

**PROSENJIT SAHA, Ph.D.**

Assistant Professor

Centre for Interdisciplinary Sciences

JIS Institute of Advanced Studies and Research (JISIASR)

AN INITIATIVE OF JIS GROUP, KOLKATA

AFFILIATED TO JIS UNIVERSITY (JISU)

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**PROFESSIONAL APPOINTMENTS (RESEARCH / TEACHING/ INDUSTRIAL)**

**ASSISTANT PROFESSOR**

(Aug. 20, 2019 to Present)

JISIASR, Salt Lake City, Kolkata-91

Involvement: **TEACHING & RESEARCH**

**ASSISTANT PROFESSOR (Inspire Faculty)**

(Oct 09, 2015 to Aug. 19, 2019)

IEST, Shibpur, Howrah, WB-711103:

Involvement: **TEACHING & RESEARCH**

**POSTDOCTORAL RESEARCHER**

(Jan 2015 to Sept 2015)

Mahatma Gandhi University, Kottayam, India-686560,

Involvement: **RESEARCH**

**SENIOR RESEARCHER**

(Nov 2013 to Dec 2014)

Gyeongsang National University, Jinju, South Korea-660701,

Involvement: **RESEARCH**

**HEAD, (QC and Development)**

(Aug 2013 to Oct 2013)

KE Technical Textiles Pvt. Ltd., Kharagpur, India-721301

Involvement: **RESEARCH & DEVELOPMENT**

**MANAGEMENT TRAINEE (QC and Development)**

(Sept 2012 to July 2013)

KE Technical Textiles Pvt. Ltd., Kharagpur, India-721301

Involvement: **RESEARCH & DEVELOPMENT**

Ph.D in Polymer Science and Technology

(July 2008 to Nov 2012)

Indian Institute of Technology (IIT), Kharagpur, India-721302

**RESEARCH ACTIVITY (2008 to Present)**

**ELECTROSPUN AND 3D PRINTED NANOFIBERS FOR TISSUE ENGINEERING AND BONE-TISSUE ENGINEERING APPLICATIONS**

- Optimized parameters for successful electrospinning of trans-polyisoprene reported for the first time
- Trans-polyisoprene nanofibers were found stable and could be reinforced to prepare high end composites

- Developed a simple method for making electrospun elastomer nanofibers
- 3D printed natural polymeric nanocomposite for wound healing, smart skin fabrication, bone tissue regeneration
- Surface morphology was investigated by SEM-TEM microscopies

#### **MODIFIED NANO-SCAFFOLD FOR WATER PURIFICATION**

- Chemical modification of natural polymers with Graphene
- Performed synthesis of iron modified graphene on sand particles for water filter
- Preparation of bio-based vegetable oil emulsion to transesterify natural fibers for modified fiber based filter scaffold
- Nanomaterials and nanosurface coating for removal organic pollutants
- Batch and column study of removal of organo-halides from waste water
- Modified fiber scaffold was found to remove the organo-halides effectively from waste water

#### **GREEN SYNTHESIS OF CELLULOSE FROM BACTERIA**

- Optimized process to synthesize natural cellulose from bacteria
- Could be potential substitute of plastic
- Bio-plastic film for packaging and tissue scaffold applications

#### **ECOFRIENDLY DEVULCANIZATION AND RECYCLING OF WASTE ELASTOMER FOR EMI SHIELDING**

- Eco-friendly chemical alteration (devulcanization) of Chitin/chitosan for re-use and preparation of novel composites
- Electrospinning of W-Epdm rubber
- Devulcanization done by microwave, and ultrasound treatment
- Waste-EPDM was also foamed by critical CO<sub>2</sub> for devulcanization
- Chemically devulcanized rubber through radiation and foaming method was blended with LDPE for mechanically stable composites
- Obtained understanding of radiation effect on waste rubber, and investigated the foaming mechanism with subsequent optimization

#### **CHEMICAL MODIFICATION OF JUTE FIBERS AND FABRICATION OF FIRE RETARDANT BIOCOMPOSITES**

- Eco-friendly chemical treatment for jute and other lignocellulosic fibers for durability enhancement
- Fire retardant applications of modified jute fiber based composites
- Durable geotextiles from modified jute fibers
- Jute based diversified green applications

