

Curriculum Vitae
Jahangir Masud
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Grand Forks, ND

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SUMMARY

Experience material scientist & electrochemist in the field of electrochemical energy storage & conversion, especially water electrolysis, fuel cells, supercapacitors & CO₂ to fuels, electrochemical corrosion studies, and non-enzymatic biosensing. Managed 10+ cross-functional experts in a multicultural environment. Experience in DOE grants and proposal writing. Actively seeking a challenging research/scientific position in a research institute.

EDUCATION

Doctor of Science, Chemical Science and Engineering (Formally known as Department of Electronic Chemistry), Tokyo Institute of Technology. Japan, 2011

Thesis: Studies on Preparation and Electrocatalysis of Tantalum Oxide-Modified Electrodes

MS in Organic Chemistry, Shahjalal University of Science & Technology, Bangladesh, 2003

Thesis: Chemical Investigation of Citrus Macroptera.

BS in Chemistry, Shahjalal University of Science & Technology, Bangladesh, 2001

PROFESSIONAL APPOINTMENTS

- 2019-Now Research Scientist, Energy & Environmental Research Center, Grand Forks, ND, USA.
Projects: 1. Carbon-free support materials for fuel cell catalyst
 2. Rare earth elements (REEs) and Li extraction from coal and brine solution.
 3. Electrochemical enhancement of ethanol fermentation.
 4. Electrochemical corrosion studies of SS316L
 5. Electrochemical Ammonia synthesis
- 2014-2019 Research Associate, Chemistry, Missouri S & T, Rolla, MO, USA
Projects: 1. Transition Metal based catalyst for energy storage & conversion
 2. Non-Enzymatic sensors
- 2012-2014 Postdoctoral Fellow, Chemical & Petroleum Engineering, University of Kansas,
Lawrence, KS, USA
Project: Highly active and stable electrocatalyst for HOR/HER in H₂-Br₂ fuel cell applications
- 2011-2012 Postdoctoral Fellow, Clean Energy Research Center, University of Yamanashi, Kofu,
Yamanashi, Japan
Project: Highly CO-tolerant PtRu/CB catalyst for anode in PEM Fuel cell
- 2004-2008 Quality Control Officer, Essential Drugs Company Ltd., Dhaka, Bangladesh

TEACHING & MENTORING

Instructor CHEM 2319, Inorganic Chemistry Laboratory, **Spring Semester 2018**. Received 3.25/4.0 average rating for teaching effectiveness from student evaluations

TA CHEM 2319, Inorganic Chemistry Laboratory, **Spring Semester 2015**

TECHNIQUES, SOFTWARE & INSTRUMENTATION

- Catalysts / Thin films/semiconductor synthesized by using different techniques, such as electrodeposition, hydrothermal, solvothermal, CVD, the reflux column, FIB, etc.
- Surface modification using vacuum coating, etching, etc.
- Surface characterization techniques, e.g. SEM, TEM, EDS, XRD, XPS, Optical microscope, etc.
- Analytical techniques: FTIR, UV-visible, HPLC, GC-MS, NMR, ICP-MS, TGA, etc.
- Electrochemical techniques: CV, LSV, SWV, DPV, EIS, RRDE, chronoamperometry, chronopotentiometry, MEA, Fuel cell, battery, etc.
- Software: Zview, XPSPEAK41, MS Office, Origin, ImageJ, Matlab, etc

PUBLICATIONS

Published (peer-reviewed)

