

## PROFILE

1. Full Name: Dr. Sanjoy Debnath
2. Educational Qualification: M.Tech., Ph.D.
3. Designation: Principal Scientist
4. ARS Discipline: Textile Manufacture
5. Date of joining in ICAR: November 25, 1999
6. Date of Joining in ICAR-NINFET: November 25, 1999
7. Working experiences (in years): 26
  - a. Research: 24 years
  - b. Teaching: 3 years
  - c. Industry: 1 year
8. Area of work (Five areas only)
  - a. Natural fibre based nonwoven: property evaluation, product development (agro-textile, geo-textile)
  - b. Instrument & machinery development: Instruments - Rigidity tester, Friction tester, Electrical insulation tester, Machinery – Pineapple leaf fibre extractor, Sisal leaf fibre extractor, Flax fibre extractor, Modified handloom for jute, Fine yarn spinning system in jute spinning machinery
  - c. Bio-composite
  - d. Jute based home textile, Apparel textile, Thermal insulation and other industrial textiles
  - e. Experienced in handling different natural fibres (property evaluation, processing and product development): Jute, Pineapple leaf fibre, sisal, coir, nettle, angora rabbit hair fibre, Pig hair fibre, Mesta Indian Wool fibre, Indian flax fibre
9. Contact details
  - a. Mobile No: +91-9433008322
  - b. Email (Including ICAR email): sanjoy.debnath@icar.gov.in
10. (a) Number of project completed (As PI): 09  
  
(b) Number of project completed (As Co-PI): 16



11. Professional Achievements (Awards / Best Papers/Appreciation)

- a. Nominated Joint Convenor Textile Engineering Divisional Sub-Committee for the Session 2021-2022 and 2022-2023 of The Institution of Engineers (India), 8 Gokhale Road, Kolkata – 700020.
- b. Nominated as Convenor of Textile Engineering Divisional Sub-Committee for the Session 2014-2015 and 2015-2016 (till October 31, 2016) of The Institution of Engineers (India), 8 Gokhale Road, Kolkata – 700020.
- c. Selected as External Examiner for Ph.D. Synopsis Evaluation registered under Textile Designing Department, Banasthali Vidyapith, Rajasthan during 2014-2015.
- d. Attended the Round Table International Conference on “Challenges and Possibilities for Up-Scaling High Value Products from Himalayas with Focus on Himalayan Nettle” on October 30, 2013 at India Habitat Center (IHT), New Delhi. Out of the four Sessions, Session 2: “Present techniques and expected modifications in technology for fibre production” has been *Chaired* by Dr. Sanjoy Debnath, Sr. Scientist, NIRJAFT. The whole programme Sponsored by GIZ-RED, Germany and organised by Uttarkhand Regional Economic Development Programme, Uttarkhand, Uttarkhand Bamboo & Fibre Development Board, Uttarkhand and GIZ-RED, Germany.
- e. Awarded Best Poster in Poster on “Effect of pre-treatment of jute fabric with potassium permanganate on the jute polyester based bio-composites” presented at International Conference on Natural Fibres (Theme: Jute & Allied Fibres), at The Oberoi Grand, Kolkata, India 1 to 3 August 2014, organized by The Indian Natural Fibre Society, 12, Regent Park, Kolkata, India.
- f. Organised Lecture as Convenor on “Green Technology in Textiles” by Dr. Sankar Roy Moulick, Associate Professor and Dr. Prabir Choudhry, Associate Professor of Viswabharati, Santineketan, West Bengal R.N. Mukherjee Hall, West Bengal State Centre, The Institution of Engineers (India), Kolkata at 6:00 P.M. on 8<sup>th</sup> May, 2015.
- g. Received Appreciation Certificate on December 14, 2015 from The Institution of Engineers (India) for acting as Reviewer of research paper of the Journal of the Institution of Engineers (India): Series E.
- h. Chaired and acted as Group Leader of Apparel & Textile Section during the Brainstorming Workshop on Bridging the gaps in Gender Research from June 01-02, 2016 at ICAR-Central Institute of Women in Agriculture, Bhubaneswar on 02.03.2016.
- i. Acted as Organizing Committee Member for Conducting 30<sup>th</sup> National Convention of Textile Engineers and National Seminar on ‘Intervention of Frontier Technologies in Textile and Jute Sector’, under aegis of Textile Engineering Division, IEI, March 3-5, 2017 at West Bengal State Center, The Institution of Engineers (India), 8 Gokhale Road, Kolkata – 700020.
- j. Acted as Alternate Member of ‘Technical Textiles for Agro-tech Sectional Committee’, TX 35, Bureau of Indian Standards, New Delhi during 2017-2019.

