

DR. JYOTISHMOY BORAH

Department of Chemistry, B.B. Engineering College

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Academic Profile:

B.Sc., Nowgong College, Assam (India), 1996

M.Sc., Gauhati University, Assam (India), 1998

Ph.D., Tezpur University, Assam (India), 2007

PDF, Qingdao University of Science & Technology, PR China, 2007-2009

Guide ship:

Recognized Ph.D. guide of Bodoland University (A state University of Assam)

Ph.D. Students:

Ms Sarmistha Chakravorty

Mr Chandan Brahma

Mr Jabin Chandra Roy

Research Interests:

- Development of hyperbranched polymers and their biological applications
- Development of flame retardant polymers and their applications
- Rubber/Plastic Blending
- Natural Dyes

Research experience:

- About six years research experience particularly in the field of **Polymer Synthesis** at Tezpur Central University.
- Two years at Qingdao University of Science and Technology, PR China in the field of **rubber/plastics blending** and **waste rubber/asphalt blending**

Professional Experience:

- Lecturer in Chemistry Department, Kaliabor College, Gauhati University (Assam) teaching chemistry in HS, BSc (Pass and Major) from January 2000 to October 2007.
- Guest Professor in Electromechanical Engineering Department, Qingdao University of Science and Technology, PR China teaching B. Tech. programme (foreign students section) from February 2008-August 2009.
- Lecturer in Chemistry Department, Kaliabor College, Gauhati University (Assam) teaching chemistry in HS, BSc (Pass and Major) from November 2009 to August 2010.
- Assistant Professor in Chemistry Department, B.B. Engineering College, Gauhati University (Assam) teaching chemistry of BE 1st & 2nd Semester from 10th August, 2010 to till date.
- Guest Faculty in Bongaigaon Polytechnic, Bongaigaon, Assam, from 2011-2013.

Reviewing Manuscripts for publication in

- European Polymer Journal (SCI)
- Journal of Petroleum and Gas Engineering (Academic press)
- Journal of Brewing and Distilling (Academic press)
- Journal of Materials Sciences and Applications (AASCIT)
- Reviewed more than 50 articles of proceeding for Asian Workshop on Polymer Processing held in 2009 (EI)
- Reviewed articles of proceeding for 4th International Conference on Biology, Environment and Chemistry, IPCBEE vol. (2013), IACSIT Press, Singapore

List of significant publications (Only Selected Publications)

- i. **Borah J.** and Karak N., "Synthesis and characterization of a novel hyperbranched polyether", *Polym Int*, **2004**, 53, 2026-2030.

- ii. **Borah J.** Mahapatra S. S., Saikia D., and Karak N., “Physical, thermal, dielectric and chemical properties of a hyperbranched polyether and its linear analog”, *Polym Degd Stab*, **2006** 91, 2911-2916.
- iii. **Borah J.** and Karak N., “Synthesis and characterization of hyperbranched polyethersulfone as a flame retardant material”, *Int J Plastic Technol (Springer)*, **2006**, 10, 598-604.
- iv. **Borah J.** and Karak N., “Blends of triazine based hyperbranched polyether with LDPE and plasticized PVC”, *J Appl Polym Sci*, **2007**, 104, 648-654.
- v. **Borah J.**, Wang C.S., Hyperbranched polymers as novel flame retardant material, *APPF (China)*, **2009**, 78-83
- vi. **Borah J.**, Wang C.S. and Karak N., “Synthesis and characterization of flame retardant hyperbranched polyether”, *Chinese J Polym Sci*, **2010**, 28, 1-12.
- vii. **Borah J.**, Lin G. and Wang C.S., “Hyperbranched polymers as novel flame retardant material”, *Adv Mater Res*, **2010**, 87-88, 271.
- viii. **Borah J.** and Karak N., “Hyperbranched polyethers and polyamines – a review”, **2013 (Submitted)**.
- ix. **Borah J. and Wang C.S.**, Morphological and Flame retardant Behaviors of Rubber-Modified Asphalt, *Key Engg Mater*, **2012**, 501, 532-537.
- x. **Borah J.**, Study on the Compatibility and Mechanical Properties of BR-LDPE-PVC Blends, *Int Proced Chem Bio Envir Engg*, **2013**, 58, 37-40.
- xi. **Borah J.**, A history of Polymer-Present and Future, *Chem Edn*, **2014**, 23, 38-42.
- xii. **Borah J.**, Application of Flame Retardant Hyperbranched Polymer in BR-LDPE-PVC Ternary Blends, *Int. Int J Mater Sci Innov*, **2015**, 03, 55-59.
- xiii. **Borah J.**, Two Dimensional Molecules: Graphene, *Chem Edn*, **2015 (In press)**

Some Selected Conferences Presentation (Published as Proceeding):

- i. **Borah J.** and Karak N., “Synthesis and characterization of hyperbranched polyethers”, National Conference on High Performance Polymers and its Applications”, at Kolkata, December **2002**.
- ii. Karak N., **Borah J.**, and Mahapatra S.S., “Synthesis and characterization of novel linear and hyperbranched polyethers”, International Symposium on Macro- and Supra-Molecular Architecture, at M.U., USA, June **2004**.
- iii. Mahapatra S.S., **Borah J.** and Karak N., “Dendritic polymers-synthesis to

