Highlights

Nine National awards including Visitor's award in research category by The President of India, 2017, Professor M. Santappa Award in Polymer Science of the year 2020 by Polymer Society of India, 2021, 3rd National Award for Technology Innovation by Ministry of Chemicals and Fertilizers, Govt. of India, 2013, Chemical Research Society of India (CRSI) Bronze medal by CRSI 2016, Material Research Society of India (MRSI) medal award by MRSI 2014, etc.

Nine international recognitions including Listed among the world scientists in AD Scientific Index (Alper-Doger), (University 1, Country 383, and world 44251among more than 7 lakh scientists in 190 countries), 2021 & 2022, 2023; Listed in World ranking among top 2% scientists from India by Stanford University scientists (rank country 11 and world 738, top 0.91483823% in polymer), 2020, 2021, 2023; The Fellow of Royal Society of Chemistry (by RSC, UK), 2018, Recognized as the most highly prolific author for ACS Sustainable Chemistry & Engineering (top among Asian countries and 4th out of 5 in world), by ACS 2016, etc.

More than two hundred seventy-five research papers in the reviewed journals with more than 1330 total impact factors, h-index-64, i-10 index-233 and more than 14659 total citations (Courtesy: Google Scholar)

Ten books (six authored and four edited published from reputed publishers, like ACS, RSC, Elsevier, etc.

CURRICULUM VITAE

Highlights

Twenty-six book chapters in international edited books

Member of the Editorial Board of the six international research journals

Twenty-seven Ph.D. guided awarded and three under the guidance.

Seven post-doctoral fellows, and forty-seven postgraduate students guided.

Thirteen sponsored research projects and five consultancy projects completed.

Major assignments: Director R & D, Rymbal, Delhi-NCR, Dean (Research & Development) and Head, Sophisticated and analytical Instrumentation Center (SAIC) and Head, Department of Chemical Sciences of Tezpur University

Four India patents granted, and one more Indian Patents under examination.

More than ninety-six invited lectures delivered national and international academic events.

Acted as associate-editor of Journal of Renewable Materials, ISSN: 2164-6325 (USA) 2019-2022

Three foreign research work experiences in the international Institutes of the World

Transfer technology from laboratory to commercial production of recycled polyurethane thermosetting foams, low-cost polyester polyol, biobased polyester polyurethane foam system, bio-based superabsorbent, etc.

Academic Identity

Orcid Id:0000-0002-3402-9536; Scopus Id:6701764136; Researcher Id: A-1030-2014; Google Scholar Id:m9KmQrYAAAAJ; and Vidwan-ID: 218320

1. Name: **PROFESSOR** (***VRS***) **(DR.) NIRANJAN KARAK,** (FRSC)

2. Date & place of birth: 21 February 1968, Midnapore (West Bengal)

3. Present position/ designation**:** Director R & D, Rymbal (a Space World Group Enterprise), Delhi-NCR

4. Address with Tel / Fax / Email

Present Address

Director, Research and Development
Rymbal (a Space World Group Enterprise), RTC, 64/5/12, Sahibabad Industrial Area Site 4
Sahibabad, Ghaziabad, Uttar Pradesh 201010
Tel.: +91-9401837065
Email: karakniranjan@gmail.com

Permanent Residence

Mangalpara, Nadasuli, Via-Satbankura, Midnapore (W)
West Bengal, Pin-721253, India
Tel.: +91-9401837065
Email: karakniranjan@gmail.com

5. Academic qualifications (PG degree onwards)

Name of Institution	Degree passed	Class/rank	Subject	Year	CGPA out of 10 (Marks, %)
IIT Kharagpur	MSc*	I /2	Chemistry (Organic)	1992	9.3 (93%)
IIT Kharagpur	MTech*	I /2	Rubber Tech.	1994	8.84 (88.4%)
IIT Kharagpur	PhD*	-	Polymer Sci. & Tech.	1998	-

**Title of thesis: Antimony containing polymers, special reference to flame retardant behabiour (PhD), Invetigation of tyre tread compounds with special reference to hardness (MTech) and Oxidative polymerization of aniline and its derivatives (MSc)*

6. Positions held (in chronological order)

Organization / Institution	Position held	Nature of duties / work	Date of joining	Date of leaving	Length of service
Rymbal (a Space World Group Enterprise)	Director R & D	Research and administration	17.10.2023	Till date	>1 year
Tezpur University (a Central University)	Professor*	Teaching & research	30.03.09	16.10.2023	14 years & 7 months
Tezpur University	Reader/Associate Professor	Teaching & research	14.06.04	29.03.09	4 years & 9 months
Tezpur University	Lecturer (Sr. Scale)	Teaching & research	27.03.01	13.06.04	3 years & 2.5 months
Tezpur University	Lecturer	Teaching & research	26.03.97	26.03.01	4 years
Birla Tyres (a Birla Group Company)	Management trainee (Technical)	Quality control of tyre compounds	26.03.94	08.05.95	>1 year

** Professor and Head of the Department from 01 September 2010 to 31 August 2013; Head, SAIC, Tezpur University from 01 April 2015 to 4th April 2018; and Dean Research and Development, Tezpur University, from 01 April 2019 to 05 September 2022.*

***7.* Additional academic/industrial experience**

University / Organization	Designation	From	To	Topic of research
IPF (Germany)	Guest researcher	Jan'08	Mar'08	Hyperbranched polyurethane /Ag nanocomposites
KU (S. Korea)	Visiting Professor	Jun'07	Jul'07	Polyurethane carbon nanotube nanocomposites
KAIST (S. Korea)	PDF	May'01	July'01	Synthesis of specialty polymers
IIT Kharagpur	SRF (PhD)	May'95	June'97	Development of antimony polymers
Dunlop I. Ltd./ IIT Kharagpur	MTech	June'93	Nov'93	Development of tyre tread compounds
IIT Kharagpur	MSc	Jan'92	June' 92	Oxidative polymerization of aryl amines

8**. Achievements/Distinctions/Awards/Honors/Recognitions**

International

- Listed among the world scientists in AD Scientific Index (Alper-Doger) (University 1, Country 325, and world 44030), 2023, 2022 & 2021.
- Listed in World ranking among top 2% scientists from India by Stanford University scientists (world rank 738, India rank 11, top 0.91483823% in polymer), 2020, 2021, 2023.
- Associate Editor, Journal of Renewable Materials, Tech Science Press, USA, 2019-2022.
- Advisory Board Member of International Journal of Advanced Chemical Science and Applications, 2020-2022

- ❖ Editorial Board member for the international Journals (Journal of Nanotechnology in Diagnosis and Treatment by Savvy Science Publisher, since 2014, Advances in Nano Research (ANR), *An International journal* by Techno Press, since 2015; American Journal of Engineering and Applied Sciences by Science Publications, since 2015, Technology audit production reserves by Technology Center, since 2017, Journal of Composites and Biodegradable Polymers, Savvy Science Publisher, since 2019).
- ❖ **The Fellow of Royal Society of Chemistry** (by RSC, UK), 2018 (No. 652504).
- ❖ Recognized as one of the top Indian authors (among top 5) in *ACS Omega* by ACS, 2019.
- ❖ Regular member of American Chemical Society (Gifted by ACS, USA), 2018 (No. 30764416).
- ❖ Recognized as the most highly prolific author for *ACS Sustainable Chemistry & Engineering (*top among Asian countries and 4thout of 5 in world*)*, by ACS 2016.
- ❖ Post-doctoral Fellow of Korean Advanced Institute of Science and Technology (KAIST), 2001.
- ❖ Visiting Professor of Prof. J. W. Cho's Laboratory, Department of Textile Engineering, Konkuk University, South Korea, 2007.
- ❖ Guest Researcher of Leibnitz Institute of Polymer Research, Dresden, Germany, 2008.

National

- ❖ Professor M. Santappa Award in Polymer Science of the year 2020 by Polymer Society of India, 2021
- ❖ **Visitor's award in research category by The President of India**, 2017.
- ❖ Chemical Research Society of India (CRSI) Bronze medal by CRSI 2016.
- ❖ 4th Dr. S. S. Deshpande National Award by Holkar Government (Model, autonomous) Science College- Indore, 2015.
- ❖ 9th Polymer Foundation Award for the year 2014 by PSMPF, 2015.
- ❖ Material Research Society of India (MRSI) medal award by MRSI 2014.
- ❖ 3rd National Award (one winner and one commendation) for Technology Innovation in Petrochemicals and Downstream Plastics Processing Industry by Ministry of Chemicals and Fertilizers, Govt. of India, 2013.
- ❖ Dr. Arvind Kumar Memorial Award by Indian Council of Chemists (ICC), 2012.
- ❖ Dr. J.N. Baruah Memorial Science Award, in Chemical Science, by Assam Science Society, 2012.

Other

- ❖ Certificate of Appreciation for excellent contributions in field of literacy (by Rotary club of Tezpur), 2020.
- ❖ Certificate of Appreciation for excellent academic achievements (on Silver Jubilee by Tezpur University), 2018.
- ❖ RSC offers 12-month complimentary online RSC e-membership, 2012.
- ❖ Best oral/poster presentation awards by the group members on

'Citric acid/glycerol ester, a backup of 2,2-bis(hydroxymethyl)propionic acid and biobased synthesis of anionic polyurethane dispersion' by S. Morang and N. Karak, in virtual international conference on 'Molecules to Materials (MTM-2020), Sardar Vallabhbhai Institute of Technology, Gujarat, 17-18 December 2020.

'Renewable resource-based smart hyperbranched polyurethane elastomer', by T. Ghosh and N. Karak, International Symposium on Advanced Sustainable Polymers (ASP-17), IIT Guwahati, January 2018.

'Sustainable resource based tough hyperbranched polyurethane/carbon dot- silver nanocomposite: prospective rapid self-expandable stent', by R. Duarah, and N. Karak, in 1st International Conference on

Sophisticated Instruments in Modern Research, IIT Guwahati, 30th June-1st July 2017.

'Bio-based smart hyperbranched polyurethane nanocomposite with antimicrobial and repeatable self-healing attribute', By S. Thakur, and N. Karak, 9th Polymer award function & national seminar on 'Multifunctional Polymer Materials' (POLY 2014), Viswa Bharati, Shantiniketan, 14-15 February 2015.

'Photoluminescent transparent hyperbranched epoxy/carbon dot nanocomposites', by B. De and N. Karak, APA International Conference on Polymers visions and innovations (APA-2014), IIT Delhi, New Delhi, 19-21 February 2014.

