

Curriculum Vitae



Dr. S. K. Samdarshi

Professor, Department of Energy Engineering

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Academic:

- | | |
|---|------|
| • Ph.D.(Energy) : Indian Institute of Technology, Delhi | 1992 |
| • M.Sc.(Physics): Indian Institute of Technology, Delhi | 1984 |
| • B.Sc.(Phys Hons): St Xavier's College, Ranchi | 1982 |

Professional:

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| • Professor: Department of Energy Engineering, Central University of Jharkhand(CUJ), Ranchi, Jharkhand | 2013-contd |
| • Professor: Department of Energy, Tezpur(Central) University(TU), Tezpur, Assam | 2009-13 |
| • Associate Professor/Reader: Department of Energy, Tezpur(Central) University(TU), Tezpur, Assam | 2004-09 |
| • Lecturer: School of Phys. Sc., North Maharashtra University (NMU), Jalgaon, Maharashtra | 1994-04 |
| ▪ Adjunct Professor: Department of Energy and Environmental Management SMVD University Katra, Jammu and Kashmir, India | 2017-21 |
| • Distinguished visiting Professor, Department of Electrical Engineering, University of Chile, Santiago | 2026 |

Administrative Responsibilities:

National:

- **Member Secretary**, NAAC Assessor PTV for Technical University, June 2025
- **Chairman**, Panel of MED 04 of **Bureau of India Standards(BIS)**, **New Delhi** for development of standard for solar water heater tanks and ETC systems(2025)
- **Convenor**, Panel of MED 04 of **Bureau of India Standards(BIS)**, **New Delhi** for development of standard for solar thermal cooking systems(since 2024)

- **Invited member** of Niti Aayog on the “Purvodaya scheme” of **Ministry of Planning, Govt of India** (2024)
- **Member**, Task Force on Energy, Sector Specific Group (Energy), **Ministry of Education, Govt of India, New Delhi** headed by DG, International Solar Alliance and Convened by Director, IIT, Delhi(since April 2024)
- **Centre Superintendent**, Ranchi Centre, Central University Common Entrance Test 2020 (**CUCET 2020**) from September 18-10, 2020
- **Coordinator, National Renewable Energy Fellowship(NREF), Ministry of New and Renewable Energy(MNRE), New Delhi**(since March 2019)
- **Director/Coordinator and Principal Investigator, *Center for Excellence in Green and Efficient Energy Technology(CoE-GEET)*** established under *FAST* scheme of **Ministry of Human Resources Development New Delhi** at Central University of Jharkhand, Ranchi(since 2014-contd.)
- **Member, Governing Council, Solar Energy Society of India** (2009 - 2011)
- **Member, Technical Committee, International Congress on Renewable Energy (ICORE- 2009, ICORE-2010, ICORE-2011, ICORE-2012, ICORE-2013, ICORE-2014, iCON-2015)**
- **Convener, International Congress on Renewable Energy (ICORE-2011)** the flagship event of Solar Energy Society of India(SES), Tezpur University, Tezpur

International:

- **Coordinator, MoU/Collaboration** between **ISEP, ERE, John Hopkins University, USA** and Central University of Jharkhand, Ranchi, India(Jan 2020- Dec 23).
- **Coordinator, MoU/Collaboration** between **Solar Energy Research Centre(SERC), University of Chile, Santiago** signed in 2022.

State:

- **Invited member** for Budget Meeting of **Ministry of Finance, Government of Jharkhand, Ranchi** for two consecutive years 2022-23, 2023-24 and 2024-25
- **Member, ESCR Panel of Jharkhand State Electricity Regulatory Commission (JSERC), Ranchi**(since March 2018-contd.).

Institutional:

- **Member, Court, Central University of Jharkhand, Ranchi** (since October 2023)
- **Head**, Department of Energy Engineering, Central University of Jharkhand, Ranchi (since Feb 2014-Feb 2020, April 2023-contd)
- **Chairman**, School Board, School of Engineering and Technology, Central University of Jharkhand, Ranchi (since 2014-2020, April 2023-Contd)
- **Member**, School Board, School of Engineering and Technology, Central University of Jharkhand, Ranchi(April 2023-Contd)
- **Dean**, School of Engineering and Technology, Central University of Jharkhand, Ranchi (Feb 2014-Feb 2020)
- **Dean**, Students' Welfare, Central University of Jharkhand, Ranchi (Jan 2014-Aug 2015)
- **Member**, Executive Council, Central University of Jharkhand, Ranchi (2014-16)
- **Chairman**, Equivalence Committee, Central University of Jharkhand, Ranchi(2013-2014)
- **Head**, Department of Energy, Tezpur University, Tezpur (2007 – 2010)
- **Convener**, Solar photovoltaic power plant and solar thermal energy gadgets' installation Initiative, Tezpur University, Tezpur, Assam(2009- June 2011)

- **Coordinator**, 500kW Solar PV Power Plant Committee, Central University of Jharkhand, Ranchi(2013, 2021, 2023)

Academic / Research and Development Responsibilities:

National

- **Member(Visitor's Nominee)**, Academic Council, Nagaland(Central) University, Kohima(since March 2019)
- Member, **Academic Advisory Committee, National Resource Centre for Energy Systems Engineering, IIT Bombay**(Since June 2018)
- **Member**, Academic Council, Central University of Jharkhand, Ranchi(2013-2020)
- **Member**, Academic Council, Tezpur University, Tezpur (2007-2013)
- **Member**, Board of Studies(BOS), Department of Energy, Tezpur University, Tezpur (2004 – 2013)
- **Academic Program Coordinator**, M.Tech.(Energy Technology) and Ph.D. courses of Department of Energy, Tezpur University, Tezpur (2004 – 2007)
- Member, Technical Committee, International Congress on Renewable Energy (ICORE-2009, ICORE-2010, ICORE-2011, ICORE-2012, ICORE-2013, ICORE-2014, iCON-2015)
- Member, Board for Research Studies, Central University of Jharkhand, Ranchi(2013-contd)
- **Editor, SESI-Journal**, Solar Energy Society of India(2014-contd)
- Referee, RGSTC Projects, North Maharashtra University, Jalgaon, 2015
- Referee, **R&D Projects, Ministry of New and Renewable Energy**, New Delhi 2015
- Examiner, Ph.D. thesis on Energy of a number of IITs, National Labs and Central and State Universities
- Member, Selection Committees of a number of **top national level institutions of eminence / central universities / State Public Service Commission**, 2009 onwards
- Member, Scrutiny Committees of top national level universities / central ministry for top executive posts, 2009 onwards
- Member, BOS, Energy Systems Engineering, **National Institute of Technology, Jamshedpur**, Jharkhand, 2015
- Member, BOS, Department of Energy Engineering, **North-Eastern Hill University(NEHU), Shillong**, Meghalaya(2013-16, 2016-19)
- Member, BOS, Department of Mechanical Engineering, **BIT, Mesra**, Ranchi(April 2018)
- Reviewer, Program structure and course content of the two-year M.Tech program in Energy and Environment Management proposed by **Centre for Energy Studies, Indian Institute of Technology, Delhi**, February 2016
- Member, Expert Visiting Committees(EVCs) of **All India Council for Technical Education(AICTE)** for approval of Engineering and Technology Institutions in India since March 2016.
- Reviewer, Syllabus of Department of Energy and Environment, **TERI University, New Delhi**(2017).
- Expert, IQAC, Sri Mata Vaishno Devi University, Katra, Jammu and Kashmir, Dec 2017

International

- *Reviewer*, Solar World Congress-2023, International Solar Energy Society(ISES), New Delhi

- *Reviewer*, International project for **Comision Nacional de Investigacion Cientifica y Tecnologica (CONICYT), Chile** from University of Tarapacá, Escuela Universitaria de Ingeniería Mecánica, Arica, Chile, South America.(2016).
- *External Assessor* for the Post of Professor in Energy for **Universiti Sains Malaysia, Penang, Malaysia**, (2015)
- *Reviewer*, Curriculum for M.Sc.(Metall. Engg) and Ph.D.(Metallurgy), **Department of Material Science and Engg., Jimma University, Ethiopia**(2014).
- *Reviewer*, *Solar Energy*, Elsevier (2008 onwards); *Applied Energy*, Elsevier (2010 onwards); *Desalination*, Elsevier (2009 onwards); *Journal of Hazardous Materials*, Elsevier (2011 onwards); *Environmental Progress and Sustainable Energy*, AIChE, Wiley-Blackwell (2011 onwards); *Photochemistry and Photobiology C:Chemistry*, Elsevier (2011 onwards); *Environmental Science and Technology*, ACS (2012 onwards); *Materials Letters*, Elsevier(2014 onwards); *Fuel*, Elsevier(2014 onwards)

MoU/Collaboration contribution: International(USA, Chile) National(CEED, JBVNL)

International

- **ISEP, ERE, John Hopkins University, USA** and Central University of Jharkhand, Ranchi, India(since January 2020)
- **Solar Energy Research Centre(SERC), University of Chile, Santiago** and Central University of Jharkhand (since 2022)
- Collaboration with professors from **University of Montpellier, France** and **University of Algarve, Portugal**
- **Convener**, One-week visit of **Prof Rodrigo Palma Behnke, Founder Director, Solar Energy Research Centre**, University of Chile, Santiago, Chile, South America.