#### **SURFACE MODIFICATION OF ELASTOMER AND CNT FUNCTIONALIZATION**

- Performed anionic polymerization of polybutadiene rubber using epoxidized soybean oil via ring-opening reaction
- Epoxidized polybutadiene rubber was found to act as a suitable matrix for uniform silica dispersion
- Developed a strong nanosilica dispersed rubber composite for shoe out-sole application
- Surface functionalization of mWCNTs by silane and TiO<sub>2</sub> to prepare natural rubber composite by melt blending method
- CNT based natural rubber composites were found to have higher thermal conductivity and enhanced gas barrier property

### **RESEARCH EXPERIENCE**

#### **INFRASTRUCTURE DEVELOPMENT**

- Developed prototype facilities to bulk level synthesis of plant based thermoset phenolic resin.
- Developed processing facilities for stable vegetable oil based emulsion

- Developed accelerated characterization facilities to study the life-expectancy of natural fiber based composites.
- Developed optimized electrospinning set up for nanofiber preparation from elastomer, and biobased polymers

### **MATERIAL SYNTHESIS**

- Developed green method to prepare polyols from dimer acids as prepolymer of polyurethane
- Synthesize thermoset resin from plant based phenolic materials
- Developed thermally conductive CNTs reinforced elastomer with higher gas barrier properties
- Synthesize epoxidized polybutadiene blend with uniformly dispersed nanosilica powder

### **CHARACTERIZATIONS**

- Performed thermal analysis (DTA, DSC, TGA), XRD, SEM/AFM, XPS,. Thermal conductivity, gas-barrier property measurement. <sup>13</sup>C Solid State NMR, FT-IR, UTM, Elemental Analyzer, HPLC, GC-MS. Degradation study of biopolymers by biological, chemical, saline solutions, pH solutions, UV-moisture exposures (Artificial Accelerated Weathering), Electrospinning, 3D bioprinting.

### **Laboratory and Research Facilities Developed**

- Research grants were awarded by DST, SERB, DST-SYST, and Ministry of Textiles.
- Using these grants, state-of-the art Polymer Synthesis & Processing (PSP) laboratory, Polymeric Biomaterials Laboratory (PBL), and Polymer Composite Lab (PCL) were developed at School of Materials Science, in IEST-Shibpur
- Available Laboratory Facilities for PSP and PB laboratories include a wet synthesis arrangements for biopolymer, advanced nanofiber manufacturing using electrospinning device, biofabrication by 3D bioprinter, water bath, heating and vacuum oven, refluxing facilities, magnetic stirrer, cold centrifuge, viscometers.
- In addition to that, an advanced facilities for composite preparation include UTM, hydraulic press, high-end autoclave.
- Testing facilities for fire retardancy of natural polymer composites include, LOI, injection molding machine

### **EDUCATION**

***Ph.D. from Materials Science Centre (in Sustainable Polymer Science and Technology)***, 2012-13  
INDIAN INSTITUTE OF TECHNOLOGY, Kharagpur, India

**Thesis Title: Chemical modification of lignocellulosic fiber for enhancing their degradation resistance**

***Master of Science (MSc) in Environmental Science***, 2007 (Mark obtained: 77.10 %)  
UNIVERSITY OF CALCUTTA, Calcutta, India