'Vegetable oil based mMWCNT/polyurethane nanocomposites for bone tissue engineering applications', by B. Das, P. Chattopadhyay and N. Karak, at national conference TEZCON 2012.

'Greener approach to prepare polymer stabilized biocidal silver nanoparticles', by S. Barua, R.Konwarh, M. Mandal, and N. Karak, National workshop on recent trends in nanoscience and technology (RETNAT-11), Jorhat (Assam), 2011.

'Electrospun cellulose acetate mats for automotive applications, by R Konwarh, A K Mohanty, M Misra and N Karak at Ontario Biocar Initiative, 8th Biannual Research Meeting, University of Windsor, Windsor, Ontario, Canada, 2011

'Antimicrobial and antilarvacidal silver nanocomposites through Greener approach' by S. Barua, R. Konwarh, M. Mondal and N. Karak at National workshop on Recent trend in Nanoscience and Technology, 2011

'Fluorescence tailoring of polyaniline nanofiber-nanocomposites' by R. Konwarh, S. Pramanik, R. Barua and N. Karak at National workshop on Nuclear and Atomic Techniques based Pure and Applied Sciences, 2011

'Fluorescence properties of renewable oil-based polyester/clay silver nanocomposites' by U. Konwar and N. Karak at National Seminar on Photonics and Quantum Structures, 2009

- Honoree member of SPE (Society of Plastics Engineers) 2011
- SCI (Society of Chemical Industry: www.soci.org) is a learned society founded in 1881, with international headquarters in London, UK and members in over 70 countries offered a year's complimentary membership of the Society for the year 2006.
- Post-Doctoral Fellowship, KAIST (South Korea, 2001)
- IIT Kharagpur, Institution Fellowships (MTech & PhD, 1990-1993)
- NET (Both JRF and Lectureship, 1992)
- GATE (98.16 percentile, all India 16th rank, 1992)
- MCM Fellowship, IIT Kharagpur (1990-1992)
- National Loan Scholarship, Govt. of WB, (1987-1989)

9. Highlights of teaching and research activities

- Teaching more than twenty-six and half years for different courses of MSc in Polymer Science (1997-2011), MTech in Polymer Science and Technology (2011-2020), MSc in Nanoscience (2006-2013), Integrated MSc in Chemistry (2020-2023) and PhD programs (2000-2021)
- Greener innovative approaches for achieving environmentally benign tough high performing polymeric materials.
- Biodegradable, biocompatible advanced polyurethanes and their nanocomposites for multifaceted applications including smart biomedical.
- Hyperbranched epoxy thermosets and their nanocomposites with carbon dots and its nanohybrids as outstanding tough materials with photocatalytic attribute.
- Bio-based biodegradable hyperbranched polyesters and their nanocomposites as advanced (including antimicrobial) surface coating and paint binder materials.
- Bio-based biodegradable hyperbranched poly(ester amide) and its nanocomposites as antistatic advanced coating materials.
- Petroleum based hyperbranched polyethers and polyamines for multipurpose polymeric additives.
- Biodegradable polymer supported nanomaterials immobilized bioactive molecules with enhanced activity, recyclability, storage stability and industrial applicability.

- ❖ Strong background in polymer synthesis, characterization and properties evaluation (Utilizing NMR, SEM, FTIR, UTM, TGA, DSC, two roll mill, Bravender plastic order, Rheometer, Compression press, etc. instruments).
- ❖ Computer skills: Windows, ChemDraw, Power point, Origin and Microsoft Excel.
- ❖ Creative and energetic team player with experience in collaborative research and supervising post-graduate/Ph.D. students.

10. **Administrative Experience**

- ❖ *Director, Research and Development*, Rymbal, RTC, Sahibabad Industrial Area Site 4, Delhi-NCR , 17 October 2023 to till date
- ❖ *Dean Research and Development*, Tezpur University from 01 April 2019 to 05 September 2022
- ❖ Co-Chair of the Expert Committee of Bioengineering and Biomaterials and allied areas of BioCARe, DBT, New Delhi, from 2022 for 3 years
- ❖ Member of The Planning Board, Tezpur University, 2019-2022
- ❖ Member of Standing audit committee, Tezpur University, 2019-2022
- ❖ Member of Deans' Committee as University decision making authority, 2019-2022
- ❖ Member of Centre advisory committee for Centre for Innovation, Incubation and Entrepreneurship (CIIE), TU, 2019-2022
- ❖ Member of Management committee for TU Incubation Center, 2019-2022
- ❖ Member of faculty financial assistance for attending seminar, conference, etc., 2019-2022
- ❖ Member of Tezpur University anti-ragging committee, 2019-2022
- ❖ Member of Standing committee for accreditation and ranking of TU, 2019-2022
- ❖ Member of UGC-CARE (Consortium for academic & research ethics) regional center for Eastern zone, 2019
- ❖ Returning Officer for Tezpur University Student Council election, 2018-2019
- ❖ Chief Coordinator of Silver Jubilee Celebration Committee of Tezpur University, 2018-2019.
- ❖ Member of Internal Quality Assurance Cell (IQAC) of Tezpur University, 2018 & 2019.
- ❖ Head of Sophisticated and analytical Instrumental Center (SAIC), Tezpur University, 01 April 2015-05 April 2018.
- ❖ Head of the Department, Chemical Sciences Department, Tezpur University, 01 September 2010 to 31st August 2013.
- ❖ Member of Research Committee of Tezpur University, 2010-2017.
- ❖ Chief Coordinator of 11th Convocation of Tezpur University, 2012-2013.
- ❖ Executive research council member of DRL (DRDO), Tezpur 2013-2016.
- ❖ Course designer for MTech in Polymer Science and Technology, 2010-2016
- ❖ Coordinator, UGC-NET, December 2013, Tezpur University Center.
- ❖ Member of Academic Council, Tezpur University from April 2009 to 2022.
- ❖ Member of School Board of Studies of School of Sciences, Tezpur University from September 2010 to August 2013.
- ❖ Chairman of Board of Studies of Chemical Sciences Department, Tezpur University, Tezpur from September 2010 to August 2013.
- ❖ Chairman of Departmental Research Committee of Chemical Sciences Department, Tezpur University, Tezpur from September 2010 to August 2013.
- ❖ Chairman of Departmental Purchase Committee of Chemical Sciences Department, Tezpur University, Tezpur from September 2010 to August 2013.
- ❖ Chairman of Tezpur University Entrance Examination, 2009-2010.
- ❖ Dean in-charge of School of Sciences, 2010-2017 (as & when required).
- ❖ Coordinator of Venue committee of 10th Convocation of Tezpur University, 2011-2012.
- ❖ Member of modifying committee of syllabus of Polymer Science specialization in Applied Chemistry Course, 2006-2010.
- ❖ In-charge for project and training for MTech program, 2011-2016.

- ❖ External member of departmental doctoral committee (DRC) for different departments of Tezpur University, 2006-2023.
- ❖ Member of Counseling for any academic problem of the students of Tezpur University, 2009-2023.
- ❖ Expert member for selections of faculty, technical staff, project staff, etc. for various Departments of Tezpur University.
- ❖ Expert member of selection committee of DRDO (DRL, Tezpur), New Delhi, IASST, Guwahati.
- ❖ External examiner of PhD thesis /PG course for various Institutions like NEHU, IIT Kharagpur, Madras University, Calcutta University, Manipur University, Utkal University, IIT BHU, Jadavpur University, Dibrughar University, Gauhati University, IIT Guwahati, NCL Pune, etc.

11. **Organized seminar/workshop/symposium**

i. Chairman of one day consultative workshop on Research and Developments in HEIs with stakeholders of North-Eastern regions to obtain feedback/suggestions, 18 November 2021, Tezpur University, India

ii. Member of organizing committee of an International Conference on Materials Chemistry and Catalysis (Virtual Mode), 4-6 March 2021, Tezpur University

iii. Member of organizing committee of an international conference (virtual) on The Present and Future of Excellence in Organic Synthesis, 7th-8th January 2021, Tezpur University

iv. Member of organizing committee of an international symposium on Sustainable Polymers & Launch of SPSI-Northeast Chapter, August 23-25, 2019, IIT Guwahati, India

v. Member of organizing committee of an International Conference in Chemistry, OrganiX-2018, Department of Chemical Sciences, Tezpur University, 20-21 December 2018.

vi. Member of national organizing committee of Fourth International Symposium on Advances in Sustainable Polymers, IIT Guwahati, Guwahati, January 8 - 11, 2018

vii. Co-chairmen of International Conference on Sophisticated Instruments in Modern Research (ICSIMR-2017), IIT Guwahati, Guwahati, 30th June-1st July 2017

viii. Member of 20th CRSI National Symposium in Chemistry (NSC 2017), Department of Chemical Sciences, Tezpur University, 3-5th February 2017.

ix. Member of International conference on Nano for Energy and Water (NEW)-2017, USPT, Dehradun, February 22-24, 2017.

x. Member of 14th International Symposium on Bioplastics, Biocomposites & Biorefining, ISBBB-2016, Guelph University, Canada, May 31-3rd June 2016.

xi. Member of national conference on Contemporary development in Chemical Sciences, Department of Chemical Sciences, Tezpur University, 23rd-24th November 2015.

xii. Member of 20th Symposium on National Magnetic Resonance Society (NMRS-2014), Department of Chemical Sciences, Tezpur University, 2nd-5th February 2014.

xiii. Member of International Scientific Committee of 13th International Symposium on Bioplastics, Biocomposites & Biorefining: Moving Towards a Sustainable Bioeconomy, Guelph, Canada, May 19 - 24, 2014.

xiv. Member of Academic of Science Lecture series, Department of Chemical Sciences, Tezpur University, 22-24 November 2013.

xv. Member of National Workshop on Popularization of Chemistry, Department of Chemical Sciences, Tezpur University, 30th October 2012.

xvi. Convener of national conference on 'Chemistry, Chemical Technology and Society,' Department of Chemical Sciences, Tezpur University, 11-12 November 2011.

xvii. Smart Nanostructure, 2011, Department of Physics, Tezpur University, January' 17-19, 2011, as an organizing committee member. (Coordinator of technical committee).

xviii. Advisory member of national workshop on Emerging Trend in Nanochemistry, St. Anthony's College, Shillong, 2011.

xix. INSPIRE program, 2010, Tezpur University, Core committee member.

xx. Summer School on Green Chemistry during 2-22 June 2009 Department of Chemical Sciences,

Tezpur University, Core committee member.

xxi. Frontier Lecture Series in Chemistry, Department of Chemical Sciences, Tezpur University, November 19-21, 2009, Core committee member.

xxii. Learning science program for school children, Department of Chemical Sciences, Tezpur University, 20th November 2009, Core committee member.

xxiii. International Conference in Frontiers in Polymer Science and Technology-POLY-2007, Guwahati, Core committee member.

xxiv. Green Chemistry Task Force Meeting of Department of Chemical Sciences and Technology, Department of Chemical Sciences, Tezpur University, 2007, Core committee member.

xxv. Group Monitoring Workshop cum PAC meeting on Inorganic Chemistry of DST, Department of Chemical Sciences, Tezpur University, 2007, Core committee member.

xxvi. Condensed Matter Days'06, Department of Physics, Tezpur University, Aug' 29-31, 2006, as an organizing committee member.

xxvii. Intellectual property right-national workshop, Tezpur University November 2004, as an organizing committee member.

xxviii. National seminar on Polymer research in Academy, R & D organization and Industry, Kolkata, June 1998, as an organizing committee member.