National

- **Coordinator, MoU/Collaboration** between CUJ, Ranchi and Centre for Environment and Energy Development(**CEED**), **New Delhi** (since June 2018)
- **Coordinator, MoU/Collaboration** between **JBVNL, Ranchi** and Central University of Jharkhand, Ranchi, India (since July 03, 2020)

Research Area/ Interest:Solar Energy, Energy Materials, Energy Policy

- *Solar Energy*:
Experimental and theoretical (computer simulation) studies on different solar systems and applications; Solar pond; Solar cooker; Solar photoactive materials for energy conversion(photocatalytic hydrogen generation), solar carbon valorisation, solar environmental remediation; New generation organic PV cells including DSSC;
- *Energy Materials*
Synthesis of photocatalysts/materials for solar energy applications, Synthesis of CNMs from plant precursors and their applications, Synthesis of heterogeneous antioxidants;

- *Energy Policy*: Education, Energy Security, Roof Top Solar Policy, Energy Policy and Transition

Research Publications: Journal / Conferences (International: 67/51 National: 03/21)

i) Peer-reviewed journals: (* Corresponding author)

2025

1. Panja, P.S., Atul A. Sagade, **S.K. Samdarshi***, Md Rahbar Jamal(2025) Experimental validation of design-induced change on the opto-thermal performance of solar box cooker utilizing the novel design of cooking pot, **Thermal Science and Engineering Progress (Elsevier)**, 60, 2025, 103455(IF=5.1) <https://doi.org/10.1016/j.tsep.2025.103455>.
2. Sanyal, Shubham, **S.K. Samdarshi*** (2025) Application of Low Emissions Analysis Platform for Demand Side Management for the electricity sector of Indian State of Jharkhand, **Energy(Elsevier)**, 2025 (IF=9.0) <https://doi.org/10.1016/j.energy.2025.134797>

2024

3. Harsh, Tripurari Kumar, **S. K. Samdarshi***, Uday Deshpande, Neha Kumari, and Kumar Gaurav(2024) Role of phase ratio in mixed phase bismuth oxide nanoscale systems for improved visible light photocatalytic kinetics. **Ceramics International(Elsevier)**, (2024). (IF=5.1) <https://doi.org/10.1016/j.ceramint.2024.12.241>
4. Panja, P.S., **S.K. Samdarshi***, Atul A. Sagade , Md Rahbar Jamal, Inclusivity of thermal performance parameters for evaluation of solar cookers and the necessity of uniformity in the appraisal using generalized test procedure for different designs, **Sustainable Energy Technologies and Assessments (SETA) (Elsevier)**, 2024 (IF:8.0) DOI: 10.1016/j.seta.2024.103847
5. Jamal, Rahbar, **S.K. Samdarshi***, Mandeep Singh, Atul A Sagade, P.S. Panja, Aaquib Ullah Ansari(2024) Improvement in the opto-thermal performance of Indian standard solar box cooker by novel internal retrofit radiative control, **Solar Energy(Elsevier)**, 274, 112564, 2024(IF:6.7) DOI: 10.1016/j.solener.2024.112564

2023

6. Kumari Neha, **S K Samdarshi***, Ranjana Verma, Kumar Gaurav, Arnab S. Bhattacharyya, Kaustubha Mohanty, Uday Deshpande (2023) Superior functionality of niobium pentoxide nano-rod/tripod photocatalyst synthesized using polyethyleneimine as a soft template for the abatement of methylene blue under UV and visible irradiation, **Environmental Science and Pollution Research(Springer-Nature)**, 30 (58), 122458-122469, 2023 (IF:5.8) DOI: 10.1007/s11356-023-31001-w)

7. Kumari Neha, Tripurari Kumar Harsh, A. S. Bhattacharya, Kumar Gaurav, Ranjana Verma, **S. K. Samdarshi** *(2023) Enhanced Photocatalytic Activity of Ceria doped Zinc Oxide under UV illumination prepared via chemical precipitation, **Luminescence: The Journal of Biological and Chemical Luminescence (Wiley)**, 38 (7), 1282-1286, 2023 (IF:2.9) (DOI: <https://doi.org/10.1002/bio.4396>).

2022

8. Verma Ranjana, Jay Singh, **S.K. Samdarshi**, Anchal Srivastava (2022) Phase modulation kinetics in TiO₂ by manipulating pH: A dynamic of photoactivity at different combination of phase and pH, **Journal of Alloys and Compounds(Elsevier)**, 904, 164019 2021 (IF=6.371) DOI: 10.1016/j.jallcom.2022.164019
9. Verma Ranjana, Jay Singh, **S.K. Samdarshi**, Anchal Srivastava (2022) Autonomous self-optimizing defects by refining energy levels through hydrogenation in CeO_{2-x} polymorphism: a walking mobility of oxygen vacancy with enhanced adsorption capabilities and photocatalytic stability, **New Journal of Chemistry(Wiley)**, 46(12), 5869-5880, 2022(IF=3.925) DOI: 10.1039/D2NJ00057A
10. Gaurav K, **SK Samdarshi***, N Kumari, AS Bhattacharyya, S Paul, and Uday Deshpande (2021) Distinct role of hexagonal tungsten in tungsten/ceria heterojunction in efficient utilization of visible flux, **Solar Energy Materials and Solar Cells(Elsevier)**, 234,111405 (IF=7.305) DOI: 10.1016/j.solmat.2021.111405

2021

11. Sagade, Atul A., **S. K. Samdarshi**, Narayani A. Sagade, and P.S.Panja(2021) Enabling open sun cooling method-based estimation of effective concentration factor/ratio for concentrating type solar cookers, **Solar Energy(Elsevier)**, October 2021, 227, 568-576(IF=7.188) DOI: 10.1016/j.solener.2021.09.035

2020

12. Kumari Neha, Kumar Gaurav, **S K Samdarshi***, A. S. Bhattacharyya, Samrat Paul, and Biju Mani Rajbongshi (2020) Dependence of photoactivity of niobium pentoxide (Nb₂O₅) on crystalline phase and electrokinetic potential of the hydrocolloid, **Solar Energy Materials and Solar cells(Elsevier)**, 208, 110408 (IF=7.305) DOI: 10.1016/j.solmat.2020.110408
13. Singh Abhay, Rahul Dev, and **S. K. Samdarshi** (2020) Performance analysis of solar energy operated crop cutting machine, **J. Indian Chem. Soc. (Scientific Pub-India)**, 97, 10(A), 1655-1661, 2020(IF=0.284)
14. Sagade Atul A., **S. K. Samdarshi**, P.J. Lahkar, Narayani A. Sagade(2020) Experimental Determination of the Thermal Performance of an Intermediate Temperature Solar Box Cooker with a Hybrid Cooking Pot, **Renewable Energy(Elsevier)**, 150, 1001-1009, Feb 2020 (IF=8.634) DOI: 10.1016/j.renene.2019.11.114

2019

15. Sagade Atul, **S.K. Samdarshi***, and Pranab J Lahkar(2019)Ensuring the Completion of Solar Cooking Process under Unexpected Reduction in Solar Irradiance, **Solar Energy(Elsevier)**, 179, 286-297 (IF=7.188) DOI: 10.1016/j.solener.2018.12.069

2018

16. Ranjith G. Nair, Swapna Ojah, P. Mathan Kumar, S.K. Nikhil, **S.K. Samdarshi*** (2018) Role of copper and silver modified titania photoanode on performance engineering of dye sensitized solar cells, **Materials Letters(Elsevier)**, 221, 313–317(IF=3.574) DOI: 10.1016/j.matlet.2018.03.150
17. Sagade Atul, **S.K. Samdarshi*** and Partha S Panja (2018) Enabling Rating of Intermediate Temperature Solar Cookers using Different Working Fluids as Test Loads and its validation through design change, **Solar Energy(Elsevier)**,171, 354-365(IF=7.188) DOI: 10.1016/j.solener.2018.06.088