32. M. Nath, U. De Silva, H. Singh, M Perkins, W. Liyanage, S. Umapathi, S. Chakravarty, **J. Masud**. Cobalt Telluride: A Highly Efficient Trifunctional Electrocatalyst for Water Splitting and Oxygen Reduction. *ACS Appl. Energy Mater.* **2021**, <https://doi.org/10.1021/acsaem.1c01438>.
31. U. De Silva, J. See, W. Liyanage, **J. Masud**, J. Wu, W. Yang, W. T. Chen, D. Prendergast, M. Nath. Understanding Structural Evolution of Nickel Chalcogenide Electrocatalyst Surface for Water Oxidation. *Energy Fuels* **2021**, 35, 5, 4387.
30. I.M. Abdullahi, **J. Masud**, P. C. Ioannou, E. Ferentinos, P. Kyritsis, M. Nath. A Molecular Tetrahedral Cobalt–Seleno-Based Complex as an Efficient Electrocatalyst for Water Splitting. *Molecules* **2021**, 26, 945.
29. A. Saxena, W. Liyanage, **J. Masud**, S. Kapila and M. Nath. Selective Electroreduction of CO₂ to Carbon-rich Products by Simple Binary Copper Selenide Electrocatalyst. *J. of Mater. Chem. A*, **2021**, 9, 7150.
28. S. Umapathi, H. Singh, **J. Masud**, M. Nath. Nanostructured copper selenide as an ultrasensitive and selective non - enzymatic glucose sensor. *Mater. Adv.*, **2020**, 2, 927.
27. S. Umapathi, J. Masud, H. Coleman, M. Nath. Electrochemical sensor based on CuSe for determination of dopamine. *Microchim Acta* **2020**, 187, 440.
26. B. G. Amin, **J. Masud**, M. Nath. Facile One-Pot Synthesis of NiCo₂Se₄-rGO on Ni foam for High Performance Hybrid Supercapacitor. *RSC Adv.* **2019**, 9, 37939-37946.
25. B. G. Amin, U. D. Silva, **J. Masud**, M. Nath. Ultrasensitive and Highly Selective Ni₃Te₂ as a Nonenzymatic Glucose Sensor at Extremely Low Working Potential. *ACS Omega* **2019**, 4, 11152-11162.

24. B. G. Amin, **J. Masud**, M. Nath. Non-enzymatic glucose sensor based on CoNi₂Se₄/rGO nanocomposite with Ultrahigh sensitivity at low working potential. *J. Mater. Chem. B* **2019**, *7*, 2338-2348.
23. **J. Masud**, W. P. R Liyanage, X. Cao, A. Saxena and M. Nath. Copper Selenides as High-efficiency Electrocatalysts for Oxygen Evolution Reaction. *ACS Appl. Energy Mater.* **2018**, *1*, 4075-4083.
22. X. Cao, Y. Hong, N. Zhang, Q. Chen, **J. Masud**, M. A. Zaeem, M. Nath, Phase Exploration and Identification of Novel Multinary Transition Metal Selenides as High-efficiency Oxygen Evolution Electrocatalysts through Combinatorial Electrodeposition. *ACS Catal.* **2018**, *8*, 8273-8289.
21. U. De Silva, **J. Masud**, N. Zhang, Y. Hong, W. P. R. Liyanage, M. A. Zaeem, M. Nath, Nickel telluride as a bifunctional electrocatalyst for efficient water splitting in alkaline medium. *J. Mater. Chem. A* **2018**, *6*, 7608-7622.
20. M. Arivu, **J. Masud**, S. Umapathi, M. Nath. Facile synthesis of Ni₃B/rGO nanocomposite as an efficient electrocatalyst for the oxygen evolution reaction in alkaline media. *Electrochem. Commun.* **2018**, *86*, 121-125.
19. S. Umapathi, **J. Masud**, A. T. Swesi, M. Nath. FeNi₂Se₄-reduced Graphene Oxide Nanocomposite: Enhancing Bifunctional Electrocatalytic Activity for Oxygen Evolution and Reduction through Synergistic Effects. *Adv. Sustainable Sys.* **2017**, *1*, 1700086.
18. A. T. Swesi, **J. Masud**, W. P. R. Liyanage, S. Umapathi, E. Bohannon, J. Medvedeva, M. Nath. Textured NiSe₂ Film: Bifunctional Electrocatalyst for Full Water Splitting at Remarkably Low Overpotential with High Energy Efficiency. *Sci. Rep.* **2017**, *7*, 2401.
17. B. G. Amin, A. T. Swesi, **J. Masud**, M. Nath. CoNi₂Se₄ as an Efficient Bifunctional Electrocatalyst for Overall Water Splitting. *Chem. Commun.* **2017**, *53*, 5412-5415.
16. **J. Masud**, P. C. Ioannou, N. Levesanos, P. Kyritsis, M. Nath. A Molecular Ni-complex Containing Tetrahedral Nickel Selenide Core as Highly Efficient Electrocatalyst for Water Oxidation. *ChemSusChem* **2016**, *22*, 3128-3132 (**Selected as a front cover page & Cover profile**).
15. A. T. Swesi, **J. Masud**, M. Nath. Enhancing Electrocatalytic Activity of Ni₃Se₂ for Water Oxidation through Etching-induced Surface Nanostructuring. *J. Materials Research* **2016**, *31*, 2888-2896 (invited paper).
14. **J. Masud**, A. Swesi, W. P. R Liyanage and M. Nath. Cobalt Selenide Nanostructures: An Efficient Bifunctional Catalyst with High Current Density at Low Coverage. *ACS Appl. Mater. Interfaces* **2016**, *8*, 17292-17302.
13. **J. Masud**, S. Umapathi, A. Nikitaa and M. Nath. Iron phosphide nanoparticles as an efficient electrocatalyst for the OER in alkaline solution. *J. Mater. Chem. A* **2016**, *4*, 9750-9754.
12. **J. Masud** and M. Nath. Co₇Se₈ Nanostructures as Catalysts for Oxygen Reduction Reaction with High Methanol Tolerance. *ACS Energy Lett.* **2016**, *1*, 27-31.
11. A Swesi*, **J. Masud*** and M. Nath. Nickel Selenide As High-efficiency Catalyst for Oxygen Evolution Reaction. *Energy Environ. Sci.* **2016**, *9*, 1771-1782 (* *Equally Contributed*).
10. P. Desai, N. Ashokan, **J. Masud**, A. Pariti and M. Nath. Synthesis and magnetic properties of superparamagnetic CoAs nanostructures. *Materials Research Express* **2015**, *2*, 036102.

