

Dr. Bishnu Prasad Koiry

Assistant Professor
B. Voc Rubber Technology
Tripura University (A Central University)
Suryamaninagar-799022
Tripura, India
Email ID: bishnuiitkgp@gmail.com
Phone: +91-9436918764



Current Position

I have been working as an Assistant Professor in B. Voc Rubber Technology, Tripura University (A Central University) since 16th November 2015 to till date.

Education

Ph.D in Polymer Science (2015)

Institution: Rubber Technology Centre, IIT Kharagpur, India.

Supervisor: Prof. Nikhil K. Singha

Thesis Title: “A Tailor-Made Polyfluoroacrylate, its Random and Block Copolymers via Reversible Addition-Fragmentation Chain Transfer (RAFT) Polymerization.”

Master of Technology (M. Tech.) in Rubber Technology (2007-2009)

Institution: Rubber Technology Centre, IIT Kharagpur, India.

Title: Copolymerization of styrene and 2-ethylhexylacrylate by atom transfer radical polymerization (ATRP) and Emulsion Polymerization.

Supervisors: Prof. Nikhil K. Singha (RTC, IIT Kgp) and Dr. S. Roy (Asian Paints Limited, Mumbai)

Area of Research Interest

- Synthesis and characterization of well-defined polymers via RDRP techniques like RAFT polymerization, ATRP.
- Synthesis of polymers using various techniques like bulk, solution, emulsion and miniemulsion polymerization.
- Synthesis of homo and copolymers (random, block copolymer) and their characterization.
- Polymers for application in Adhesives, Paints and Coatings.

Experience in Modern Instrumental Techniques

GPC, MALDI-TOF-MS, NMR, UV-Vis, FT-IR, GC, UTM, ODR, MDR, Mooney Viscometer, Brabender plasticoder, Compression molding, Two-roll mill mixing, TGA, DSC, DIN Abrader, Hardness tester (Shore A and Shore D), Optical microscopy, Goniometer (Contact angle), SEM, TEM, AFM and XRD.

Research Experience

- ✓ I worked in an Industrial Project in collaboration with Asian Paints Limited (R&D), Mumbai. One international journal article has been published in *Journal of Fluorine Chemistry* from that project.
- ✓ I worked in the **Indo-Swiss Joint Research Program** with Prof. H-A Klok of EPFL, Switzerland in 2010-2011. From that project one international journal article has been published in *Biomacromolecules*.

List of Publications

- Anjana Dhar, Upendra Singh, **Bishnu P. Koiry**, Bikash Baishya, Dhruva J. Haloi “Investigation of microstructure in poly(methyl methacrylate) prepared via ambient temperature ARGET-ATRP: a combined approach of 1D and 2D NMR spectroscopy.” *Journal of Polymer Research*, 27, 174 (2020).
- Anjana Dhar, **Bishnu P. Koiry**, Dhruva J. Haloi "Synthesis of poly(methyl methacrylate) via ARGET ATRP and study of the effect of solvents and temperatures on its polymerization kinetics." *International Journal of Chemical Kinetics*, 50, 10, 757-763 (2018).

