

PERSONAL PROFILE



1. **Name of the Teacher** : MADHURYA DEKA
2. **Department** : PHYSICS
3. **Designation** : PROFESSOR
4. **Email id** : madhuryya@rtuassam.ac.in
5. **Contact no.** : 9957565626
6. **Teaching Experience** : (up to 31st December, 2024)

Class	Teaching Experience (years)	Topics
UG	11	Modern Physics, Solid State Physics-1, Materials Science and Nanotechnology, Nuclear Physics-1, Electricity and Magnetism
PG	11	Solid State Physics, Atomic and Molecular Physics, Nuclear and Particle Physics, Physics of Thin Films, Low Temperature Physics, Nanoscience: Introduction and Applications, Experimental Techniques in Physics
PhD Course work	6	Research Methodology, Analytical Techniques in Physics

7. **Research area of interest:** Solid State Ionics, Electroactive Polymers, Novel and Advanced Materials for Energy Storage Technologies.
8. **Google Scholar ID** : <https://scholar.google.co.in/citations?user=BMTHWLUAJ&hl=en>
9. **Vidwan ID** : 587413
10. **Academic activities**

a. Seminar/Conference/Workshop attended:

- International Seminar on Interdisciplinary Approaches for a Sustainable World, 6-7 January, 2025, CNB, College, Bokakhat, Assam, India.
- International Conference on Recent Advances in Materials and Computational Methods (ICRAMCM-2024), 23-24 October, 2024, Arignar Anna Govt. Arts and Science College, Karaikal, Puducherry, India .
- Condensed Matter Days (CM DAYS- 2017), November 4-6, 2024, Dibrugarh University, Assam, India.
- 7th International Conference on Polymer Science and Technology, 10-13 February, 2023, IIT- Guwahati.
- International Conference on Engineering Sciences & Technologies for Environmental Care, 20 - 22 Feb, 2020, CSIR-North East Institute of Science & Technology, Jorhat, India
- National Seminar and workshop on Nanotechnology and Biotechnology in daily Life (NSW-ANBDL- 2019), 26-28 September, 2019, Sibsagar College, Sibsagar, India,
- National Conference on “GSES 2019”, Cotton University, Guwahati, 28-29 June, 2019 jointly organized by Cotton University and Assam Science Society.
- National Conference on Nanomaterials and its Applications (NCNA-2017), 20-21 September, 2017, D.R. College, Golaghat
- Condensed Matter Days (CM DAYS- 2017), 29-31 August, 2017, Tezpur University, Tezpur, Assam, India.
- International Conference on Renewable Energy (ICORE-2011), 2-4 November, 2011, Tezpur University, Tezpur, Assam, India.
- Condensed Matter Days (CM DAYS-2011), 24-26 August, 2011, Gauhati University, Assam, India.
- National Workshop on Nuclear and Atomic Techniques based Pure and Applied Sciences (NATPAS-2011), 1-3 February, 2011, Tezpur University, Tezpur, Assam, India.
- National Conference on Smart Nanostructures (NCSN-2011), 18-20 January, 2011, Tezpur University, Tezpur, Assam, India.
- National Conference on Condensed Matter Physics, 22-23 March, 2010, NEHU, Shillong, Meghalaya, India.
- International Conference on Fundamental and Applications of Nanoscience and Technology (ICFANT-2010), 9-11 December, 2010, Jadavpur University, Kolkata.
- 8th National Conference on Solid State Ionics (NCSSI-2009), 7-9 December, 2009, Dr. Hari Singh Gour University, Sagar (M.P.), India.
- National Seminar on Photonics and Quantum Structures (NSPQS-2009), 4-6 November, 2009, Tezpur University, Tezpur, Assam, India.

- Assam Science Society, 54th Annual Technical Session, 4 February, 2009, Tezpur University, Tezpur, Assam, India.
- Condensed Matter Days (CM DAYS-2008), 29-31 August, 2008, Visva-Bharati, Santiniketan, West Bengal, India.

b. Details of publications in UGC recognized/Peer reviewed/Indexed journals:

