

PROFORMA FOR BIO-DATA

1. Name and full correspondence address Dr. Sayan Bayan
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9681726072
3. Institution Rajiv Gandhi University, Arunachal Pradesh, India
4. Date of Birth 04/11/1985
5. Gender (M/F/T) M
6. Category Gen/SC/ST/OBC SC
7. Whether differently abled (Yes/No) No

8. Academic Qualification (Undergraduate Onwards)

	Degree	Year	Subject	University/Institution	% of marks
1.	B.Sc.	2006	Physics (Major),	Gauhati University	66.2
2.	M.Sc.	2008	Physics	Tezpur University	66.7
3.	Ph.D.	2013	Physics	Tezpur University	-

9. Ph.D thesis title, Guide's Name, Institute/Organization/University, Year of Award.

Ph.D thesis title Investigation of optoelectronic and photonic properties of ZnO nanoscale systems
fabricated via physico-chemical routes

Guide's Name Dr. Dambarudhar Mohanta

University Tezpur University

Year of Award 2013

10. Work experience (in chronological order).

S.No.	Positions held	Name of the Institute	From	To	Pay Scale
1	Research Associate	Saha Institute of Nuclear Physics, Kolkata	04/03/2013	03/03/2015	Fixed
2	Post-doctoral Fellow	Indian Institute of Technology Kharagpur	06/07/2015	06/07/2018	Fixed

3	CSIR Senior Research Associate (Scientist's Pool Scheme)	S. N. Bose National Centre for Basic Sciences, Kolkata	18/07/2018	13/04/2021	Fixed
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11. Professional Recognition/ Award/ Prize/ Certificate, Fellowship received by the applicant.

S.No	Name of Award	Awarding Agency	Year
1	Rajiv Gandhi National Fellowship	UGC	2009

12. Publications (*List of papers published in SCI Journals, in year wise descending order*).

S.No.	Author(s)	Title	Name of Journal	Volume	Page	Year
1	V. Dabi, A. Banerjee, B. Baro, R. Boruah, S Bayan	A Noninvasive Triboelectric Fruit Freshness Sensor with ZnO and PVA Layers	ACS Appl. Electr. Mat.	7	4572–4581	2025
2	Z. Praween, T. Mayu, B. Baro, S Bayan	Au-decorated 2D graphitic carbon nitride (g-C ₃ N ₄)-coated ZnO nanorods for improved UV photodetection	Int. J. Mod. Phys. B.	39	2540046	2025
3	T. Mayu, B. Baro, R. Boruah, S. Bayan	Photoconductivity in BxCyNz decorated ZnO 2D/1D system: Conjugation of charge	Sensors and Actuators A: Physical	377	115675	2024
4	B. Baro, K. Shah, K. H. Shah, M. Roy, S. Bayan	ZnO Nanowall Network-Based Tactile/Gesture Sensors and Prediction with Machine Learning	ACS Applied Materials and Interfaces	16	61272–61283	2024
5	M. Baraily, B. Baro, R. Boruah, S. Bayan	PVDF-HFP encapsulated WS ₂ nanosheets in droplet-based triboelectric	Nanotechnology	35	365502	2024
6	B. Baro, T. Mayu, A. Ghorai, S. Bayan	Tribo-piezoelectric Hybrid Nanogenerators Based on ZnO Nanorods and CsPbBr ₃	ACS Appl. Nano Mater.	7	14504	2024
7	B. Baro, S. Bayan	Rationally designed g-C ₃ N ₄ /ZnO nn heterojunction based flexible triboelectric	Sensors and Actuators A: Physical	362	114668	2023
8	S. P. Das, R. Bhuyan, B. Baro, U. Das, R. Sharma, S. Bayan	Flexible triboelectric nanogenerators of Au-g-C ₃ N ₄ /ZnO hierarchical nanostructures for machine learning enabled body movement detection	Nanotechnology	34	445501	2023