ICAR-National Institute of Natural Fibre Engineering & Technology  
12, Regent Park, Kolkata-700040

- k. Acted as an Examiner evaluate of 2 (two) Ph.D. Thesis registered for Ph.D. Programme under Anna University, Chennai during 2017-2018.
- l. As Co-Organizing Secretary, Organized National Seminar on 'Market Driven Innovations in Natural Fibres', Organized by The Indian Natural Fibre Society, Kolkata at ICAR NIRJAFT, 12, Regent Park, Kolkata – 700040 during February 22-23, 2018.
- m. Awarded 'Best Paper' entitled, 'Extraction and Spinning of Indian Flax Fibre' During the National Seminar of The Indian Natural Fibre Society, February 22-23, 2018 at ICAR-National Institute of Research on Jute & Allied Fibre Technology, Kolkata.
- n. Acted as Reviewer of for book proposal submitted to Elsevier Publisher during 2017-2018.
- o. Awarded 'Best Paper' entitled, 'Opportunity in waste utilization: Extractor for converting green leaf to high value natural fibre', by L.K. Nayak, S Debnath and V. B. Shambhu, presented in the technical session on Production & Quality Enhancement of Natural Fibre – A Way Forward during the National Seminar on Natural Fibre Resource Management for Sustainable Development held at ICAR-National Institute of Natural Fibre Engineering and Technology, Kolkata, organized by The Indian Natural Fibre Society, February 02-33, 2019.
- p. Acted as External Examiner of Major Project work of M. Tech 4<sup>th</sup> Semester in Jute and Fibre Technology of Department of Jute and Fibre Technology, Institute of Jute Technology, Ballygunge, University of Calcutta on 06.06.2018.
- q. Acted as External Examiner of Major Project work of B. Tech 8<sup>th</sup> Semester in Jute and Fibre Technology of Department of Jute and Fibre Technology, Institute of Jute Technology, Ballygunge, University of Calcutta on 21.06.2018.
- r. Acted as External Examiner of Paper-VI (DJT-456) 'Project Work' for the students of 4<sup>th</sup> Semester of 2 years Post Graduate Diploma in Jute Technology & Management Course of Department of Jute and Fibre Technology, Institute of Jute Technology, Ballygunge, University of Calcutta on 24.08.2018.
- s. Acted as External Examiner of Minor Project work of B. Tech 7<sup>th</sup> Semester in Jute and Fibre Technology of Department of Jute and Fibre Technology, Institute of Jute Technology, Ballygunge, University of Calcutta on 21.01.2019.
- t. Acted as an Examiner evaluate of Ph.D. Thesis registered for Ph.D. Programme under Anna University, Chennai during 2018-2019.
- u. Acted as Principal Member of 'Technical Textiles for Agro-tech Sectional Committee', TX 35, Bureau of Indian Standards, New Delhi during 2019-2020.
- v. Acted as External Examiner for Assessment & Certification of Trainees undergoing Skill Development Training Programme on Jute Product Maker (HCS/Q7405) at Purba Burdwaman, West Bengal organized by Webcon Consulting (India) Ltd. (Govt. of West Bengal), Chatterjee International, Kolkata on 28.05.2019.
- w. Acted as External Examiner of Paper-8 (JFT-808), Major Project work of 8th Semester B. Tech in Jute and Fibre Technology Course, 2019 of Department of Jute and Fibre

Technology, Institute of Jute Technology, Ballygunge, University of Calcutta on 21.06.2019.