2017

18. Sagade Atul, **S.K. Samdarshi*** and Partha S Panja(2017) Experimental Determination of Effective Concentration Ratio for Solar Box Cookers using Thermal Tests, **Solar Energy(Elsevier)**,159, 984-991 (IF=5.742) DOI: 10.1016/j.solener.2017.11.021
19. Verma R, **S.K. Samdarshi***, Kalpana Sagar and B.K. Konwar(2017), Nanostructured bi-phasic TiO₂ nanoparticles grown on reduced graphene oxide with high visible light photocatalytic detoxification, **Materials Chemistry and Physics(Elsevier)**, 186, 202-211 (IF=4.778) DOI: 10.1016/j.matchemphys.2016.10.045 [*Cited by Ciara Byrne et al(2018) Advances in the Development of Novel Photocatalysts for Detoxification: Nanostructured Catalyst Design, Mechanisms, and Applications in the book Visible Light-Active Photocatalysis, Srabanti Ghosh (Editor), published by Wiley, 2018; DOI 10.1002/9783527808175.ch11]*
20. Samrat Paul, Biju Mani Rajbongshi, Birinchi Bora, Ranjith G Nair and **S K Samdarshi** (2017), Organic photovoltaic cells using green-MWCNTs, **New Carbon Materials(Elsevier)**, 32 (1), 27-34 (IF=3.70) DOI: 10.1016/S1872-5805(17)60104-5

2016

21. Nair Ranjith G., Abinash Das, Samrat Paul, B. Rajbongshi, **S. K. Samdarshi***(2016) MWCNT decorated V doped Titania: An efficient visible active photocatalyst, **Journal of Alloys and Compounds(Elsevier)**, 695, 3511-3516(IF=6.371) DOI: 10.1016/j.jallcom.2016.12.002
22. Verma R, and **S K Samdarshi***(2016) In-Situ Decorated Optimized CeO₂ on Reduced Graphene Oxide with Enhanced Absorptivity and Visible Light Photocatalytic Stability and

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Reusability, **Journal of Physical Chemistry C(ACS)**, 120, 22281–22290, 2016(IF=4.772)
DOI: 10.1021/acs.jpcc.6b04493

23. Boro B., B. M. Rajbongshi, and **S.K. Samdarshi***(2016) Synthesis and fabrication of TiO₂-ZnO nanocomposite based solid state dye sensitized solar cell, **Journal of Materials Science: Materials in Electronics (JMSE)(Springer)**, 27 (9), 9929–9940 (IF=2.779) DOI: 10.1007/s10854-016-5062-8
24. Ramchiary A, **S. K. Samdarshi***, and T Shripathi (2016) Hydrogenated mixed phase Ag/TiO₂ nanoparticle - A super-active photocatalyst under visible radiation with multi-cyclic stability, **Solar Energy Materials and Solar cells(Elsevier)**, 155, 117-127 (IF=7.305) DOI: 10.1016/j.solmat.2016.04.050

2015

25. Verma R, **S K Samdarshi*** and Jay Singh(2015) Hexagonal Ceria Located at the Interface of Anatase/Rutile TiO₂ Superstructure Optimized for High Activity under Combined UV and Visible Light Irradiation, **Journal of Physical Chemistry C(ACS)**, 119 (42), 23899–23909 (IF=4.772) DOI: 10.1021/acs.jpcc.5b05652
26. Verma R, **S K Samdarshi***, Sreedhar Bojja, Samrat Paul, Biswajit Choudhury(2015) A novel thermo-photocatalyst of mixed-phase cerium oxide (CeO₂/Ce₂O₃) homo-composite nanostructure: Role of interface and oxygen vacancies, **Solar Energy Materials and Solar cells(Elsevier)**, 141, 414–422, 2015 (IF=7.305) DOI: 10.1016/j.solmat.2015.06.027 [*highlighted in Nanotechnology Weekly, September 7, 2015, www.highbeam.com/doc/1G1-427845051.html*]
27. Ramchiary A, and **S. K. Samdarshi*** (2015) Hydrogenation based disorder-engineered visible active N-doped mixed phase titania, **Solar Energy Materials and Solar cells(Elsevier)**, 134, 381-388, 2015 (IF=7.305) DOI: 10.1016/j.solmat.2014.12.031
28. Nair, R G Nair, P J Bharadwaj, S K Samdarshi(2015) Design improvement and performance evaluation of solar photocatalytic reactor for industrial effluent treatment, **Ecotoxicology and Environmental Safety(Elsevier)**, 134(2), 301–307 (IF=7.129) DOI: 10.1016/j.ecoenv.2015.07.036
29. Verma R. and **S K Samdarshi*** (2015) Correlating oxygen vacancies and phase ratio/interface with efficient photocatalytic activity in mixed phase TiO₂ **Journal of Alloys and Compounds(Elsevier)**, 629, 105-112, 2015 (FYIF=6.371)
30. Rajbongshi Biju Mani, **S K Samdarshi***, Bibha Boro(2015) Multiphasic bicomponent TiO₂-ZnO nanocomposite: synthesis, characterization and investigation of photocatalytic activity under different wavelength of light irradiation" **Journal of Materials Science: Materials in Electronics (JMSE)(Springer)**, 2015, 26, 377–384 (IF=2.779).

2014

31. Rajbongshi, Biju Mani and **S. K. Samdarshi***(2014) Influence of N-doping on photocatalytic activity of ZnO nanoparticles under visible light irradiation, **Materials Letters(Elsevier)**, 134, 111-114, 2014 (FYIF=4.778)

32. Rajbongshi B M, Ramchiary A, and **S. K. Samdarshi*** (2014) Investigation of visible light active Ag sensitized mixed phase TiO₂ photocatalyst for solar energy application, **Journal of Sol-Gel Science and Technology(Springer)**, 72(1), 114-121, 2014(IF=2.606)
33. Rajbongshi B M, Ramchiary A, B M Jha, and **S. K. Samdarshi*** (2014) Synthesis and characterization of plasmonic visible active Ag/ZnO photocatalyst, **Journal of Materials Science: Materials in Electronics (JMSE)(Springer)**, 25(7), 2969-2973, 2014 (IF=2.8).
34. Ramchiary A, B M Rajbongshi and **S. K. Samdarshi*** (2014) Ag deposited mixed phase titania visible light photocatalyst– Superiority of Ag-titania and mixed phase titania co-junction, **Applied Surface Science(Elsevier)**, 305, 33-39, 2014(FYIF=7.392)
35. Ramchiary, A and **S K Samdarshi*** (2014) High Visible Light Activity of Hydrogenated Structure-Engineered Mixed Phase Titania Photocatalyst, **Chemical Physics Letters(Elsevier)**, 597, 63-68.(FYIF=2.8).
36. Rajbongshi, Biju Mani and **S. K. Samdarshi*** (2014) Cobalt-doped zincblende–wurtzite mixed-phase ZnO photocatalyst nanoparticles with high activity in visible spectrum, **Applied Catalysis B: Environmental (Elsevier)**, 144, 435-441, 2014, (FYIF=24.319). <https://doi.org/10.1016/j.apcatb.2013.07.048>
37. Biju Mani Rajbongshi and **S K. Samdarshi** (2014) ZnO and Co-ZnO nanorods - Complementary role of oxygen vacancy in photocatalytic activity of under UV and visible radiation flux, **Materials Science and Engineering: B(Elsevier)**, 182, 21-28 (FYIF=4.051)

2013

38. Nair G. Ranjith, **S. K. Samdarshi**, and Bruno Boury (2013) Surface Mineralization of Cellulose by Metal Chloride – an Original Pathway for the Synthesis of Hierarchical Urchin and Needle Carpetlike TiO₂ Superstructures, **European Journal of Inorganic Chemistry(RSC)**, 2013(30), 5303–5310.(IF=2.551)
39. Barnali Das, Ranjith G. Nair, Biju Mani Rajbongshi and **S.K. Samdarshi*** (2013), Investigation of the photoactivity of pristine and mixed phase N-doped Titania under visible and solar irradiation, **Material characterization (Elsevier)**, 83, 145-151, 2013(IF= 4.537).

