

## PROFILE

1. Full Name: SurajitSengupta
2. Educational Qualification: M Tech (IITD), Ph D (Tech), PGDFM
3. Designation: Principal Scientist and Head, Mechanical Processing Division
4. ARS Discipline: Textile Manufacture
5. Date of joining in ICAR:21.01.1992
6. Date of Joining in ICAR-NINFET: 21.01.1993
7. Working experiences (in years)
  - a. Research: 30 years
  - b. Teaching: Occasionally during last 20 years as special lectures to Calcutta University & WBUT (Presently MAKAUT)
  - c. Industry: 3 years
8. Area of work (Five areas only)
  - a. Natural fibre based nonwoven: Needle punched, adhesive and thermal bonded
  - b. Nonwoven agrotextiles
  - c. Instrument development: Rigidity tester, Friction tester, Electrical insulation tester, Yarn characterization tester, Modified handloom for jute, Computerised linear density tester.
  - d. Bio-composite
  - e. Jute based woven hometextiles& Insulation (thermal & Sound) material
9. Contact details
  - a. Mobile No : 9433080878
  - b. Email: [drssengupta42@gmail.com](mailto:drssengupta42@gmail.com), [surajit.sengupta@icar.gov.in](mailto:surajit.sengupta@icar.gov.in)
10. (a) Number of project completed (As PI)



	Project	Sponsoring agency	Duration
1	Development of jute needle punched patterned nonwoven textiles	AP cess fund	2000-2003
2	Development of low cost dense jute nonwoven fabrics	Jute Technology Mission, Ministry of Textiles, GoI	2010-2013
3	Design and development of computerized instrument for testing bending behavior of semi-rigid fabrics with special reference to technical textiles	Department of Science & Tech. (DST), GoI	2012-2015
4	Development of an efficient staple yarn characterization unit with multi sensor fusion and field programmable gate array (FPGA) based data reduction card.	Department of Science & Tech. (DST), Govt of India	2011-2015

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

5	Study on the potential of jute based needle-punched nonwoven as sound absorbent /insulator	ICAR	2004-2006
6	To develop natural fibre (jute/allied) based yarns for decorative or apparel fabric by multi-fibre blending	ICAR	2005-2007
7	Development of home textiles from jute based blended yarn and its evaluation	ICAR	2007-2009
8	Development of instrument and method for testing bending rigidity for semi-rigid fabrics / curly fabrics.	ICAR	2008-2010
9	Study of bending, frictional and electrical behavior of jute materials	ICAR	2010-2014
10	Development Of Nonwoven Fabrics From Banana And Sunhemp	ICAR	2014-2016
11	Development of low area density jute nonwoven fabric for carry bags	ICAR	2015-2018
12	Development of Laminated needle punched nonwoven for impermeable light weight packaging	ICAR	2018-2021
13	Development of interlinear/ garment stiffener/filler from sunhemp and banana nonwoven	ICAR	2018-2020
14	Development of computerized measuring system of liquid propagation of textiles	ICAR	2020-2023
15	Development of carpet underlay from sunhemp fibre	ICAR	2020-2023

(b) Number of project completed (As Co-PI)

16	Development of composites and moulded products from Jute and Allied fibres	NATP	1999-2004
17	A value chain for coconut fibre and its byproducts: Manufacture of diversified products of higher value and better marketability to enhance the economic returns of farmers	NAIP	2008-2012
18	Investigation of effect of structure of jute products on its sound insulation property	National Agricultural Science Fund (NASF), ICAR	2015-2018
19	Study on acoustic and thermal insulation properties of particle boards from date palm leaf and its blends	ICAR	1993-1996
20	Some studies on chemical finishing of jute based nonwovens for improved moisture resistance and compatibility with synthetic resins	ICAR	1993-1996
21	Development of jute nonwoven agrotexiles with improved hygral properties	ICAR	1996-1999
22	Development of functional polymeric binders and finishing agents for jute based products	ICAR	1997-1999
23	Study of wetting characteristics of raw and modified lingo-cellulosic natural fibres	ICAR	2003-2005
24	Development of Expert System For Analysis Of Defects Of Jute Fabrics During Inspection	ICAR	2012-2016
25	Development of blended textiles from Indian flax fibre for technical applications	ICAR	2020-2023

