



Prof. (Dr.) Anirban Bagui is working as an Assistant Professor in the Department of Physics, Garhbeta College since 31st December, 2021. His research interests lie in the field of renewable energies, more specifically organic photovoltaics.

Academic Qualifications

- PhD, Indian Institute of Technology, Kanpur (2015)
- MSc, Indian Institute of Technology, Kanpur (2007)
- BSc, Ramakrishna Mission Vidyamandira, Belur Math, Calcutta University (2005)

Professional Experience

- Fulbright Postdoctoral Fellow, North Carolina State University, Raleigh, USA
- Asst. Professor (Inspire Faculty), Indian Institute of Engineering Science & Technology, Shibpur
- Visiting researcher, Nanyang Technological University, Singapore
- DST-Inspire Faculty, CSIR-Indian Institute of Chemical Technology, Hyderabad
- National Postdoctoral Fellow, CSIR-Indian Institute of Chemical Technology, Hyderabad
- Research Associate, CSIR-Indian Institute of Chemical Technology, Hyderabad
- Senior Project Associate, National Centre for Flexible Electronics, IIT Kanpur

Research interests:

- Organic solar cells, device physics of organic semiconductors, organic electronics
- Perovskite solar cells, flexible large area electronics
- Solar radiation, wind energy
- Nano-technology, nano-materials

Courses Undertaken:

- CC-2: Mechanics
- CC-4: Waves and Optics
- SEC-2: Renewable Energy and Energy Harvesting

Awards and Achievements

- Awarded Fulbright-Nehru postdoctoral fellowship by USIEF in 2019.
- Selected among top ten posters and for Flash Talk in 8th East Asia Symposium on Functional Dyes and Advanced Materials (EAS8) held at CSIR NIIST Thiruvananthapuram in 2017.
- Selected for SERB Indo-US postdoctoral fellowship funded by IUSSTF, Government of India in 2017 (not availed).
- Selected for INSPIRE Faculty Award sponsored by DST, Government of India in 2017.
- Selected for competitive postdoctoral position at University of Calgary, Canada in 2017 (not availed).
- Recipient of National Postdoctoral Fellowship (N-PDF) provided by SERB, Government of India.
- Reviewer of Organic Electronics (Elsevier), Polymer Chemistry (Royal Society of Chemistry), Journal of Energy Chemistry (Elsevier), Materials Science in Semiconductor Processing (Elsevier).
- Invention award (in cash) from Intellectual Ventures Asia PTE Ltd.
- Best poster award in 15th International Workshop on the Physics of Semiconductor Devices (IWPSD) held at Delhi in 2009.
- Cash award (Rs. 20,000/-) from Dean Resource Planning & Generation (DRPG), IIT Kanpur for publication in journals listed in ISI web of science.
- Doctoral Fellowship (2007-2012) for carrying out PhD research work funded by MHRD, Government of India.
- All India rank 19 in JAM (Joint admission to MSc) Physics in 2005.
- Ranked 7th in B.Sc. Physics in Calcutta University in 2005.
- Awarded prestigious Sw. Vireswarananda and Sw. Vimuktananda Memorial Prize from RKMVM, Belur Math for best performance in Indian Spiritual Heritage.
- Awarded Jogindranath Barman Memorial prize for scoring highest marks in BSc Mathematics (General) from RKMVM, Belur Math in 2005.
- Recipient of merit certificate under national scholarship scheme in higher secondary examination from West Bengal in 2002.
- Recipient of merit certificate and cash award under national scholarship scheme in West Bengal Secondary Examination (10th level) in 2000.
- Recipient of merit certificate for Medha Sandhan Pariksha organized by Academic Science, Culture & Promotion Society, West Bengal in the year of 2000.
- Recipient of merit certificate for Science Talent Search Test organized by Jaitiya Vijnan Parishad, Indian Science Congress Association in the year of 1995-1999.
- School topper in all classes up to 10th level secondary examination.

Patents Filed

- “Manufacturing of organic photovoltaic devices”, Anirban Bagui, S. Sundar Kumar Iyer, patent application no: 654/DEL/2011, dated: 09-03-2011

- “Integrating electric-field annealing in glove box ante-chamber”, Anirban Bagui, Anukul Parhi, S. Sundar Kumar Iyer, patent application no: 33/DEL/2015, dated: 06-01-2015
- “A method of manufacturing an organic semiconductor film having improved conductivity”, Anirban Bagui, S. Sundar Kumar Iyer, patent application no: 201811047532, dated: 15-12-2018.