09. **J. Masud**, T. V. Nguyen, N. Singh, E. McFarland, M. Ikenberry, K. Hohn, C. J. Pan and B. J. Hwang. A Rh_xS_y/C Catalyst for the Hydrogen Oxidation and Hydrogen Evolution Reactions in HBr. *J. Electrochem. Soc.* **2015**, *162* (4), F455-F462.
08. **J. Masud**, J. Walter, T. V. Nguyen, G. Lin, N. Singh, E. McFarland, H. Metiu, M. Ikenberry, K. Hohn, C. J. Pan and B. J. Hwang. Synthesis and Characterization of Rh_xS_y/C Catalysts for HOR/HER in HBr. *ECS Transactions* **2014**, *58* (37), 37-43.
07. **J. Masud**, M. T. Alam, Z. Awaludin, M. S. El-Deab, T. Okajima and T. Ohsaka. Electrocatalytic oxidation of methanol at tantalum oxide–modified Pt electrodes. *J. Power Sources* **2012**, *220*, 399.
06. Z. Awaludin, M. Suzuki, **J. Masud**, T. Okajima and T. Ohsaka. Enhanced Electrocatalysis of Oxygen Reduction on Pt/TaO_x/GC. *J. Phys. Chem. C* **2011**, *115* (51), 25557.
05. M. T. Alam, **J. Masud**, M. M. Islam, T. Okajima and T. Ohsaka. Differential Capacitance at Au (111) in 1-Alkyl-3-Methylimidazolium Tetrafluoroborate Based Room-Temperature Ionic Liquids. *J. Phys. Chem. C* **2011**, *115* (40), 19797.
04. **J. Masud**, M. T. Alam, T. Okajima and T. Ohsaka. Catalytic Electrooxidation of Formaldehyde at Ta₂O₅ – Modified Pt Electrode. *Chem. Lett.* **2011**, *40* (3), 252.
03. **J. Masud**, M. T. Alam, M. R. Miah, T. Okajima and T. Ohsaka. Enhanced Electrooxidation of Formic Acid at Ta₂O₅ – Modified Pt Electrode. *Electrochem. Commun.* **2011**, *13*, 86.
02. M. R. Miah, **J. Masud** and T. Ohsaka. Kinetics of oxygen reduction reaction at electrochemically fabricated tin-palladium bimetallic electrocatalyst in acidic media. *Electrochim. Acta* **2010**, *56*, 285–290.
01. M. R. Miah, **J. Masud** and T. Ohsaka. In situ fabricated iodine-adlayer assisted selective electrooxidation of uric acid in alkaline media. *Electrochim. Acta* **2008**, *54*, 316

PATENT 1. Electrochemical Extraction of Metals, Provisional patent, 2021, Submitted.