- **Bishnu P Koiry**, Lakshmi K. Singh, Arindam Chakraborty, R.K. Nath “Non-ionic fluorinated amphiphilic block copolymer via RAFT polymerization and their application as surfactant in emulsion polymerization.” **Materialstoday: Proceedings**, Volume 5, Issue 1, Part 2, Pages 2040-2048 (2018).
- Lakshmi K. Singh, **B.P. Koiry** “Natural Dyes and their Effect on Efficiency of TiO₂ based DSSCs: a Comparative Study.” **Materialstoday: Proceedings**, Volume 5, Issue 1, Part 2, Pages 2112-2122 (2018).
- **Koiry, B. P.**; Ponnupandian S.; Choudhury S.; Singha N. K. “Synthesis and morphologies of fluorinated diblock copolymer prepared via RAFT polymerization.” **Journal of Fluorine Chemistry**, 189, 51-58 (2016).
- **Koiry, B. P.**; Chakraborty, A; Singha, N. K. “Non-ionic fluorinated amphiphilic block copolymers via RAFT polymerization and its application as surf-RAFT in miniemulsion polymerization.” **RSC Advances**, 5, 15461-15468 (2015).
- **Koiry, B. P.**; Klok, H.-A.; Singha, N. K. “RAFT copolymerization of 2,2,3,3,4,4,4-heptafluorobutyl acrylate with butyl acrylate and determination of their reactivity ratios.” **Journal of Fluorine Chemistry**, 165, 109-115 (2014).
- **Koiry, B. P.**; Singha, N. K. “Copper mediated controlled radical copolymerization of styrene and 2-ethylhexyl acrylate and determination of their reactivity ratios.” **Frontiers in Chemistry: Polymer Section**, 2, 1-8 (2014).
- Haloi, D. J.; **Koiry, B. P.**; Mandal, P. Singha, N. K. “Synthesis and characterization of Poly(2-ethyl hexyl acrylate) via ATRP, RATRP and FRP.” **Journal of Chemical Sciences**, 125, 791-797 (2013).
- **Koiry, B. P.**; Moukwa, M.; Singha, N. K. “Reversible addition fragmentation chain transfer (RAFT) polymerization of 2,2,3,3,4,4,4-hepta fluoroacrylate (HFBA).” **Journal of Fluorine Chemistry**, 153, 137-142 (2013).
- Singha, N. K.; Gibson, M. I.; **Koiry, B. P.**; Danial, M.; Klok, H.-A. "Side-Chain Peptide-Synthetic Polymer Conjugates via Tandem "Ester-amide/thiol-ene" Post-Polymerization Modification of Poly(pentafluorophenyl methacrylate) Obtained Using ATRP." **Biomacromolecules**, 12, 2908-2913 (2011).
- Dhar A.; Singh U.; **Koiry, B. P.**; Baishya B.; Haloi D. J. “Investigation of Microstructure in Poly(methyl methacrylate) Prepared via Ambient Temperature ARGET-ATRP: A Combined Approach of 1D and 2D NMR Spectroscopy”. (Communicated)
- “Dithiocarbamate based RAFT agent for the polymerization of fluorinated monomer 2,2,3,3,4,4,4-heptafluorobutyl acrylate.” (Under preparation)

Papers presented in National/International Conferences

- *63rd Annual Technical Session of Assam Science Society & National Conference on Applied Sciences, Sustainable and Evolving Technologies (ASSET-2018)* jointly organized by Bodoland University and Central Institute of Technology at CIT Kokrajhar from March 9th to 11th March, 2018. Delivered lecture as an Invited Speaker on “Synthesis, Characterization and Application of Fluorinated polymers via RAFT polymerization” by **Bishnu P Koiry**.
- National Conference on Materials, Condensed Matter and Theoretical Physics (**NCMCTP-2018**) as **National Organizing Committee Member** which was held at **ADP College (Under Gauhati University), Nagaon, Assam, India**. Delivered lecture on “Natural Rubber: its importance and applications to finished products” as **Invited Speaker** during 20th & 21st December 2018.
- “Non-ionic fluorinated amphiphilic block copolymer via RAFT polymerization and their application as surfactant in emulsion polymerization” by **Bishnu P Koiry**, Lakshmi K. Singh, Arindam Chakraborty, R. K. Nath, **International Conference on Material Science (ICMS 2017)**, Department of Physics, Tripura University (A Central University), Tripura, February 16-18, 2017.
- “Copolymerization of 2,2,3,3,4,4,4-Heptafluorobutyl Acrylate (HFBA) with Butylacrylate (BA) Via RAFT Polymerization and Determination of Reactivity Ratio by Different Methods.” by **Bishnu P. Koiry**, S. Ata, Nikhil K. Singha, ICRRM, Rubber Technology Centre, IIT Kharagpur, March 6-9, 2013.
- “Random and Block Copolymers of 2-Ethylhexylacrylate and Styrene via Atom Transfer Radical Polymerization (ATRP).” by **Bishnu P. Koiry**, S. Ata, Nikhil K. Singha, *Advances in Polymer Science and Rubber Technology (APSRT)*, IIT Kharagpur, March 3-5, 2011.
- “AB and ABA block copolymers of Styrene and 2-Ethylhexyl acrylate by Atom Transfer Radical Polymerization (ATRP).” by **Bishnu P. Koiry**, S. Ata, Nikhil K. Singha, *Symposium on Polymer Science (SPS-2011)*, IISER Kolkata, December 10, 2011.

