DR. ANKITA GAUR

CONTACT DETAILS

Phone No: +918130823650, +919310602263
Email: ankitagaur@sau.int, ankitaph08@gmail.com
Official Address: Faculty of Physical Sciences, South Asian University, Rajpur Road, Maidan Garhi, New Delhi - 110068, India.

ACADEMIC POSITION

Assistant Professor, Faculty of Physical Science, South Asian University, New Delhi, India.

RESEARCH INTEREST

- Solar photovoltaic devices (Inorganic, organic and perovskite based)
- Advanced luminescence materials
- Bio-inspired solar energy devices
- Design and optimization of the solar cells using SETFOS software
- Antireflecting and self-cleaning coatings.

PROJECT

Name of the Project: "Bio -Inspired Adaptive Advanced Solar Building Envelope."
Principle Investigator: Dr. Ankita Gaur
Sponsoring Agency: Science and Engineering Research Board, Govt. of India.
Sanction year: 2019
Duration: 2019-2024
Sanctioned project fund: INR. 38 lakhs

EDUCATIONAL QUALIFICATION

2011-2014	**Ph.D.** **Institute/University:** Indian Institute of Technology Delhi, New Delhi, India. **Title of Thesis:** "Performance evaluation of solar cell materials and its applications" **Shrimati Vijay Usha Sodha award for best Thesis**
2006-2008	**Masters in Physics (M. Sc., 2 years course)** **University:** M. J. P. Rohilkhand University, Bareilly, India
2003-2006	**Bachelors in Science (3 years course):** **Subjects:** Physics, Chemistry and Mathematics. **University:** M. J. P. Rohilkhand University, Bareilly, India

RESEARCH EXPERIENCE

2019-2024 **Indian Institute of Technology Guwahati, Assam, India**
Dept. School of Energy Science and Engineering
Job title: SERB/DST Ramanujan Fellow

2016-2018 **LOCIE UMR CNRS 5271, University of Savoie Mont-Blanc and INES, Le Bourget du Lac, France.**
Job title: Research Scientist
Projects completed

- Bio-inspiration for solar building envelopes
  (with Prof. Monika Woloszyn).
- Thermodynamic combined cycle for cooling and electricity production"
  (with Prof. Benoit STUTZ).
- Modeling and experiment on BiPVT system with phase change materials
  (with Prof. Cristophe MENEZO).

2015-2016 **National Institute of Applied Sciences (INSA) Lyon, France**
Centre de Thermique de Lyon (CETHIL) UMR 5008
Job title: Research Scientist
Project: Modeling and experimentation of photovoltaic thermal green house (with water flow and without water flow over top surface of roof integrated PV module) (with Prof. Cristophe MENEZO).

2014-2015 **Indian Institute of Technology Madras**
Department of Physics, Chennai, India
Job title: Research Associate
Project: Flexible and high-performance perovskite solar cells
(with Prof. Manu JAISWAL)

MENTORING EXPERIENCE AT IIT GUWAHATI, ASSAM (2019-PRESENT)

Ph.D.

Sl. No	Name of the student	Reg. no.	Thesis Title	Status
1.	Puja Hazarika	196151008 01-Jul-2019	Building integrated photovoltaic system with passive air channel	Synopsis Submitted (11/06/2025)

Ph.D. Intern

Sl. No	Name of the student	Reg. no.	Thesis Title	Internship Duration
1.	Mrigankadeep Bharadwaj	MZU/Ph.D./1458 26-Jul-2019	A study on down-conversion and up-conversion in lanthanide doped in silica glass co-doped in metal nano-particle towards photonics application	September 2022 – July 2024 (Ph.D. Awarded)

Master of Science by Research: 01 (completed)

Sl. No	Name of the student	Reg. no.	Thesis Title	Status
1.	Mouli Karmakar	194351006	Performance Analysis of Anti-Reflective Coatings on Photovoltaic module- Coupled Opto-Thermal Model	Thesis awarded (June 2021)

Master of Technology Nano technology/ Energy Engineering: 02 (Completed)

Sl. No	Name of the student	Reg. no.	Thesis Title	Status
1.	Ganta Varun Reddy	202105104	Simulation and Performance analysis of Cadmium Telluride thin-film solar cell	Thesis Awarded (May 2022)
2.	Suvit Verma	CUJ/I/2016/ IEE/06	Thermal Modelling of an Open Channel Solar PVT Collector using Nanofluids and PCM	Awarded (June 2021)

RESEARCH PUBLICATIONS

1. P. Hazarika, Shyam, P. Kalita, **A. Gaur**, (2025). Annual Energy Analysis of a Building Integrated Semi-Transparent Photovoltaic Thermal Façade, ASME. Journal of Solar Energy Engineering. 147 (3), 034501.

