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📍 Lumami, 798627

SKILLS

- Inorganic Chemistry
- Polymer Materials
- Electrochemistry

FELLOWSHIPS/ AWARD/ SCHOLARSHIPS

- NET (Lectureship) | CSIR-UGC
- NET (JRF-Lectureship) | CSIR-UGC
- National Scholarship | Delhi University
- Award for a paper presented at 'International Symposium on Advances in Electrochemical Science and Technology' | SAEST
- Felicitation | Cachar College Chemical Society
- Young Scientist Award for Best Oral Presentation | Solid State Ionic Society of India & Tezpur University

DR. NURUL ALAM CHOUDHURY

EDUCATIONAL QUALIFICATIONS

Doctor of Philosophy in Chemistry from Indian Institute of Science | Bengaluru, India

- Thesis Title - *Studies on Polymer Hydrogel Electrolytes for Application in Electrochemical Capacitors and Direct Borohydride Fuel Cells.*
- Specialization in Materials for electrochemical energy systems

M.Sc. in Chemistry Delhi University | Delhi, India

- Chemistry (Inorganic Chemistry specialization)

B.Sc. from Assam University | Assam, India

- Subjects taken - Chemistry (Honors), Physics, Mathematics

EXPERIENCE

May 2015 - Current

Assistant Professor Nagaland University | Lumami

- Teaching and Research

October 2013 – April 2015

Assistant Professor (Contract) Nagaland University | Lumami

- Teaching and M.Sc.
- Project Guidance

April 2012 – September 2013

Postdoctoral Fellow Queen's University | Kingston, Canada

- Research, Lab set-up, and Lab management

January 2011 – January 2012

Postdoctoral Research Associate Washington University | St. Louis, USA

- Research, Lab set-up, Lab management, Course development, and teaching

October 2009 – January 2011

Postdoctoral Researcher Ohio State University | Columbus, USA

- Research, Lab set-up, and Lab management

January 2001- July 2001

Project Assistant DDU Gorakhpur University | Gorakhpur, India

- Research and Lab management
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PUBLICATIONS

I. US Patents Publications (Total = 02)

1. Direct borohydride fuel cells with hydrogen peroxide oxidant, A. K. Shukla, R. Kothandaraman, and **N. A. Choudhury**, *US Patent Application Publication No.: US2005 / 0255341 A1*.
2. Chemically linked hydrogel materials and uses thereof in electrodes and/or electrolytes in electrochemical energy devices, Y. Sahai, **N. A. Choudhury**, and R. G. Buchheit, *US Patent Application Publication No.: US2011 / 0305970 A1*.

II. Publications in Peer-reviewed Journals: (Total = 21)

Total Cumulative Impact Factor: 137.751

1. KI-doped redox-active gelatin chemical hydrogel membrane electrolytes for solid-state electrical double layer capacitors. D. Kamei & **N. A. Choudhury**, (2024). *Materials Today Chemistry* (Vol. 37, p. 101891). (Journal Publisher: Elsevier, **Journal Impact factor = 7.3**)
2. Supramolecular Co (II) complexes based on dithiolate and dicarboxylate ligands: Crystal structures, theoretical studies, magnetic properties, and catalytic activity studies in photocatalytic hydrogen evolution. Journal of Adhikari, S., Sheikh, A. H., Kansız, S., Dege, N., Baildya, N., **N. A. Choudhury** et al. 2023, August. *Molecular Structure*. (Journal Publisher: Elsevier, **Journal Impact factor = 3.8**)
3. Antiproliferative evaluation and supramolecular properties of a Pd (II) complex harvested from benzil bis (pyridyl hydrazone) ligand: Combined experimental and theoretical studies. *Inorganic Chemistry Communications*. Adhikari, S., Hussain Sheikh, A., Baildya, N., Mahmoudi, G., **Choudhury, N. A.**, et al. 2023, (Journal Publisher: Elsevier, **Journal Impact factor = 3.8**)
4. Syntheses, crystal structures, theoretical studies, and anticancer properties of an unsymmetrical schiff base ligand N-2-(6-methylpyridyl)-2-hydroxy-1-naphthaldimine and its Ni(II) complex. Bhattacharjee, T., Adhikari, S., Sheikh, A. H., Mahmoudi, G., Mlowe, S., et al. 2022, December. *Journal of Molecular Structure*. (Journal Publisher: Elsevier, **Journal Impact factor = 3.8**)
5. Chitosan hydrogel-based electrode binder and electrolyte membrane for EDLCs: experimental studies and model validation, **N. A. Choudhury**, P. W. C. Northrop, A. C. Crothers, S. Jain, and V. R. Subramanian, *J. Appl. Electrochem.*, 42 (2012) 935-943. (Journal Publisher: Springer, **Journal Impact factor = 2.9**).
6. High performance and Eco-friendly Chitosan Hydrogel Membrane Electrolytes for Direct Borohydride Fuel Cells, **N. A. Choudhury**, J. Ma, and Y. Sahai, *J. Power Sources*, 210 (2012) 358-365. (Journal Publisher: Elsevier, **Journal Impact factor = 9.2**).