2012

40. Bruno Boury, Ranjith G. Nair, **Sanjoy K. Samdarshi**, Tahereh Makiabadi and P. Hubert Mutin (2012) Non-hydrolytic synthesis of hierarchical TiO₂ nanostructures using natural cellulosic materials as both oxygen donors and templates, **New Journal of Chemistry(RSC)**, 2012, 36, 2196-2200.(IF=3.925)
41. Nair, Ranjith. G., Jetendra Kumar Roy, **S. K. Samdarshi***, A. K. Mukherjee (2012) Mixed phase V doped titania shows high photoactivity for disinfection of Escherichia coli and detoxification of phenol **Solar Energy Materials and Solar cells(Elsevier)**, 2012, 105, 103-108.(FYIF=7.267)

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42. Lahkar J. Pranab, Bhamu K. Rajesh, **S. K. Samdarshi***(2012)Enabling inter-cooker thermal performance comparison based on cooker opto-thermal ratio (COR),**Applied Energy(Elsevier)**,99, 2012, 491–495.(FYIF=11.446)
43. Nair, Ranjith. G., A. M. Tripathi, **S. K. Samdarshi***(2012) Impact of Ti-V ratio on the crystalline phase/visible light activity of TiV–oxide photocatalyst, **Environmental Progress and Sustainable Energy (AIChE, Wiley-Blackwell)**, 31(1), 107–113.(IF=2.8)
44. Husain M., G. Sharma, **S.K. Samdarshi*** (2012) Innovative design of non-convective zone of salt gradient solar pond for optimum thermal performance and stability, **Applied Energy(Elsevier)**, 93, 357–363.(FYIF=11.446)
45. Suhas R. Patil, U. G. Akpan, B. H. Hameed, **S. K. Samdarshi** (2012) Comparative study of photocatalytic efficiency of Degussa P25, Qualigens and Hombikat UV-100 in the degradation kinetic of congo red dye, **Desalination and Water Treatment – Journal of European Desalination Society, (Taylor and Francis)**, 46, 188–195.(IF=1.254)

2011

46. Chaturvedi A, and **S K Samdarshi*** (2011) Energy, Economy and Development (EED) Triangle: Concerns for India, **Energy Policy (Elsevier)**,39(8), 4651-4655.(FYIF=7.576)[*Cited in Security of Energy Supply, International Handbook of Energy Security, Hugh Dyer and Maria Julia Trombetta (Editors), Edward Elgar Publishing Ltd, UK, 2013*].
47. Nair, Ranjith. G., A. M. Tripathi and **S. K. Samdarshi***(2011) Photocatalytic activity of predominantly rutile mixed phase Ag/TiV oxide nanoparticles under visible light irradiation, **Energy(Elsevier)**,36, 3342-3347. (IF=8.857)
48. Nair, Ranjith. G., Jetendra Kumar Roy, **S. K. Samdarshi***, A. K. Mukherjee(2011) Enhanced visible light photocatalytic disinfection of gram negative, pathogenic Escherichia coli bacteria with Ag/TiV oxide nanoparticles, **Colloids and surfaces B: Biointerfaces(Elsevier)**, 86, 7–13. (IF=5.999)
49. Nair, Ranjith. G., Samrat Paul, **S. K. Samdarshi*** (2011) High UV/Visible light activity of mixed phase titania: A generic mechanism, **Solar Energy Materials and Solar cells(Elsevier)**, 95, 1901–1907(IF=7.303)
50. Paul Samrat and **S K Samdarshi*** (2011) A green precursor for carbon nanotubes synthesis, **New carbon materials (Elsevier)**,26(2),1-4(IF=1.905)
[https://doi.org/10.1016/S1872-5805\(11\)60068-1](https://doi.org/10.1016/S1872-5805(11)60068-1)

2010

51. M. Nirmala, Manjula G. Nair, K. Rekha, A. Anukaliani, **S.K. Samdarshi** and Ranjith G. Nair (2010) Photocatalytic Activity of ZnO Nanopowders Synthesized by DC Thermal Plasma, **African Journal of Basic & Applied Sciences**, 2 (5-6), 161-166.

52. Tripathi, A. M., Ranjith. G. Nair and **S. K. Samdarshi*** (2010) Visible active silver sensitized vanadium titanium mixed metal oxide photocatalyst nanoparticles through sol gel technique, **Solar Energy Materials and Solar Cells (Elsevier)**, 94, 2379-2385.(IF=7.267)
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72. Tripurari Kumar Harsh, S.K. Samdarshi*, Uday Deshpande, AS Bhattacharyya(2023) A sustainable synthesis of carbon dot nanoparticles (CDN) from waste plant (*Argemone mexicana*) seed for solar photocatalysis applications presented at International Conference on Renewable Energy(ICORE-2023) between 7-9 December, 2023 organized by KREEPA under the aegis of Solar Energy Society of India(SES) published in ISES Conference Proceedings (2023), 10.18086/swc.2023.13.01, <http://proceedings.ises.org>

Patents: International 00 National 02

National

1. A process for preparing carbon nanotubes from non-biodegradable polypropylene and polyethylene terephthalate.(28578 of 01/08/2017).
2. Thermal performance improvement and cost reduction of Indian standard solar box cooker through retrofitting of radiation regulator and its validation through standard tests(202431064022, Published on 31/01/2025).

Books/Chapter: Edited: 03 Authored: Chapter 03

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2. **S K Samdarshi**, J S Jawa(2012)Grid Power from Renewables, Solar Energy Society of India, Excel India Publishers, New Delhi.(ISBN: 978-93-82062-77-6)
3. Kumaravel M, S M Ali, **S K Samdarshi**, R Jha, and J S Jawa (2013)Renewables for Development of Rural Areas, Excel India Publishers, New Delhi. (ISBN: 978-93-82880-80-6)
4. Swapna Ojah, Ranjith G. Nair and **S. K. Samdarshi**(2013),Recent Development in Dye-Sensitized Solar Cells, Akshay Urja (MNRE), 7(1), 10-13, 2013, (<http://biomasspower.gov.in/document/Magazines/Akshay%20Urja/Vol%207,%20Issue%201-%20July-Aug%202013.pdf>)
5. Garg, H P and **S K Samdarshi**(2014) India: the Global Powerhouse of Renewable Energy?, **Renewable Energy 2014**, World Renewable Energy Network, Brighton, UK, 19-27. (Invited)
6. Vijay K. Jayswal*, V. V. Tyagi, Richa Kothari, D. P. Singh and **S. K. Samdarshi**(2016), Role and Initiatives of Indian Government Policies for Growth of Wind Energy Sector, Emerging Energy Alternatives for Sustainable Environment, D. P. Singh, Richa Kothari, and V. V. Tyagi(Editors), TERI, 99-116, 2016(ISBN- 978-81-7993-411-1)
7. Dr. A.S Bhattacharyya, Prof. **S. K. Samdarshi**, Dr. Sachin Kumar (Editors), Book of abstracts GEETAM 2019, LA LAMBERT Publications, Lap Lambert Academic Publishing, Mauritius(ISBN: 978-613-9-45755-7)

Invited Talks/Chair: International/ National Invited Talk (06/ 37) Chair (03/ 06) Judge (00/02)

Invited speaker/panelist/judge

International

1. Delivered an **invited talk** on “*HRD in Renewable Energy : Demand & Supply Gap*” on December 02, 2010 at International Congress on Renewable Energy(ICORE-2010), at Chandigarh, India
2. Delivered an **invited talk** on “*Strategies for improvement in the performance of photoactive metal-oxide nanomaterials*” on November 26, 2013 at International Congress on Renewable Energy(ICORE-2013), at Bhubaneshwar, India.
3. Delivered an **invited talk** on “*Energy Security Paradigm: Shift in the Critically Issues*” at two days International conference BRIDGES 2015 held at BBA Central University Lucknow, India from January 16-17, 2015 .
4. Delivered an **invited talk** on “*Phase-complexation and nano-structuration of metal oxide photocatalyst for visible light activity* ” on December 16, 2015 at International conference on Energy and Environmental Impact on Biodiversity and Sustainable Development held between December 15-17, 2015 at BRAB University, Muzaffarpur, Bihar.
5. Delivered an **invited talk** on “*New Role of metal-oxide nanomaterials in solar hydrogen production*” on March 07, 2017 at International Asia-Pacific Conference on Sustainable Energy & Environmental Technologies organized in Patna.
6. **Presented a report** on “*Innovation and Entrepreneurship: Status of Indian Higher Education Institutions and the way ahead*” during Leadership for Academics Program(LEAP) at Nanyang Technological University, Singapore on February 18, 2019.
7. Delivered an **invited talk** on “*Solar water splitting for Hydrogen production*” during International conference on advanced material for energy science and technology (AMEST 2019) held from Feb 26-28, 2019.
8. **Panelist**, Online panel discussion on “*Clean Energy and Energy Transition in Jharkhand*” November 23, 2020 organized by World Bank, USA and CUJ, Jharkhand.
9. Delivered **invited talk** during Expo Clean Energy 2023, Santiago, Chile on “*Advances in Hydrogen Energy Technology policy in India*” on November 09, 2023 organized by Energy Centre, University of Chile, Santiago.
10. **Invited Plenary speaker** on “*Solar Cookers – Scope of innovation through a holistic performance parameter*” during **International Conference on Advances in Energy Research(ICAER)**, organized by IIT Bombay on Dec 13, 2023.
11. **Invited talk** on “*Solar energy for hydrogen and other decentralized energy solutions*” at University of Tarapaca, Chile on 14th May, 2024

National

12. Delivered an **invited talk** on “*Scope of solar energy in North-East*” at a training program for Assam State administrative officers at NERIWALM in August 2006.
13. Delivered an **invited talk** on “*Achievements and technological challenges in photocatalytic detoxification of non-biodegradable organics*” at Silver Jubilee National Conference ICC-2007 at Mumbai.

