proceedings, **2269**, 030071 (2020).
2. **Sagar Bhattarai**, Arvind Sharma, and T. D. Das, "Performance Enhancement for Scattering Effect in Perovskite Solar Cell with Distinct Cathode Materials" Electronic Systems and Intelligent Computing, 965-971 (2020) (**BOOK CHAPTER**)
3. Arvind Sharma, **Sagar Bhattarai**, and T. D. Das, "Fluorescent trilayer OLED device: An electrical and optical characterization-based simulation", AIP Conference Proceedings, **2269**, 030049 (2020).
4. D Muchahary, **S Bhattarai**, AK Mahato, S Maity, "A Brief on Emerging Materials and Its Photovoltaic Application" Emerging Materials, 361-406 (**BOOK CHAPTER**)
5. Deboraj Muchahary, **Sagar Bhattarai**, Arvind Sharma, Ajay Kumar Mahato, Fundamental Physics of Light Emitting Diodes: Organic and Inorganic Technology, Organic and Inorganic Light Emitting Diodes, CRC Press, (**BOOK CHAPTER**)
6. Dipankar Gogoi, **Sagar Bhattarai**, Hrishikesh Kalita, TD Das, "Aluminum doped Zinc oxide anode film for performance enhancement of trilayer fluorescence organic light emitting diode" Materials Today: Proceedings, Elsevier, (2023).

### Book Publication

1. THE PHYSICS OF PEROVSKITE SOLAR CELLS: Materials and Characterizations, ISBN: 9798887832289 (Notion Press).
2. REVOLUTION OF PEROVSKITE SOLAR CELLS: FROM BASIC TO ADVANCED (Notion Press).

### Ongoing Projects:

1. “Large scale production of energy from organic solar cell for the utilization in underwater surveillance” from Indian Institute of Technology Guwahati as **Principal Investigator**, (Funding: 19 Lakh INR).
2. “Development and characterization of CsSnGeI<sub>3</sub> based solar cell devices through theoretical and experimental approach” from DST-SERB, Core Research Grant as **Co-Principal Investigator**, (Funding: 49 Lakh INR).

## References

1. Dr. D P Samajdar, Assistant Professor, Indian Institute of Information Technology, Design and Manufacturing, Jabalpur, Madhya Pradesh (Email: [dipprakash010@gmail.com](mailto:dipprakash010@gmail.com)).
2. Dr. Rahul Pandey, Assistant Professor, Chitkara University, Punjab (Email: [rahul.pndey@chitkara.edu.in](mailto:rahul.pndey@chitkara.edu.in)).
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