7. Chitosan Chemical Hydrogel Electrode Binder for Direct Borohydride Fuel Cells, **N. A. Choudhury**, Y. Sahai, and R. G. Buchheit, *Electrochem. Commun.*, 13 (2011) 1-4. (Journal Publisher: Elsevier, **Journal Impact factor = 5.4**).
8. Polyvinyl Alcohol Chemical Hydrogel Electrode Binder for Direct Borohydride Fuel Cells, **N. A. Choudhury**, Y. Sahai, and R. G. Buchheit, *J. Electrochem. Soc.*, 158 (2011) B712-B716. (Journal Publisher: The Electrochemical Society, **Journal Impact factor = 3.9**).
9. High-Performance Polymer Chemical Hydrogel-based Electrode Binder Materials for Direct Borohydride Fuel Cells, **N. A. Choudhury**, J. Ma, Y. Sahai, and R. G. Buchheit, *J. Power Sources*, 196 (2011) 5817-5822. (Journal Publisher: Elsevier, **Journal Impact factor = 9.2**).
10. Performance Study of Direct Borohydride Fuel Cells Employing Polyvinyl Alcohol Hydrogel Membrane and Nickel-based Anode, J. Ma, **N. A. Choudhury**, Y. Sahai, and R. G. Buchheit, *Fuel Cells*, 11 (2011) 603-610. (Journal Publisher: Wiley, **Journal Impact factor = 2.8**).
11. A high-performance direct borohydride fuel cell employing cross-linked chitosan membrane, J. Ma, **N. A. Choudhury**, Y. Sahai, and R. G. Buchheit, *J. Power Sources*, 196 (2011) 8257- 8264. (Journal Publisher: Elsevier, **Journal Impact factor = 9.2**).
12. A Comprehensive Review of Direct Borohydride Fuel Cells, J. Ma, **N. A. Choudhury**, and Y. Sahai, *Renew. Sustain. Energy Rev.*, 14 (2010) 183–199. (Journal Publisher: Elsevier, **Journal Impact factor = 15.9**).
13. Hydrogel-polymer electrolytes for electrochemical capacitors: an overview, **N. A. Choudhury**, S. Sampath, and A. K. Shukla, *Energy Environ. Sci.*, 2 (2009) 55–67. (Journal Publisher: The Royal Society of Chemistry, **Journal Impact factor = 32.5**).
14. Poly (vinyl alcohol) hydrogel membrane as electrolyte for direct borohydride fuel cells, N. A. Choudhury, S. K. Prashant, S. Pitchumani, P. Sridhar, and A. K. Shukla, *J. Chem. Sci.*, 121 (2009) 647–654. (Journal Publisher: Indian Academy of Sciences, **Journal Impact factor = 1.406**).
15. Hydrogel membrane electrolyte for electrochemical capacitors, S. Sampath, N. A. Choudhury, and A. K. Shukla, *J. Chem. Sci.*, 121 (2009) 727–734. (Journal Publisher: Indian Academy of Sciences, **Journal Impact factor = 1.406**).
16. Gelatin hydrogel electrolytes and their application to electrochemical supercapacitors, **N. A. Choudhury**, S. Sampath, and A. K. Shukla, *J. Electrochem. Soc.*, 155 (2008) A74–A81. (Journal Publisher: The Electrochemical Society, **Journal Impact factor = 3.9**).
17. A phenyl-sulfonic acid anchored carbon-supported platinum catalyst for polymer electrolyte fuel cell electrodes, G. Selvarani, A. K. Sahu, **N. A. Choudhury**, P. Sridhar, S. Pitchumani, and A. K. Shukla, *Electrochim. Acta*, 52 (2007) 4871–4877. (Journal Publisher: Elsevier, **Journal Impact factor = 6.6**).
18. Cross-linked polymer hydrogel electrolytes for electrochemical capacitors, **N. A. Choudhury**, A. K. Shukla, S. Sampath, and S. Pitchumani, *J. Electrochem. Soc.*, 153 (2006) A614–A620. (Journal Publisher: The Electrochemical Society, **Journal Impact factor = 3.9**).