RESEARCH EXPERIENCE

- 2019-now Energy & Environmental Research Center, University of North Dakota, Grand Forks, ND
- Initiated and conceptualized several independent projects, involving designing innovative materials for carbon-free support of Pt group catalysts, electrosynthesis of NH₃ and rare earth elements extraction.
 - Electrochemical enhancement of ethanol fermentation.
 - Monitored electrochemical corrosion of stainless steel 316L which, used as a pipeline in the gas field.
 - Writing proposal on energy storage & conversion for external & internal research grants
- 2014-2019 Nanomaterials Research, Chemistry, Missouri S & T, Rolla, MO, USA.
- Project:** Metal chalcogenide-based electro and photocatalyst for energy storage & conversion, Non-enzymatic sensors & CO₂ to fuel.
- Responsibilities:**
- Initiated, designed, and executed 3 independent projects, studying energy storage & conversion, non-enzymatic glucose sensing & supercapacitor.

- Successfully synthesized and characterized more than 12 inorganic nanomaterials (Ni_3Se_2 , NiSe_2 , Co_7Se_8 , Cu_2Se , FeNi_2Se_4 , CoNi_2Se_4 , Ni_3Te_2 , Ni_3B , CoAs , etc.) for water splitting and oxygen reduction reaction and published in several peer-reviewed journals.
- Wrote experimental, results & discussion section in NSF grant which secured \$300K+ fund.
- Managed and negotiated to order for lab consumables, equipment, and machine calibration services. Assisted in lab maintenance and organization
- Mentored and trained 4 PhD candidates, 3 MS students, 2 undergrads, and 4 high school students (summer intern) in research design, problem-solving & teamwork towards their research goals.

- 2012-2014 Chemical & Petroleum Engineering, University of Kansas, Lawrence, KS, USA.
Project: Highly active and stable electrocatalyst for HOR/HER in H_2 - Br_2 fuel cell applications.
Responsibilities:
- Planned, designed and synthesized catalysts (RhS based) for hydrogen, CNTs for bromine electrodes in H_2 - Br_2 flow battery which successfully progressed DOE ARPA-E project from phase-I to phase-II and phase-II to phase-III.
 - Independent development of a reactor for high pressure-high temperature catalyst synthesis.
 - Compiled reports, manuscripts, technical manuals for use by other scientists and funding agencies. Periodically presented progress results to Department of Energy (DOE) executive committee.
 - Collaborated in the development of new research proposals and new scientific initiatives and carried out collaborative research with post-doctoral fellows, research associates, PhD students
- 2011-2012 Clean Energy Research Center, University of Yamanashi, Kofu, Yamanashi, Japan
Project: Highly CO-tolerant PtRu/CB catalyst for anode in PEM Fuel cell.
Responsibilities:
- Synthesized n-Pt₂Ru₃/C (~3 nm) fuel cell catalyst by the nanocapsule method which showed excellent activity compared to commercially available one.
 - Designed and performed experiments in a controlled environment (presence of 100 % CO and high temperature) for hydrogen oxidation.
 - Prepared MEA and checked the degradation behavior at low and high humidity conditions.
 - Compiling research findings and drafting proposals.
- 2008-2011 Tokyo Institute of Technology, Yokohama, Japan
Project: Studies on Preparation and Electrocatalysis of Tantalum Oxide-Modified Electrodes.
Responsibilities:
- Designed water & air sensitive experiments in Ar-filled glove box to synthesize transition metal based electrocatalyst.
 - Electroplated tantalum from ionic liquid on different conducting substrates.
 - Performed small organic molecules (Methanol, Formic acid, Formaldehyde, etc.) electrooxidation and oxygen reduction reaction as fuel cell catalyst.
 - Developed in-situ iodine adlayer on Au (I-Au) for selective oxidation of uric acid (UA) in the presence of ascorbic acid (AA).