26	Technological evaluation and process standardization of Hemp fibre degumming and dry spinning.	Industry	2021-2022
27	Characterisation, processing & product development of Indian Hemp Fibre.	ICAR	2022-2024

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

- Best Paper Award in The Michael Faraday IET Summit, 2013 by The Institute of Engineering and Technology, UK.
- Dr Triguna Charan Sen Medal in 24th Indian Engg Congress, 2009.
- Organizing secretary of 18th National Convention of Textile Engineers on Innovative and Diversified Jute Products, 2005 by IEI and NCJD
- Organizing secretary of All India Seminar of Textile Engineers on Exportable jute and textile products, 2006 by IEI and JMDC.
- Convenor of All India Seminar of Textile Engineers and Civil Engineers on Technical Textile in Civil Engineering , 2007, by IEI, Kolkata and JMDC, Ministry of Textiles
- Invited speaker on 'Jute in Agriculture' in Conf. on Protective Agrotextiles – Advantages & Future Prospects on 22nd March, 2012 at IJIRA, Kolkata organised by SASMIRA & Office of Textile Commissioner in association with IJIRA and BCKV.
- Invited Speaker in Conference on 'Role of Natural Fibres in Environment friendly Industrial Growth' by The Textile Association of India on 21/02/2009.
- Session Chairman in International conference on Natural Fibres, Theme: Jute & Allied Fibres on August 1-3, 2014
- Session Chairman in All India Seminar of Textile Engineers and civil engineers on Technical Textile in Civil Engineering organized by Textile Engg Division & Civil Engg Div, West Bengal State Centre, The Institution of Engineers (I) on 13-14 Sept, 2007
- Invited for Special Lecture on 'CLOTHTECH' at IIT, Calcutta University
- Visiting lecturer at CTTS for M Sc Tech course. Subject: Structure of Woven Fabrics

12. List of Publication (Numbers only)

- a. Research papers in National journal (NAAS rated): 46
- a. Research papers in International journal (NAAS rated):37
- b. Popular articles: 14
- c. Book Chapter: 9
- d. Books: 7
- e. Books Edited: 6
- f. Seminar Papers: 23
- g. Bulletin: 8

13. Seminar presentation (numbers only)

- a. Invited papers: 7
  - b. Research papers: 21
14. Patents Applied (Numbers only): 8
1. Patent: 1118/KOL/2014 dated 01/11/2014:A System for Testing Dynamically Bending Behaviour of Semi-rigid Fabrics and a Method of Such Testing, (S Sengupta, S Debnath&ASengupta)
  2. Patent : 1188/KOL/2014 dated 17/11/2014. :A system for measuring electrical behaviour of textile material (S Sengupta, S Debnath)
  3. Patent:897/KOL/2014 dated 29/09/2014.:A yarn characterization unit (A Sengupta, S Roy, S Sengupta)
  4. Patent: 247/ Kol/2009 dated 12/02/2009. : A method for incorporating surface pattern on non-woven feed material by needle punching in a needle loom system. (S Sengupta, A N Roy)
15. Patents Granted (Details): 4
- 1.Patent No. 290314:A Jute reinforced composite moulded tile from jute reed and unsaturated polyester resin and method for producing the same. ( S Sengupta, S Samajpati, A Dey)
  2. Patent No. 290640: A method for producing jute-hollow polyester blended yarn, union fabric of said yarn and method of preparing said union fabric and shawl from the said yarn. (S Debnath, S Sengupta)
  3. Patent No: 333780, Application No 293/KOL/2014 dated 13/03/2014 : A soil substitute for seed germination obtained of renewed natural fibre (S Sengupta, S Debnath, G Bose)
  4. Patent No 384471, Application No 292/KOL/2014 dated 13/03/2014. : Jute fibre based light weight thin fabric (S Sengupta, S Debnath)
16. Technology Commercialised (five with details )
- 1. Nonwoven carry bag from jute/mesta as substitute of plastic bag**  
Method applied: Thermal bonded and Adhesive bonded nonwoven Technology. It is need based, sustainable & ecofriendly product which can carry 4-8 Kg material.
  - 2. Jute agrotextile: Mulching cover, Nursery pot, Grass mat, Soilless germination**  
Commercialised to : Milltex Ecofibres Pvt Ltd (MOU & MOA)  
Impact: Better growth & yield, Better moisture retention, Less soil erosion, Higher profit and acts as breathable cover & thermal insulator of soil, Better wicking behaviour helps in distribution of water.
  - 3. Jute based Home textiles** : Curtain, Sofa-cover, Bed cover, Cushion and its cover, quilt etc.) from jute based blended yarn.
  - 4. Development of instrument and method for testing bending rigidity of semi rigid technical fabric**  
MOU signed with Tech(Style) India, Joy Maa Tara Enterprise & IEST, Shibpur.  
Impact: Open up a new area of testing, Useful to design a fabric, Dynamic properties can also be measured.
  - 5. Natural fibre reinforced composite**  
Products are: Washing basin, Corrugated sheet, Traffic signal, Sound box, Chair, Table, Boats, Products as the substitute of plywood.

