

PROFILE*

1. Full Name : **Dr. Deb Prasad Ray**
2. Educational Qualification : M.Sc, Ph.D., PGDTMA
3. Designation : Principal Scientist & Head
Chemical & Biochemical
Processing Division
4. ARS Discipline : Organic Chemistry
5. Date of joining in ICAR : January 7, 2011
6. Date of Joining in ICAR-NINFET : January 7, 2011
7. Working experiences (in years) : 21 Years
 - a. Research : 21 Years
 - b. Teaching
 - c. Industry
8. Area of work (Five areas only)
 - a. Accelerated Retting of jute & other natural fibres for extraction of quality fibres
 - b. Development food materials from fibre biomass
 - c. Conversion to fibre to food grade products
 - d. Bio-macromolecules from agro-residues for diversified applications
 - e. Activated carbon from agro-residues
9. Contact details
 - a. Mobile No : 7439626004
 - b. Email (Including ICAR email) : dpray2017@gmail.com; debprasad.ray@icar.gov.in
10. Number of projects completed (As PI)
 - a. At Govt. of West Bengal : 05
 - b. At ICAR-NINFET : 07
11. Professional Achievements (Awards / Best Papers/Appreciation)
 - a. Technology Award from Indian Council of Agricultural Research on July 2023 for NINFET-Sathi
 - b. Elected as Fellow of West Bengal Academy of Science & Technology (2023)
 - c. Elected as Fellow of Indian Chemical Society (2020)
 - d. Elected Vice-President, Society of Pesticide Science, India (2017-20)
 - e. Elected SPPS Fellow from Society of Plant Protection Sciences (2015)
 - f. Founder Secretary, The Indian Natural Fibre Society (2012-18)
 - g. Life Member, Chemical Research Society of India
 - h. Best Paper in Oral Presentation from The Indian Natural Fibre Society in February 2-3, 2019.



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राष्ट्रीय पटसन एवं समवर्गी रेशा प्रौद्योगिकी अनुसंधान संस्थान

12, रीजेन्ट पार्क, कोलकाता - 700040

- i. Best Paper in Oral Presentation in National Seminar on Water & Soil Management Approaches for Climate Smart Agriculture held at Banaras Hindu University during March 23-24, 2018
- j. Best Overall Award for presentation in National Seminar at ICAR-Indian Institute of Vegetable Research during September 8-9, 2017
- k. Received Best Poster Award from National Symposium on Recent Trends in Biopolymers at and ICAR-National Institute of Natural Resins and Gums during February 17-18, 2017 at IINRG, Ranchi pp.
- l. Received Bharat Seva Ratan Gold medal Award in July 9, 2016
- m. Best Paper Award from Royal Society of Chemistry in Chemical Science in *Macro 2015* during 23-26 January, 2015, Kolkata, India
- n. Best Oral Presentation Award from National Seminar on Biopolymer Green Composites-Emerging Science & Technology (BPGC 2014) on November 14, 2014, CIPET, Kochi, India
- o. Best Poster Award from the International Conference on Natural Fibres during 1-3 August, 2014 at Kolkata
- p. Young Scientist Award at First International Conference on Bioresource and Stress Management, during 6-9 February, 2013 held at Science City, Kolkata
- q. Best Oral Presentation Award from the First International Conference on Bioresource and Stress Management, during 6-9 February, 2013, Science City, Kolkata
- r. Hindi Divas Puraskar during Hindi Week Celebration at National Institute of Research on Jute & Allied Fibre Technology, 12, Regent Park, Kolkata-700 040 during September 14-22, 2011 and won the 1st Prize
- s. Best Student Award in Division of Agricultural Chemicals and received SLC Gold Medal for Ph.D. programme from Indian Agricultural Research Institute, New Delhi-110 012

12. List of publication (Numbers only)

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|--|------|
| a. Research papers in National journal (NAAS rated) | : 65 |
| b. Research papers in international journal (NAAS rated) | : 22 |
| c. Popular articles | : 38 |
| d. Book Chapter | : 32 |
| e. Books Authored/ Edited | : 08 |
| f. Seminar Papers | : 45 |
| g. Bulletin | : 10 |

13. Seminar presentation (numbers only)

- | | |
|--------------------|------|
| a. Invited papers | : 06 |
| b. Research papers | : 45 |