AWARDS & HONORS

- 2016 Registration Grant 2016 MRS Spring Meeting & Exhibits, Phoenix, Arizona, USA.

- 2010-2011 Monbukagakusho Scholarship, Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan.
- 2008-2011 Jasso Honors Scholarship, MEXT, Japan.
- 2010 Best Collaboration Award, International Forum on Multidisciplinary Education and Research for Energy Science, Tokyo Institute of Technology Energy Global COE., Okinawa, Japan.

GRANT & PROPOSAL EXPERIENCE

- 2021
5. PI: Lower-Temperature Electrochemical Reduction of Carbon Dioxide to Graphene. State Energy Research Center (SERC), North Dakota. Grant Amount: \$147K, 2021, Pending.
 4. Contributor: Tunable Electrochemical Pathway for High-Purity REM and CM. DOE, Grant Amount: \$150K, 2021 **Funded**
 3. Co-PI: Advanced Process for Separation and Purification of REE, DOE, EF, Concept paper, submitted (Not Encouraged).
 2. Co-PI: SiO₂ and Magneli Phase Composite (SAMPC) Support for Electrocatalyst, ARPA-E, Concept Paper, submitted (Not Encouraged).
 1. Co-PI: Tunable CO₂ Electro-Valorization to High-Value Liquid Products. ARPA-E, Concept Paper, submitted (Not Encouraged).
- 2020
7. Contributor: Ammonia-Based Energy Storage Technology (NH₃-BEST). DOE, FE, **Funded**. Grant Amount: \$250K.
 6. Co-PI: Electrochemical Extraction of REEs from North Dakota Lignite. State Energy Research Center (SERC), North Dakota. **Funded**. Grant Amount: \$25K
 5. Co-PI: Tunable CO₂ Electro-Valorization to High-Valued Liquid Products. DOE EERE. Not Selected. Grant Amount: \$2.5M
 4. Contributor: Cost-effective and High-throughput Manufacturing Processes for Integrated Membrane Electrode Assembly (IMEA). DOE, EERE. Not Selected. Grant Amount: \$4.1M
 3. PI: Efficient M-TiO₂ Support PGM Electrocatalyst for Direct Ethanol Fuel Cells (DEFCs), Submitted, ECS Toyota Young Investigator Fellowship.
- 2019
2. Co-PI: Electrochemical Pathways for Enhanced Ethanol Synthesis at Near-Zero CO₂ Emissions. State Energy Research Center (SERC), North Dakota. **Funded**. Grant Amount: \$150K
- 2017
1. Contributor: Designing efficient water splitting catalysts from transition metal chalcogenide. NSF, **Funded**. Grant Amount: \$303K

RECOGNITION & SERVICES

Guest and Topic Editor: Batteries, MDPI

Outstanding Reviewer for Green Chemistry, 2020.

Reviewer

ACS Applied Materials & Interfaces, Green Chemistry, Dalton Transaction, Nanoscale, Electrochimica Acta, Colloid & polymer science, Scientific Reports.

Media Coverage

My research work, titled "A Molecular Ni-complex Containing Tetrahedral Nickel Selenide Core as Highly Efficient Electrocatalyst for Water Oxidation" was selected as 16 important research stories of 2016 at Missouri S & T. Published in materials science news at *Phys.org* (<https://phys.org/news/2016-12-approach-hydrogen-production.html>).

Participated and demonstrated

Energy Research, Missouri Academy of Science, Missouri S & T, April 27, 2018

Panel Judge

Graduate Research Showcase, Missouri S & T, April 25, 2018

Organizing

Missouri Inorganic Day, Missouri S & T, April 21, 2018

CONFERENCE PRESENTATIONS

49. M. Nath, A. Saxena, H. Singh, U. De Silva, , W. P. R. Liyanage, **J. Masud**. "Slurry of Transition Metal Chalcogenides for Multifaceted Electrochemical Applications: Energy Conversion, Storage, Sensing & Catalysis" 239th ECS Meeting with the 18th International Meeting on Chemical Sensors (IMCS), May 30-June 3, 2021, Digital Meeting.