Patent granted. It is low cost and lighter product, It can be produced in the small scale and decentralized sector.

17. List the five major achievements in the career
- Contribution towards development of natural fibre based nonwoven
  - Research for using jute in Agrotextiles,
  - Development of yarn and fabric testing instruments
  - Use of jute in sound insulation
  - Utilisation of sunhemp fibre

18. List the 10 best publications in the whole career (Details)

Authors, Year of publication, Title of the paper	Journal Name, Volume and Page No.	NAAS Rating
1. <b>Sengupta Surajit</b> , Sanjoy Debnath & Anindita Sengupta, 2016, Fabric bending behaviour testing for technical textiles.	Measurement (Elsevier), 87 (June) 205-215.	9.927
2. <b>Sengupta Surajit</b> & A Sengupta, 2013, Electrical resistance of jute needle punched nonwoven fabric: effect of punch density, needle penetration and area density.	Journal of Textile Institute, 104(2), 132-139.	7.88
3. <b>Sengupta Surajit</b> & Sanjoy Debnath, 2018, Development of sunhemp ( <i>Crotalaria juncea</i> ) fibre based unconventional fabric	Industrial crops and products (Elsevier), 116 (June), 109-115	11.645
4. <b>Surajit Sengupta</b> , S Debnath & G K Bhattacharyya, 2008, Development of handloom for jute based diversified fabrics modifying traditional cotton handloom	Indian Journal of Traditional Knowledge, NISCAIR, Special Issue on Traditional Handlooms and Handicrafts, 7(1) 204-207	7.27
5. S Roy, A Sengupta, & <b>S Sengupta</b> , 2017, Performance study of optical sensor for parameterization of staple yarn.	Measurement (Elsevier), 109 (October), 394-407.	9.927
6. A Sengupta, S Roy & <b>S Sengupta</b> , 2015, Development of a low cost yarn parameterisation unit by image processing.	Measurement (Elsevier), 59 (January), 96-109	9.927
7. <b>Surajit Sengupta</b> , Sanjoy Debnath, Papai Ghosh & Izhar Mustafa, 2019, Development of unconventional fabric from banana ( <i>Musa Accuminata</i> ) fibre for industrial uses.	Journal of Natural Fibres (Taylor & Francis), DOI: 10.1080/15440478.2018.1558153 dated 03.01.2019.	11.323
8. <b>Surajit Sengupta</b> & Sanjoy Debnath, 2019, Study on needle punched jute nonwoven as an artificial medium for germination of seed: Effect of bulk density.	Journal of Natural Fibres (Taylor & Francis), 16:4, 494-502, DOI: 10.1080/15440478.2018.1426078.	11.323
9. <b>Surajit Sengupta</b> , 2018, Study on Some Functional Properties of Mesta Needle Punched Nonwoven Fabrics Using Central Composite Rotatable Design.	Journal of Natural Fibers (Taylor & Francis) , 15 (1),131-145	11.323
10. <b>Surajit Sengupta</b> , Papai Ghosh, Izhar Mustafa, 2022, Effect of process parameters on mechanical properties of mesta ( <i>Hibiscus cannabinus</i> ) adhesive-bonded nonwoven	The Journal of The Textile Institute, 113:1, 10-24, DOI: <a href="https://doi.org/10.1080/00405000.2021.1938880">10.1080/00405000.2021.1938880</a>	7.88