- “Atom Transfer Radical Polymerization of 2-Ethylhexyl Acrylate Effect of Different Additives.” by Dhruba J Haloi, **Bishnu P. Koiry**, Nikhil K. Singha, 2nd International Symposium Frontiers in Polymer Science, at Centre de Congres, Lyon, France May 29-31 xx (2011).
- “Copolymerization of Styrene and 2-Ethylhexylacrylate via Atom Transfer Radical Polymerization (ATRP).” by **Bishnu P. Koiry**, Nikhil K. Singha MACRO, IIT Delhi, December 15-17, 2010.

Citation and h index

- Citation: 101
- h-index: 4
- i10-index: 3

Academic Honors and Awards

- Qualified Graduate Aptitude Test in **Engineering (GATE) Examination 2006, AIR 137 (Chemistry)**
- **2007-2009:** Obtained fellowship for pursuing **M. Tech in Rubber Technology at Indian Institute of Technology Kharagpur (IIT), Kharagpur, West Bengal, India.**
- **2009 onwards:** Selected as Institute Fellow and got fellowship for doing Ph. D at Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India.
- Delivered lecture as **Invited speaker in National Conference “Applied Sciences, Sustainable & Evolving Technologies (ASSET) & 63rd Annual Technical Session of Assam Science Society”** at CIT, BTAD, Kokrajhar, Assam during 9-11th March 2018.
- Actively participated in National Conference on Materials, Condensed Matter and Theoretical Physics (NCMCTP-2018) as **National organizing Committee Member** which was held at **ADP College (Under Gauhati University), Nagaon, Assam, India.** Also delivered lecture as **Invited Speaker** during 20th & 21st December 2018.
- Successfully organized International e-Poster Conference on Current Outlook in Material Science and Engineering (COMSE-2k20) on 15-16th May 2020 as one of the Organizing Committee members. It was on social media platform Facebook because of the lockdown situation due to Covid-19 pandemic.

Additional Information

- ✓ Invited as an **External Expert for the Syllabus Revision Committee on MIT, Aurangabad.**
- ✓ Selected as a **Reviewer of 61st DAE Solid State Physics Symposium (SSPS) 2016 and SPSS 2017** and also reviewed a few papers of this Symposium.
- ✓ **Co-Author of a Book** entitled as “Introduction to Computer and Computer Programming with Applications” for **B. Sc (Physics) 4th & 6th Semester of Gauhati University, Assam,** Published by Ashok publication, Guwahati (2017). **ISBN: 978-93-84095-72-7.**
- ✓ Published a **Book Chapter** entitled “Natural Rubber: its importance and applications to finished products” in **Edited Book** titled as “Advances in Nuclear Physics and Condensed Matter”, Editor: Dr. Lakshmi K. Singh, **Published by EBH publishers (India) (2019). ISBN: 978-93-88881-20-3.**

Extracurricular activities

- I have worked as Secretary, Rubber Society of Rubber Technology Centre (2009-2015).
 - I was **elected as Second Senate Member (Student Gymkhana) of B. C. Roy Hall of Residence, IIT Kharagpur (2011-2012).**
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