48. **J. Masud**, J. Thakare, T. Aulich, M. Mann, Z. Jullia. "Magneli Phase Titanium Oxide As a Support Materials for ORR Catalyst" AIChE Annual Meeting, November 16-20, 2020, San Francisco, CA, USA., Poster, Virtual.

47. **J. Masud**, J. Thakare, T. Aulich, M. Mann, Z. Jullia. "Magneli Phase Ti_9O_{17} - Catalyst Support Materials for ORR" Pacific Rim Meeting on Electrochemical and Solid-State Science (PRiME 2020), October 4-9, 2020, Honolulu, Hawaii, USA. Virtual.

46. **J. Masud**, J. Thakare, C. Martin. "Investigation of Electrochemical Corrosion of SS316L in Different Electrolyte" Pacific Rim Meeting on Electrochemical and Solid-State Science (PRiME 2020), October 4-9, 2020, Honolulu, Hawaii, USA. Virtual.

45. A. Saxena, **J. Masud**, and Manashi Nath. "Electroreduction of CO₂ to High-Value Products Using Selenide Based Electrocatalysts" 235th ECS Meeting, May 26-30, 2019, Dallas, TX, USA.

44. M. Nath, **J. Masud**, A. T. Swesi, U. De Silva, W. P. R. Liyanage, S. Umapathi and B. G. Amin. "Designing Smart Materials for Efficient Electrosynthesis of Fuels and Environmental Remediation: The Story of Transition Metal Chalcogenides" 233rd ECS Meeting, May 13-17, 2018, Seattle, WA, USA.

43. U. De Silva, D. Allada, **J. Masud**, and Manashi Nath. "Nanostructured Nickel Selenides for High Efficiency Water Oxidation Electrocatalysis" 233rd ECS Meeting, May 13-17, 2018, Seattle, WA, USA.

42. B. G. Amin, **J. Masud** and M. Nath. "CoNi₂Se₄ Nanoflakes—A Highly Efficient Electrocatalyst for Overall Water Splitting in Alkaline Medium" MRS Meeting and Exhibit, April 2-6, 2018, Phoenix, AZ, USA.

41. B. G. Amin, **J. Masud** and M. Nath. "CoNi₂Se₄ /Reduced Graphene Oxide on Ni Foam as a Highly Sensitive NonEnzymatic Glucose Sensor with Extremely Low Working Potential" MRS Meeting and Exhibit, April 2-6, 2018, Phoenix, AZ, USA.

40. M. Nath, **J. Masud**, A. Swesi, U. De Silva, B. Amin. S. Umapathi, W. P. R. Liyanage, Designing smart materials for efficient energy conversion: The story of transition metal chalcogenides" 255th ACS Meeting, March 18-22, 2018, New Orleans, LA, USA.

39. **J. Masud**, M. Nath, P. Kyritsis, "A Molecular Ni-Complex Containing Tetrahedral Nickel Selenide Core As Highly Efficient Electrocatalyst for Water Oxidation" 231th ECS Meeting, May 28-June 1, 2017, New Orleans, LA, USA.