***Bachelor of Science (BSc) in Chemistry***, 2005 (Mark obtained: 51.12 %)  
VIDYASAGAR UNIVERSITY, Midnapore, India

***Higher Secondary (+2) Examination***, 2001 (Mark obtained: 82.10 %)  
WBCHSE, WB, India

***Secondary Examination***, 1999, (Mark obtained: 87.50 %)  
WBSE, WB, India

## **AWARDS AND HONORS**

- DST YOUNG SCIENTIST Award under SYST scheme 2016
- Early Career Research (ECR) grant from DST-SERB, 2016
- DST-INSPIRE FACULTY AWARD in August 2015
- D.S.Kothari Postdoctoral Fellowship for 2015-2018 by UGC, Government of India.
- Johan Gadolin Postdoc Fellowship, Abo Academi for 8 months research stay in Finland
- South African National Research Fellowship (NRF) for postdoctoral research in South Africa (2013)
- Awarded Senior Research Fellowship (SRF) from CSIR-HRDG, Government of India in 2011
- Awarded Junior Research Fellowship (JRF) from National Jute Board, Ministry of Textiles from 2008 to 2011
- Awarded best poster presentation in IYC 2011 and One day symposium “Frontier of polymer chemistry”. IIT Kharagpur, (2011)
- Project proposal was selected in the National level India Innovation Initiative award (I3), out of 163 projects from all over India. Organized by DST and CII, 2010

## **PROFESSIONAL AFFILIATIONS**

- Associate Editorial Board Member of Journal "RECENT PATENTS ON MATERIALS SCIENCE", Bentham Science
- Member of Editorial Board of Journal “Functional Ceramics”.
- Member, “The Polymer Society of Korea”
- Life Member, The Indian Institute of Metals (IIM), Membership No. 55083
- Member of the Royal Society of Chemistry (MRSC) ((No. 653387)
- Selected as Mentor for summer project training for Master and Graduate students by National Academy of Sciences, India, for Summer 2019

## **RESEARCH INTEREST**

Novel biomaterials, biocomposites, and biochemicals based on hemicelluloses, lignin, extractives, and cellulose;

3D bioprinting of natural polymers especially for health and drug delivery applications; chemical characterization/analytical methods of biomass;

renewable materials chemistry; wood components in pulping and papermaking

## **CONFERENCE PUBLICATIONS**

### **International Conference:**

1. REMOVAL OF FLUORIDE FROM WATER USING CHEMICALLY MODIFIED JUTE. B Adhikari, S Manna, P Saha, D Roy, RK Sen. Environmental Science and Technology (2014), Vol-01. Edited by: G Sorial, and J Hong. ISBN 978-097 6885368. Proceedings from the 7th International Conference on Environmental Science and Technology, held on June 9-13, 2014 in Houston, Texas, USA, pp-243

### **National Conference:**

1. Assessment of service life of jute fibers after exposure to artificial UV induced physical weathering by **Prosenjit Saha**, Suvendu Manna, Debasis Roy, Basudam Adhikari. Oral Presentation, ICAMMP 2011, pp. 141, December 10-12, 2011. IIT Kharagpur.
2. Fabrication of Chitosan-Polycaprolactone Nanofibrous Mats for Skin Tissue Engineering Applications by Amit Chanda, Jaideep Adhikari, Pallab Datta and **Prosenjit Saha\***. Proceedings of National Conference on Advance Functional Materials & Manufacturing (NCAFMPM-2017), 109-112, February 2-3, 2017, ISBN: 978-93-86256-40-9
3. Novel Fire Retardant Jute Composites: Fabrication and Characterization by Amit roy, Jaideep Adhikari, Bhairab Chandra Mitra, Subrata Chatterjee and **Prosenjit Saha\***. Proceedings of National Conference on Advance Functional Materials & Manufacturing (NCAFMPM-2017), 257-259, February 2-3, 2017, ISBN: 978-93-86256-40-9.
4. Removal of turbidity and E-coli from surface water by electrocoagulation and study of its economic feasibility, by Saumya Kanta Ray, C Majumder, Prosenjit Saha. National conference on sustainable advanced technologies for environmental management (SATEM-2017). page: 19-20, June 28-30, 2017. ISBN: 978-93-86256-94-2.
5. A model development on electrocoagulation by design of experiment for drinking water, by Saumya Kanta Ray, C Majumder, Prosenjit Saha. Proceedings of research scholars colloquium 2016. page: 110-111. August 23-24, 2016. Vol-01, ISBN: 978-93-80813-44-8