2. P. Hazarika, Shyam, **A. Gaur***, (2024). Exergy assessment of a semi-transparent building integrated photovoltaic facade for mild weather conditions of Srinagar. IOP Conference Series: Earth and Environmental Science, IOP Publishing, 1372, 012087.

3. M. Bharadwaj, **A. Gaur*,** (2024). "Photoluminescence confocal mapping of a novel d^{3+}/Yb^{3+}:Zn_2 SiO_4 composite thin film on Si (100) substrate utilizing a 980 nm Pumping source" **Journal of Fluorescence**, 1-8.

4. M. Bharadwaj, **A. Gaur*,** (2024). "Cooperative sensitization upconversion of ex-situ sol-gel synthesized zno-sio2: Nd^{3+}/Yb^{3+} dense glass ceramic material under 980nm laser Pumping" **Journal of Non-Crystalline**, 631,1-8.

5. M. Bharadwaj, S. Rai, **A. Gaur***, (2024). White Upconversion Luminescence of Nd3+–Yb3+ Ion Pair Co-Doped Ex Situ Sol–Gel Synthesized Zinc-Silicate Dense Glass. In: Manjappa, M., Chandrashekar, C.M., Ghosh, A., Gupta, T.D. (eds) Advances in Nano-Photonics and Quantum Optics. PHOTONICS 2023. Lecture Notes in Electrical Engineering, vol 1245. Springer, Singapore. https://doi.org/10.1007/978-981-97-4760-3_10.

6. M. Bharadwaj, S. Rai, **A. Gaur*,** (2023). "Structural and morphological characterizations of ex-situ sol-gel derived luminescent Nd^{3+}-Yb^{3+} ion co-doped zinc-silicate dense glass Ceramic" **Journal of Non-Crystalline Solids**, 619, 1-7.

7. M. Bharadwaj, S. Rai, **A. Gaur***, (2023). **"**Color tunable upconversion luminescence from ex-situ sol-gel derived Titania-Silicate dense glass-ceramic co-doped with Pr^{3+}-Yb^{3+} ion pair, **Optical Materials**, 146, 1-7.

8. **A. Gaur***, M. Karmakar, Shyam, (2022). *"*Modeling of Silicon Solar Cell with Anti-Reflecting Coating*"* **International Journal of Chemical and Materials Engineering**. 16, 12-15.

9. **A. Gaur**, Stutz B, Shyam and F. Boudéhenn, (2022). "Modelling of an Ammonia Water Falling Film Generator" **JP Journal of Heat and Mass Transfer** 25, 27-60.

10. **A. Gaur***,* C. Menezo**,** S. G. Julien (2017). "Numerical studies on thermal and electrical performance of a fully wetted absorber PVT collector with PCM as a storage medium. **Renewable Energy** 109, 168-187**.**

11. **A. Gaur,** G.N. Tiwari, C. Menezo, I. M. Al-Helal, (2016). *"*Numerical and experimental studies on a Building Integrated Semi-transparent Photovoltaic Thermal (BiSPVT) system: Model validation with a prototype test setup". **Energy conversion and management** 129, 329–343.

12. **A. Gaur,** G. N. Tiwari, (2015). "Analytical expressions for the temperature dependent electrical efficiencies of thin film BIOPVT systems". **Applied Energy** 146, 442–452**.**

13. **A. Gaur**, G. N. Tiwari, (2014). "Exergoeconomic and enviroeconomic analysis of photovoltaic modules of different solar cells". **J. Sol. Energy**, 1-13.

14. R. Lamba, **A. Gaur,** G.N. Tiwari, (2014). "Life cycle cost assessment and enviroeconomic analysis of thin film amorphous silicon photovoltaic system". **International journal of Fundamentals of Renewable Energy and Applications** 4, 1-5. http://dx.doi.org/10.4172/2090-4541.1000140.