- Himadree Sarmah, Unnati Bora, Dipjyoti Bora, Karanika Sonowal, Lakshi Saikia, **Madhuryya Deka**, Enhanced ionic conductivity and electrochemical performance of environmental friendly guar gum-based bio polymer gel electrolytes doped with Al₂O₃ nanofibers for Li-ion batteries, International Journal of Biological Macromolecules 287 (2025) 138540. **IF = 7.7.**
- Masum Das, Madhabi Konwar, Utpal Sadhoni, Lakhya J. Borthakur, Utpal J. Mahanta, Lakshi Saikia, **Madhuryya Deka**, Scaling the ionic conductivity and electrochemical properties of bio-based gel polymer electrolytes reinforced with Al₂O₃ nanofibers for energy storage applications, Polymer Bulletin 82 (2025) 501–522. **IF = 3.1**
- Kishor Kalita, **Madhuryya Deka**, Mridula Baro, SILAR deposited Al-doped ZnO films for TCO applications, AIP Conference Proceedings 3198 (2025) 020064. **IF = 0.41.**
- Himadree Sarmah, Karanika Sonowal, Unnati Bora, Bitupon Boruah, Dipjyoti Bora, Ankur Gogoi, Jayanta K. Sarmah, Utpal J. Mahanta, Lakshi Saikia, **Madhuryya Deka**, Surface functionalized silica nanofiber cross-linked guar gum as novel nanocomposite polymer gel electrolytes towards green energy storage solutions Materials Science and Engineering B 310 (2024) 117764. **IF = 3.9.**
- Masum Das, Nishant Shukla, Bitupon Boruah, Ankur Gogoi, Lakshi Saikia, Swapnali Hazarika, Utpal J. Mahanta, Jayanta K. Sarmah, **M. Deka**, Cellulose acetate- based gel electrolytes grafted with surface-functionalized SiO₂ nanofiber for green energy storing applications, Colloids and Surfaces A 686 (2024) 133268. **IF = 4.9.**
- **M. Deka**, Yashibenla Longkumar, Bitupon Boruah, Himadree Sarmah, Madhabi Konwar, Lakhya J. Borthakur, Borax cross-linked guar gum hydrogel-based self-healing polymer electrolytes filled with ceramic nanofibers towards high-performance green energy storing applications, Reactive and Functional Polymers 195 (2024) 105822. **IF = 4.5.**
- Masum Das, Bitupon Boruah, Nishant Shukla, Ankur Gogoi, Munu Borah, Lakshi Saikia, Jayanta K. Sarmah, **M. Deka**, Aligning TiO₂ nanofiber for high ionic conductivity in cellulose acetate gel electrolytes, Materials Chemistry and Physics 314 (2024) 128841. **IF = 4.3.**
- Himadree Sarmah, Bitupon Boruah, Munu Borah, Nishant Shukla, Ankur Gogoi, Utpal J. Mahanta, Jayanta K. Sarmah, Lakshi Saikia, **M. Deka**, High ionic conductivity upon low electrolyte uptake in TiO₂ nanofiber-filled guar gum gel electrolytes, Materials Chemistry and Physics 307 (2023) 128239. **IF = 4.3.**
- Sandeepan Borah, Lakshi Saikia, Ankur K. Guha, **M. Deka**, SiO₂ nanofiber reinforced P(VdF-HFP) based microporous polymer electrolytes for advanced energy storage applications, Colloids and Surfaces A 673 (2023) 131819. **IF = 4.9.**
- Sandeepan Borah, A.K. Guha, Lakshi Saikia, **M. Deka**, Nanofiber induced enhancement of electrical and electrochemical properties in polymer gel electrolytes for application in energy storage devices, Journal of Alloys and Compounds 886 (2021) 161173. **IF = 5.8.**
- Sandeepan Borah, Jayanta K. Sarmah, **M. Deka**, Understanding uptake kinetics and ion dynamics in microporous polymer gel electrolytes reinforced with SiO₂ nanofibers, Materials Science and Engineering B, 273 (2021) 115419. **IF = 3.9.**
- Sandeepan Borah, **M. Deka**, Study of electrical and electrochemical properties of P(VdF- HFP)-MMT based nanocomposite gel polymer electrolytes for application in energy storage devices, Materials Science and Engineering B 263 (2021) 114822. **IF = 3.9.**
- Sandeepan Borah, **M. Deka**, Effect of silica nanofiber dispersion on electrochemical properties of cellulose acetate composite gel electrolytes, Materials Chemistry and Physics 252 (2020) 123218. **IF = 4.6.**
- Somik Banerjee, **M. Deka**, A. Kumar and Udayan De, Ion Irradiation Effects in some Electro-active and Engineering Polymers: Studies by Conventional and Novel Techniques, Defect and Diffusion Forum, 341 (2013) 1-49. **IF = 0.161.**
- **M. Deka**, A. Kumar, P. Chutia, Electrical and electrochemical properties of poly (methyl methacrylate) based nanocomposites gel polymer electrolytes dispersed with dedoped (insulating) polyaniline nanofibers, Ionics 19 (2013) 1367. **IF = 2.4.**
- **M. Deka**, A. Kumar, Dielectric and conductivity studies on 90MeV O⁷⁺ ion irradiated poly (ethylene oxide)/montmorillonite based single ion conductor, Journal of Solid State Electrochemistry 17 (2013) 977. **IF = 2.6.**
- **M. Deka**, A. Kumar, H. Deka, N. Karak, Ionic transport studies in hyperbranched polyurethane/clay nanocomposite gel polymer electrolytes, Ionics, 18 (2012) 181–187. **IF = 2.6.**
- A. Kumar, **M. Deka**, PEO/P(VdF-HFP) blend-based Li⁺ ion-conducting composite polymer electrolytes dispersed with dedoped (insulating) polyaniline nanofibers, Journal of Solid State Electrochemistry 16 (2012) 35-44. **IF = 2.6.**
- **M. Deka**, A. Kumar, Electrical and electrochemical studies of poly(vinylidene fluoride)-clay nanocomposite gel polymer electrolytes for Li-ion batteries, J. Power Sources, 196 (2011) 1358–1364. **IF = 8.1.**