Book:

- “Effect of Electric-Field Annealing on P3HT:PCBM Solar Cell Performance” by Anirban Bagui, Lap Lambert Academic Publishing, Germany, 2016 (ISBN:3659875511)

Journal Publications:

1. **A. Bagui**, S.S.K. Iyer, “Improvement of hole mobility in PTB7 polymer film with a low temperature electric field treatment”, *Journal of Applied Physics* 128, 215501 (2020) (DOI: <https://doi.org/10.1063/5.0026329>)
2. A. Solanki, M. M. Tavakoli, Q. Xu, S. S. H. Dintakurti, S. S. Lim, **A. Bagui**, J. V. Hanna, J. Kong and T. C. Sum, “Heavy Water Additive in Formamidinium: A Novel Approach to Enhance Perovskite Solar Cell Efficiency”, *Advanced Materials*, 2020, 1907864 (DOI: 10.1002/adma.201907864) (Impact factor – **25.809** in 2018).
3. S. Thawarkar, P. Nagarjuna, **A. Bagui**, R. Narayan, J. S. Panicker, V. C. Nair, S. P. Singh, “Trifluoromethyl-Directed Supramolecular Self-Assembly of Fullerenes: Synthesis, Characterization and Photovoltaic Applications”, *ChemistrySelect*, 2020, vol. 5, issue 3, pages 1115-1121 (DOI: 10.1002/slct.201902974) (Impact factor – **1.716** in 2018)
4. R. Datt, Suman, **A. Bagui**, A. Siddiqui, R. Sharma, V. Gupta, S. Yoo, S. Kumar, S.P. Singh – “Effectiveness of Solvent Vapor Annealing over Thermal Annealing on the Photovoltaic Performance of Non-Fullerene Acceptor Based BHJ Solar Cells”, *Scientific Reports (Nature)*, 2019, vol. 9, issue 1, pages 8529 (DOI: 10.1038/s41598-019-44232-0) (Impact factor – **4.122** in 2018).
5. P. Nagarjuna, **A. Bagui**, R.S. Rao, V. Gupta, S.P. Singh – “Highly Efficient Benzo-Furan Based Electron Acceptor derived from One-Pot Synthesis for High Performance Bulk Heterojunction Solar cells”, *ACS Applied Energy Materials*, 2019, vol. 2, pages 1019-1025 (DOI: 10.1021/acsaem.8b01064).
6. N. Chander, E. Jayaraman, M. Rawat, **A. Bagui**, S.S.K. Iyer – “Stability and reliability of PTB7:PC₇₁BM and PTB7:PC₆₁BM inverted organic solar cells: A comparative study”, *IEEE Journal of Photovoltaics*, 2019, vol. 9, pages 183-193 (DOI: 10.1109/JPHOTOV.2018.2874952) (Impact factor - **3.075** in 2018).
7. B. Yadagiri, K. Narayanaswamy, R.S. Rao, **A. Bagui**, R. Datt, V. Gupta, S. P. Singh, “D- π -A- π -D Structured Diketopyrrolopyrrole Based Electron Donors for Solution