12. **Resource persons for Invited talk/plenary lecture**

i. National Conference on "Recent Trends in Applied Sciences: A Special Focus on Nanoscience and Nanomaterials" (RTAS-2024) during 22 - 23 March, 2024

ii. Polyurethane Material Recycling in Footwear Industry, IPUA Seminar at Calicut, 18 January 2024.

iii. Development of science and technology for a sustainable society: From Nano to Macro level**,** Guest lecture in CMRIT, Bangalore, Department of Chemistry, 01 January 2024.

iv. Green polymer nanocomposites for advanced applications, International Symposium on Emerging Trends in Chemical Sciences (ETCS 2023), North-Eastern Hill University Shillong, India 2nd -4th March 2023

v. Recent trends in Advanced Polymer Materials: Sustainability and Multifaceted Applications, Keynote address in webinar on Materials for energy and environment, St. Joseph's College, Tiruchchirappalli, 19 December 2022

vi. Biodegradable smart polymer nanocomposites as a sustainable material for multifaceted advanced applications, International conference on Science and Technology of Polymers and Advanced Materials through Innovation, Entrepreneurship and Industry, CSIR-National Chemical Laboratory, IISER Pune and SP Pune University, 2-4 November, 2022

vii. Research in Higher Education: Opportunities, Challenges and Right Approaches, Online Interdisciplinary Refresher Course (IDRC) on Academic Writing and Research, Teaching Learning Centre (TLC), Tezpur University, 16-30 May 2022.

viii. Polymer and the probable remedial approaches for waste plastic materials, in Short Term Training Program (STTP) on "Plastics Waste Management-Waste to wealth Concept" under sponsorship of AICTE, CIPET: CSTS-Guwahati, 21-25 March 2022.

ix. Polymer matrix-based nano-structural materials for biomedical applications, in AICTE sponsored faculty development program on "Polymer Matrix based Nanostructures for Targeted Drug Delivery Application", CIPET: CSTS-Guwahati, 07-11February 2022.

x. Sustainable polymer nanocomposites for multifaceted advanced applications, International Conference on Nanotechnology (ICNT-2021) at Institute of Fire and Safety Engineering, Haldia 23-24 December 2022, India

xi. Sustainable Polymers and their Nanocomposites for different advanced Applications, Faculty Development Programme (FDP) on "Plastic Product Manufacturing & Recycling Techniques" under the august sponsorship of the ATAL Academy, Govt. of India to be held at CIPET: CSTS-Guwahati, Assam from 19-23 July 2021

xii. Sustainable Polymeric Nanocomposites for Multifaceted Applications, Webinar on Key concepts in polymer science, organized by Society of Polymer Science-Mumbai Chapter and hosted by Dept. of Polymer Science, S. K. Somaiya College, Somaiya Vidyavihar University, Mumbai, 27th February 2021

xiii. Bio-derived biodegradable hyperbranched polymeric nanocomposites with multidimensional applications, International Conference on Emerging Trends in Chemical Sciences (ETCS-2020) at Gauhati University, 13-15 February 2020

xiv. Characterization, testing and analysis of polymers, nanomaterials and their nanocomposites, National workshop on Analytical Techniques in Chemical Sciences, Tezpur University, 20-25January, 2020

xv. Renewable resource based hyperbranched polyurethane nanocomposites as smart materials for multifaceted applications, International conference on Advances In Polymer Science and Rubber Technology, September 24-27, 2019, IIT Kharagpur, India

xvi. Sustainable hyperbranched polyurethane elastomeric nanocomposites with multifaceted attributes, International symposium on Sustainable Polymers & Launch of SPSI-North East Chapter, August 23-25, 2019, IIT Guwahati, India

xvii. Research in higher education, Induction training for new faculty at Teaching Learning Centre (TLC), TU, 18 June 2019.

xviii. Sustainable hyperbranched polyurethane nanocomposites for biomedical applications, Continue education program (CEP), DRL Tezpur, 01-03 April 2019

xix. Bio-based hyperbranched polymeric nanocomposites for environment, energy and health care applications, International Conference on Advanced functional materials for environment, energy and health care, Mysore University, 18-20th March, 2019

xx. Bio-based hyperbranched polymeric nanocomposites for multifaceted applications, Birla Corporate house, Kolkata, 10th March, 2019

xxi. Orientation lecture for Research Scholars of USTM, Science and Technology University of Meghalaya, Guwahati, 9th February 2019

xxii. Bio-based biodegradable sustainable hyperbranched polymer nanocomposites for biomedical applications, 6th World Congress on nanomedicine (ISNSCON-2018), Bigyan Bhavan, New Delhi, 8-10th January 2019

xxiii. Sustainable polymers, nanomaterials and their nanocomposites, 106th Indian Science Congress (ISC-2019), Lovely Professional University, Jalandhar, 3-6th January 2019

xxiv. Sustainable thermoplastic and thermosetting polymeric nanocomposites, International Conference on Polymer Science and Technology (SPSI-MACRO 2018), IISER, Pune, 18-20th December 2018

xxv. From nano to macro: Development of science and technology for sustainable society, Induction training for new faculty at Teaching Learning Centre (TLC), TU, 14 June 2018.

xxvi. Trends and prospect in chemistry, workshop, DR College, March 2018.

xxvii. Smart sustainable thermoplastic hyperbranched polyurethane elastomers with self-healing and self-cleaning attributes as futuristic materials, National Rubber Conference (NRC) 2017 and International Conference and Exhibition on Polymers (ICEP) 2018, Guwahati, March 2018.

xxviii. Bio-based biodegradable hyperbranched polymer nanocomposites as sustainable multifaceted advanced materials, National conference on Innovative Process Technology for Sustainable Development (IPTSD-2018), Institute of Chemical Engineers, Kolkata, March 2018.

xxix. Sustainable polymeric nanocomposites for multifaceted advanced applications, International Symposium on Advanced Sustainable Polymers (ASP-17), IIT Guwahati, January 2018.

xxx. Smart hyperbranched polyurethane nanocomposites from renewable resources including carbohydrate, CARBO-XXXII on National conference on Emerging chemistry and biology of carbohydrates, IIT Kharagpur, December 2017.

xxxi. Bio-based biodegradable hyperbranched polymer nanocomposites as sustainable materials for multifaceted advanced applications, Invited talk, Vidyasagar University, Midnapore, December 2017.

xxxii. Bio-based biodegradable hyperbranched polymeric nanocomposites as biomaterials, Continuing Educational program, Defense Research Laboratory (DRDO), Tezpur, November 2017.

xxxiii. Bio-based multifaceted advanced sustainable materials: An approach towards improvement of quality of life, World IPR day invited talk, Tezpur University, April 2017.

xxxiv. Bio-based biodegradable smart polyurethane nanocomposites for advanced multifaceted applications, National conference on hard and soft condense material physics, Tezpur University, March 2017.

xxxv. Biodegradable high performing waterborne hyperbranched polyester nanocomposite: A promising eco-friendly advanced material, International conference on advanced polymeric materials, IISc Bangalore, February, 2017.

xxxvi. Polymer nanocomposite: Wonderful gift of chemistry, Dr. Soumendralal Mukherjee Memorial Lecture, Cotton College, Guwahati, November 2016.

xxxvii. Bio-based biodegradable hyperbranched polymers, nanomaterials and their nanocomposites for biomedical applications, 1st International conference on nanocomputing and nanobiotechnology, MAKAUT, Kolkata, October 2016.

xxxviii. Polymer, nanomaterial and their nanocomposites for multifaceted applications, Orientation lecture, University of Science and Technology of Meghalaya (USTM), September 2016

xxxix. Bio-based hyperbranched polymer nanocomposites for multifaceted applications, 19th CRSI symposium, NBU, Siliguri, July 2016.

xl. Bio-based hyperbranched polymer nanocomposites for multifaceted advanced applications, NCL, Pune, June 2016.

xli. Polymers, nanomaterials and their nanocomposites for multifaceted applications, workshop on Plastics in Yak husbandry, National research center on Yak (NRCY), November 2015.

xlii. Bio-based advanced hyperbranched polymers for multifaceted applications, National seminar on Role of chemistry on basic and applied sciences, Holkar Government Science College- Indore, September 2015.

xliii. Biodegradable hyperbranched polymer nanocomposites for biomedical applications, QIP short term course on Advances in Biomedical Engineering, IIT Guwahati, March 2015.

xliv. Bio-based hyperbranched polymeric nanocomposites for multifaceted advanced applications, National seminar on Multifunctional Polymer Materials (Poly-2014), Viva-Bharati, Santiniketan, February 2015.

xlv. Bio-based hyperbranched poly(ester amide) nanocomposites: Advanced multifaceted materials, International symposium on Polymer Science and Technology (Macro-2015), IACS, Kolkata, January, 2015.

xlvi. Bio-based industrially important hyperbranched polymeric nanocomposites as sustainable advanced materials, National symposium on Advances in sustainable polymers (ASP-2015), IIT Guwahati, January 2015.

xlvii. Material research on bio-based hyperbranched polymers, nanomaterials and nanocomposites Through greener approaches, Continuing education program (CEP-2014), DRL, Tezpur, 2014.