- A. Kumar, **M. Deka**, PVdF-clay nanocomposite gel polymer electrolytes for Li-ion batteries, AIP Conference Proceedings 1349 (2011) 1303. **IF = 0.41**.
- **M. Deka**, A. Kumar, Enhanced electrical and electrochemical properties of PMMA-clay nanocomposite gel polymer electrolytes, Electrochimica Acta 55 (2010) 1836. **IF = 5.5**.
- A. Kumar, **M. Deka**, S. Banerjee, Enhanced ionic conductivity in oxygen ion irradiated poly(vinylidene fluoride-hexafluoropropylene) based nanocomposite gel polymer electrolytes, Solid State Ionics 181 (2010) 609. **IF = 3.0**.
- **M. Deka**, A. Kumar, "Enhanced ionic conductivity in novel nanocomposite gel polymer electrolyte based on intercalation of PMMA into layered LiV_3O_8 ", Journal of Solid State Electrochemistry 14 (2010) 1649. **IF = 2.6**.
- **M. Deka**, A.K. Nath, A. Kumar, Ionic conduction and phase separation studies in PEO-P(VdF-HFP)- LiClO_4 -dedoped polyaniline nanofiber composite polymer electrolytes – I, Indian Journal of Physics 84 (2010) 1299. **IF = 1.6**.
- A.K. Nath, **M. Deka**, A. Kumar, Ionic conduction and phase separation studies in P(VdF-HFP)- LiClO_4 -dedoped polyaniline nanofiber composite polymer electrolytes-II, Indian Journal of Physics 84 (2010) 1307. **IF = 1.6**.
- **M. Deka**, A. Kumar, Ionic transport in P(VdF-HFP)-PEO based novel microporous polymer electrolytes, Bulletin of Materials Science 32 (2009) 627. **IF = 1.9**.
- **M. Deka**, A.K. Nath, A. Kumar, Effect of dedoped (insulating) polyaniline nanofibers on the ionic transport and interfacial stability of poly(vinylidene fluoride-hexafluoropropylene) based composite polymer electrolyte membranes, Journal of Membrane Science 372 (2009) 188. **IF = 8.4**.

c. Publication of Chapter(s) in Books:

- Bitupon Boruah, Sandeepan Borah, **M. Deka**, Electroactive Polymer Based Nanostructures and Nanocomposites for Sensing Applications, Nanoscale Matter and Principles for Sensing and Labeling Applications, D. Mahanta and P. Chakraborty (Eds), Springer, Ch. 12, 2023, pp. 243-267, ISBN: 978-981-99-7847-2
- **M. Deka**, Historical developments of nanocomposite polymer electrolytes for advanced electrochemical device applications, Materials Science and Nanomaterials: Recent Advance and Applications, Surajit Konwar and Ankur Gogoi (Eds), Global Publishing House, Ch-1, 2014 ISBN – 978-93-81563-65-6.
- P. Chutia, **M. Deka**, A. Kumar, Effect of dedoped (insulating) polyaniline (PAni) nanofibers on electrical and electrochemical properties of PMMA based gel electrolytes, Energy Storage and Conversion: Materials and Devices, Ashok Kumar and Shyamal Kumar Das (Eds), Narosa Publishing House, Ch. 10, 2016, pp. 113-123, ISBN: 978-81-8487-578-2.
- A. Kumar, **M. Deka**, Polymer-clay nanocomposite electrolytes for rechargeable lithium batteries, Clay: Types, Properties and Uses, J.P. Humphrey and D.E. Boyd (Eds.), Nova Science Publishers Inc., Ch. 8, 2011, pp.275-300, ISBN: 978-1-61324- 449-4.
- **M. Deka**, A. Kumar, Nanocomposite polymer electrolytes for Li-ion batteries, Advances in Energy Research, Vol. 8, M. J. Acosta (Ed.), Nova Science Publishers Inc., Ch. 4, 2011, pp. 143-172, ISBN: 978-1-61324-208-7.
- A. Kumar, S. Banerjee, **M. Deka**, Electron microscopy for understanding swift heavy ion irradiation effects on electroactive polymers, Microscopy Book Series IV, Vol. 3, A. Mendez-Vilas and J. Diaz (Eds.), Formatex Research Center, 2010, pp. 1755-1768, ISBN (13): 978-84-614-6191-2.
- A. Kumar, **M. Deka**, Nanofiber reinforced composite polymer electrolyte membranes, Nanofibers, A. Kumar (Ed.), InTech, Ch. 2, 2010, pp. 13-38, ISBN: 978-953-7619-86-2.
- **M. Deka**, A. Kumar, Photoluminescence studies on PEO-PVdF blend polymer electrolytes, Proceedings of the XXXIII Optical Society of India (OSI) Symposium- 2007, P.P. Sahu and P. Deb (Eds.), pp. 244-246.