15. **A. Gaur**, P. Kumar, (2014). "An improved circuit model for polymer solar cells. **Progress in Photovoltaic: Res. Appl.** 22, 937–948.

16. **A. Gaur**, G. N. Tiwari, (2014). "Performance of a-Si thin film PV modules with and without water flow: An experimental validation". **Applied Energy** 128, 184-191.

17. **A. Gaur**, G. N. Tiwari, (2013), "Performance of Photovoltaic Modules of Different Solar Cells". **J. Sol. Energy**,1-8. (http://dx.doi.org/10.1155/2013/734581).

18. **A. Gaur**, P. Kumar, (2013). "Effect of degradation on electronic properties of polymer solar cells". **Polymers Advanced Technologies** 24, 630-637.

19. **A. Gaur**, P. Kumar, (2013). "Studies on stability of bi-functional P3HT:PCBM: rubrene opto-electronic devices". **Applied Physics A** 111, 877-886.

20. P. Kumar, **A. Gaur**, (2013). "Model for the J-V characteristics of degraded polymer solar cells". **Journal of Applied Physics** 113, 94505 (1-8).

NATIONAL/INTERNATIONAL CONFERENCES

---

1. M. Bhardwaj, S. Rai, **A. Gaur***. "White Upconversion Luminescence of Nd3+-Yb3+ Ions Pair Co-doped ex-situ Sol-Gel Synthesized Zinc-Silicate Dense Glass" Advances in Nano Photonics and Quantum Optics, proceedings of international conference- Photonics, Springer, Volume 4. 5-8 July 2023, Bangalure, India.

2. **A. Gaur***, Mouli Karmakar, Shyam "Modeling of Silicon Solar Cell with Anti-Reflecting Coating" International Conference on Photovoltaic Materials and Electronic devices ICPMED 2022: XVI. 03-04 March 2022 in Bangkok, Thailand.

3. P. Hazarika, Shyam, **A. Gaur***. “Exergy assessment of a semi-transparent building integrated photovoltaic facade for mild weather conditions of Srinagar” International Conference on Sustainable Energy and Green Technology 2023, 2023-12-10.

4. **A. Gaur**, Karmakar Mouli, Shyam, “Modeling of Silicon Solar Cell with Anti-Reflecting Coating” International Conference on Photovoltaic Materials and Electronic devices ICPMED 2022: XVI. 03-04 March 2022 in Bangkok, Thailand, **World Academy of Science Engineering and Technology** (WASET).

5. M. Karmakar, **A. Gaur**, P. Kalita, “Bio-inspired photonic structures and its applications” International symposium on "Bio-inspired Nanomaterials for Environmental Applications" supported by DST-UKIERI, 12th Feb. 2020 -13th Feb. 2020 at the Centre for the Environment, Indian Institute of Technology Guwahati.

6. P. Hazarika, **A. Gaur**, P. Kalita, “Bioinspired strategies for building envelope using nature for climate adaption”, International symposium on "Bio-inspired Nanomaterials for Environmental Applications" supported by DST-UKIERI, 12th Feb. 2020 -13th Feb. 2020 at the Centre for the Environment, Indian Institute of Technology Guwahati.

7. **A. Gaur**, B. Stutz, C. Menezo, M. Woloszyn, G. Fraisse, Gérard MERLIN, “Biomimicry as an approach for bio-inspired solar building envelope” International conference on Solar Energy, JNES 2018, 27-29 June 2018, Lyon Tech Campus, Villeurbanne, France.

8. **A. Gaur,** B. Stutz, F. Boudehenn,” Performance evaluation of solar assisted absorption machine” International conference on Solar Energy, JNES 2018, 27-29 June 2018, Lyon Tech Campus, Villeurbanne, France.

9. **A. Gaur**, S. GIROUX, C. Menezo, “Study of hybrid solar photovoltaic collectors integrating with phase change materials.’’ International conference on Solar Energy, JNES 2017, 13-15 June 2017, University of Perpignan, Perpignan, France.

10. **A. Gaur,** C. Menezo, “Performance evaluation of different generation solar cells integrated on building” International conference on Solar Energy, JNES 2016, 28-30 June 2016, University of Perpignan, Perpignan, France.