xlviii. Emerging trend in material research on vegetable oil based hyperbranched polymer nanocomposites for multifaceted applications, National Conference on Recent Trends in Chemical, Environmental and Material Sciences (CEMS-2014), Punjab University, Chandigarh, 2014.

xlix. Nano composites, smart polymers and their properties, Workshop on Testing and Quality Control of Plastic Products, CIPET Guwahati, 10-21 March 2014.

l. Green and sustainable hyperbranched polymers and their nanocomposites for multifaceted advanced applications, National school on sustainable polymers and First symposium on advances in sustainable polymers (ASP-14), IIT Guwahati, 2014.

li. Hyperbranched polyurethane/GO/RGO nanocomposites for advanced multifaceted applications, 3rd International conference on advanced nanomaterials and nanotechnology (ICANN-2013), IIT Guwahati, 2013.

lii. Development of bio-based hyperbranched poly(ester amide) nanocomposites: antibacterial, larvicidal and anti-static coatings, National conference on medical arthopodology, DRL, Tezpur, 2013.

liii. Renewable resource based hyperbranched polyurethane nanocomposites-prospects and challenges, Asian Paints (I) Ltd., Mumbai, 2012.

liv. Vegetable oil and petroleum based conventional and hyperbranched polyester and epoxy nanocomposites for surface coating applications, Asian Paints (I) Ltd., Mumbai, 2012.
lv. Can you live without Polymers-in the present days, Inspire program of DST, 2012
lvi. Bio-based polymer nanocomposites-Multifaceted applications, APM-2011, CIPET Chennai, 2011.
lvii. Vegetable oil-based polymer nanocomposites-Present and future, RETNAT 2011, Jorhat, 2011.
lviii. Green polymer nanocomposites-Multifaceted Application, National workshop on Emerging Trend in Nanochemistry, St. Anthony's College, Shillong, 2011.
lix. Sustainable Polymers from Vegetable Oils and Their Nanocomposites for Multifaceted Applications, International conference on SP&CT, IICT Hyderabad (plenary lecture), 2011.
lx. Vegetable oil based hyperbranched Polyurethanes Multiwalled carbon nanotubes nanocomposites, National conference on Smart Nanostructure, Tezpur University, 2011.
lxi. Vegetable oil based hyperbranched Polyurethanes Multiwalled carbon nanotubes nanocomposites, National conference on Smart Nanostructure, Tezpur University, 2011.
lxii. Polymers-Wonderful Materials, Inspire program of DST, Tezpur University, 2010.
lxiii. Vegetable oil based Polymers and Their Nanocomposites. Maco 2010, IIT Delhi, 2010.
lxiv. Vegetable Oil Based Polymer/Multi-walled Carbon Nanotubes (MWCNT) Nanocomposites - Multi-facet Advanced Materials, ICCNT:PC, IIT Kanpur, 2010.
lxv. Polymer nanocomposites-multifaceted advanced materials for today's society, National Seminar on Photonics and Quantum Structures, Tezpur University, 2009.
lxvi. Polymers from vegetable oils and their uses, National Seminar on Green polymers and emerging technologies, IICT, Hyderabad, 2008.
lxvii. Hyperbranched Polymers – Multipurpose Polymeric Additives, in International Conference on Polymer processing, 2007 (Beijing, China).
lxviii. Dendritic Polymers-synthesis to applications, in National conference on Advanced frontier polymer science and technology, IACS, 2006.
lxix. Polymer Science and Technology - the gifts for mankind' in motivated contact program for talented school students, Tezpur University, 2005.
lxx. Dendritic polymer prospect and challenges in National workshop on advance frontier materials, Tezpur University, 2005.
lxxi. Polymer Nanocomposites-an advance frontier material in National workshop on advance frontier materials, Tezpur University, 2005.
lxxii. Dendritic polymers-the advanced, versatile and unique materials in national workshop on Advanced Materials, Tezpur University, 2004.

13. **Member of professional bodies**

- Life member of Alumina Association of IIT Kharagpur and Tezpur University
- Life member of The Polymer Society of Indian (KI26) and Vice-President of North-East Chapter, 2019-2021
- Life member of Assam Science Society
- Life member of Materials Research Society of India (LMB1691)
- Life member of Oil Technologist's Association of India (L276)
- Life member of Indian Science Congress Association (L21133)
- Life Member of Chemical Research Society of India (LM1587)
- Life member of Asian Polymer Association (L381) and executive member, 2021-22
- Life member of PSMPAF (founding member)

14. Discipline (specialization) and course taught

Chemical Sciences (Polymer Science & Technology), and Courses taught for MSc in Polymer Science, MTech in Polymer Science and Technology, MSc Nanoscience, Int. MSc in Chemistry and Ph.D. programs are:

- Introduction to Polymer Chemistry

- ❖ Industrial Chemistry
- ❖ Basic Materials Science
- ❖ Introduction to Polymer Science
- ❖ Petrochemicals and Chemical Processes
- ❖ Rubber Science and Technology
- ❖ Production of Industrial Polymers
- ❖ Processing and Fabrication of Polymers
- ❖ Chemistry for Paints and Surface Coatings
- ❖ Organic Chemistry Laboratory
- ❖ Petrochemical Laboratory
- ❖ Polymer Synthesis Laboratory
- ❖ Polymer analysis laboratory
- ❖ Polymer Testing Laboratory
- ❖ Polymer Chemistry Theory and Laboratory in Nanoscience
- ❖ Polymer Nanocomposites
- ❖ Dendritic Polymers
- ❖ Polymeric Biomaterials
- ❖ Nanocomposites and Nanomaterials

15. Working on

Polymer nanocomposite, Nanomaterial, Hyperbranched polymer, Multifunctional polymeric additive, Polymers from natural resource, hydrogel, etc.

16. Research Supervised/Supervising

A) M. Sc. Project Thesis

Sl. No.	Name	Status/Year	Thesis Topic
1.	Mr. Hiranya Thakura (PS-98-08)	Awarded/2000	Synthesis of hyperbranched polymers
2.	Mr. Nitul Kakati (NS-05-07)	Awarded/2007	Synthesis and Characterization of Silver Nanoparticles in Polyacrylamide Matrix (4^{th} Sem)
3.	Mr. Gitanjal Deka (PHN07004)	Awarded/2009	Synthesis and Characterization of Iron Nanoparticles in Polymer Matrix (3^{rd} sem)
4.	Ms. Tosnim Alfirdoss (CHA07018)	Awarded/2009	Nahar oil and its modified products as lubricants (4^{th} sem)
5.	Ms. Sangita Haloi (CHA07028)	Awarded/2009	Polyester/cellulose composites (4^{th} sem)
6.	Mr. Rangksan Mawroh (CHA070019)	Awarded/2009	Carbon black modification using vegetable oil (Nahar oil) and acid treatment & its effects on the properties of SBR (4^{th} sem)
7.	Ms. Sujata Pramanik (CHA08018)	Awarded/2010	Polyaniline nanofibers and oil modified polyester/polyaniline nanofiber nanocomposites (4^{th} sem)
8.	Ms. Meenakshi Sharma (CHA08022)	Awarded/2010	Hyperbranched polyurethane nanocomposite (4^{th} sem)
9.	Mr. Biswajit Gogoi (CHA08029)	Awarded/2010	Biomimetic preparation of polymer-templated, multifaceted green silver nanoparticles using *Citrus sinensis* and development of antimicrobial chicken-feather keratin-epoxy composite (4^{th} sem)

10.	Mr. Bibekananda De (CHA09007)	Awarded/2011	Castor oil based polyester resin and bisphenol-A, pentaerythritol based epoxy resin blend and its clay nanocomposite (4^{th} sem)
11.	Pankaj Gogoi (CHA09016)	Awarded/2011	Bis-MPA based hyperbranched polyester, its blend with epoxy resin, nanocomposites with nanoclays, their characterization and property determination (4^{th} sem)
12.	Mr. Indrajit Das (CHA09020)	Awarded/2011	Synthesis and characterization of pumpkin seed oil polyester resin/clay nanocomposite (4^{th} sem)
13.	Mr. Manas Jyoti Bordoloi (CHA09025)	Awarded/2011	Castor oil based hyperbranched poly(ester amide) resin and its silver nanocomposites (4^{th} sem)
14.	Ms. Swagata Baruah (CHM10008)	Awarded/2012	Methyl ester of castor oil: A promising biodiesel (4^{th} sem)
15.	Mr. Shiven Kaushal (PHN12001)	Awarded/2014	Synthesis and characterization of silver nanoparticles by microemulsion technique
16.	Mr. Jyotirmoy Hajong (CHB13001)	Awarded/2018	Guar gum based superabsorbent acrylic acid/clay nanocomposite
17.	Mr. Dipankar Barman (CHB17008)	Awarded/2019	Preparation, characterization and properties of superabsorbent hydrogel based on guar gum and acrylamide (4^{th} sem)
18.	Mr. Dipjyoti Das (CHB14001)	Awarded/2019	Synthesis, characterization and swelling behavior of superabsorbent hydrogel based on carboxymethyl tarmarind and acrylamide
19.	Mr. Krisnandu Dey (CHM18011)	Awarded/2020	Preparation, characterization and properties of Guar gum-acrylic acid based hydrogel
20.	Rudradeep Das (CHI15007)	Awarded/2020	Variation in viscosity of Guar Gum, under various conditions and checking its stability
21.	Ankita Kundu (CHM19012)	Awarded/2021	Study on adsorption efficiency of cellulose nanofiber molybdenum trioxide nanocomposite for cationic dye
22.	Tanushree Biswas (CHM19026)	Awarded/2021	Study on natural resource based starch modified superabsorbent hydrogel
23.	Puja Acharjee (CHM20002)	Awarded /2022	Guargum and starch- based hydrogel: preparation, characterization and application
24.	Elora Nath (CHM20025)	Awarded /2022	Waste material derived nanomaterial and its application to wastewater treatment
25.	Megha Gurung (CHM2029)	Awarded /2023	Lignin modified bioplastic
26.	Nitu Kumari Thakur (CHM2030)	Awarded /2023	Recycling of PU foam
27.	Prokriti Sonowal (CHM2026)	Awarded /2023	Recycling of PET bottles

B) M. Tech. Project Thesis (Both Minor and Major)

Sl. No.	Name	Status/Year	Thesis Topic
1	Mr. Achyut Konwar (CHT11002)	Awarded/2012 -13	Hyperbranched polyamine a s a flame retardant additive for waste polyethylene (3^{rd} sem) Low cost abundant natural jute fiber reinforced waste polyethylene composite (4^{th} sem)