#### **INTERNATIONAL JOURNAL PUBLICATIONS (SCI indexed)**

1. Enhancement of tensile strength of lignocellulosic jute fibers by alkali-steam treatment, by **Prosenjit Saha**, Suvendu Manna, Sougata Roy Chowdhury, Ramkrishna Sen, Debasis Roy, Basudam Adhikari. **Bioresource Technology** 101, 3182-87 (2010), (No. of Citations: 160):**Impact Factor-5.807**
2. Durability of Lignocellulosic Fibers Treated with Vegetable Oil-Phenolic Resin, by **Prosenjit Saha**, Suvendu Manna, Ramkrishna Sen, Debasis Roy, Basudam Adhikari. **Carbohydrate Polymers** 87, 1628-36 (2012), **Impact Factor-5.158**
3. Durability of transesterified jute-geotextiles, by **Prosenjit Saha**, Suvendu Manna, Debasis Roy, Ramkrishna Sen, Basudam Adhikari and Sukumar Roy. **Geotextiles and Geomembranes** 35, 69-75 (2012), **Impact Factor-3.715**
4. Composition analysis and material characterization of an emulsifying extracellular polysaccharide (EPS) produced by *Bacillus megaterium* RB-05: A hydrodynamic sediment-attached isolate of fresh water origin, by S Roychowdhury, S Manna, **Prosenjit Saha**, R K Basak, R Sen, B Adhikari. **Journal of Applied Microbiology** 111, 1381-93 (2011), **Impact Factor-2.16**
5. Enhanced biodegradation resistance of biomodified jute fibers, by Suvendu Manna, **Prosenjit Saha**, Debasis Roy, Ramkrishna Sen, Sancharini Das, Basudam Adhikari. **Carbohydrate Polymers**, 93, 597-603, 2013, **Impact Factor-3.91**
6. Novel polymer composite from waste ethylene-propylene-diene-monomer rubber by supercritical CO<sub>2</sub> foaming technology, by Keuk Min Jeong, Yeo Joo Hong, **Prosenjit Saha**, Seong Ho Park, Jin Kuk Kim. **Waste Management and Research**., 32, 1113, 2014, (Accepted, DOI- 10.1177/0734242X14545375), **Impact Factor-1.631**
7. Effect of photodegradation of lignocellulosic fibers transesterified with vegetable oil by **Prosenjit Saha\***, Suvendu Manna, Debasis Roy, Sukanya Chowdhury, Sushmita De,

Ramkrishna Sen, Basudam Adhikari, and JK Kim. *Fibers and Polymers* 15, 2345-2354 (2014), **Impact Factor-1.353**

8. Processing and Characterization of Electrospun Trans-polyisoprene nanofibers, by Qi Chen, **Prosenjit Saha**, Nam Gyeong Kim, Jin Kuk Kim. *J Polym Engg.*, 35, 53, 2015. **Impact Factor-0.778**
9. Processing and Characterization of Microwave and Ultrasonically Treated Waste-EPDM/LDPE polymer composites by Yeo Joo Hong, Keuk Min Jeong, Prosenjit Saha, Jaechan Suh, Jin Kuk Kim. *Polymer Engg. Sci.* 55, 533-540, 2015. **Impact Factor-1.551**
10. Green Polyurethane from Dimer Acid based Polyether Polyols: Synthesis and Characterization, by Feng Yu, **Prosenjit Saha**, Pyoung Won Suh, Jin Kuk Kim. *J Appl Polym Sci.* 132 (5), 41410-18, 2015. **Impact Factor-1.86**
11. Biodegradation of chemically modified jute fibers, By, **P Saha\***, S Manna, D Roy, S Chowdhury, S Banik, B Adhikari, JK Kim. *J Natural Fibers*, 542-551, 12, 2015. **Impact Factor-0.974**
12. Novel elastomer nanocomposite with uniform silica dispersion from polybutadiene rubber treated with epoxidized soybean oil, by Kyung Gun Kim, **Prosenjit Saha**, Jin Hong Kim; Su Hwang Jo, Jin Kuk Kim. *J Comp Materials*, 3005-16, 49, 2015. **Impact Factor-1.613**.
13. Defluoridation of aqueous solution using alkali-steam treated water hyacinth and elephant grass, by **P Saha**, S Manna, D Roy, B Adhikari, *Journal of the Taiwan Institute of Chemical Engineers*, 50, 215-222, 2015. **Impact Factor-3.849**
14. Biodegradation of chemically modified Lignocellulosic sisal fibers: Study of the mechanism for enzymatic degradation of cellulose by, **P Saha\***, S Manna, D Roy, S Chowdhury, S Banik, B Adhikari, JK Kim. *e-Polymers*, 15, 158-194, 2015. **Impact Factor-1.11**
15. Development of nanocomposite with epoxidized natural rubber and functionalized multiwalled carbon nanotubes for enhanced thermal conductivity and gas barrier property, by Jae Ok Jo, **Prosenjit Saha**, Nam Gyeong Kim, Chang Ho Choi, Jin Kuk Kim. *Materials and Designs*, 83, 777-785, 2015. **Impact Factor-4.525**.
16. A brief review on the chemical modifications of lignocellulosic fibers for durable engineering composites, by **P Saha\***, Debasis Roy, Sukanya Chowdhury, Basudam Adhikari, Jin Kuk Kim, Sabu Thomas. *Polymer Bulletin*, 73, 2016, 587-620), **Review paper, Impact Factor-1.589**.
17. Defluoridation potential of jute fibers grafted with fatty acyl chain, by S. Manna, **P. Saha**, D.Roy, R.Sen, B.Adhikari. *Applied Surface Science*, 356, 30-38, 2015. **Impact Factor-4.439**.
18. New Biobased Surface Treatment to Improve Strength and Durability of Bombax ceiba, by **P Saha\***, S Manna, D Roy, S Chowdhury, R Sen, B Adhikari, and Sabu Thomas. *ACS Sustainable Chem. Eng.*, 4 (1), 76–84, 2016. **Impact Factor: 6.140**
19. Removal of 2,4-dichlorophenoxyacetic acid from aqueous medium using modified jute, Suwendu Manna, **Prosenjit Saha**, Debasis Roy, Ramkrishna Sen, Basudam Adhikari. *Journal of the Taiwan Institute of Chemical Engineers*. 67, 298-299, 2016, **Impact Factor-3.849**