14. Patents Applied (Numbers only) : 08

15. Patents Granted (Details) : 03

- a. Ray DP, Debnath S and Nag D (2014) A Method for Processing of Jute Fibre Using Jute Seed Oil"- A patent with complete specifications have been filed to Kolkata Patent office vide 49/KOL/2014) & Patent Granted on 28. 09.2022 (Patent No. 407816)
- b. Ammayappan L, Ganguli PK, Nag D, Debnath S, Ray DP, Ghosh RK, Dasgupta S and Chakraborty S (2015) A process for coating metal nanoparticles on surface of jute

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fibre/ textiles for enhancing functionality of jute fibre/fabric and jute-polymer resin biocomposite sheet obtained thereof- A patent with complete specifications have been filed to Kolkata Patent office vide 1262/KOL/2015) & Patent granted on 28.07.2020 (Patent No. 342660)

- c. Ammayappan L, Ganguli PK, Nag D, Debnath S, Ray DP, Ghosh RK, Dasgupta S and Chakraborty S (2015) Surface modification process of Jute fibre for enhanced functionalities and biocomposites obtained thereof - A patent has been filed vide Patent application No. 1348/KOL/2015, and Patent granted on 18.07.2022 (Patent No. 401472).

Trademarks Registered

- a. A trademark on NINFET-Sathi® has been registered (PI, QEI-22), Trademark Registration No. 4259315 dt. 07.08.2019 under Class 1 of Trade Marks Act, 1999 and Trademark Registration No. 4259316 dt. 07.08.2019 under Class 42 of Trade Marks Act, 1999.
- b. A trademark on NINFET-Power® has been registered (Co-PI, CBED/ ToT-13), Trademark application No. 5161137 under Class 7 dt. 05.10.2021
- c. A trademark on NINFET-Jute Leaf Drink® has been registered (PI NJB-JLT & Co-PI, CBED/ ToT-13), Trademark application under Class 30 and 43 the of Trade Marks Act, 1999

Copyrights

- a. Shakyawar DB, Ray DP, Mridha N, Basak S, Roy SB (2022) ICAR-NINFET PROFILE: A Status Report (1938-2022) p. (Copyright Registration No. L-114619/2022 dt. 23.04.2022)
- b. Roy AN, Debnath S, Ray DP & Nayak LK (2021) ICAR-NINFET Agribusiness Compendium, ICAR-National Institute of Natural Fibre Engineering & Technology. 66 p.(Copyright Registration No. L-104605/2021 dt. 18.06.2021)

16. Technology Commercialised (five with details)

- a. NINFET-Sathi (TEMP/E-1/21892/2019-KOL dt. 25.05.2019), the retting formulation, has been commercialised through signing a MoU with M/s Quality Export, Kolkata. (as PI)
- b. Digital Jute Grading Instruments (CRP-2 Projects) with M/s Deep Microsystems, Singur, Hooghly, W.B.
- c. Jute Leaf drinks has been commercialized with three Licensees viz. Divulge, BF-BSS, Bharat Sevasharam Sangha, Delhi and BSNW India
- d. Jute Activated Carbon (JAC) has been commercialized with two licensees viz. BF-BSS, Bharat Sevasharam Sangha, Delhi and BSNW India