14. **Judged** the poster session on Green Chemistry at Silver Jubilee National Conference ICC 2007 at Mumbai.
15. Delivered **invited talk** on “*New & Renewable energy and nanotechnology applications*” at UGC-DAE Consortium for Scientific Research, Indore on March 23, 2009.
16. Delivered **invited talk** on “*Solar photocatalytic hydrogen production*” at Short term course on Fuel Cell and Hydrogen Technology, Department of Chemical Engineering, Indian Institute of Technology, Guwahati on September 18, 2009.
17. Delivered an **invited talk** on “*Environment-friendly alternative energy sources*” at a workshop organized by Disaster Management Cell, Tezpur University on February 10, 2010.
18. Delivered an **invited talk** on “*Input for HRD needs in renewable energy sector from Department of Energy, Tezpur University*” on April 10, 2010 at the National Solar Mission workshop on “Capacity Building in Renewable Energy Technologies” organized by Ministry of New and Renewable Energy, New Delhi.
19. Delivered an **invited talk** on “*Developments in solar energy and energy materials*” on March 30, 2012 at a National workshop on “Solar energy and its applications” organized by NIT, Silchar.
20. Delivered an **invited talk** on “*Pristine mixed phase materials have potential to cross the upper limit of activity of photocatalyst?*” at National Conference on Recent Advances in Bio-energy Research organized by SSS-National Institute of Renewable Energy from December 7-8, 2012.
21. Delivered an **invited talk** on “*Polytypism in Metal Oxides: Advantage Visible Photocatalysis*” on April 07, 2013 at Reflux 2013 on theme “Cleaner Energy-Greener Tomorrow” organized by Department of Chemical Engineering, IIT, Guwahati.
22. Delivered an **invited talk** on “*An assessment of photoactivity of optimized mixed lattice metal oxide nanomaterials for solar energy and environmental applications*” on January 12, 2014 at RISE-2014 held at NIT, Silchar.
23. Delivered an **invited talk** on “*Test Procedures for Solar Thermal Collectors and Systems – The basic considerations*” on January 12, 2014 at RISE-2014 held at NIT, Silchar.
24. Delivered an **invited talk** on “*Solar Energy Through Mathematics*” on February 02, 2014 at National Conference on Applied Mathematics, held at Central University of Jharkhand, Ranchi
25. Delivered **invited talk** on “*Synthesis, characterization and performance evaluation of visible active multi-phasic metal-oxide nanoparticle systems for solar, energy and environmental applications*” at DST-SAP workshop on Solar Cell on March 15, 2014 held at BIT Mesra
26. Delivered an **invited talk** on “*Application of Solar Thermal Technologies with special reference to the North-Eastern States*” at training program on Importance of ground solar radiation data in the penetration of solar energy held at Guwahati on May 08, 2014

organized by Assam Power Distribution Company Limited, Assam State Electricity Board, Guwahati

27. Delivered an **invited talk** on “*Solar Thermal Technologies with Special Reference to Solar Radiation Resource*” at two days training program on Functioning and Maintenance of SRRA Station held from July 01-02, 2014 at Central University of Jharkhand, Ranchi
28. Delivered an **invited talk** on “*Nano-metal oxides for solar and photocatalytic applications*” a TEQUIPecture at UICT North Maharashtra University, Jalgaon, on January 20, 2015.
29. **Judged** the research work of the research scholars and faculty members on energy and materials of the “*Avishkar*” initiative of North Maharashtra University, Jalgaon on November 22, 2015.
30. Delivered an **Invited talk** on **Solar energy–The future source of power**(“*Phase Complexation and Nanostructuration of New Generation Solar-active Nanomaterials*”) for the executives of Electronics Division, BHEL, Bangalore on April 16, 2016.
31. Delivered **invited talk** on “*Solar energy materials for novel applications-New generation solar-active nanomaterials*” at RTC College, Ranchi at one day seminar on Role of Power Electronics in Renewable Source of Energy Systems held on August 28, 2016.
32. Delivered an **invited talk** on “*Solar water splitting for hydrogen production*” at North Eastern Hill University(NEHU), Shillong on Feb 27, 2017 during National Conference on Renewable Energy Technology Utilization for Rural Development(NCRETURD) held from Feb 27-March 01, 2017.
33. Delivered an **invited talk** on “*Impact of phase-complexation and nano-structuration of photoactive nanoparticles on solar water splitting*” on February 25, 2017 at NIT, Silchar at Research Conclave on Recent Innovations in Science and Engineering (RISE 2017) during 24th – 26th March, 2017.
34. Delivered **invited talk on** “*Solar Thermal and Fuel Conversion – System Design and Performance*” on March 22, 2017 at **National Workshop on Advances in Renewable Energy** organized by Department of Mechanical Engineering at the Cambridge Institute of Technology, Ranchi, from March 21 -25, 2017.
35. **Panelist**, workshop on “*Local coping mechanisms for Integrated Climate Resilience: Opportunities & Challenges for urban poor in Ranchi*” organized by **Mahila Housing Sewa Trust (MHT)** in Hotel Chanakya BNR on June 07, 2017.
36. Delivered **invited talk** on “*Progress and challenges on Energy Education In Centre for Energy Engineering, Central University of Jharkhand, Ranchi*” during the round-table meet on December 13, 2017 at IIT Bombay.
37. **Keynote lecture** on “*Generalization of solar cooker thermal performance parameter and the test procedure*” during National Conference on Renewable Energy and Environmental

Challenges, NCREEC-2018 organized by Department of Mechanical Engineering, NIT Jamshedpur from 26-27 Feb 2018.

38. Delivered **invited talk** on “*Phase and Structural Engineering at Nanoscale for Solar Hydrogen and Electricity*” during National Level workshop on Experimental Physics at BIT Mesra Ranchi June 22, 2018.
39. Delivered **invited talk** on “*Interdisciplinary Research Schemes*” during Faculty Development program at Amity University Ranchi on August 04, 2018.
40. Invited as an **expert panellist** to participate in IIT Bombay Diamond Jubilee workshop on “*Future of Energy Research and Education*” On December 13-14, 2018.
41. Delivered **invited talk** on “*Design and performance evaluation of nanomaterial systems for chemical and electrical energy conversion, and thermal system for cooking applications of solar energy*” On Feb 26, 2019 during International Conference on Advanced materials for Energy Science and Technology organized by Department of Energy Engineering, North-Eastern Hill University (NEHU), Shillong, Meghalaya during 26th – 28th February, 2019.
42. **Invited participation** in the workshop on “*Improving development outcomes in climate vulnerable areas through improved energy access*” on the 18th December 2019 organized by World Resources Institute(WRI) in Ranchi.
43. **Invited lecture** on May 28, 2020 on “*Entrepreneurship through Innovation and Research in Renewables: The Case of Solar Energy*” during webinar on Renewable Energy: Application and Entrepreneurship organized by Department of Mechanical Engineering, SSBT College of Engineering, Jalgaon, Maharashtra on May 27-30, 2020.
44. **Invited lecture** on July 13, 2020 on “*Innovation and entrepreneurship in Solar Energy: Linkage with applied research in materials and system performance parameter for sustainability*” during webinar series on Research initiatives and current developments in renewable energy sources(Under TEQUIP III) organized by Girijanand Chowdhury Institute of Management and Technology, Guwahati in collaboration with Assam Science and Technology University(ASTU) from July 9-13, 2020.
45. **Invited lecture** on August 11, 2020 on “*Innovation, entrepreneurship and solar conversion systems*” during 5th International Webinar on Energy and Environment organized at Govt MLB Girls PG College, Indore(MP) from July 13-14, 2020.
46. **Invited plenary talk** on “*Photocatalytic route for Solar Fuel*” on December 12, 2020 at 28th National (Virtual) Conference on Condensed Matter Physics - Condensed Matter Days (CMDAYS20) organized by NIT Silchar from December 11-13, 2020.
47. **Invited panellist** during panel discussion on “*Just Transition in Jharkhand*” co-organized by Centre for Environment and Energy Development(CEED), New Delhi and CoE-GEET, CUJ, Ranchi on August 17, 2021