9	B. Baro, S. Khimhun, U. Das, S. Bayan	ZnO based triboelectric nanogenerator on textile platform for wearable sweat sensing application	Nano Energy	108	108212	2023
10	T. Chekke, R. Narzary, S. Ngadong, B. Satpati, S. Bayan , U. Das	Cotton Based Self-Powered Temperature Sensor Based on Au-Augmented WS ₂ Triboelectric	Journal of Electronic Materials	52	2685–2694	2023
11	S. Bayan , S. Pal, S. K Ray	Boron carbonitride (B _x C _y N _z) nanosheets based single electrode triboelectric	Applied Materials Today	30	101686	2023
12	T. Chekke, R. Narzary, S. Ngadong, B. Satpati, S. Bayan , U. Das	Au decorated ultrathin WS ₂ -based single-electrode triboelectric nanogenerator for flexible self-powered photodetector	Sensors and Actuators A: Physical	349,	114076	2023
13	S Ngadong, T Chekke, R Narzary, S Bayan , U Das	Metal oxide nanocomposite based flexible nanogenerator: Synergic effect of light and pressure	Nanotechnology	34	045403	2023
14	T. Mayu, R. Narzary, T. Chekke, U. Das, S. Bayan	Influence of surface functional groups of ZnO nanorods on the performance of cellulose paper-based flexible triboelectric	Int. J. Nanoscience,	21	2250034	2022
15	S. Mondal, S. Bayan , R. Ghosh, M. Das, A. Adhikari, D. Mukherjee, A. K. Mallick, S. K. Ray, S. K. Pal	Functionalized Two-Dimensional Carbon Nitride Nanodots Detect and Reverse Lead Toxicity in the Physiological Milieu	ACS Appl. Mater. Interfaces	14	27002	2022
16	S. Pal, S. Bayan , D. K. Goswami, S. K Ray	Boron carbonitride nanosheet/ZnO nanorod heterojunctions for white-	ACS Appl. Nano Mater	4	8572	2021
17	D. Bhattacharya, S Bayan , R. K. Mitra, S. K. Ray	2D WS ₂ embedded PVDF nanocomposites for photosensitive piezoelectric nanogenerators with a colossal energy	Nanoscale	13	15819	2021
18	S. Bayan , A. Adhikari, U. Pal, R. Ghosh, S. Mondal, S. Darbar, T. S. Dasgupta, S. K	Development of Triboelectroceutical Fabrics for Potential Applications in Self-Sanitizing Personal Protective Equipment	ACS Appl. Bio Mater	4	5485	2021

19	A. Adhikari, U. Pal, S. Bayan , S. Mondal, R. Ghosh, S. Darbar, T. S. Dasgupta, S. K. Ray, S. K. Pal	Nanocoetical Fabric Prevents COVID-19 Spread through Expelled Respiratory Droplets: A Combined Computational, Spectroscopic and	ACS Appl. Bio Mater	4	5471	2021
20	S. Bayan , D. Bhattacharya, R. K Mitra, S. K Ray	Two-dimensional graphitic carbon nitride nanosheets: a novel platform for flexible, robust and optically active	Nanoscale	12	21334-21343	2020
21	S. Bayan , D. Bhattacharya, R. K Mitra, S. K Ray	Self-powered flexible photodetectors based on Ag nanoparticle loaded g-C ₃ N ₄ nanosheets and PVDF hybrids: Role of plasmonic and	Nanotechnology	31	365401	2020
22	D. Bhattacharya, S. Bayan , R. K Mitra, S. K Ray	Flexible Biomechanical Energy Harvesters with Colossal Piezoelectric Output (~ 2.07 V/kPa) Based on Transition Metal Dichalcogenides-Poly (vinylidene fluoride) Nanocomposites	ACS Appl. Electron. Mater.	2	3327–3335	2020
23	S. Pal, S. Bayan , D. K. Goswami, S. K Ray	Superior performance self-powered photodetectors utilizing piezo-phototronic effect in SnO nanosheets/ZnO nanorods hybrid heterojunctions	ACS Appl. Electron. Mater.	2	1716–1723	2020
24	S. Bayan , N. Gogurla, A. Ghorai, S. K. Ray	Forster Resonance Energy Transfer Mediated Charge Separation in Plasmonic 2D/1D Hybrid Heterojunctions of Ag-C ₃ N ₄ /ZnO for Enhanced Photodetection	ACS Applied Nano Materials	2	3848	2019
25	S. Pal, S. Bayan , S. K. Ray	Piezo-phototronic mediated enhanced photodetection characteristics of plasmonic Au-g-C ₃ N ₄ /CdS/ZnO based hybrid	Nanoscale	10	19203	2018
26	S. K. Jana, S. Banerjee, S. Bayan , H. R. Inta, V. Mahalingam	Rectification and Amplification of Ionic Current in Planar Graphene/Graphene-Oxide Junctions: An Electrochemical Diode and Transistor	J. Phys. Chem. C	122	11378	2018
27	N. Gogurla, S. Bayan , P. Chakrabarty, S. K. Ray	Plasmon mediated enhancement of visible light emission of Au-ZnO nanocomposites	J. Luminescence	194	15	2018