11. **A. Gaur,** C. Menezo “Efficiency improvement of photovoltaic thermal water collector with PCM, International conference on Solar Energy” International conference on Solar Energy, JNES 2016, 28-30 June 2016, University of Perpignan, Perpignan, France.

12. **A. Gaur,** C. Menezo," Reduction of PV module operating temperature through hybridization of solar collectors" 6th Asia - Pacific Forum on Renewable Energy. AFORE 2016, 9 -12 Nov. 2016, Guangzhou, China

13. **A. Gaur**, C. Menezo, G.N. Tiwari, "Different cooling techniques for photovoltaic modules- application for integrated PV on greenhouse" International conference on solar Energy, JNES 2015, 1-3 July 2015, University of Perpignan, Perpignan, France.

14. **A. Gaur**, C. Menezo," A new design of Building Integrated Photovoltaic Thermal (BiPVT) system for space heating and cooling" International conference on solar Energy, JNES 2015, 1-3 July 2015, University of Perpignan, Perpignan, France.

15. G.N. Tiwari, **A. Gaur. "**Photovoltaic Thermal (PVT) systems and its Applications, International Conference on Green Energy and Technology (ICGET)" Dhaka, Bangladesh 5-6 Sept. IEEE (2014)132-138, 2014-09-05

16. **A. Gaur**, P. Kumar, R. Bhardwaj, G. D. Sharma, S. Chand, "Improved stability of P3HT:PCBM solar cells with doping of Rubrene" National Symposium on Recent Advances in Materials and Devices for Solar Energy Applications, 1-3 Sept. 2011, National Physical Laboratory, New Delhi.

SEMINAR/WORKSHOP/FACULTY DEVELOPMENT PROGRAM

1. Successfully completed one-week Global Initiative of Academic Networks (GIAN) Course on Advances in Solar Collector Technologies (ASCT 2025), from 03rd March 2025 to 07th March 2025, Organized by Indian Institute of Technology, Guwahati, Assam.

2. Attended an online one days Hands on training on Solar cell and OLED Using SETFOS Software on 27th September 2024 conducted by IMPULSE TECHNOLOGY, Gurugram, Haryana.

TEACHING EXPERIENCE

2020-2024 **Indian Institute of Technology Guwahati**

Course name (For Master's and Ph.D. students)

1- Photovoltaic devices and systems **(EN675)**

2- Fundamentals of Energy Engineering **(EN 673) (Taught in sharing)**

COURSE DEVELOPED AND LABORATORY ESTABLISHED

1. Independently Developed one Elective course, entitled "Photovoltaic devices, and systems (EN675)".
2. Established "Energy Device Laboratory" for material synthesis, thin film coating and device fabrication at IIT Guwahati, During 2019-2024

PROGRAMMING SKILL /SOFTWARE

SETFOS, MATLAB, Scilab, Mathcad

AWARD & HONORS

Mar. 2022 **Best oral presentation award**
ICPMED 2022: XVI. International Conference on Photovoltaic Materials and Electronic devices. 03-04 March 2022 in Bangkok, Thailand, organized by World Academy of Science Engineering and Technology (WASET).

Oct. 2019 Invited from French institute in India/French Embassy, as Indian delegates in **Indo French Knowledge Summit 2, Lyon 2019** to represent IIT Guwahati and the awarded project on bio-inspiration.

Aug. 2018 **Ramanujan Fellowship award** by **Science and Engineering Research Board, Department of Science and Technology Delhi, Govt. of India**.
(This is meant for Indian scientists and engineers from all over the world to take up scientific research positions in India, those Indian scientists/engineers who want to return to India from abroad.)

Oct. 2015 **Shrimati Vijay Usha Sodha award** for **best publications** during thesis from **Indian Institute of Technology Delhi, India**

Jun. 2013 DST **INSPIRE Senior Research Fellowship -**2012, a prestigious fellowship of Department of Science and Technology, India, to continue research further in Ph. D.

Nov. 2010 DST **INSPIRE** Fellowship, a prestigious fellowship of Department of Science and Technology, India, to pursue Ph. D. in the area of science.

Feb. 2008 University topper in post-graduation (**Gold Medalist)**