- x. Acted as External Examiner of Paper-VI (DJT-456) 'Project Work' for the students of 4th Semester of 2 years Post Graduate Diploma in Jute Technology & Management Course of Department of Jute and Fibre Technology, Institute of Jute Technology, Ballygunge, University of Calcutta on 28.08.2019.
- y. Acted as an Examiner evaluate of Ph.D. Thesis of registered for Ph.D. Programme under Anna University, Chennai during 2019-2020.
- z. Acted as an Examiner evaluate of Ph.D. Thesis of registered for Ph.D. Programme under Jadavpur University, Kolkata during 2019-2020.
- aa. Acted as an External Examiner of Ph.D. Viva-Voce Examination of Mr. Thanabal V. of Anna University, Chennai on 13.09.2019 at 10:30 am at Bannari Amman Institute of Technology, Satyamangalam, Tamilnadu.
- bb. Acted as one of the Member of the Textile Engineering Divisional Sub-Committee of West Bengal State Centre for the Session 2018-2019 and 2019-2020.
- cc. Acted as an External Examiner evaluate to evaluate the Viva-Voce Examination of Ph.D. Thesis entitled 'Optimization of cotton Melange yarn manufacturing for better quality and productivity' on 05.12.2019 at 3 pm at G.C. Sen Memorial Hall, Production Engineering Department, Jadavpur University.
- dd. Acted as External Examiner of Minor Project work of M. Tech Paper-VI, Course No. MT-616 in Textile Technology (Technical Textiles) of Department of Jute and Fibre Technology, Institute of Jute Technology, Ballygunge, University of Calcutta on 21.01.2020.
- ee. Selected as Member of the Textile Engineering Divisional Sub-Committee of West Bengal State Centre, The Institution of Engineers (India) for the Sessions 2018-2019 and 2019-2020.
- ff. Acted as Principal Member of 'Geosynthetics Sectional Committee', TX 30, Bureau of Indian Standards, New Delhi during 2020-2021.
- gg. Acted as Supervisor of Three months Professional Attachment Training of newly joined Scientist, Dr. Sanchita Biswas, MP Division with effect from July 27, 2020.
- hh. Acted as Principal Member of Agro Tech. Sectional Committee Meeting of BIS (TXD-35) for preparing a preliminary draft standard of jute products for use in Agricultural Application with effect from 17.10.2021.
- ii. Acted as Alternate Member of Industrial Fabrics Sectional Committee TXD 33, TX 30, Bureau of Indian Standards, New Delhi during 2021-2022.
- jj. Acted as an External Member for Ph.D. Viva-Voce Examination (online) of Mrs. Ashwini register in Textile Technology held on 10.01.2022, at Department of Textile Technology, Anna University, Chennai Tamil Nadu - 600 025.
- kk. Acted as an Examiner for evaluation of Ph.D. thesis in Department of Silpa Sadan, Visaa-Bharat, Santniketan, West Bengal.
- ll. Qualified GATE-94 during 1994.
- mm. Awarded CSIR Senior Research Fellow (3 years + 1 year extension) for the period of December 1998 to 2002.
- nn. Received Best Processing Project of B.Text (Textile Technology) during 1994, DKTEs Textile & Engineering Institute, Ichalkaranji, Maharashtra.

12 List of publication (Numbers only)

- a. Research papers in National journal (NAAS rated ): 15
- b. Research papers in International journal (NAAS rated): 34
- c. Popular articles: 20
- d. Book Chapter: 36
- e. Books Edited: 6
- f. Seminar Papers: 35
- g. Bulletin: 3

12. Seminar presentation (numbers only)

- a. Invited papers: 8
- b. Research papers: 10

13. Patents Applied (Numbers only) : 14

Patents Granted (Details): 06

- a. A method for producing blended yarn from jute and hollow polyester and method of preparing union fabric and shawl from the said blended yarn , Debnath S, Sengupta S & Singh U S, Patent No. 290640, Granted December 14, 2017, Applied July 09, 2008.
- b. A blanket from jute-hollow polyester blended bulk yarn and method of preparing the same, Debnath S, Bhattacharya G K& Singh U S, Patent No. 310348, Granted March 29, 2019, August 28, 2009.
- c. A soil substituent for seed germination obtained of renewable natural fibre” Sengupta S, Debnath S and Bose G, Patent No. 333780, Granted March 03, 2020, Applied March 13, 2014.
- d. A process for coating metal nanoparticles on surface of jute fibre / textiles for enhancing functionality of jute fibre / fabric and jute-polymer resin biocomposite sheet obtained thereof” by L. Ammayappyan, P.K. Ganguly, D. Nag, **S. Debnath**, D.P. Roy, R.K. Ghosh, Swati Dasgupta and Sujay Chakroborty, Patent No. 342660, Granted July 28, 2020, applied December 09, 2015.
- e. A system for tresting dynamically bending behaviour of semi-rigid fabrics and a method of such testing”, by Sengupta S, Debnath S and Sengupta A, Patent No. 362012, Granted March 18, 2021, applied November 01, 2014.
- f. Jute fibre based light weight thin jute fabric” by Sengupta S and Debnath S, Patent No. 384471, Date of Grant December 16, 2021, applied March 13, 2014.

14. Technology Commercialised (five with details )

- a. Warm garments, blanket from jute-based materials (jute-hollow polyester, yak, etc.): Light weight and high thermal insulation achieved from these material blending. Bulked yarn from woollenized jute and hollow polyester fibre suitable for knitted products and blanket material.