11. Gautam Basu, Mallika Datta, <b>Surajit Sengupta</b> , Devarun Nath & Sayandeep Debnath ,2021, Jute felt for noise reduction: Understanding effect of pore size distribution	Journal of Natural Fibers, DOI: <a href="https://doi.org/10.1080/15440478.2021.1921663">10.1080/15440478.2021.1921663</a>	11.323
12. <b>Surajit Sengupta</b> , Manik Bhowmik & Sujoy Karmokar, 2021, Effect of structure on vertical and horizontal wicking performance concerning jute ( <i>Corchorus Olitorius</i> ) and water	Journal of Natural Fibers, DOI: <a href="https://doi.org/10.1080/15440478.2021.1980173">10.1080/15440478.2021.1980173</a>	11.323
13. <b>Surajit Sengupta</b> , 2022, Development of Jute Fabric for Jute-Polyester Biocomposite considering Structure–Property Relationship,	Journal of Natural Fibers, 19:5, 1864-1878, DOI: <a href="https://doi.org/10.1080/15440478.2020.1788495">10.1080/15440478.2020.1788495</a>	11.323
14. <b>Surajit Sengupta</b> , Manik Bhowmick & Sujoy Karmokar, 2021, Effect of Structure on Vertical and Horizontal Wicking Performance Concerning Jute ( <i>Corchorus Olitorius</i> ) and Water,	Journal of Natural Fibers, DOI: <a href="https://doi.org/10.1080/15440478.2021.1980173">10.1080/15440478.2021.1980173</a>	11.323
15. Gautam Basu, Mallika Datta, <b>Surajit Sengupta</b> , Devarun Nath & Sayandeep Debnath, 2021, Jute Felt for Noise Reduction: Understanding Effect of Pore Size Distribution,	Journal of Natural Fibers, DOI: <a href="https://doi.org/10.1080/15440478.2021.1921663">10.1080/15440478.2021.1921663</a>	11.323
16. <b>Surajit Sengupta</b> , Papai Ghosh & Izhar Mustafa, 2022, Effect of process parameters on mechanical properties of mesta ( <i>Hibiscus cannabinus</i> ) adhesive-bonded nonwoven,	The Journal of The Textile Institute, 113:1, 10-24, DOI: <a href="https://doi.org/10.1080/00405000.2021.1938880">10.1080/00405000.2021.1938880</a>	7.88
17. <b>Surajit Sengupta</b> , Papai Ghosh & Izhar Mustafa, 2022, Properties of Poly-vinyl Alcohol Bonded Jute ( <i>Corchorus olitorius</i> ) Nonwoven Fabric and Its Performance as Disposable Carry Bag,	Journal of Natural Fibers, 19:6, 2034-2052, DOI: <a href="https://doi.org/10.1080/15440478.2020.1798842">10.1080/15440478.2020.1798842</a>	11.323

#### Other research papers >> NASS rating 6

1. <b>Sengupta Surajit</b> , Basu G, Chakraborty R & Thampi C J, 2014, Stochastic analysis of major physical properties of coconut fibre	Indian Journal of Fibre & Textile Research, <b>39</b> (1) 14-23	6.84
2. <b>Sengupta S</b> & Debnath S, 2018, Production and Application of Engineered Waste Jute Entangled Sheet for Soil cover: A Green System	Journal of Scientific & Industrial Research, <b>77</b> (4), 240-245	7.056
3. <b>Sengupta Surajit</b> , 2018, Effect of loading behaviour on compressional property of needle punched nonwoven fabric,	Indian Journal of Fibre & Textile Research, <b>43</b> (2) 194-202	6.84
4. <b>Sengupta Surajit</b> & Debnath S, 2010, A new approach for jute industry to produce fancy blended yarn for upholstery	Journal of Scientific & Industrial Research, <b>69</b> (Dec) 961-965	7.056
5. <b>Sengupta Surajit</b> , 2010, Sound reduction by needle-punched nonwoven fabric	Indian Journal of Fibre and Textile Research, <b>35</b> (3) 237-242	6.84
6. <b>Sengupta Surajit</b> , 2009, Water absorbency of jute needle punched nonwoven fabric	Indian Journal of Fibre and Textile Research, <b>34</b> (4) December, 345-351	6.84
7. <b>Sengupta Surajit</b> , Chattopadhyay S N, Samajpati S. & Day A., 2008, Use of jute needle punched nonwoven fabric as reinforcement in composite	Indian Journal of Fibre and Textile Research, <b>33</b> (1) 37-44	6.84