48. **Invited lecture** on “*New developments, and performance enhancement and evaluation tools of solar cooking and solar photocatalytic application systems*” on September 17, 2021 during the National Webinar on “Recent Advances in Renewable Energy Technology” by Deptt of Mechanical Engg, North Eastern Regional Institute of Technology, Itanagar, Arunachal Pradesh, India
49. **Invited lecture** on “*Research, Innovation, and entrepreneurship: Science to Technology*” during the National Science Day seminar on “**Global Science for Global Well-being**”, on Feb 28, 2023 at Birsa Institute of Technology, Sindri, Jharkhand
50. **Invited lecture** on “*Role of Solar Energy in Clean Cooking and Process Heat Applications*” as a panellist during “**R&D Conclave on Renewable Energy**”, on April 11-12, 2023 at Akshay Urja Bhavan, Ministry of New and Renewable Energy(MNRE), New Delhi.
51. **Invited lecture** on Energy Security “*Renewable Energy and Energy Security: India’s Opportunities*” during **G20 University Connect Engaging Young Minds lecture series** on March 06, 2023 organized by CUJ, Ranchi with Ministry of External Affairs and Research and Information System for Developing Countries(RIS), New Delhi.
52. **Invited talk** on “*Photocatalytic Materials for self-cleaning surfaces and water purification*” on August 01, 2023 at R & D Centre, Tata Steel, Jamshedpur.
53. **Invited lecture** on “*A generalized performance parameter for holistic(opto-thermal) evaluation of solar cooker designs and design-hybrids*” as a **BIS New Work Item Proposal** at 26th TC Meeting of MED04 Hosted by BIS_6 on Nov 08, 2023.
54. Invited expert for **televised discussion/interview** on **Doordarshan** on “**Pradhanmantri Suryoday Yojana**” on January 24, 2024.
55. **Invited Keynote lecture** on “*Solar photoactive materials for environmental remediation and clean fuel*” during **National Conference on Advanced Materials and its Applications(NCAMA) 2024** organized by National Institute of Advanced Materials and Technology(NIAMT) on Feb 09, 2024.
56. **Invited Member, 4th Workshop on Energy Education and Research, organized by** Department of Energy Science and Engineering at IIT Bombay on November 20-21, 2024.
57. **Invited lecture** at the Industry-Academia Workshop on **Advanced Materials for Sustainable Technologies (AMST 2025)** under SERB project from **29th January to 2nd February, 2025** at NIT Silchar in **Hybrid Mode**.
58. **Invited Keynote speaker** at the **National Conference on Recent Innovations in Green Science and Technology for Betterment of Environment** organized by Ranchi Women's College, Ranchi, Jharkhand in collaboration with Department of Forest, Environment & Climate Change, Jharkhand from 13th -14th Feb, 2025.
59. **Invited expert** for **televised discussion/interview** on **Doordarshan** on “**National Science Day**” on February 28, 2025.

60. **Invited Member** of Technical Committee during **workshop for technical committee members on xmlisation of standards and online standards development**, at Chennai on July 04, 2025 organized by Bureau of Indian Standards, New Delhi
61. Delivered an **Invited Talk** on “**Research Funding Opportunities and Proposal Preparation**” at Sarla Birla University on November 08, 2025
62. **Invited talk** on “*Novel strategies for enhancing conversion efficiency of mixed phase metal-oxide nanostructured photocatalyst systems for Solar hydrogen and environmental applications using MOFs*” at One Day Symposium on “The 2025 Nobel Prize in Chemistry: Breakthroughs in Metal–Organic Frameworks (MOFs)” by Ranchi University, Ranchi on November 14, 2025.

Chair

International

1. **Chaired** a session on December 16, 2016 at International conference on Energy and Environmental Impact on Biodiversity and Sustainable Development held between December 15-17, 2015 at BRAB University, Muzaffarpur, Bihar.
2. **Chaired** a session at International Asia-Pacific Conference on Sustainable Energy & Environmental Technologies organized in Patna on March 08, 2017.
3. **Chaired** a session during “**International Conference on Nuclear, Particle and Accelerator Physics (ICNPAP-2018)**” to held from October 23-26, 2018 at Central University of Jharkhand, Ranchi

National

4. **Chaired** a session on “*Green Chemistry*” at Silver Jubilee National Conference ICC 2007 at Mumbai.
5. **Chaired** a session on “*Solar Energy Conversion*” at National conference on Renewable Energy(NCRE-2010) held from March 22-25, 2010 at Tezpur University, Tezpur .
6. **Chaired** a session on “*Energy and Environment*” during National Seminar on “Climate Change and Sustainable Development with reference to India” held from April 1-3, 2010 at Tezpur University, Tezpur, India.
7. **Chaired** the opening session of the Round Table discussion on **Renewable Energy as Sustainable Alternative organized** by Centre for Environment and Energy Development(CEED) and OXFAM India on March 17, 2016 at Ranchi.
8. **Chaired** a session on Feb 27, 2017 during National Conference on Renewable Energy Technology Utilization for Rural Development(NCRETURD) held from Feb 27-March 01, 2017 at North Eastern Hill University(NEHU), Shillong.

9. **Chaired** special session “**Hydrogen production, storage, sensing and fuel cells**” on December 11, 2020 at 28th National (Virtual) Conference on Condensed Matter Physics - Condensed Matter Days (CMDAYS20) organized by NIT Silchar from December 11-13, 2020.
10. **Chaired** break-out session on “**Interdisciplinarity, Bridging Research Gaps and Integrating Findings into Curriculum**” during National Workshop on Future Ready Energy Education: Opportunities and Challenges at IIT Delhi, July 9, 2025

Consultancy: 2 Private and 2 Public sector

- Testing of Solar FPC, and development of Solar distillation system for M/S Jain Irrigation Systems Ltd., Jalgaon(Maharashtra)
- Development of Solar Tobacco Barn in collaboration with SEC, New Delhi for Tobacco Board, India
- Third Party inspection of ~2000 Homelight systems in North Lakhimpur, and Dhemaji districts of Assam, India.

Sponsored Project handling: PI (6Major R&D projects) Co-PI(2 Major R&D Projects)

Sl. No.	Details of project	Agency	Amount (Rs.)
1.	Development of novel Collection and Storage Device for Intermediate Temperature(PI)	AICTE (8017/RDII/BOR/95/Rec 688(Part(II)(1997-2001)	5.00 Lakh
2.	A Model Energy Park at North Maharashtra University, Jalgaon(PI)	MNRE(FNo. 49/300/98-SADP) + NMU (1998-2000)	2.50 Lakh
3.	Design, development and performance evaluation of actinic photocatalytic detoxification system for direct environmental application of solar energy(PI)	UGC(F10-31/201(SR-I)) (2001-2004)	~5.00 Lakh
4.	Preparation, Characterization and performance analysis of the catalysts in a Fixed-Bed Solar PhotocatalyticReactor for Degradation of Azo-Dyes(AICTE Sponsored)	AICTE(8023/RID/NPROJ/RPS-51/ 2004-2005)	16.50 Lakh
5.	Development of Alkaline Fuel Cell Electrode incorporating Carbon nanomaterials (AICTE Sponsored)2009-11	AICTE(8023/BOR/RID/RPS-35/ 2008-09)	17.00 Lakh
6.	Synthesis and Characterization Of Carbon Nano materials(CNM) From planst based precursors and investigation of their utility as	DST(SR/S3/ME/049/2007 dated 27th June 2008)	27.26 Lakh