20. Fabrication of chitosan/PEO nanofiber mats with mica by electrospinning, by Qi Chen, Zhen Xiang Xin, **Prosenjit Saha**, Jin Kuk Kim. **J Polym Eng.**, 37, 461-470, 2016, **Impact Factor-0.778**.
21. Rapid methylene blue adsorption using modified lignocellulosic materials, by S Manna, D Roy, **P Saha**, D Gopakumar, S Thomas, **Process Safety and Environmental Protection**, 107, 346-356, 2017, **Impact Factor- 3.441**.
22. *Functionalized reduced graphene oxide (fRGO) for removal of fulvic acid contaminant*, by SK Roy, C Majumdar, **Prosenjit Saha\***, **RSC Advances**, 7, 21768–21779, 2017, **Impact Factor-2.936**.
23. Fixed bed column study for water defluoridation using neem oil-phenolic resin treated plant bio-sorbent, by Suvendu Manna, Prosenjit Saha, Debasis Roy, Basudam Adhikari, Papita Das. **J Env. Management**, Volume 212, 15 April 2018, Pages 424–432. **Impact Factor-4.005**.
24. Tuning of microstructure in engineered poly (trimethylene terephthalate based blends with nano inclusion as multifunctional additive, by Ajitha A. R, Geethamma V. G, Lovely Mathewa, **Prosenjit Saha**, Nandakumar Kalarikkala, Sabu Thomas, Michał Strankowski, **Polym Testing**, 68, 2018, 395-404, **Impact Factor-2.247**.
25. Electrospun chitosan/polycaprolactone-hyaluronic acid bilayered scaffold for potential wound healing applications, by Amit Chanda, I, Jaideep Adhikari, Aritri Ghosh, Sougata Roy Chowdhury, Sabu Thomasd, Pallab Datta, **Prosenjit Saha\***, **Int J Biological Macromolecules**, 116, 774, 2018, **Impact Factor = 3.909**.
26. Devulcanization of waste rubber powder using thiobisphenols as novel reclaiming agent, by Xiaojie Zhang, **Prosenjit Saha**, Lan Cao, Huan Li, Jinkuk Kim. **Waste Management**, 78, 2018, 980-991, **Impact Factor = 4.723**.
27. Carbon nanotube reinforced poly (trimethylene terephthalate) nanocomposites: viscoelastic properties and chain confinement. by M K, Aswathi; M, Padmanabhan; Mathew, Lovely; **Saha, Prosenjit**; Terzano, Roberto ; Kalarikkal, Nandakumar; Volova, Tatiana G.; Thomas, Sabu. Accepted in **Polymer Engineering & Science**, DOI: 10.1002/pen.25010, 2018, **Impact Factor = 1.551**.
28. Preparation of novel bio-elastomers with enhanced interaction with silica filler for low rolling resistance and improved wet grip, by Min Cheol Kim, Jaideep Adhikari, Jin Kuk Kim, **Prosenjit Saha\***, Accepted in **Journal of Cleaner Production**, DOI: <https://doi.org/10.1016/j.jclepro.2018.10.217>, Vol-208, pp-1622, 2019, **Impact Factor = 5.561**.
29. Facile fabrication of electrospun regenerated cellulose nanofiber scaffold for potential bone-tissue engineering application, by Pritam Kishore Chakraborty, Jaideep Adhikari, **Prosenjit Saha\***, **International Journal of Biological Macromolecules**, In press, accepted manuscript, 122, 644, 2019
30. Thermal stability, swelling and degradation behaviour of natural fibre based hybrid polymer composites, Bhabatosh Biswas, Pravin Sawai, Angshuman Santra, Amal Gain, Prosenjit Saha, Bhairab Chandra Mitra, Nil Ratan Bandyopadhyay, Arijit Sinha. Cellulose (2019) Accepted. DOI: 10.1007/s10570-019-02383-3. **Impact Factor = 3.890**.
31. Recent advances in mechanical properties of biopolymer composites: a review, DOI: 10.1002/pc.25356, May 06, 2019. Polymer Composites.