19. An alkaline direct borohydride fuel cell with hydrogen peroxide as oxidant, **N. A. Choudhury**, R. K. Raman, S. Sampath, and A. K. Shukla, *J. Power Sources*, 143 (2005) 1–8. (Journal Publisher: Elsevier, **Journal Impact factor = 9.2**).
20. A high output voltage direct borohydride fuel cell, R. K. Raman, **N. A. Choudhury**, and A. K. Shukla, *Electrochem. Solid-State Lett.*, 7 (2004) A488–A491. (Journal Publisher: The Electrochemical Society, **Journal Impact factor = 2.321**).
21. Carbon-supported Pt-Fe alloy as a methanol-resistant oxygen-reduction catalyst for direct methanol fuel cells, A. K. Shukla, R. K. Raman, **N. A. Choudhury**, K. R. Priolkar, P. R. Sarode, S. Emura, and R. Kumashiro, *J. Electroanal. Chem.*, 563 (2004) 181–190. (Journal Publisher: Elsevier, **Journal Impact factor = 3.218**).

IV. Publications in Conference Proceedings: (Total = 01)

1. N. A. Choudhury, “Cross-linked Chitosan Hydrogels for Direct Borohydride Fuel Cells”, Proceedings of the International Conference on Advances in Functional Materials (ICAFM- 2017), Organized jointly by Central University of Tamil Nadu (India), Anna University (India), and University of Oslo (Norway), held during January 6-8, 2017, Editors: P. Ravindran and R. Vidya, ISBN: 978-93-80366-35-7.

Google Scholar Citations

	All	Since 2019
Citations	2212	664
h-index	16	11
i10-index	17	12

Conference presentations:

1. N. A. Choudhury, “Redox-active Glutaraldehyde-crosslinked Gelatin Chemical Hydrogel Membrane Electrolytes with/without KI-Dopant for High-performing solid-state EDLCs”, International Conference on Energy Conversion and Storage (IECS-2023), Advanced Centre for Energy Storage and Conversion of the energy Consortium, Indian Institute of Technology Madras, held during January 18-20, 2023.
2. N. A. Choudhury, “Cross-linked Chitosan Hydrogels for Direct Borohydride Fuel Cells”, International Conference on Advances in Functional Materials (ICAFM-2017), Organized jointly by Central University of Tamil Nadu (India), Anna University (India), and University of Oslo (Norway), held during January 6-8, 2017.

3. N. A. Choudhury, "Poly(vinyl alcohol) and Chitosan-based Chemical Hydrogel Electrode Binders for Direct Borohydride Fuel Cells and Supercapacitors", Eleventh National Conference on Solid State Ionics (NCSSI-11), Organized by Tezpur University in Association with Indian Solid State Ionics Society, held during December 21-23, 2015.
 4. N. A. Choudhury, "Polymer-based Electrode Binders for Application in Fuel Cells", National Seminar on 'Globalization, Development and Environment with Special Reference to North- East India, Organized by Nagaland University Teachers Association (Lumami), Nagaland University, Lumami, Nagaland (India) held during March 19-20, 2015.
 5. N. A. Choudhury, J. Ma, Y. Sahai, and R. G. Buchheit, "Studies on Polymer-based Novel Electrode Binder Materials for Direct Borohydride Fuel Cells", One-Week Short-Term Course on Renewables In Science and Engineering, NIT Silchar (India) held during January 10 - 14, 2014.
 6. N. A. Choudhury, M. Skerit, P. G. Jessop, B. Peppley, and B. Davis, "Materials Development for Thermally Regenerative Fuel Cells", Green Chemistry Summit, Montreal (Canada) held during June 5-7, 2013.
 7. N. A. Choudhury and V. R. Subramanian, "Supercapacitor employing chitosan hydrogel- based electrode binder", 220th Electrochemical Society Meeting & Electrochemical Energy Summit, Boston (USA) held during October 9-14, 2011.
 8. N. A. Choudhury, S. Sampath, and A. K. Shukla, "Gelatin chemical hydrogel electrolytes for electrochemical capacitors", International Symposium on Advances in Electrochemical Science and Technology, Goa (India) during November 28-30, 2006.
 9. N. A. Choudhury, A. K. Shukla, S. Sampath, and S. Pitchumani, "Electrochemical capacitor based on poly (vinyl alcohol) / poly (acrylic acid) blend gel electrolyte", International Conference on Electrochemical Power Systems, Hyderabad (India) December 20-21, 2004.
 10. Attended in the 223rd Electrochemical Society Meeting, Toronto (Canada) held during May 12–16, 2013).
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Faculty Development Programs (FDP) attended

1. Participated and got an "A" grade in a one-week Online National Faculty Development Program on "e-Content Development", organized by Guru Angad Dev Malaviya Mission Teacher Training Centre, SGTB Khalsa College, University of Delhi, held from 10th October to 16th October 2023.
2. Participated and got an "A+" grade in a one-week Online National Faculty Development Program on "Design, Development, and Delivery of MOOCs Using Four Quadrants", jointly organized By SIES (NERUL) College of Arts, Science, and Commerce, Navi Mumbai and Guru Angad Dev Teaching Learning Centre, SGTB Khalsa College, University of Delhi under the Pandit Madan

Mohan Malaviya National Mission on Teachers and Teaching (PMMMNTT) of Ministry of Education, held on 14th October to 20th October 2022.