d. Research Projects:

(i). Completed

Principal Investigator/ Co-Investigator (s) and Department (s)	Title of the project	Funding Agency	Duration	Amount (Rs.)
Dr. Madhurya Deka, Dept. of Physics, The Assam Kaziranga University	Development of novel cellulose- ceramic nanofiber based biodegradable polymer electrolytes for Li-ion batteries	ASTEC	2 years	7,00,000/-

(ii). Ongoing

Principal Investigator/ Co-Investigator (s) and Department (s)	Title of the project	Funding Agency	Duration	Amount (Rs.)
Dr. Madhurya Deka, Dept. of Physics, The Assam Kaziranga University	Development of a self-maintaining vertical solar tree (Surya Taru) for agricultural and industrial applications	ASTEC	3 years	30,30,000/-

e. Number of citations received in the year : 756

f. h-index (based on Scopus/Web of science) : 13

g. Awards/Fellowship/Recognition at State/National/International level from Government/Recognized bodies :

Name of the Award/Fellowship/Recognition	Conferring agency
Senior Research Fellow	CSIR (2010)
Best Poster Award	National Conference on Condensed Matter Physics, 22-23 March, 2010, NEHU, Shillong

h. Extension Activities/Outreach programme conducted in collaboration with industry / community / NGOs /through NSS/NCC/Red Cross/ Youth Red Cross etc:

- Organized 3 days national workshop on “Synergies in Bioinformatics and Biophysics-Exploring Computational Approaches in Molecular Sciences” at The Assam Kaziranga University during 23rd to 25th October, 2024.
- Organized 3 days national workshop on “Astronomy and Astrophysics: Recent Trends and Scopes” at The Assam Kaziranga University during 6th to 8th March, 2017.
- Developed a research laboratory “Materials Research and Simulation Laboratory” at the Department of Physics, The Assam Kaziranga University.
- Organized “National Science Day” at The Assam Kaziranga University on 28th February, 2022.
- Organized “National Science Day” at The Assam Kaziranga University on 28th February, 2020.
- Organized “National Science Day” at The Assam Kaziranga University on 28th February, 2018.
- Key resource person at workshop cum guest lecture series on “Chemistry education for undergraduate: Opportunities and career prospects” organized by Sibsagar College on 22nd December, 2020.
- Key resource person at online webinar on “Quantum Evolution” organized by Duliajan College on 22nd July, 2020.
- Resource person at Refresher programme organized by Assam Higher Secondary Education Council, Assam on 3rd August, 2019.

i. Any other achievements:

Invited talk delivered: 23

No. of Ph.D. produced: 3

No. of Ph.D. pursuing: 5

International collaborators: (i) Prof. Soyoung Park
Dept. of Polymer Science and Engineering
Kyungpook National University
Daegu, Republic of Korea

(ii) Prof. Gabriel Anandrajah
UCL Energy Institute
University College London, London, UK

National collaborations: (i) Dr. Lakshi Saikia
Principal Scientist, Materials Science & Technology Division
CSIR, North East Institute of Science and technology, Jorhat, Assam

(ii) Dr. Ankur Kanti Guha
Dept. of Chemistry, Cotton University, Guwahati, Assam

(iii) Dr. Brij Kishore
Scientist, CSIR- CMERI, Durgapur, West Bengal



Signature of Teacher in full.....