- b. Machine modification for fine yarn spinning in jute system: possible to spin very fine yarn even 50 tex in existing jute spinning machine which was limited to 138 tex prior to the intervention.
  - c. Processing of fine yarn from Indian flax fibre and angora-viscose blended yarn: Very fine yarn is possible in wet spinning system of around 42 tex all Indian flax fibre and German angora (Sikkim origin) blended with viscose fibre can go around 55 tex fibre yarn in modified Spinning.
  - d. Jute carry bag: High potential in replacement to some extent synthetic carry bag of load carrying capacity atleast 18 kg and can be repeated use. It is degradable under contact of moist soil for prolonged period.
  - e. Fibre extractors: Pineapple leaf fibre extractor, sisal leaf fibre extractor, flax fibre extractor suitable for Indian origin plant fibres.
15. List the five major achievements in the career
- a. Warm garments from jute-based materials (jute-hollow polyester, yak, etc.)
  - b. Machine modification for fine yarn spinning in jute system
  - c. Processing of fine yarn from Indian flax fibre, jute hollow polyester, etc.
  - d. Carry bag and home textile (window blind) from jute-based material
16. List the 10 best publications in the whole career (Details)
- a. Sengupta Surajit, Debnath Sanjoy, Sengupta Anindita, 'Fabric bending behaviour testing instrument for technical textiles', Measurement, Volume 87, June 2016, pp. 205–215. doi:10.1016/j.measurement.2016.03.030
  - b. Narayana H. Mohan, Debnath Sanjoy, Ram K. Mahapatra, Laxmi K. Nayak, Samprity Baruah, Anubrata Das, Santanu Banik, Madan K. Tamuli, "Tensile properties of hair fibres obtained from different breeds of pigs", Biosystems Engineering, Vol. 119, 2014, pp. 35-43.
  - c. Mohan N. H., Ammayappan L., Sarma D. K., Debnath S. & Tamuli M. K., 'Characterization of Thermal Properties of Pig Hair Fiber', Journal of Natural Fibers, Vol. 14, No. 4, 2017, pp. 459-465. DOI: 10.1080/15440478.2016.1250023.
  - d. Sengupta Surajit, **Debnath Sanjoy**, Ghosh Papai & Mustafa Izhar, 'Development of Unconventional Fabric from Banana (Musa Acuminata) Fibre for Industrial Uses', Journal of Natural Fibers, Vol. 17, No.8, 2020, pp. 1212-1224. DOI: 10.1080/15440478.2018.1558153.
  - e. Sengupta Surajit, and **Debnath Sanjoy**, 'Development of sunnhemp (Crotalaria juncea) fibre based unconventional fabric', Industrial Crops & Products, Vol. 116, 2018, pp. 109-115.
  - f. N H Mohan, L K Nayak, P P Gokuldas, S Debnath, M Paul, L Ammayappan, V V Ramamurty and D K Sarma, 'Relationship between morphology and tensile properties of pig hair fibre', Indian Journal of Fibre & Textile Research, Vol. 43, March 2018, pp. 126-131
  - g. Sengupta Surajit, Debnath Sanjoy, Ghosh Papai & Mustafa Izhar, 'Development of Unconventional Fabric from Banana (Musa Acuminata) Fibre for Industrial Uses', Journal of Natural Fibers, Vol. 17, No.8, 2020, pp. 1212-1224. DOI: 10.1080/15440478.2018.1558153.

- h. Sengupta Surajit, and Debnath Sanjoy, 'Study on needle punched jute nonwoven as an artificial medium for germination of seed: Effect of bulk density', Journal of Natural Fibers, Vol. 16, No.4, 2019, pp. 494-502.
  - i. Debnath S., Madhusoothanan M., & Srinivasmoorthy V. R., "Modelling of tensile properties of needle-punched nonwovens using artificial neural networks", Indian Journal of Fibre & Textile Research, Vol.25, March 2000, No.1, pp.31-36.
17. Training program attended (Numbers only): 15
18. Training program organized (Numbers only): 25
19. Professional Affiliations (Details)
- a. Member of Institution of Engineers since 2005, Fellow Institution of Engineers since 2011.
  - b. Member, West Bengal State Centre Committee, Inst of Engrs India
  - c. Patron member of The Textile Association of India since 2009.
  - d. Life Member of The Natural Fibre Society since 2014
  - e. Convener, Textile Engineering Subcommittee, WBSC, IEI
  - f. Ph.D. thesis Examiner and Viva-Voce Examiner of Jadavpur University (Kolkata), Anna University (Chennai), Banasthali University (Rajasthan), Visvs Bharati University (Santineketan)
  - g. Principal Member and Alternate members of different committees of BIS, India