**\* as corresponding author**

### **National Journal (Indian)**

1. Status of Geobags in India. **Prosenjit Saha\***, S K Roy, BCH India. *TechTex India*, Apr-May 2013, 36-38, 2013.
2. Removal of turbidity and E. coli from surface water by electrocoagulation and study of its economic feasibility, SK Ray, C. Majumder, P. Saha, **J. Indian Chem. Soc.**, Vol. 95, March 2018, pp. 1-6. **Impact Factor = 0.145**

### **PATENT FILED**

1. Methods for decreasing aqueous halide and organohalide levels using plant biomass, by Suvendu Manna, **Prosenjit Saha**, Debasis Roy, Ramkrishna Sen, Basudam Adhikari. (US-2014/0374357 A1, Dec.25, 2014)
2. Chemical Modification of Lignocellulosic Fibers with Vegetable oil, by **Prosenjit Saha**, Suvendu Manna, G Khanzode, Ramkrishna Sen, Debasis Roy, Basudam Adhikari Indian Patent Applications *1263/KOL/2009 of 19/10/09* (2009)
3. Microbial transformation of lignocellulosic fibers using ecofriendly reagents for strength and durability enhancement, by Suvendu Manna, Debasis Roy, Ramkrishna Sen, **Prosenjit Saha**, Basudam Adhikari, Sancharini Das. Indian Patent Applications *1062/KOL/2010 of 22/09/2010* (2010)

### **Book Edited**

1. Multicomponent Polymer Materials, To be published by **Springer**, Edited by: Jin Kuk Kim-Sabu Thomas-**Prosenjit Saha** (2016). Hardcover ISBN: 978-94-017-7323-2
2. Rubber Recycling: Challenges and New Developments, by **RSC Publishers**, 2018,. Ed: **Prosenjit Saha**, Jin Kuk Kim, Sabu Thomas, Jozef Hapouniuk, Aswathi MK. ISBN: 978-1-78801-084-9