	Fuel Cell electrode (<i>DST Sponsored</i>)2009-11		
7.	Solar Radiation Resource Assessment Station Instruments	MNRE, New Delhi (2014-2019)	~ 40.00 Lakh
8.	Centre of Excellence in Green and Efficient Energy Technology(CoE-GEET) (<i>MHRD Sponsored</i>)(2014-18,2018-2020, 2020-2021)	MHRD (F.No. 5-5/2014- TS.VII dated 4th September 2014)(2014-2021)	250.00 Lakh
9.	Performance analysis of novel Bismuth oxide based nanocomposite photocatalyst in multidimensional matrix	UGC DAE CSR CRS Project (letter no. CRS/2021-22/01/403 dtd March 30, 2022)(2022-25)	15.00Lakh

Institutional Project handling:PI (6 Major projects)

- A **Model Energy Park** at North Maharashtra University, Jalgaon (~Rs2.50 lakh, *MNES and NMU Sponsored*) **1998**
- Installation of different types of **Solar Water Heating Systems of about 10000 lpd** capacity at NMU, Jalgaon.(~Rs18.00 lakh, *NMU sponsored*) **2000**
- Awarded a project for installation of **4 KW Wind-PV hybrid systems** by MNES at NMU, Jalgaon(Rs 9.00 lakh, *MNRE sponsored*) **2004**
- Installation of **Solar Water Heating Systems of capacity ~14500 lpd** at TU, Tezpur(~ Rs 20.50 Lakh, *MNRE and TU sponsored*) **2009**
- Establishment of 1 kW_p off-grid Solar PV Power Plant at Tezpur University, Tezpur(~Rs 1.50 lakh, *MNRE and TU sponsored*) **2009**
- Establishment of **Solar Radiation Resource Assessment(SRRA)** station at CUJ, Ranchi (~Rs 40 lakh, *MNRE Sponsored*) **2014**
- **Establishment of 500kW Solar PV Power Plant** at CUJ Ranchi(under RESCO/OPEX scheme) **2025**

Contributions in R&D:Computer models, Exptl. Systems, Materials & Processes, Solar systems, and Energy Policy

- **Heat Transfer in Solar Thermal Collectors**
 - Development of generalized model, analytical in nature, for calculation of heat losses in flat Plate collectors with 1, 2, and N Glass covers and tubular collectors including ETC.
- **Solar Pond Design, Simulation and Establishment**
 - Establishment of First Solar Pond in Eastern India
 - Development of a detailed computer simulation model for performance study of solar pond.

- Formulation of a method for optimization of the non-convective zone of a maturing salt gradient solar pond.
- Simplification of relations for estimating the radiation transmission in the solar pond
- Investigations on combined effect of turbidity and reflectivity and establishing the complementary nature of both the parameters.
- **Generic Thermal Performance Parameter and Test Procedure for solar Cookers**
 - Proposed Objective Parameters to facilitate a user in selection and utility of solar cookers of different types and designs based on the Thermal Performance Parameter(TPP) rating.
 - Developed a robust and type/design independent generic TPP, COR(cooker opto-thermal ratio) and test procedure(TeP) for solar cookers.
 - Developed experimental procedure and technique to determine effective concentration ratio for solar cookers using COR.
 - Developed the method with an alternative procedure and test loads to rate intermediate temperature cookers employing COR.
 - Design of solar cooker for assured cooking under sudden reduction in irradiance level.
 - Performance evaluation of novel designs of solar cookers developed in different countries through global collaboration
 - Novel internal retrofitted radiative control with more than 6% enhancement in different performance parameters with minimal cost implications
 - Carried out detailed analysis of limitations of different thermal performance parameters and robustness of COR as a holistic and inclusive parameter
- **Visible Active Solar Photoactive Materials and Systems:**
 - Developed visible active Ag/TiV oxide photocatalyst with high photoactivity.
 - Identified and explained the unique photogenerated charge transfer mechanism responsible for high activity of mixed phase titania photocatalyst in visible as well as UV radiation in terms of interface mechanism. This phenomenon has been further substantiated and cited by other researchers in a number of high impact factor journals.
 - The interface mechanism was substantiated by synthesizing biphasic ZnO with a metastable phase using unique NIP technique and later by developing biphasic Ceria homo-composite and ceria based hetero-composite photocatalysts with high visible light activity.
 - For the first time proposed a method to determine *Microbicidal Photonic Efficiency* which will be useful in designing of photocatalytic disinfection reactor.
 - Established the utility of Taguchi Robust Technique in data reduction as well as photocatalytic process and reactor design optimization.
 - Developed thermo-photocatalyst based on ceria and rGO-ceria system
 - Proposed novel generic mechanism, uniquely correlating photo-thermo-catalytic activities of oxide photocatalyst systems
 - Developed niobia based photocatalyst system and demonstrated dependence of its activity on electrokinetic potential in aqueous media.

- Demonstrated photonic up-conversion using carbon nanodots from plant based precursor
- **Nanomaterials for Advanced Energy Applications**
 - Development of Carbon Nanomaterials (Carbon nano tubes CNT, Carbon microtubes CMT) from plant based green precursors for energy applications. Development of these materials(CNT, CNM) using PP and PET waste which results in valorization of environmental hazard.
 - Oxide nanoparticles based heterogeneous antioxidants for increasing shelf life of degradable biofuels.
 - Developed hydrogenated titania nanorods based highly photoactive electrodes for solar photoelectrochemical hydrogen generation
- **New Generation Photovoltaics**
 - Development of an active electron collector for Dye-sensitized Solar Cells(DSSC) based on TiO_2
 - Development and fabrication of f-MWNT based improved architecture for Organic PV Cell.
 - Development of low cost Cu-Titania based DSSC solar cells
- **Energy Policy, Management and Security**
 - Energy supply security
 - Renewable energy policy and regulations including generation(genco), and distribution(discoms)
 - Energy security, transition and justice
- **Other developmental activities**
 - Establishment and operation of First Institutional Energy Park in Northern Maharashtra.
 - Conception, installation, commissioning and operation of different types of Solar Water Heating Systems of about 10000 lpd capacity at NMU, Jalgaon.
 - Establishment and operation of 1 kW_p off-grid Solar PV Power Plant at Tezpur University, Tezpur.
 - Conception, installation, and operation of 14000 lpd solar water heating system at Tezpur University, Tezpur.
 - Conception of 4 KW Wind-PV hybrid systems by MNES at NMU, Jalgaon.
 - Establishment, and operation of Solar Radiation Resource Assessment(SRRA) station at CUJ, Ranchi
 - Establishment, and auditing of 500 kW_p grid-connected Solar PV Power Plant at Central University of Jharkhand, Ranchi.

Guidance: 13+3 Ph.D., 37 M.Tech., 25 M.Sc. & B.Tech.

- Investigations on design and performance of solar devices for energy and environmental applications(*P. S. Patil, 2005, completed*)

- Investigation on solar pond for photothermal and photocatalytic detoxification application(*M.Hussain, 2005, Completed*)
- Parametric studies on solar photothermal and photodetoxification systems(*S. R. Patil, 2006, Completed*)
- Thermal performance parameters of solar cookers: a study leading to generalization(*P.J.Lahkar, 2012, Completed*)
- Synthesis of carbon nanotubes from plant based precursors and their application in organic photovoltaic cells and bio-diesel storage(*Samrat Paul, 2012, Completed*)
- Mixed phase titania based visible active photocatalyst for solar energy applications(*R.G. Nair, 2013, Completed*)
- Synthesis and characterization of metal oxide visible active photocatalyst for solar energy application(*BijuMani Rajbongshi, 2016, Completed*)
- Development of structure-engineered mono/biphasic nanoscale photocatalyst systems and investigation of their solar photocatalytic activity/hydrogen generation potential(*Anjalu Ramchiary, 2016, Completed*)
- Characterization and performance studies on visible active metal oxide polymorphs for solar energy applications(*Ranjana Verma, 2017, Completed*)
- Generalization of the test standards for intermediate temperature solar cookers and its utilization for investigations on design parameters and variations(*Atul A Sagade, 2019, Completed*)
- Study of impact of nano-structuration and nano-compositization on the photocatalytic activity of niobium pentoxide for solar energy and environmental applications (*Neha Kumari, 2023, Completed*)
- Synthesis and Thermo-photoactivity Analysis of Nanostructured Tungsten Oxide and its Composites(*Kumar Gaurav, 2023, Completed*)
- Performance Development and analysis of the thermal performance parameter and test procedure for advanced continuous solar cooker (*Partha Sarathi Panja, 2026, Completed*)
- Analysis of novel Bismuth oxide based nanocomposite photocatalyst in multidimensional matrix(*Tripurari Kumar Harsh, Submitted, 2025*)
- Solar cooker carbon mitigation potential and load capacity: Identification, analysis and utility of the objective parameters derivable from Cooker Opto-thermal Ratio (COR)(*Rahbar Jamal, Since 2021*)
- An assessment of the operational and financial aspects of the power distribution sector for the Indian state of Jharkhand(*Shubham Sanyal, since 2021*)