- applications”, National Conference on Advanced Frontier Polymer Sciences and Technology, at Kolkata, February **2006**.
- iv. **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, at IIT Kharagpur, September **2006**.
- v. Mahapatra S.S., **Borah J.**, and Karak N., Hyperbranched Polymers – Multipurpose Polymeric Additives, International Conference on Polymer Processing, ICPP 2007, BUCT, Beijing, China, May 18-20, **2007**.
- vi. **Borah J.**, Karak N., Hyperbranched polyethers as flame retardant materials, International Seminar on Frontiers in Polymer Science and Technology, POLY 07, Guwahati, India, November 1-3, **2007**.
- vii. **Borah J.**, Wang C.S. and Karak N., Triazine based hyperbranched polyethers as flame retardant polymeric additives, 9th International Seminar on Polymer Science and Technology (**ISPST 09**), Tehran, October 17-21, **2009**.
- xiv. **Borah J.**, Application of Intumescent Flame Retardant (IFR) Materials in Polyolefins, National Seminar on Polymer Science and Technology: Vision and Scenario, Chaiduar College, Assam, February 11-12, **2011**
- xv. **Borah J** and Wang C.S., Morphological and Flame retardant Behaviors of Rubber-Modified Asphalt, **APPF (China)**, **2011**.
- xvi. **Borah J.**, Morphological Study of BR-LDPE-PVC Blends by Melt Mixing, National Seminar: Recent Challenges for Chemical Research and Practices: Moulding Chemistry towards a better tomorrow (RCCRP), Darrang College, Assam, November 8-10, **2012**.
- xvii. **Borah J.**, Study on the Compatibility and Mechanical Properties of BR-LDPE-PVC Blends, 4th International Conference on Biology, Environment and Chemistry, Phuket, Thailand, November 23 -24, **2013**

Workshop Participated

Science Academics’ Lecture Workshop on Modern Trends in Chemistry and Chemistry Education, 22nd Nov. to 23rd Nov. 2012, North Bengal University, India

Books Published:

1. A text book on Environmental Science for undergraduate level (Gauhati University & Dibrugrah University syllabus), title- **“Paribesh Adhayan”** Publisher: Kaliabor College Bigayan Mancha, Assam
2. A practical book on Science for class X standard (SEBA syllabus), title- **“Utchya Madhyamic Beboharic Bigyan”** Publisher: Assam Book Depot., Assam
3. A text book on Chemistry for HS-XI standard (NCERT syllabus), title- **“Utchator Madhyamic Rosayana”** Publisher: Assam Book Depot., Assam (ISBN 978-81 920160-3-0)
4. A text book on Chemistry for HS-XII standard (NCERT syllabus), title- **“Utchator Madhyamic Rosayana”**, Publisher: Assam Book Depot. Assam (ISBN 978-93 82384-07-6)
5. A book on Chemistry Problem for HS, and competitive examinations title- **“Chemistry Through Problems”**, Publisher: Kalyani Publishers, Ludhiana, India (ISBN 978 -93 272-1705-6)
6. A practical book on Chemistry for class XII standard (NCERT syllabus), title- **“Utchator Madhyamic Beboharic Rosayana”**, Publisher: Kalyani Publishers, Ludhiana, India (ISBN 978-93 272-2468-9)
7. A text book on Chemistry for Polytechnics, title- **“Chemistry for Polytechnic”**- First Semester, Publisher: Kalyani Publishers, Ludhiana, India (ISBN 978-93 272-2453-5)
8. A text book on Chemistry for Polytechnics, title- **“Chemistry for Polytechnic”**- Second Semester, Publisher: Kalyani Publishers, Ludhiana, India (ISBN 978-93-272-3685-9)
9. A text book on Chemistry for B.Sc. standard (GU syllabus), title- **“Snatak Moholar Rosayana”**- First Semester, Publisher: Assam Book Depot. Assam (ISBN 978-93 82384-44-1)
10. A text book on Chemistry for B.Sc. standard (GU syllabus), title- **“Snatak Moholar Rosayana”**- Second Semester, Publisher: Assam Book Depot. Assam (ISBN 978-93 82384-45-8)
11. A practical book on Chemistry for class XI standard (NCERT syllabus), title- **“Utchator Madhyamic Beboharic Rosayana”**, Publisher: Kalyani Publishers, Ludhiana, India (ISBN 978-93 272-3045-1)