8. <b>Sengupta Surajit</b> , Majumdar P. K. & Roy P., 2008, Tensile deformation of jute needle punched nonwoven geotextiles under compressive load	Indian Journal of Fibre and Textile Research, <b>33</b> (2) 139-145	6.84
9. <b>Sengupta Surajit</b> , Ray P. & Majumdar P. K., 2008, Effect of punch density, depth of needle penetration and mass per unit area on compressional behaviour of jute needle-punched nonwoven fabrics using central composite rotatable experimental design	Indian Journal of Fibre and Textile Research, <b>33</b> (4) 411-418	6.84
10. <b>Sengupta Surajit</b> , Ray P & Majumdar P K., 2005, Effect of dynamic loading on jute-based needle-punched nonwoven fabrics	Indian Journal of Fibre and Textile Research, <b>30</b> (4) 389-395	6.84
11. <b>Sengupta Surajit</b> , Samajpati S & Ganguly P K., 1999, Air permeability of jute based needle-punched nonwoven fabrics	Indian Journal of Fibre & Textile Research, <b>24</b> (2) 103-110	6.84
12. <b>Sengupta Surajit</b> , Ganguly P K & Ghosh Samar Kanti, 2001, Effect of chemical texturization on physical and relaxation properties of jute-polypropylene ply yarns	Indian Journal of Fibre & Textile Research, <b>26</b> (3) 261-267	6.84
13. <b>Sengupta Surajit</b> , 2000, Retained strength of air-spliced yarn – Rupture process and effect of test length	Indian Journal of Fibre & Textile Research, <b>25</b> (4) 277-283.	6.84
14. <b>Sengupta Surajit</b> , 2010, Modeling on sound transmission loss of jute needle punched nonwoven fabrics using central composite rotatable experimental design	Indian Journal of Fibre & Textile Research, <b>35</b> (4)293-297	6.84
15. <b>Sengupta Surajit</b> , Ganguly P K, & Samajpati S, 1999, Mechanical behaviour of jute and polypropylene blended needle-punched fabrics	Indian Journal of Fibre & Textile Research, <b>24</b> (March) 34-40	6.84
16. <b>Sengupta Surajit</b> & Sengupta A, 2012, Electrical resistance of jute fabric ,	Indian Journal of Fibre & Textile Research, <b>37</b> (1), 55-59	6.84
17. <b>Sengupta Surajit</b> & Debnath S, 2012, Studies on jute based ternary blended yarns.	Indian Journal of Fibre & Textile Research, <b>37</b> (3) 217-223	6.84
18. Sengupta Anindita, Debnath Sanjoy, <b>Sengupta Surajit</b> , 2018, Design and development of an instrument for testing electrical insulation of technical textiles	Indian Journal of Fibre & Textile Research Vol.43(4) 402-409	6.84
19. <b>Sengupta Surajit</b> , Effect of different lignocellulosic fibre based needle punched nonwovens on mechanical properties of bio-reinforced composite	Indian Journal of Fibre & Textile Research, <b>45</b> (4), 2020, 436-443	6.84
20. <b>Sengupta S</b> & Debnath S, 2020, Effect of processing parameters of mesta sheet for use as eco-friendly agrotextiles	Journal of Scientific & Industrial Research, <b>79</b> , March, 256-260	7.056

19. Training program attended (Numbers only): 16

20. Training program organized (Numbers only): 3

21. Professional Affiliations (Details)

a. Fellow of Institution of Engineers since 2005

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

- b. Patron member of The Textile Association of India since 2009
- c. Life Member of The Natural Fibre Society since 2014
- d. Member, West Bengal State Centre Committee, Inst of Engrs India
- e. Convener, Textile Engineering Subcommittee, WBSC, IEI
- f. Alternate member, TXDB, BIS, GoI
- g. Principal Member, TXD 09 committee, BIS, GoI
- h. Principal Member , TXD 03 committee, BIS, GoI
- i. Principal Member, TXD 35 committee, BIS, GoI
- j. Member, Ph D Research Advisory Committee, Textile Technology, University of Calcutta.