28	S. Bayan , N. Gogurla, A. Midya, A. Singha, S. K. Ray	Plasmon mediated enhancement and tuning of optical emission properties of two dimensional graphitic carbon nitride	Nanotechnology	28	485204	2017
29	S. Bayan , A. Midya, N. Gogurla, A. Singha, S. K. Ray	Origin of Modified Luminescence Response in Reduced Graphitic Carbon Nitride Nanosheets	J. Phys. Chem. C	121	19383	2017
30	S. Bayan , L. Pegu, D. Mohanta	Catalyst-free growth and luminescence response of single-crystalline ZnO nanorods	Ind. J. Pure and Appl. Phys.	55	512	2017
31	A. Ghorai, S. Bayan , N. Gogurla, A. Midya, S. K. Ray	Highly Luminescent WS ₂ Quantum Dots/ZnO Heterojunctions for Light Emitting Devices	ACS Appl. Mater. Interfaces	9	558	2017
32	S. Bayan , S. K. Mishra, B. Satpati, R. K. Srivastava, R. K. Shukla, P.	Modified photoluminescence and photodetection characteristics of	J. Vac. Sci. Tech. B	34	061201	2016
33	S. Bayan , N. Gogurla, A. Midya, S. K. Ray	White light emission characteristics using two dimensional graphitic carbon nitride and ZnO nanorods hybrid	Carbon	108	335-342	2016
34	B. Choudhury, S. Bayan , A. Choudhury, P. Chakraborty	Narrowing of band gap and effective charge carrier separation in oxygen deficient TiO ₂ nanotubes with improved visible light Photocatalytic activity	J. Colloid Interface Sci.	465	1-10	2016
35	S. Bayan , B. Choudhury, B. Satpati, P. Chakraborty, A. Choudhury	A comprehensive SIMS analysis of ZnO nanowalls: Correlation to photocatalytic responses	J. Appl. Phys.	117	095304	2015
36	S. Bayan , B. Satpati and P. Chakraborty	ZnS nanoparticle decorated ZnO nanowall network: investigation through electron microscopy and secondary ion mass spectrometry	Surf. Interface Anal.	47	37-44	2015
37	S. Bayan , S. K. Mishra, B. Satpati and P. Chakraborty	Enhancement of persistent photoconductivity of ZnO nanorods under polyvinyl alcohol encapsulation	Mat. Sci. in Semiconductor Proces.	24	200-207	2014
38	S. Bayan and P. Chakraborty	Secondary ion mass spectrometry and photoluminescence study on microstructural characteristics of chemically synthesized ZnO nanowalls	Appl. Surf. Sci.	303	233-240	2014