3. Participated and got an “A+” grade in a one-week Online National Faculty Development Program on “Basics of Research Methodology and Issues in Plagiarism (An Interdisciplinary Approach)”, organized by Guru Angad Dev Teaching Learning Centre, a Centre under the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNTT) of the Ministry of Education and Department of Business Economics, SGTB Khalsa College, University of Delhi, held on 31st May to 06th June 2022.

Membership in Professional Bodies

Sl. No.	Name of Professional Body	Membership Type	Membership No
I	The Electrochemical Society, USA	Annual	351801
II	Cachar College Chemical Society, India	Life	A 006

Research Guidance

Sl. No	Name of the Scholar	Joining Year
1	Mr. Afzal Hussain Sheikh	2018
2	Mr. Duangailung Kamei	2019
3	Mr. Dipankar Hazarika	2021
4	Ms. Marjo A. Kichu	2022
5	Mr. Nuphizo Shijoh	2023

M.Sc. Project Guidance

Total numbers of M.Sc. project Guidance Till 2023: 21

Teaching experience:

1. Post-Graduate: Presently teaching Inorganic Chemistry to P.G. students in Nagaland University.
2. Under-Graduate:
 - Prepared a study module on polymer-based materials for electrochemical supercapacitors for “Advanced Energy Lab Course: EECE 439” and co-taught it to a class of U.G. students during the Fall Quarter of 2011 at Washington University (USA).
 - Was involved in summer internship training of two U.G. students (one from IIT Gandhinagar and the other from North Carolina State University) in 2011 at

Washington University. (Project title: Supercapacitors employing cross-linked chitosan-based electrode binder and electrolyte membrane-experimental studies and model validation). This work resulted in a peer-reviewed journal publication.

3. Ph.D. Level: Was involved in training of a Ph.D. student at Ohio State University (USA).

Experience in setting up and maintenance of laboratories

- **Washington University**
 - Designed and set up an experimental laboratory for supercapacitor research and teaching within a short span of time and with limited budget.
 - Was appointed as the Environmental Health & Safety (EHS) contact for the laboratory to make it EHS compliant.
 - Was a volunteer member of the Green Lab Initiative Committee that has been set up to make EECE department energy-efficient and environmentally sustainable.
 - **Ohio State University:**
 - Set up a fully functional experimental laboratory for fuel cell research within a short span of time.
 - Was appointed as the EHS contact for the laboratory to make it EHS compliant.
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Professional Training Received

- Received WHMIS training from EHS Department of Queen's University on research safety and waste management.
 - Received training from EHS Department of Queen's University on uses of fire extinguishers.
 - Received training from EHS Department of Washington University on research safety and waste management.
 - Received training from Sustainability Department of Washington University on how to reduce energy consumption and manage laboratory wastes in a sustainable manner.
 - Received training from EHS Department of Ohio State University on research safety and waste management.
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Manuscript Reviewer for the following Peer-Reviewed International Journals

- Journal of Power Sources
 - Materials Chemistry and Physics
 - Electrochemistry Communications
 - Journal of the Electrochemical Society
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Experience in writing Research Proposals/Reports:

1. Conceptualized and prepared a collaborative research proposal for funding under URSA program of Washington University. The proposal, worth \$25,000, was funded in the following year.
2. Conceptualized and prepared a collaborative research proposal for funding by the Third Frontier Fuel Cell Program of State of Ohio at Ohio State University. The proposal was short-listed but not funded because of lack of funds.

3. Was involved in preparation of annual report for ‘Research Experiences for Undergraduates’ program of National Science Foundation (REU/NSF) at Washington University.

Research and Development Fundings

Sl. No.	Funding Agency	Amount	Period	Title
1	UGC-Startup Grant	10,000,00	2017-2020	Development of Cost-effective, Hydrophilic, and High-performance Electrode Binders Comprising of Polymer Chemical Hydrogels for Solid-state Supercapacitors
2	DST-SERB Core-Research Grant	36,83,885	2018-2021	Development of Novel, Cost-effective, and High-performance Polymer Membrane Electrolytes Comprising of Redox Mediator/Incorporated Cross-linked Polymer Hydrogels for Solid-state Supercapacitors