2	Ms. Dolly Talukdar (CHT11006)	Awarded/2012-13	Vegetable oil based hyperbranched epoxy resin (3rd sem) Vegetable oil based hyperbranched epoxy/clay nanocomposite (4th sem)
3	Mr. Shasanka Sekhar Borkotoky (CHT11007)	Awarded/2012-13	Modification of bitumen by waste polymer and fly ash (3rd sem) Hyperbranched pol(ester amide)/functionalized fly ash nanocomposites (4th sem)
4	Mr. Rupak Pratim Borah (CHT12006)	Awarded/2013-14	Reduced graphene oxide and its nanocomposite (3rd sem) Epoxy/reduced graphene oxide-titanium dioxide nanocomposites as efficient photocatalyst (4th sem)
5	Ms. Deepshikha Bhagawati (CHT13001)	Awarded/2014-15	Low cost modified polyester with bitumen (3rd sem) Low cost hyperbranched polyester/flyash nanocomposite (4th sem)
6	Ms. Aditi Saikia (CHT13003)	Awarded/2014-15	Castor oil based hyperbranched epoxy/black liquor blend for use as binder in coating application (3rd sem) Castor oil based hyperbranched epoxy/clay nanocomposite for coating applications (4th sem)
7	Mr. Biplob Ghosh (CHT13008)	Awarded/2014-15	Biobased polyol modified waterborne hyperbranched polyurethane (3rd sem) Biobased waterborne polyurethane/carbon dot nanocomposite (4th sem)
8	Mr. Jyanta Kumar Borah (CHT14004)	Awarded/2015-16	Glycol modified unsaturated polyester resin from polyethylene terephthalate waste (3rd sem) A mixed glycol modified waste polyethylene terephthalate based unsaturated polyester resin/MWCNT nanocomposite (4th sem)
9	Ms. Sumitra Gohain (CHT14008)	Awarded/2015-16	Compatibilization of poly(methyl methacrylate) with polystyrene using castor oil derivative (3rd sem)
10	Ms. Udangshree Boro (CHT14009)	Awarded/2015-16	Tannic acid based hyperbranched epoxy resin as a sustainable material (3rd sem) Tannic acid based hyperbranched epoxy/reduced graphene oxide (RGO) nanocomposite (4th sem)
11	Ms. Kangkana Deori (CHT15003)	Awarded/2016-17	Synthesis, characterization and properties evaluation of castor oil, glycerol based hyperbranched epoxy thermoset using commercial diglycidyl ether of bisphenol-A (3rd sem) Biobased hyperbranched epoxy/MWCNT-Ag thermosetting nanocomposite (4th sem)
12	Ms. Doli Hazarika (CHT15007)	Awarded/2016-17	Modification of commercial diglycidyl ether of bisphenol-A using castor oil and triethanol amine as hyperbranched moiety by a single step A2 + B3B´3 polycondensation reaction (3rd sem) Bio-based hyperbranched epoxy/silver-reduced graphene oxide nanocomposite for advanced applications (4th sem)
13	Ms. Nilakshi Debberma (CHT16004)	Awarded/2017-18	Cellulose nanofiber modified epoxy resin (3rd sem) Preparation of sorbital modified hyperbranched epoxy thermosetting nanocomposite with cellulose nanofiber (4th sem)
14	Mr. Dipmoni Borah (CHT16005)	Awarded/2017-18	Synthesis of waterborne hyperbranched poly(ester amide urethane)/clay nanocomposite 3rd sem)

			Hyperbranched polyurethane/triple doped carbon dot nanocomposite (4th Sem.)
15	Mr. Anuron Deka (CHT16008)	Awarded/2017-18	Silica nanoparticles containing superhydrophobic polyurethane surface (3rd sem) Silica nanoparticle containing tough polyurethane nanocomposite produced using a bio-derived raw material (4th sem)
16	Mr. Jugal Charan Sarmah (CHT17004)	Awarded/2018-19	Preparation, characterization and properties of guar gum-acrylic acid based superabsorbent (3rd sem) Preparation, characterization and properties of guar gum-acrylic acid-montmorillonite nanocomposites as a superabsorbent material (4th sem)
17	Mr. Manasjyoti Nath (CHT17005)	Awarded/2018-19	Investigation of poly(acrylic acid) based superabsorbing hydrogel (3rd sem) Investigation of poly(acrylic acid)/graphene oxide nanocomposite as a superabsorbing hydrogel (4th sem)
18	Mr. Prasanjit Kr. Dey (CHT18001)	Awarded /2019-20	Carboxy methylated starch based hydrogel (3rd sem) Preparation of biobased nanocomposite hydrogel from carboxymethyl tapioca starch (cms) and mmt nanoclays (4th sem)
19	Mr. Jay Hind (CHT18003)	Awarded /2019-20	Hydrophobically modified of Guar Gum (3rd sem) Hydrophobically modification of guar gum by using isobutyl glycidyl ether and octyl glycidyl ether (4th sem)
20	Mr. Gaurav Khatimara (CHT18006)	Awarded /2019-20	Carboxy methylated guar gum and tamarind based superabsorbent of (3rd sem) Synthesis and characterization of polysaccharide (guar & tamarind gum) clay hydrogel (4th sem)

C) **Ph.D. Thesis**

Sl. No.	Name	Status/Year	Thesis Topic
i.	Dr. Nandini Dutta	Awarded/2006	Development of polyester resins from *Mesua ferrea* L. seed oil
ii.	Dr. Jatismoy Borah	Awarded/2007	Synthesis, characterization and properties evaluation of hyperbranched polyethers
iii.	Dr. Sibdas Singha Mahapatra	Awarded/2008	Development of s-triazine based hyperbranched aromatic polyamines
iv.	Dr. Suvanshu Dutta	Awarded/2009	Development of *Mesua ferrea L.* seed oil based polyurethane resins
v.	Dr. HareKrishna Deka	Awarded/2010	Development of polyurethane nanocomposites
vi.	Dr. Uday Konwar	Awarded /2011	Development of polyester nanocomposites
vii.	Dr. Gautam Das	Awarded/2011	Vegetable oil based epoxy nanocomposites and their applications
viii.	Dr. Budhadev Roy	Awarded/2012	Hyperbranched polyether based epoxy nanocomposites
ix.	Dr. Rocktotpal Konwarh	Awarded/2013	Polymer assisted nanomaterials immobilized biomolecules and their potential applications
x.	Dr. Hemjyoti Kalita	Awarded/2013	Hyperbranched polyurethane nanocomposites as shape memory materials

xi.	Dr. Sujata Pramanik	Awarded/2014	Vegetable oil based hyperbranched poly(ester-amide) nanocomposites
xii.	Dr. Beauty Das	Awarded/2015	Biodegradable hyperbranched polyurethane nanocomposites for biomedical applications
xiii.	Dr. Shawat Barua	Awarded/2015	Hyperbranched epoxy nanocomposites for biomedical applications
xiv.	Dr. Bibekanada De	Awarded/2015	Development of tough hyperbranched epoxy nanocomposites
xv.	Dr. Suman Thakur	Awarded/2016	Hyperbranched polyurethane/graphene nanocomposites and their potential applications
xvi.	Dr. Satyabrat Gogoi	Awarded/2016	Environmentally benign hyperbranched polyurethane nanocomposites and their applications
xvii.	Dr. Rituparna Duarah	Awarded/2019	Starch modified hyperbranched polyurethane nanocomposites with carbon based nanomaterial
xviii.	Dr. Deepshika Hazarika	Awarded/2019	Nanocomposites of bio-derived waterborne hyperbranched polyester and carbon-based nanomaterials
xix.	Dr. Rajarshi Bayan	Awarded/2020	Renewable resources derived hyperbranched polyurethane nanocomposites for multifaceted applications
xx.	Dr. Aditi Saikia	Awarded/2020	Bio-based hyperbranched epoxy nanocomposites for multifaceted applications
xxi.	Dr. Tuhin Ghosh	Awarded/2021	Environmentally benign smart hyperbranched polyurethane nanocomposites
xxii.	Dr. Geeti Kaberi Dutta	Awarded/2022	Bio-based environmentally benign polyester nanocomposites and their potential applications
xxiii.	Dr. Dimpee Sarmah	Awarded/2023	Polysaccharide-based hydrogels and their potential applications
xxiv.	Dr. Samiran Morang	Awarded/2024	Waterborne polyurethane dispersions and nanocomposites for multifaceted applications
xxv.	Dr. Annesha Kar	Awarded/2024	Bio-based biodegradable poly(ester amide) nanocomposites and their multifaceted applications
xxvi.	Dr. Nobomi Borah	Awarded/2024	Biobased epoxy thermosets and their composite
xxvii.	Dr. Ashok Bora	Awarded/2023	Superabsorbent polymer nanocomposites
xviii.	Raghav Poudel	Working	Starch-derived bioplastic Nanocomposites and their potential applications
xxix.	Kalyan Dutta	Working	Bio-based self-healing epoxy thermosetting nanocomposites
xxx.	Kriti Yadav	Working	Bio-based smart epoxy thermosetting nanocomposites

D) Post-Doctoral fellow supervised/Supervising

Sl. No.	Name	Year	Topic
i	Dr. S.N. Harsha	2014	Biocompatible and nontoxic silver nanoparticles
ii	Dr. Vijay K. Das	2015 & 2016	Green silver nanoparticles and their catalytic activities
iii	Dr. Soumen Chandra	2018	Bio-based waterborne polyurethane nanocomposites
iv	Dr. Anamika Kalita (DSKF)	2018	Bio-based superabsorbent
v	Dr. Bhaskar Sarmah	2018	Nanomaterial and nanocomposite

vi	Dr. Haribondhu Chaudhari	2019 & 2020	Nanomaterials and nanocomposites
vii	Dr. A. Gopinath	2020 & 2021	Polyurethane nanocomposite