12. A practical book on Chemistry for class XII standard (NCERT syllabus), title- **“Higher Secondary Practical Chemistry”**, Publisher: Kalyani Publishers, Ludhiana, India (ISBN 978-93 272-3038-3)
13. A text book on Chemistry for B.Sc. standard (GU syllabus), title- **“Snatak Moholar Rosayana”**- Third Semester, Publisher: Assam Book Depot. Assam (ISBN 978-93 82384-50-2)
14. A text book on Chemistry for B.Sc. standard (GU syllabus), title- **“Snatak Moholar Rosayana”**- Fourth Semester, Publisher: Assam Book Depot. Assam (ISBN 978-93 82384-48-9)
15. A text book on Chemistry for B.Sc. standard (GU syllabus), title- **“Snatak Moholar Rosayana”**- Fifth Semester, Publisher: Assam Book Depot. Assam (ISBN 978-93 82384-62-5)
16. A text book on Chemistry for B.Sc. standard (GU syllabus), title- **“Snatak Moholar Rosayana”**- Six Semester Publisher: Assam Book Depot. Assam (ISBN 978-93 82384-51-9)
17. A text book on Chemistry for BE/B.Tech. standard (All India’s Universities), title- **“Engineering Chemistry”**- 60% completed Publisher: Oxford University Press, New Delhi.
18. A practical book on Chemistry for class B.Sc. standard (Gauhati University syllabus), title- **“Undergraduate Practical Chemistry”**, Publisher: Assam Book Depot, Assam, India (ISBN 978-93 82384-56-6)
19. A practical book on Chemistry for class B.Sc. standard (Dibrugarh University syllabus), title- **“Practical Chemistry”**, Publisher: Kalyani, Publishers, Ludhiana, India (ISBN 978-93-272-4093-1)
20. A text book on Chemistry for B.Tech. standard (ASTU), title- **“Chemistry for Engineers”**- 60% completed Publisher: Kalyani, Publishers, Ludhiana, India.
21. PET: A Guide Book, Assam Book Depot, Assam, India (In Press)

Book Chapter

“Dendrimers and Hyperbranched Polymers” Advanced Sensor And Detection Materials, Ch 12, WILEY-Scrivener Publisher’s, USA (ISBN 978-1-118-77348-2)

Popular Science Articles:

About 10 popular science articles published in daily news-papers and Science magazine

Invited Talk:

- A talk for high school teacher on **Science Subject** organized by Kunjalata Mahanta Foundation at Kaliabor College (2001)
- A talk for B.ED. teachers on **Environmental pollution** organized by ECERT, Shillong at Kaliabor B.ED. College (2007)
- Chair Person in UGC sponsored National Seminar, Chaiduar College, 11th -12th February, (2011)
- Co-Chair, 4th International Conference on Biology, Environment and Chemistry, Phuket, Thailand, 23rd to 24th Nov, 2013

Major Project Completed:

1. Development of flame retardant rubber modified asphalt concrete , Funding Agency: Shandong (China) Innovation Post doctor Foundation (**Grant No. 200803038**), RMB 20,000/-
2. Research on flame retardant rubber modified asphalt for highway construction superior material, China Post doctoral Science Foundation, (**Grant No. 20090451287**), RMB 40,000/-

Course Completed

- (i) Orientation Programme, from 24th February to 22nd March, 2003, Academic Staff College, Himachal Pradesh University, Shimla, India
- (ii) Winter School on Catalysis, 1st to 14th February, 2006, Dept. of Chemistry Tezpur University, Assam, India
- (iii) Short term course (one week), 19 to 23 Dec. 2011, NITTTR, Guwahati, Assam, India
- (iv) Refresher Course, from 21st Nov. to 11th Dec., 2012, Academic Staff College, North Bengal University, West Bengal, India
- (v) Short term course (one week), 15 to 19 July, 2013, NITTTR, Guwahati, Assam, India

- (vi) Orientation Programme, from 4th to 31st January, 2014, Academic Staff College, Burdwan University, WB, India
- (vii) Short term course (one week), 23rd to 27th June, 2014, NITTTR, Kolkata, West Bengal, India
- (viii) Short term course (one week), 18rd to 22nd May, 2015, NITTTR, Chandigarh, India

Academic Involvements:

- (i) Executive Member, Water Quality Analysis, Kaliabor Sub-Division (PHE), Govt. of Assam (India).
- (ii) Member, Anti-ragging Committee, B.B. Engineering College, Kokrajhar, Assam.
- (iii) Member, Research Promotion Group (ID 1216), Int. J. Material & Mechanical Engineering.
- (iv) Member, Editorial board, Res. Open J Chemical Engineering Material Sci. NY, USA
- (v) Member, Editorial Board, Res. Open J of Polymer Degradation and Stability, NY, USA
- (vi) Senior member (**Member NO.:100808**), Asia-Pacific Chemical, Biological & Environmental Engineering Society (APCBEEES), Hong Kong.
- (vii) Member, Technical Committee, 4th International Conference on Biology, Environment and Chemistry, Phuket, Thailand, 23rd to 24th Nov, 2013.
- (viii) Member, Editorial Board, Journal of Materials Sciences and Applications, American Association for Sci & Tech, USA
- (ix) Member, Technical Committee, 5th International Conference on Biology, Environment and Chemistry, San Diego, USA, 29rd to 30th Oct, 2014.
- (x) Member, Editorial Board, American Journal of Materials Research, American Association for Sci & Tech, USA