### **Book Chapters**

1. Multi Component Materials, Chapter-1, **Prosenjit Saha**, Sukanya Chowdhury, Min Cheol Kim, and Jin Kuk Kim. Ed: Jin kuk Kim. Sabu Thomas, Prosenjit Saha. *Multicomponent Polymeric Materials*, **Springer**, ISBN 978-94-017-7324-9, 2016, pp-03, chapter-1
2. Design for Multicomponent Materials, Chapter-2, Jaideep Adhikari, Sukanya chowdhury, **ProsenjitSaha\***, Jin kuk Kim. Ed: Jin kuk Kim, Sabu Thomas, Prosenjit Saha. *Multicomponent Polymeric Materials*, **Springer**, ISBN 978-94-017-7324-9, 2016, pp-13, chapter-2
3. Lignocellulosic materials for Geotextiles and Geocomposite for Engineering Applications. **Prosenjit Saha\***, S. Chowdhury, J Adhikary, **Springer**, Lignocellulosic Composite Materials, Edited by Susheel Kalia. ISBN 978-3-319-68696-7, 2017, PP-357-388, CHAPTER-09
4. Alkali Treatment to Improve Physical, Mechanical and Chemical Properties of Lignocellulosic Natural Fibers for Use in Various Applications, S. Manna, **P. Saha**, S.



Chowdhury, S. Thomas. Lignocellulosic Biomass Production and Industrial Applications, Edited by A Kuila, V Sharma, **Wiley Publishers**, ISBN: 978-1-119-32360-0. 2017, pp-47, chapter-03

5. Nanobiomaterials for removal of fluoride and chlorophenols from water, S. Manna, DA Gopikumar, D. Roy, P. Saha, S. Thomas. Ch. 20, **New Polymer Nanocomposites for Environmental Remediation** edited by Chaudhery Mustansar Hussain, Ajay Kumar Mishra. Elsevier, NL. 2018. ISBN: 9780128110331, pp-487, chapter-20
6. Surface modification of metallic bone implants—Polymer and polymer-assisted coating for bone in-growth, Jaideep Adhikari, Prosenjit Saha, Arijit Sinha, Chapter 14, **Fundamental Biomaterials: Metals**, 2018, <https://doi.org/10.1016/B978-0-08-102205-4.00014-3>.
7. Grinding of waste rubber, Jaideep Adhikari, Tridib Sinha, Prosenjit Saha and Jin Kuk Kim, **Rubber Recycling: Challenges and Developments** Editors: Jin Kuk Kim, Prosenjit Saha, Sabu Thomas, Józef T Haponiuk , Aswathi MK. 2018, ISBN, RSC 978-1-78801-084-9, chapter-1, pp-1
8. Suprabha Bandyopadhyay, Md. Minhajur Rahman and Prosenjit Saha, Testing and Industrial Characterization for Waste Rubber. **Rubber Recycling: Challenges and Developments** Editors: Jin Kuk Kim, Prosenjit Saha, Sabu Thomas, Józef T Haponiuk , Aswathi MK. 2018, ISBN, RSC 978-1-78801-084-9, chapter-06, pp-128
9. Anindya Das, Jaideep Adhikari, Prosenjit Saha Electrospun polymeric nano carbons and nanomats for tissue engineering , **Nanocarbon and its Composites: Preparation, Properties and Applications** ISBN: 9780081025093, 2019, Woodhead Publishing, Editor: Dr. Anish Khan

#### **TECHNICAL REPORT**

1. Need Assessment and Market Survey for Jute-geotextiles in Riverbank Erosion Control Applications, by Debasis Roy, **Prosenjit Saha**, Atis Chanda. Prepared for National Jute Board, Ministry of Textiles, and Government of India (2011).

#### **CONTRIBUTION TO WORLD GENE DATA-BANK**

1. *Bacillus megaterium* strain RB-05 16S ribosomal RNA gene (HM371417, 1495 bp, May 31, 2010). Web source: <http://www.ncbi.nlm.nih.gov/nuccore/HM371417.1>
2. *Lysinibacillus sp.* DRG3 16S ribosomal RNA gene (HQ436337, 1500 bp, Oct. 25, 2010). Web source: <http://www.ncbi.nlm.nih.gov/nuccore/HQ436337.1>
3. *Bacillus pumilus* strain DRG1 16S ribosomal RNA gene (HQ436338, 1494 bp, Oct 26, 2010). Web source: <http://www.ncbi.nlm.nih.gov/nuccore/HQ436338.1>
4. *Bacillus foraminis* strain DRG5 16S ribosomal RNA gene (HQ436339, 1499 bp, Oct 26, 2010), Web source: <http://www.ncbi.nlm.nih.gov/nuccore/HQ436339.1>
5. *Bacillus drementensis* strain DRG4 16S ribosomal RNA gene (HQ436340, 1497 bp, Oct 26, 2010), Web source: <http://www.ncbi.nlm.nih.gov/nuccore/HQ436340.1>