17. Sponsored research/consultancy projects completed/undergoing

As PI

Sl. No.	Title	Cost (in rupees) lakh	Duration	Agency
i.	Investigation of low cost building materials for Assam type building	0.15	2001-2002	TU/ UGC
ii.	Development of dendritic polymers for multipurpose polymer additives	7.50	2003-2006	CSIR
iii.	Development of polymers from renewable resource, Nahar seed oil	6.25	2003-2006	UGC
iv.	Development of epoxy clay nanocomposites	14.80	2007-2010	DRDO
v.	Development of thermosetting polymer/clay nanocomposites	23.15	2007-2010	DST
vi.	Magnetic nanoparticles decorated biodegradable polyurethanes/MWCNT nanocomposites as shape memory materials	37.94	2010-2013	DST
vii.	Studies on green polymeric nanocomposites for development of insect repellent formulations	9.55	2011-2014	DRL
viii.	Hyperbranched epoxy nanohybrides immobilized Natural biocide for advanced marine coatings	38.31	2012-2015	NRB
ix.	Development of multifunctional dendritic polymers for injectable bone tissue engineering (Collaborative work with IIT Kharagpur, additional 37.10 lakh)	64.22	2012-2015	DBT
x.	Polymer supported green silver nano particles: using plants of northeast India; studies on toxicity and anti-cancer property (Collaborative work with Visa Bharati University, Santiniketan) Total: 58.81 lakh	33.46	2014-2017	DBT
xi.	Investigation on structure-property relationship for self-healing smart hyperbranched polyurethane nanocomposite with antistatic and antimicrobial attributes	29.93	2017-2020	DST-SERB
xii.	Development of water-borne hyperbranched polyesters and polyurethanes from bio-based resources and their nanocomposites	17.56	2017-2021	CSIR
xiii.	Self-healing and self-cleaning epoxy thermosetting nanocomposites	28.85	2021-2024	DRDO

As Co-PI with Prof. Ashok Kumar as PI

Sl. No.	Title	Cost (in rupees) lakh	Duration	Agency
i.	Development of conducting polymer-based nanocomposites for actuator, chemical and biosensor applications.	37.502	2009-2012	DST

ii.	Development of graphene based conducting polymer nanocomposites for electrochemical energy storage applications	50.10784	2016-2019	SERB-DST

As consultant

Sl. No.	Title	Consultant fees (in rupees) lakh	Duration	Agency
i.	Hyperbranched epoxy for heavy duty coatings	10.0	2013-2015	Asian Paints India
ii.	Water soluble carbon DOTS photocatalyst for air cleaning paint	5.0	2014-2015	Asian Paints India
iii.	Hyper branched High Performance Polymer nano composites based on C-dots and other Nanoparticles for Advanced Coating Applications	12.0	2015-2017	Asian Paints India
iv.	Guar gum based multifaceted superabsorbent	2.0	2018-2019	Hindustan Gum & Chemicals Ltd.
v.	Guar gum based multifaceted superabsorbent (with starch)	3.0	2019-2020	Hindustan Gum & Chemicals Ltd.
vi.	Bio-based sustainable polyurethane	3.0	2022-2023	Horizon Performance Polyurethane Pvt. Ltd,

As Director R & D (Industrial Project)

Sl. No.	Title	Duration	Industry
i.	Polyurethane for biomedical applications	2023-2024	Rymbal, Delhi-NCR
ii.	Bio-based polyester-polyurethane foam with bio-content (20, 40% & 60%)	2023-2024	Rymbal, Delhi-NCR
iii.	Chemical recycling of polyester-polyurethane foam (10% waste foam)	2023-2024	Rymbal, Delhi-NCR
iv.	Chemical recycling of polyether-polyurethane foam (20%, 30% and 40%)	2023-2024	Rymbal, Delhi-NCR
v.	Low-cost polyester polyol for polyurethane foam	2023-2024	Rymbal, Delhi-NCR
vi.	Low free raise density (FRD) and low shrinkage polyester polyurethane foam	2023-2024	Rymbal, Delhi-NCR
vii.	Polyurethane resin for artificial leather	2023-2024	Rymbal, Delhi-NCR
viii.	Thermoplastic poly(ester-amide)	2023-2024	Rymbal, Delhi-NCR
ix.	Thermoplastic polyester hot melt adhesive	2023-2024	Rymbal, Delhi-NCR
x.	Phase change polyurethane material	2023-2024	Rymbal, Delhi-NCR

19. Other academic activities

- ❖ Associate Editor, Journal of Renewable Materials, ISSN: 2164-6325 (printed); ISSN: 2164-6341 (online) 2019-2022
- ❖ Advisory Board Member of International Journal of Advanced Chemical Science and Applications (IJACSA), ISSN (Print): 2347-7601, ISSN (Online): 2347-761X, 2018
- ❖ Editorial Board member for the international Journals: Journal of Nanotechnology in Diagnosis and Treatment by Savvy Science Publisher, since 2014, Advances in Nano Research (ANR), *An International journal* by Techno Press, since 2015; American Journal of Engineering and Applied Sciences by Science Publications, since 2015, Technology audit production reserves by Technology Center, since 2017, Journal of Composites and Biodegradable Polymers, Savvy Science Publisher, since 2019.
- ❖ Reviewing manuscripts for publication in, "J. Mater. Chem.", "J. Polym. Sci. Part A: Polym. Chem.", "Green Chem", 'J. Hazardous Materials', 'Carbon', "Progress in Organic Coatings", "e-Polymer", "Polym. Degrad. Stab." "Colloid & Polymer Sci.", 'Materials Sciences Journal', "J. Nanoparticles Research", 'Journal of Polymer Materials', 'Polymer International' 'Journal of Applied Polymers Science' 'European Polymer journal', Material science and Engineering C, Journal of Chemical Science, and many more - all international Journals.
- ❖ Set-up teaching and research Laboratories: As a **founding member** of Chemical Sciences Department, Tezpur University both the teaching and research laboratories are being set up by direct involvement. The laboratories set up are – polymer synthesis lab., polymer testing lab., petrochemical lab., sophisticated instrumental lab., Polymer research lab., etc.
- ❖ Expertise in using different type of instruments, systems, computers, etc.: UV, IR, NMR, TGA, DSC, DTA, Universal Tensile Tester, DIN & Dupont Abrader, Flex & Fatigue Tester, Compression set Instrument, Hardness Tester, Two roll open mixing mill, Bravender plasticorder, Compression molding Press, LOI Tester, Autoclave, Incubator and other related equipment for polymer synthesis, characterization and properties evaluation are used frequently as per requirement. Also accustomed with different program system of computer such as ChemDraw, Microsoft Word, Excel, Origin, Power Point, etc.

20. Interested to pursue research work

- ❖ Development of Polymer Nanocomposite using various bio-based polymers and nanomaterials
- ❖ Development of Polymers from Natural/Petroleum resources and their fruitful utilization.
- ❖ Development of Multipurpose Dendritic Polymers.

21. Collaborative group members

- ❖ IIT Kharagpur (India), Biotechnology Department, Professor T. K. Maiti
- ❖ Visa-Bharati University (India), Zoology Department, Prof. Ansuman Chattopadhyay
- ❖ Konkuk University (South Korea), Textile Engineering Department, Professor J.W. Cho
- ❖ IPF (Germany), Professor Brigitte Voit
- ❖ DRDO (India): NMRL, Dr. D. Ratna & DRL, Dr. P. Chattopadhya
- ❖ Asian Paint (India), Dr. R. Parmar
- ❖ Hindustan Guar Gum (India), Dr. S. Ghosh
- ❖ Horizon Performance Polyurethane Pvt. Ltd, Rymbal (India), Dr. Devi
- ❖ Tezpur University (India), MBBT (Prof. M. Mandal), FET (Prof. C.L. Mohanty), and EVS (Dr. S. S. Bhattacharya).

22. Research publications

A. List of Publications in Journals

(a) List of Publications in Journals

Year: 2024

1. A. Bora, D. Sarmah and **N. Karak***, (2024) Biobased Nanocomposite Hydrogels derived from Renewable Resources for Biomedical Applications, Journal of Macromolecular Science, Part A: Pure and Applied Chemistry 61(11), 845-862, https://doi.org/10.1080/10601325.2024.2404101
2. A. Kar, and **N. Karak***, (2024) Renewable lignin-based biochar/poly(ester amide urethane) nanocomposites: sustainable approach for dye removal from contaminated wastewater, Journal of Renewable Materials 12(9), 1507-1540, 10.32604/jrm.2024.052220
3. N. Borah, and **N. Karak***, (2024) Cellulose nanofibers modified with pendant amine groups as potential reinforcement in bioepoxy for a mechanically tough biodegradable anticorrosive nanocomposite coating, Cellulose 31, 3623–3643, https://doi.org/10.1007/s10570-024-05837-5
4. S. Morang, A. Bandyopadhyay, N. Borah, A. Kar, B. B. Mandal and **N. Karak,** (2024) Photoluminescent self-healable waterborne polyurethane/Mo and S co-doped graphitic carbon nitride nanocomposite with bioimaging and encryption capability, ACS Appl. Bio Mater. 7(3), 1910–1924, https://doi.org/10.1021/acsabm.3c01259
5. K. Dutta and **N. Karak***, (2024) Exchangeable disulfide bond containing highly flexible epoxy vitrimers with shape-memory, self-healing, and UV shielding attributes, Polymers for Advanced Technologies 35(1), e6286, **https://doi.org/10.1002/pat.6286**
6. K Yadav, D Ratna, and **N Karak***, (2024) Gallic acid ester-based flexible UV-shielding epoxy thermosets with tunable properties, Journal of Macromolecular Science, Part A 61(1), 53-68, https://doi.org/10.1080/10601325.2023.2290024
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Year: 2023

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82. **Karak*, N.,** Dutta N., Mahapatra S. S. and Dutta S., Development of resins from Nahar seed oil for surface coating applications, International Conference on Surface Coatings SSPC 2004, Mumbai, India 2004

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1. **Karak*, N.,** Sustainable Polymers and Their Nanocomposites for Multifaceted Advanced Applications, National Conference on "Recent Trends in Applied Sciences: A Special Focus on Nanoscience and Nanomaterials" (RTAS-2024) during 22 - 23 March, 2024
2. **Karak*, N.,** Sustainable polymers, nanomaterials and their nanocomposites, 106th Indian Science Congress (ISC-2019), Lovely Professional University, Jalandhar, 3-7 January, 2019 (Invited talk)
3. **Karak*, N.,** Bio-based biodegradable hyperbranched polymer nanocomposites as sustainable multifaceted advanced materials, National conference on Innovative Process Technology for Sustainable Development (IPTSD-2018), Inst. Chem. Engg., Kolkata, 23-24 February, 2018, (Invited talk)
4. **Karak*, N.,** Smart hyperbranched polyurethane nanocomposites from renewable resources including carbohydrate, CARBO-XXXII on National conference on Emerging chemistry and biology of carbohydrates, IIT Kharagpur, 18-20th December 2017(Invited talk)**.**
5. **Karak*, N.,** Bio-based biodegradable smart polyurethane nanocomposites for advanced multifaceted

applications, National conference on hard and soft condense material physics, Tezpur University, 2-4th March, 2017 (Invited talk)**.**