17. List the five major achievements in the career

- a. Development of NINFET-Sathi, the retting accelerator
 - b. Development of the NINFET-Jute leaf drink
 - c. Development of NINFET-JAC as a new clean-up material for pesticide residue analysis
 - d. Development jute seed oil technology for processing of jute fibres
 - e. Development of Microcrystalline and Nanocellulose from lingo-cellulosic residues
18. List the 10 best publications in the whole career (Details)
- a. **Ray DP**, Ghosh RK, Saha B, Sarkar A, Singha A, Mridha N, Das I, Sardar G, Mondal J, Manjunatha BS, Shakyawar DB (2022) Accelerated retting technology for the extraction of golden fibre from the Indian Tossa jute (*Corchorus sp.*) *Journal of Cleaner Production*, Volume 380, 135063, <https://doi.org/10.1016/j.jclepro.2022.135063>. (NAAS 17.10)
 - b. Singha A, Das A, Manjunatha BS, Bhowmick M, **Ray DP***, Thakur AK, Saha B, Das R, Das R, Das A and Shakyawar DB (2022) Softening of Barky Root Cuttings of Jute by Pectinolytic Bacterial Strains for Better Spinability and Industrial Uses, *Economic Affairs*, 67(4): 1-6 (NAAS: 5.45)
 - c. Swetha RK, Dasgupta S, Chakraborty S, Li B, Weindorf DC, Mancini M, Silva SHG, Ribeiro BT, Curi N and **Ray DP** (2022) Using Nix color sensor and Munsell soil color variables to classify contrasting soil types and predict soil organic carbon in Eastern India, *Computers and Electronics in Agriculture*, 199 (2022) 107192 (NAAS 14.30)
 - d. **Ray DP**, Dureja P and Walia S (2008) Evaluation of Chemical Constituent of Marigold (*Tagetes erecta L.*) flower oil and its antifeedant properties against *Spodoptera litura*. *Pesticide Research Journal* 20(1): 10-12 (NAAS 5.95)
 - e. **Ray DP**, Srivastava S and Singh RP (2010) Phytochemical screening and biological activity of Marigold (*Tagetes erecta L.*) flower, *Pesticide Research Journal*, 22(1):1-4 (NAAS 5.95)
 - f. **Ray DP**, Dutta D, Srivastava S, Kumar B and Saha S (2012) Insect growth regulatory activity of *Thevetia nerifolia* Juss. Against *Spodoptera litura* (Fab.), *Journal of Applied Botany and Food Quality*, 85:212-215 (NAAS 7.20)
 - g. **Ray DP**, Srivastava S and Singh RP (2012) Gas chromatographic-mass spectrometric (GC-MS) analysis of marigold (*Tagetes erecta L.*) flower oil, *International Journal of Agriculture, Environment and Biotechnology*, 5(3): 215-218
 - h. Saha S, Datta D, Karmakar R and **Ray DP** (2012) Structure-toxicity relationship of chloroacetanilide herbicides: relative impact on soil microorganisms, *Environmental Toxicology and Pharmacology* 34(2012):307-314 (NAAS 10.30)
 - i. Ammayappan L, Nayak LK, Ray DP, Das S and Roy AK (2013) Functional Finishing of Jute Textiles-An Overview in India, *Journal of Natural Fibres*, 10(4):390-413 (NAAS 9.50)

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- j. Ghosh R.K., Majumder S., Bhattacharyya A., Paul A., Khan Z., **Ray D.P.**, Chattopadhyay S.N., Pardesh A., Shakyawar D.B., & Banerjee K. (2021) Introducing a low-cost jute activated carbon as a novel cleanup agent in multiclass pesticide residue analysis using gas chromatography tandem mass spectrometry, *Journal of Cleaner Production*, 319: 128696, [https://doi.org/10.1016/j](https://doi.org/10.1016/j.j) (NAAS 17.10)
- k. Ghosh, R. K., **Ray, D. P.**, Chakraborty, S., Saha, B., Manna, K., Tewari, A., & Sarkar, S. (2021). Cadmium removal from aqueous medium by jute stick activated carbon using response surface methodology: factor optimisation, equilibrium, and regeneration. *International Journal of Environmental Analytical Chemistry*, 1–18. DOI:10.1080/03067319.2019.1700964. (NAAS 8.60)
- l. Ghosh, R.K., **Ray, D.P.**, Tewari, A. & Das I (2020) Removal of textile dyes from water by jute stick activated carbon: process optimization and isotherm studies. *International Journal of Environmental Science and Technology*. <https://doi.org/10.1007/s13762-020-03003-5> (NAAS 9.10)
- m. Satya P, Sarkar D, Vijayan J, Ray S, **Ray DP**, Mandal NA, Roy S, Sharma L, Bera A., Kar CS, Mitra J, Singh NK (2021) Pectin biosynthesis pathways are adapted to higher rhamnogalacturonan formation in lignocellulosic jute (*Corchorus* spp.), *Plant Growth Regulation* 53(1):131-147 (NAAS 10.20)

19. Training program attended : 09

20. Training program organized: 18

21. Professional Affiliations (Details)

- a. Elected as Fellow of Indian Chemical Society (2020)
- b. Elected Vice-President, Society of Pesticide Science, India (2017-20)
- c. Founder Secretary, The Indian Natural Fibre Society (2012-18)
- d. Life Member, The Indian Natural Fibre Society
- e. Life Member, The Indian Science Congress Association
- f. Life Member, Society for Plant Protection Science
- g. Life Member, Society of Pesticide Science India
- h. Life Member, Society for Advancement of Natural Resins and Gums