Students' Achievements: Awards; Placement; Fellowships

- Mr Tripurari Kumer Harsh R/S** received CRS scholarship of UGC-DAE Consortium for Scientific Research for a duration of three years

- ii. **Mr Atul A Sagade, R/S**, received Solar Energy Research Centre(SERC) post-doctoral fellowship of SERC, Chile in 2020 with a provision for three years' duration.
- iii. **Ms Neha Kumari, R/S**, received National Renewable Energy Fellowship (**NREF-SRF-2018**) of **MNRE**, New Delhi
- iv. **Mr Kumar Gaurav, R/S**, received National Renewable Energy Fellowship (**NREF-SRF-2018**) of **MNRE**, New Delhi
- v. **Ms Ranjana Verma, R/S**,received **National Post-doctoral Fellowship** to work under Professor Rajiv Prakash, Indian Institute of Technology-BHU, Varanasi, India in 2019
- vi. **Ms Ranjana Verma, R/S**,received **Dr D S Kothari Post-doctoral Fellowship** of University Grants Commission, India, in 2019, tenable in Indian Universities and National Laboratories.
- vii. **Ms Bijumani Rajbongshi, R/S**, received **National Post-doctoral Fellowship** to work in Department of Chemical Technology, Indian Institute of Technology, Delhi, India in 2017
- viii.**Mr. Samrat Paul, R/S**, received **Young Scientist Award** of Indian Science Congress Association during **Indian Science Congress 2012** held at Bhubaneshwar at the hands of former President Dr A P J Abdul Kalam.
- ix. **Mr. Ranjith. G. Nair, R/S**, received fellowship to work with Dr. Hubert Mutin, CNRS Research Director, Chimie Moléculaire et Organisation du Solide, Université de Montpellier, France under **Indo-French Sandwich PhD fellowship** program - 2011.
- x. **Mr. Ranjith G. Nair, R/S**,received National Renewable Energy Fellowship (**NREF-SRF-2011**) of **MNRE**, New Delhi
- xi. **Mr. Samrat Paul, R/S** received the **Swaran Jayanthi Puraskar for the Best Paper** in the Physical Sciences section of the **Annual Session of National Academy of Sciences India**held at Jaipur from **December 2-4, 2010**at the hands of Dr M.G.K. Menon, Scientific Advisor, ISRO, Department of Space, India
- xii. **Mr. Ranjith G. Nair, R/S** received the best paper award in the poster session of Engineering section of **97th National Science Congress held at Thiruvananthapuram from January 03-07, 2010**at the hands of Dr. Madhvan N. Nair, Former Chairman, ISRO, India.
- xiii.**Mr.Samrat Paul, R/S** received the best paper award in the poster session of Engineering section of **96th National Science Congress held at Shillong from January 03-07, 2010**.
- xiv.**Mr. Samrat Paul, R/S**, received National Renewable Energy Fellowship (**NREF-SRF-2010**) of **MNRE**, New Delhi
- xv. **Mr P. J. Lahkar, R/S**, received **JBNSTS, FIST-DST Fellowship** under which he visited Solar Heat Transfer laboratory, CES, IIT Delhi from June 1- June 30, 2009.
- xvi.**Dr Prashnat S Patil, R/S**, received **SERC Fast Track Young Scientist Project Award** in 2007.

Awards/Scholarships: *National Merit, UGC, CSIR, GATE, IIT, LEAP*

- **National Merit Scholarship** during entire academic career,
- Indian Institute of Technology Research fellowship,
- **CSIR-JRF**(Junior Research Fellowship),
- Qualified **NET-JRF**, and
- Qualified GATE examination.
- Awarded **Best Organizer Award** of BRCA, IIT, Delhi
- Leadership in Academics Program(**LEAP**), MHRD, New Delhi
- Awarded “**Best Teacher Award**” of Indian Society of Technical Education (ISTE) Bihar-Jharkhand 2024

Memberships: *Professional Societies*

- Life member-Solar Energy Society of India(LM 336)
- Life member-Indian Science Congress Association(L13942)
- Life Member-Indian Society for Technical Education(LM 65392)

Training: *Disaster Management , Academic Leadership*

- Underwent training on “*Solar Energy: Use in Disasters and for Energy Security*” organized by Florida Solar Energy Center, at World Renewable Energy Congress, Denver, Colorado, USA on August 29, 2004.
- Underwent training under “*LEAP program*” of MHRD, New Delhi from February 4-23, 2019 at National Institute of Technology, Thiruchirapalli; Indian Institute of Information Technology, Sricity; and Nanyang Technological University, Singapore.

Seminar/Conference/Workshop/Training Organization:03(Regional 01, National 02, International 01)

- Organized a United States Educational Foundation of India sponsored one day seminar on “Gender and Energy Use” as *Principal Coordinator*. The seminar was co-sponsored by BHEL, New Delhi and SBI, Tezpur on November 11, 2005
- Initiated observing Rajiv Gandhi Akshay Urja Divas on August 20, 2008.
- Chairman, Organizing Committee, National Conference on Renewable Energy-2010 from March 23-25, 2010 organized by Department of Energy, Tezpur University, Tezpur (<https://www.tezu.ernet.in/events/NREC/committee.html>)
- Organizing Secretary, International Congress on Renewable Energy(ICORE-2011), the annual flagship event of Solar Energy Society of India(SESII) co-organized from November 02-04, 2011 at Tezpur University, Tezpur, Assam, India
- President, Organizing Committee, Orientation Training of NSS Programme Officers of Bihar & Jharkhand held from May 27-Jun 02, 2014 at Central University of Jharkhand.

- Chairman, Organizing committee, Workshop on “ Performance and maintenance of SRRA stations” for states of Jharkhand, Bihar, Orissa, Chhatisgarh, and West Bengal held on July 01-02, 2014.
- Member, CUJ Committee on preparation of proposal for AICTE Approval for course and fellowship.
- Member, National Advisory Committee, National Conference on Renewable Energy Technology Utilization for Rural Development(NCRETURD) held from Feb 27-March 01, 2017 at North Eastern Hill University(NEHU), Shillong.
- Member, National Advisory Committee, 11th Asia Pacific Conference on Sustainable Energy and Environment Technology(APCSEET), March 6-10, 2017, Muzaffarpur, Bihar (<http://brabu.org.in/apcseet2017>)
- Member, National Advisory Committee, International Conference on Renewable Energy for Sustainable Environment: Challenges and Remedies (ICRESE 2017), held from March 20-21, 2017 at SMVDU, Katra, Jammu and Kashmir
- Co-convener, National conference on “Repowering Jharkhand: Assessment of Solar power potential of Ranchi and Jamshedpur” on August 10, 2018 co-organized by Department of Energy Engineering, CUJ and CEED, New Delhi on August 10, 2018(<http://cuja.ac.in/PR10Aug2018.php>)
- Chairman, International Conference on Green and Efficient Energy Technology and Materials(GEETAM 2019) organized from March 06-09, 2019 by CoE-GEET, Central University of Jharkhand, Ranchi.
- Convener, International workshop on “Energy Policy Initiatives in Jharkhand” organized on January 08, 2020 co-organized with ISEP, John Hopkins University, USA. (<https://sais-isep.org/news/isep-signs-mou-with-central-university-jharkhand-cuj-till-2022>)
- Organized an online discussion with World Bank on the topic "Clean energy and energy transition in Jharkhand" on November 23, 2020
- Organized a Seminar-cum-brainstorming on “Establishment of Centre of Excellence on Energy Storage” in Jharkhand on January 18, 2023 with Department of Higher and Technical Education, Government of Jharkhand, Ranchi
- Chairman, International seminar on “Policy integration for renewable energy resources, conversions, storage and distribution” on August 28, 2025 at Central University of Jharkhand

Visits Abroad: 1 USA, 1 Singapore

- Visited Denver, Colorado, USA to attend World Renewable Energy Congress-VIII during August-September, 2004 during which attended a training program on “Use of Solar energy in disaster management and energy security” organized by Solar Energy Centre, University of Florida.
- Visited National Renewable Energy Laboratory(NREL), Golden, Colorado, USA in September 2004.

- Visited Nanyang Technological University, Singapore under LEAP program from Feb 17-24, 2019.
- Visit of University of Chile, Santiago and University of Tarapaca, Tarapaca, Chile between May 15-August 31, 2026.