6. Bayan, R., and **Karak*, N.,** Renewable resources-modified aliphatic hyperbranched polyurethane as biodegradable UV resistant smart material, 20th CRSI National Symposium, Gauhati University, Guwahati, 2nd-4th February, 2017.
7. Hazarika, D., and **Karak*, N.,** Bio-based carbon dot modified novel biodegradable high performing waterborne hyperbranched polyester thermosetting nanocomposites, 20th CRSI National Symposium, Gauhati University, Guwahati, 2nd-4th February, 2017.
8. Saikia, A., and **Karak*, N.,** Sorbitol based tough hyperbranched epoxy thermosets as sustainable materials, 20th CRSI National Symposium, Gauhati University, Guwahati, 2nd-4th February, 2017.
9. Duarah, R., and **Karak*, N.,** Prospective rapid self expandable stent from carbon dot-silver modified high performing hyperbranched nanocomposites, 20th CRSI National Symposium, Gauhati University, Guwahati, 2nd-4th February, 2017.
10. **Karak*, N.,** Bio-based hyperbranched polymer nanocomposites for multifaceted applications, 19th CRSI symposium, NBU, Siliguri, 14-16th July 2016 (CRSI, Bronze medal lecture).
11. Gogoi., S. and **Karak*, N.,** Carbon Dot: Perception as a Sustainable Nano-filler for Polymeric Material, Materials Research Society of India (MRSI) Symposium on Advanced Materials for Sustainable Applications, CSIR-NEIST, Jorhat, 18-20th February, 2016.
12. Baruah, P and **Karak*, N.,** Bio-based hyperbranched epoxy thermoset as sustainable material, Materials Research Society of India (MRSI) Symposium on Advanced Materials for Sustainable Applications, CSIR-NEIST, Jorhat, 18-20th February, 2016.
13. Duarah, R. and **Karak*, N.,** Bio-based hyperbranched epoxy modified hyperbranched polyurethane thermoset, Materials Research Society of India (MRSI) Symposium on Advanced Materials for Sustainable Applications, CSIR-NEIST, Jorhat, 18-20th February, 2016.
14. Hazarika, D. and **Karak*, N.,** Bio-based waterborne hyperbranched polyester thermoset, Materials Research Society of India (MRSI) Symposium on Advanced Materials for Sustainable Applications, CSIR-NEIST, Jorhat, 18-20th February, 2016.
15. Saikia, A. and **Karak*, N.,** Castor oil epoxy/clay nanocomposite for surface coating applications Materials Research Society of India (MRSI) Symposium on Advanced Materials for Sustainable Applications, CSIR-NEIST, Jorhat, 18-20th February, 2016.
16. Das, V. and **Karak*, N.,** A convenient 'Nose' approach for the conversion of aldehydes into nitriles catalyzed by highly active nanoparticles, Materials Research Society of India (MRSI) Symposium on Advanced Materials for Sustainable Applications, CSIR-NEIST, Jorhat, 18-20th February, 2016
17. **Karak*, N.,** Bio-based industrially important hyperbranched polymeric nanocomposites as sustainable advanced materials, National symposium on Advances in sustainable polymers (ASP-2015), IIT Guwahati, 21-22 January, 2015 (Invited talk)
18. **Karak*, N.,** Bio-based hyperbranched polymeric nanocomposites for multifaceted advanced applications, National seminar on Multifunctional polymer materials (Poly-2014), Visva-Bharati, Santiniketan, 14-15 February, 2015 (Award lecture)
19. Thakur, S. and **Karak*, N.,** Bio-based smart hyperbranched polyurethane nanocomposite with antimicrobial and repeatable self-healing attribute, 9th Polymer award function & national seminar on 'Multifunctional Polymer Materials' (POLY 2014), Viswa Bharati, Shantiniketan, 14-15 February, 2015.
20. Gogoi, S. and **Karak*, N.,** Bio-based Waterborne Hyperbranched Polyurethane Thermoset, 9thPOLY-2014, Viswa-Bharati, Shantiniketan, West Bengal, 14-15th February, 2015.
21. Gogoi, S. and **Karak*, N.,** Renewable Resource Based Biodegradable Waterborne Hyperbranched Polyurethane, 2ndASP-2015, Indian Institute of Technology, Guwahati, 21-22nd January, 2015.
22. Gogoi, S., Kumar, M., Mandal, B. and **Karak*, N.,** Carbon dot included water borne hyperbranched polyurethane as a multidimensional utility material, National Conference on Contemporary Development in Chemical Sciences (CDCS 2015), Tezpur University, Assam, 23-24 November, 2015

23. **Karak*, N.,** Emerging trend in material research on vegetable oil based hyperbranched polymer nanocomposites for multifaceted applications, National Conference on Recent Trends in Chemical, Environmental and Material Sciences (CEMS-2014), Punjab University, Chandigarh, 26th April, 2014 (Invited talk)
24. **Karak*, N.,** Nano composites, smart polymers and their properties, Workshop on Testing and Quality Control of Plastic Products, CIPET Guwahati, 10-21 March, 2014 (Invited talk)
25. **Karak*, N.,** Green and sustainable hyperbranched polymer and their nanocomposites for multifaceted advanced applications, National school on sustainable polymers and First symposium on advances in sustainable polymers (ASP-14), IIT Guwahati, 6-11 January, 2014. (Invited talk and judge for poster presentation)
26. Borkotoky S. S. and **Karak*, N.,** Hyperbranched poly(ester amide)/functionalized fly ash nanocomposites, National school on sustainable polymers and First symposium on advances in sustainable polymers (ASP-14), IIT Guwahati, 6-11 January, 2014.
27. Gogoi, S. and **Karak*, N.,** Biodegradable Hyperbranched Polyurethane, SANICON 2014, Defence Research Laboratory, Solmara, Tezpur, Assam, 16-17th December, 2014.
28. Barua, S. Chottapadhyay P. and **Karak*, N.,** 'Bio-resource based thermostable and cytocompatible micro-crystalline cellulose', 100th Indian science congress, Kolkata, 3-7 January, 2013
29. Konwarh R. and **Karak*, N.,** Bio-hybrids of polymeric nanomaterials/nanocomposites: From clean hair shaving technology to multifunctional biomaterial, National Conference on Advances Materials and applications (NCAMA-2013), NIT Tiruchirappolli, Tiruchirappolli, 4-5 April, 2013
30. **Karak*, N.,** Bio-based biodegradable hyperbranched polymers and their nanocomposites, UGC-SAP National seminar on Microbial Biotechnology, Tezpur University, Tezpur, March, 01-02, 2013
31. Konwarh R and **Karak*, N.,** Polymer supported nanomaterials as immobilization platform for microbial biocatalysts: prospective application from leather industry to detergent industry, UGC-SAP National seminar on Microbial Biotechnology, Tezpur University, Tezpur, March, 01-02, 2013
32. Pramanik, S. Barua1, S. Gopalakrishnan R. and **Karak*, N.,** Development of bio-based hyperbranched poly(ester amide) nanocomposites: antibacterial, larvicidal and anti-static coatings, 7th National Conference of Arthopodoly, DRL, Tezpur ,12-13- December 2013 (Invited talk).
33. Das B. and **Karak*, N.,** Fe_3O_4 decorated MWCNT/Hyperbranched polyurethnae nanocomposite: Antibacterial biomaterial, 7th National Conference of Arthopodoly, DRL, Tezpur, 12-13- December 2013
34. Barua S., Kaushal, Gopalkrishnan and **Karak*, N.,** Green Silver nanoparticles as the antimicrobial and larvicidal agent, 7th National Conference of Arthopodoly, DRL, Tezpur, 12-13- December 2013

35. **Karak*, N.,** Renewable resource based hyperbranched polyurethane nanocomposites-prospects and challenges, Asian Paints (I) Ltd., Mumbai , 2012 (Invited talk)
36. **Karak*, N.,** Vegetable oil and petroleum based conventional and hyperbranched polyester and epoxy nanocomposites for surface coating applications, Asian Paints (I) Ltd., Mumbai , 2012 (Invited talk)
37. **Karak*, N.,** Polymer nanocomposites and their multifaceted applications, NEIST, 2012 (Invited talk)
38. Das, B., Chattapadhya, P. and **Karak*, N.,** Vegetable Oil based mMWCNT/Polyurethane Nanocomposite for Bone Tissue Engineering Application, National Conference, TEZCON-2012, DRL, Tezpur, 06-08 Nov, 2012
39. Barua S., Chattapadhya, P. and **Karak*, N.,** Hyperbranched epoxy clay nanocomposites as tissue scaffold materials National Conference, TEZCON-2012, DRL, Tezpur, 06-08 Nov, 2012
40. **Karak*, N.,** Vegetable oil modified polymer nanocomposites and their advanced applications, XXXI annual conference ICC, Saurastra University, Rajkot, 26th December 2012
41. **Karak*, N.,** Vegetable oil based hyperbranched Polyurethanes Multiwalled carbon nanotubes nanocomposites, National conference on Smart Nanostructure, Tezpur University, 2011 (Invited talk)
42. **Karak*, N.,** Vegetable oil based polymer nanocomposites-present and future, National workshop on Recent trend in Nanoscience and Technology, Bahona College, May 20-21, 2011 (Invited talk)