### **COURSES TAUGHT (Years of teaching experience: 3.5 Years)**

M.Tech (1st Semestar)

1. Introduction to Materials (MT 901): Module VI
2. Materials Characterization (MT 902): Module I, III

M.Tech (2nd Semestar)

3. Amorphous and Nano-crystalline Materials (MT 1009)
4. Polymeric Materials (MT 1002)

### **AREAS OF TEACHING INTERESTS:**

1. Advanced polymeric Materials
2. Introduction Polymer Engineering
4. Characterizations of Polymeric Bio-materials
5. Amorphous and Nano-crystalline Materials
6. Advances in Polymer Synthesis and Processing
7. Biomaterials

<b>Research Project(s) / Sponsored Project(s) / Consultancy Activities / Patent(s)</b>					
<i>Sl. No.</i>	<i>Sponsoring Agency</i>	<i>Title of the Project(s)/ Patent(s)</i>	<i>Period</i>	<i>Amount</i>	<i>Role/ Status</i>
<b>Research Project(s)</b>					
<b>1</b>	<b>DST INSPIRE-FACULTY SCHEME</b>	Development of smart skin with natural polymer by 3D printing and electrospinning	<b>2015-2020</b>	<b>INR 35.00 Lakhs</b>	<b>PI/ Ongoing</b>
<b>2</b>	<b>DST-SERB</b>	Engineered Biomimetic Cellulose Nano-scaffold for Skin and Bone Replacement	<b>2016-2019</b>	<b>INR 42.00 Lakhs</b>	<b>PI/ Ongoing</b>
<b>3</b>	<b>DST-SEED</b>	Development of nanofiber reinforced plant polymer based durable, fire retardant biocomposites	<b>2017-2020</b>	<b>INR 21.04 Lakhs</b>	<b>PI/ Ongoing</b>

<b>(d)</b>	<b>Details of PhD students (Guided and Ongoing)</b>		
<i>Sl. No.</i>	<i>Name of Student(s)</i>	<i>Title of the Dissertation(s)</i>	<i>Status [Awarded (with date) / Submitted (with date) / ongoing]</i>
1	Soumya Kanta Ray	Sequential Integration of Electrocoagulation and Nano-composite for Treatment of Surface Water for Turbidity and Organic Acid Removal	Ongoing ( <b>Registered</b> ) Registration No: PhD/R/2016/0003 Registration date: 19.01.2016 (Jointly with Civil Engg. Dept.)
2	Jaideep Adhikari	Development of chitosan based skin and bone scaffold with 3D bioprinting	Ongoing ( <b>Registered</b> ), Registration date: 13.09.2017 (MNDSMSE, IEST-S)

Details of Project students (Guided and Ongoing)			
1	Mr. Anindya Das	Development of smart skin	2017-2019
POST GRADUATE SUPERVISION (M.Tech)			
1	AMIT CHANDA	Fabrication and characterizations of chitosan/polycaprolactone/ hyaluronic acid-polyethylene oxide electrospun bilayer nanofibrous scaffold for skin tissue engineering applications	May 2017 completed
2	AMIT ROY	Fire retardant polymer composites: fabrication and characterizations	May 2017 completed
3	Pritam Kishore Charaborty	FABRICATION OF CELLULOSE NANOFIBERS SCAFFOLDS & SOL-GEL SYNTHESISED BIOGLASS 45S5 COMPOSITE FOR POTENTIAL BIOMATERIAL APPLICATIONS	May 2018 completed
4	Md. Shahid Perwez	Development of bio-ink for 3D Printing	May 2019 completed
5	Om Prakash	Development of ceramic bio-ink	Ongoing
6	Narinder Singh	Development of identification technique for gaseous component during jute burning	Ongoing

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(Prosenjit Saha)

Place: India