- Processed Organic Solar Cells”, ACS Omega, 2018, vol. 3, pages 13365-13373 (DOI: 10.1021/acsomega.8b01515).
8. Suman, **A. Bagui**, V. Gupta, S. P. Singh, “A Fluorene Core Based Electron Acceptor for Fullerene-Free BHJ Organic Solar Cells – Towards Power Conversion Efficiency Over 10%”, Chemical Communication, 2018, vol. 54, pages 4001-4004 (DOI:10.1039/C7CC08440D) (Impact factor - **6.29** in 2018).
 9. P. Nagarjuna, **A. Bagui***, A. Garg, V. Gupta, S. P. Singh, “One-Step Synthesis of New Electron Acceptor for High Efficiency Solution Processable Organic Solar Cells”, Journal of Physical Chemistry C, 2017, vol. 121, pages 26615–26621 (DOI: 10.1021/acs.jpcc.7b08167) (**corresponding author**) (Impact factor – **4.772** in 2016).
 10. Suman, **A. Bagui**, R. Datt, V. Gupta, S. P. Singh, “A Simple Fluorene Core-Based Non-fullerene Acceptor for High Performance Organic Solar Cells”, Chemical Communication, 2017, vol. 53, pages 12790-12793 (DOI:10.1039/C7CC08237A) (Impact factor - **6.567** in 2016).
 11. P. Nagarjuna, N. Chaturvedi, **A. Bagui**, R. Runjhun, A. Garg, S.P. Singh, “Solution-Processed Organic Solar Cells Using New Electron Acceptor Derived from Naphthalene and Fluorene Unit”, ChemistrySelect, 2017, vol. 2, pages 7913–7917. (DOI: 10.1002/slct.201700910) (Impact factor – **1.505** in 2017).
 12. K. Narayanaswamy, B. Yadagiri, **A. Bagui**, V. Gupta, S. P. Singh, “Multichromophore Donor Materials Derived from Diketopyrrolopyrrole and Phenoxazine: Design, Synthesis and Photovoltaic Performance”, European Journal of Organic Chemistry, 2017, vol. 2017, pages 4896-4904 (DOI: 10.1002/ejoc.201700845) (Impact factor - **3.065** in 2016).
 13. R. S. Rao, **A. Bagui**, G. H. Rao, V. Gupta, S. P. Singh, “Achieving high efficiency using BODIPY dye as photoactive material for solution-processed organic solar cells”, Chemical Communication, 2017, vol. 53, pages 6953-6956 (DOI:10.1039/C7CC03363J) (Impact factor – **6.567** in 2016).
 14. Suman, V. Gupta, **A. Bagui**, S.P. Singh, “Molecular Engineering of Highly Efficient Small Molecule Nonfullerene Acceptor for Organic Solar Cells”, Advanced Functional Materials, 2017, vol. 27, pages 1603820 (DOI: 10.1002/adfm.201603820) (Impact factor – **11.8** in 2016).
 15. P. Nagarjuna, **A. Bagui**, V. Gupta, S.P. Singh, “A highly efficient PTB7-Th polymer donor bulk hetero-junction solar cell with increased open circuit voltage using fullerene acceptor CN-PC70BM”, Organic Electronics, 2017, vol. 43, pages 262-267 (**equal contribution**) (DOI: 10.1016/j.orgel.2017.01.015) (Impact factor – **3.471** in 2016).
 16. Suman, **A. Bagui**, V. Gupta, K.K. Maurya, S.P. Singh, “High-Performance Non-Fullerene Acceptor Derived from Diathiafulvalene Wings for Solution-Processed Organic Photovoltaics”, The Journal of Physical Chemistry C, 2016, vol. 120, pages 24615-24622 (**equal contribution**) (DOI: 10.1021/acs.jpcc.6b07778) (Impact factor – **4.772** in 2016).
 17. P. Nagarjuna, **A. Bagui**, J. Hou, S.P. Singh, “New Electron Acceptor Derived from Fluorene: Synthesis and Its Photovoltaic Properties”, The Journal of Physical Chemistry

C, 2016, vol. 120, pages 13390-13397 (DOI: 10.1021/acs.jpcc.6b03768) (Impact factor – **4.772** in 2016).

18. A. Solanki, **A. Bagui**, G. Long, B. Wu, T. Salim, Y. Chen, Y.M. Lam, T. C. Sum, “Effectiveness of External Electric Field Treatment of Conjugated Polymers in Bulk-Heterojunction Solar Cells”, ACS Applied Materials & Interfaces, 2016, vol. 8, pages 32282-32291 (DOI: 10.1021/acsami.6b08012) (Impact factor – **8.097** in 2018).
19. **A. Bagui**, S.S.K. Iyer, “Increase in hole mobility in poly (3-hexylthiophene-2,5-diyl) films annealed under electric field during the solvent drying step”, Organic Electronics, 2014, vol. 15, pages 1387-1395 (DOI: 10.1016/j.orgel.2014.03.042) (Impact factor – **4.22** in 2014).
20. **A. Bagui**, S.S.K. Iyer, “Effect of Solvent Annealing in the Presence of Electric Field on P3HT:PCBM Films Used in Organic Solar Cells”, IEEE Transactions on Electron Devices, 2011, vol. 58, pages 4061-4066 (DOI: 10.1109/TED.2011.2164545) (Impact factor – **3.27** in 2011).

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Other webpages:

- Google webpage: <https://sites.google.com/view/dr-anirban-bagui/home?authuser=0>