43. Barua S., Konwarh R., Mondal M. and **Karak*, N.,** Antimicrobial and antilarvacidal silver nanocomposites through Greener approach, National workshop on Recent trend in Nanoscience and Technology, Bahona College, May 20-21, 2011 (Best poster awarded)
44. Konwarh R., Pramanik S., Barua R. and **Karak*, N.,** Fluorescence tailoring of polyaniline nanofiber-nanocomposites, National Workshop on Nuclear and Atomic Techniques Based Pure and Applied Sciences (NATPAS), organized by Tezpur University and UGC-DAE Consortium for Scientific Research, Kolkata Centre, 1 -3 February 2011 (Best poster awarded)
45. Konwarh R, Pramanik S, Boruah R and **Karak*, N.,** *Bioconjugation of Polyaniline nanofibers for avant garde applications.* National Conference on Smart Nanostructures, organized by Department of Physics, Tezpur University, January 18-20, 2011
46. **Karak*, N.,** Green polymer nanocomposites-Multifaceted Application, National workshop on Emerging Trend in Nanochemistry, St. Anthony's College, 2011 (September 20-21) (Invited talk)
47. Roy, B., Deka, H., and **Karak*, N.,** Antibacterial activity and photoluminescence behavior of Ag-decorated clay/hyperbranched epoxy nanocomposites, National conference on smart nanostructures (NCSN-2011), Tezpur (Assam), India, January 18-20, 2011.
48. Das, G., and **Karak*, N.,** Biodegradation, cytotoxicity and performance studies of vegetable oil based hyperbranched polyurethane modified biocompatible sulfonated epoxy resin/clay nanocomposites, National Conference on Smart Nanostructures (NCSN), Tezpur University, Assam, 2011.
49. Das, G., Kalita, R.D., Deka, H., Buragohain, A.K., and **Karak*, N.,** Antibacterial properties of copper nanoparticles decorated nanoclay epoxy nanocomposites, National Conference on Chemistry and Chemical Technology and Society (NCCCTS), Tezpur University, Assam, 2011.
50. Konwar, U., and **Karak*, N.,** "Hyperbranched polyether modified vegetable oil based polyester/clay nanocomposites" National Conference on Smart Nanostructures (NCSN 2011) Tezpur University, Assam, January 2011.
51. Barua, S., Das, I. and **Karak*, N.,** Epoxy cured, pumpkin seed oil modified polyester resin as surface coating material, National Conference on Chemistry and Chemical Technology and Society (NCCCTS), Tezpur University, Assam, 11-12Nov' 2011.
52. Thakur, S. and **Karak*, N.,** Castor oil modified hyperbranched polyurethane multiwalled carbon nanotubes nanocomposites as shape memory materials, National Conference on Chemistry and Chemical Technology and Society (NCCCTS), Tezpur University, Assam, 11-12Nov' 2011.
53. Pramanik, S., **Karak*, N.,** Sagar, K., and Konwar, B. K., Prospect and synthesis of castor oil modified highly branched poly(ester amide) resins, National Conference on Chemistry and Chemical Technology and Society (NCCCTS), Tezpur University, Assam, 11-12Nov' 2011.
54. Das, B., Konwar, U. and **Karak*, N.,** Sunflower oil modified hyperbranched polyurethane/magnetic nanoparticles nanocomposites for biomedical application, National Conference on Chemistry and Chemical Technology and Society (NCCCTS), Tezpur University, Assam, 11-12Nov' 2011.
55. De, B. and **Karak*, N.,** Castor oil based polyester modified hyperbranched epoxy, National Conference on Chemistry and Chemical Technology and Society (NCCCTS), Tezpur University, Assam, 2011.
56. Kalita, H. and **Karak*, N.,** Mesua ferrea L. seed oil modified hyperbranched polyurethane as shape memory materials, National Conference on Chemistry and Chemical Technology and Society (NCCCTS), Tezpur University, Assam, 11-12Nov' 2011.
57. Roy, B., Konwar U. and **Karak*, N.,** Blend of hyperbranched epoxy resin and vegetable oil based highly branched polyester for advanced surface coating applications, National Conference on Chemistry and Chemical Technology and Society (NCCCTS), Tezpur University, Assam, 11-12Nov' 2011.
58. Konwar U. and **Karak*, N.,** Vegetable oil based polyester nanocomposites: An advanced materials for Today's Humanity, National Conference on Chemistry and Chemical Technology and Society (NCCCTS), Tezpur University, Assam, 11-12Nov' 2011.

59. Konwarh R, Pramanik S., Boruah R and **Karak*, N.,** *Tailoring the photoluminescent attributes of nanoscaled polyaniline*, National Workshop on Nuclear and Atomic Techniques Based Pure and Applied Sciences (NATPAS), organized by Tezpur University and UGC-DAE Consortium for Scientific Research, Kolkata Centre, 1 -3 February 2011
60. **Karak*, N.,** Polymers-Wonderful materials for today's society- INSPIRE Program, Tezpur University, 14 - 18th June, 2010 (Invited talk)
61. Saikia J P, Konwarh R, Konwar B K, Borah N N and **Karak*, N.,** Immobilization of polyphenolic compound from Colocasia esculenta onto polymer supported magnetic nanoparticles and their efficacy as antioxidant and antimicrobial agent. National Seminar on Medicinal Plant and Microbe Diversity and their pharmaceuticals, Tezpur University, December 19-21, 2010
62. Dutta S. and **Karak*, N.,** Development of low molecular weight green polyurethanes from Nahar plant of Assam, The 54th Annual Technical Session of Assam Science Society", Tezpur University, Assam. Feb 4, 2009
63. Roy B. and **Karak*, N.,** Prospect and synthesis of hyperbranched polyether polyol, National Seminar on Emerging Trends in Polymer Science and Technology (POLY 2009), Surashtra University, Gujarat Oct. 8-10, 2009
64. Konwar U and **Karak*, N.,** *Mesua ferrea* L. seed oil based water borne polyester resin/ clay nanocomposites for coating applications, National Seminar on Emerging Trends in Polymer Science and Technology (POLY 2009) Surashtra University, Gujarat, Oct. 8-10, 2009
65. Dutta S and **Karak*, N.,** Epoxy modified bio based polyurethane nanocomposites an advanced material, National Seminar on Emerging Trends in Polymer Science and Technology (POLY 2009) Surashtra University, Gujarat, Oct. 8-10, 2009
66. Deka H. and **Karak*, N.,** Fluorescence characteristic of hyperbranched polyurethane/silver nanocomposites, National Seminar on Photonics and Quantum Structures, Tezpur University, Assam November 4-6, 2009
67. Das G. and **Karak*, N.,** Prospects and challenges of vegetable oil based epoxy/clay nanocomposites, National Seminar on Photonics and Quantum Structures, Tezpur University, Assam, November 4-6, 2009
68. Konwar U. and **Karak*, N.,** Fluorescence properties of renewable oil based polyester/clay silver nanocomposites, National Seminar on Photonics and Quantum Structures, Tezpur University, Assam November 4-6, 2009 (Best poster awarded)
69. **Karak*, N.,** Mahapatra S.S., Dutta S., Deka H., Konwar U, Das G. and Konwarh R., Polymer nanocomposites-multifaceted advanced materials for today's society, National Seminar on Photonics and Quantum Structures, Tezpur University, Assam, November 4-6, 2009, (Invited talk)
70. **Karak*, N.,** Polymers from vegetable oils and their uses, National Seminar on Green polymers and emerging technologies, IICT, Hyderabad 2008 (Invited talk)
71. Dutta S., **Karak*, N.,** and Baruah S.D., Jute reinforced MFLSO based polyurethane biocomposites, National Workshop on Recent Trends in Polymer Science, IASST, Guwahati-35, Assam 2008
72. Saikia J.P., Dutta S., **Karak*, N.,** and Konwar B.K., Microbial degradation of *Mesua ferrea* L. seed oil based polyurethane film, "International Symposium on Microbial Biotechnology: Diversity, Genomics and Metagenomics", University of Delhi, New Delhi 2008
73. Mahapatra S.S., Das G. and **Karak*, N.,** Hyperbranched polyamines as potential agents for epoxy resin, COMME 2008, NMRl Thane, India 2008
74. Dutta S. and **Karak*, N.,** Enhanced property evaluation of *Mesua ferrea* L. seed oil based polyurethane thin films, National Symposium Condensed Matter Days 2007, NIT, Orissa 2007
75. Borah J. and **Karak*, N.,** Synthesis and characterization of hyperbranched polyethersulfone as a flame retardant material, National Symposium on Emerging Trends in Polymer Science and Technology, IIT Kharagpur 2006
76. Mahapatra S.S., Borah J. and **Karak*, N.,** Dendritic polymers-synthesis to applications, National Conference on advanced Frontier Polymer Sciences and Technology, Kolkata 2006, (Invited talk)
77. Dutta S. and Karak N., Epoxy modified *Mesua ferrea* L. seed oil based polyurethane: a dielectric

material, CMDAYS'06, Tezpur University 2006

78. Mahapatra S.S., and **Karak*, N.,** Highly branched polymeric additives for commercial polyofefines, CMDAYS'06, Tezpur University 2006
79. Dutta S. and **Karak*, N.,** Polyurethanes from a vegetable oil, Macro2006, Pune 2006
80. Karak N., Dutta N., and Dutta S., Studies on blends performance of *Mesua ferrea* L. seed oil based polyurethanes with bisphenol-A based epoxy resin, National seminar on polymer materials: present status and future prospects, Ahmadabad 2005
81. Dutta S. and **Karak*, N.,** Utilization of a local renewable resource, Nahar seed oil for the preparation of polyurethane resins, National Seminar on Current Trends in Chemical Research, Chaiduar College, Gohpur 2005.
82. Dutta N., Mahapatra S.S., **Karak*, N.,** and.Dolui S.K., Development of polyester and polyesteramide from Nahar oil, National Workshop on Science and Technology for Regional Development: Case for North-East India, IIT Guwahati 2004
83. **Karak*, N.,** and Kim J.B., Photoresist polymers for post exposure delay stability in ArF lithography, Indian Rubber Conference, IIT Kharagpur 2002
84. Dutta N., **Karak*, N.** and Dolui S.K., Development of polyester resins from vegetable oil, National Seminar on Smart Polymers, Alahabad 2002
85. Borah J., and **Karak*, N.,** Synthesis and characterization of hyperbranched polyethers, National Conference on high performance polymers and its applications, Kolkata 2002
86. Chowdhuri A., Dolui S.K, Maji T., Karak N., Sunar K., Majumdar G.K.D. and Murti Y.V.G.S., Studies of quantum dots in CdS films in polymer matrix, National Seminar on Polymer Research in Academy, Industry and R&D Organization, Calcutta 1998
87. **Karak*, N.,** and Maiti S., Biological activity of antimony containing polymers, 33rd Annual Convention of Chemists, Coimbatore 1996
88. **Karak*, N.,** and Maiti S., Prospect of synthesis and application of antimony containing polymers, 32nd Annual Convention of Chemists, Jaipur 1995

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I certify that the particulars furnished above are true in all respects based on my best knowledge and believe.

(Niranjan Karak)