39	S. K. Mishra, S. Bayan , R. Shankar, P. Chakraborty and R. K. Srivastava	Efficient UV photosensitive and photoluminescence properties of sol-gel derived Sn doped ZnO	Sensors and Actuators A	211	8-14	2014
40	S. Bayan , S. K. Mishra, P. Chakraborty, D. Mohanta, R. Shankar and R. K. Srivastava	Enhanced vacuum photoconductivity of chemically synthesized ZnO nanostructures	Philosophical Magazine	94	914-924	2014
41	S. K. Mishra, S. Bayan , P. Chakraborty and R. K. Srivastava	Defect-dominated optical emission and enhanced ultraviolet photoconductivity properties of ZnO nanorods synthesized by simple and catalyst-free	Applied Physics A	115	1193-1203	2014
42	S. Bayan and D. Mohanta	Fragmentation of elongated-shaped ZnO nanostructures into spherical particles by swift	Physica E	54	288-294	2013
43	S. Bayan and D. Mohanta	Significant Fowler-Nordheim tunneling across ZnO-nanorod based nanojunctions for nanoelectronic device applications	Curr. Appl. Phys	13	705-709	2013
44	S. Bayan and D. Mohanta	ZnO-nanorod based UV-photodetection and the role of persistent photoconductivity	Philosophical Magazine	92	3909-3919	2012
45	S. Bayan and D. Mohanta	Unusual rectifying response of nanojunctions using randomly oriented nanorods (RON) of ZnO irradiated with 80-MeV	J. Electron. Mater.	41	1955-1961	2012
46	S. Bayan and D. Mohanta	Interplay of native defect-related photoluminescence response of ZnO nanosticks subjected to 80 keV Ar ion irradiation	Radiation Effects & Defects in Solids	166	884-893	2011
47	S. Bayan and D. Mohanta	Defect mediated optical emission of randomly oriented ZnO nanorods and unusual rectifying behavior of Schottky nanojunctions	J. Appl. Phys.	110	054316	2011
48	S. Bayan and D. Mohanta	Effect of 80-MeV nitrogen ion irradiation on ZnO nanoparticles: Mechanism of selective defect related radiative emission features	Nuclear Instruments and Methods in Physics Research B	269	374-379	2011

49	S. Bayan , U. Das and D. Mohanta	Peacock feather supported self assembled ZnO nanostructures for tuning photonic properties	Eur. Phys. J. D	61	463–468	2011
50	S. Bayan and D. Mohanta	Directed growth characteristics and optoelectronic properties of Eu-doped ZnO nanorods and urchins	J. Appl. Phys.	108	023512	2010
51	S. Bayan , U. Das and D. Mohanta	Development of Tb-doped ZnO nanorods: Effect of nitrogen ion irradiation on luminescence and structural evolution	Phys. Status Solidi A	207	1859-1863	2010
52	S. Bayan and D. Mohanta	Role of cohesive energy on the interparticle coalescence behavior of dispersed nanoparticles subjected to energetic ion	J. Mater. Res.	25	814-820	2010

13. Detail of patents.

S.No	Patent Title	Name of Applicant(s)	Patent No.	Award	Agency/Country	Status
1	A Tribo-electroceutical Personal Protective Equipment system and its fabrication for potential application in Self Sanitizing	S. Bayan , A. Adhikari, U. Pal, T. S. Dasgupta, S. K. Ray, S. K. Pal	539260	24/5/2024	India	Granted
2	A Nanoceutical Fabric for source control to prevent COVID-19 spread including through expelled respiratory	A. Adhikari, U. Pal, S. Bayan , T. S. Dasgupta, S. K. Ray, S. K. Pal	529689	21/3/2024	India	Granted

14. Books/Reports/Chapters/General articles etc.

S.No	Title	Author's Name	Publisher	Year of Publication
1	Electrical and Optoelectronic Properties of Non-Spherical, Elongated Zinc Oxide Nanoscale Systems in: Carmen Galvan (Ed), Zinc Oxide: Production, Properties and Applications	S. Bayan and D. Mohanta	Nova science publishers USA ISBN: 978-1-53617-753-4	2020
2	Recent Strategies for Development of ZnO-Based Efficient UV-Photodetectors in: Nanoscale Matter and Principles for Sensing and Labeling Applications	S. Bayan	Springer, Singapore, ISBN: 978-981-99-7847-2	2024

15. Any other Information (maximum 500 words)