38. M. Nath, A. T. Swesi, **J. Masud**, S. Umapathi, "Investigating Transition Metal Chalcogenides for Efficient Oxygen Evolution Electrocatalysis: The Effect of Covalency and Directionality" 231th ECS Meeting, May 28-June 1, 2017, New Orleans, LA, USA.
37. U. De Silva, W. P. R. Liyanage, **J. Masud**, M. Nath, "Highly Efficient Water Splitting with Nickel Telluride: A Novel Bifunctional Electrocatalyst in Alkaline Medium" 231th ECS Meeting, May 28-June 1, 2017, New Orleans, LA, USA.
36. S. Umapathi, **J. Masud**, N. Ashokan, M. Nath, "Iron Phosphide Nanoparticles As an Efficient Electrocatalyst for the Oxygen Evolution Reaction in Alkaline Solution" 231th ECS Meeting, May 28-June 1, 2017, New Orleans, LA, USA.
35. X. Cao, Q. Chen, **J. Masud**, M. Nath, "Combinatorial Synthesis of High-Efficiency Transition Metal Selenides As Oxygen Evolution Electrocatalysts" 231th ECS Meeting, May 28-June 1, 2017, New Orleans, LA, USA.
34. M. Nath, **J. Masud**, A. Swesi, S. Umapathi and B. Golrokhamen, "Investigating Transition Metal Chalcogenides for Efficient Oxygen Evolution Electrocatalysis—The Effect of Covalency and Lattice Directionality" MRS Spring Meeting and Exhibit, April 17-April 21, 2017, Phoenix, AZ, USA.
33. U. De Silva, W.P. Liyanage, **J. Masud**, M. Nath, "Nickel telluride as a bifunctional electrocatalyst for efficient water splitting in alkaline medium" 253rd ACS Meeting, April 2-6, 2017, San Francisco, CA, USA.
32. M. Nath, **J. Masud**, P. Kyritsis, "Molecular Ni-complex containing tetrahedral nickel selenide core as highly efficient electrocatalyst for oxygen evolution reaction in alkaline medium" 253rd ACS Meeting, April 2-6, 2017, San Francisco, CA, USA.
31. A.T. Swesi, **J. Masud**, M. Nath, "Enhancing electrocatalytic activity of bifunctional Ni₃Se₂ for overall water splitting through etching-induced surface nanostructuring" 253rd ACS Meeting, April 2-6, 2017, San Francisco, CA, USA.
30. A. Swesi, **J. Masud** and Manashi Nath "Morphology-Controllable Ni₃Se₂ Nanostructures; Synthesis, Characterization and Electrocatalytic Activity Towards Oxygen Evolution Reaction ", Pacific Rim Meeting on Electrochemical and Solid-State Science (PRiME 2016), October 2-7, 2016, Honolulu, Hawaii, USA.
29. A. Swesi, **J. Masud** and Manashi Nath " New Family of High-Efficiency Oxygen Evolution Electrocatalyst Based on Ni-Fe Mixed Chalcogenides", Pacific Rim Meeting on Electrochemical and Solid-State Science (PRiME 2016), October 2-7, 2016, Honolulu, Hawaii, USA.
28. **J. Masud**, A. Swesi, and M. Nath "Cobalt Selenide as an Efficient Trifunctional Catalyst for HER, OER and ORR," MRS Meeting and Exhibit, March 28- April 1, 2016, Phoenix, AZ, USA.
27. A. Swesi, **J. Masud**, and M. Nath "Electrocatalytic overall water splitting on nickel selenide (Ni₃Se₂)," 251st ACS National Meeting & Exposition, March 13-17, 2016. San Diego, CA, USA.
26. **J. Masud**, A. Swesi, N. Ashokan, U. D. Silva and M. Nath "Cobalt Chalcogenide Based Nanostructures: An Efficient Catalyst System for Electrochemical Energy Conversion," MRS Meeting and Exhibit, November 29- December 4, 2015, Boston, MA, USA.
25. A. Swesi, **J. Masud** and M. Nath "Ni₃Se₂ as High-Efficiency Catalyst for Oxygen Evolution Reaction," MRS Meeting and Exhibit, November 29- December 4, 2015, Boston, MA, USA

24. A. Swesi, **J. Masud** and M. Nath "New Family of High-Efficiency Oxygen Evolution Electrocatalyst Based on Ni-Fe Mixed Chalcogenides," MRS Meeting and Exhibit, November 29- December 4, 2015, Boston, MA, USA
23. **J. Masud**, A. Swesi and M. Nath " Novel Methanol-Tolerant Metal Selenide Based Chalcogenide Electrocatalysts for Oxygen Reduction in Alkaline Solution", 228th ECS Meeting, October 11-15, 2015, Phoenix, AZ, USA.
22. A. Swesi, **J. Masud** and Manashi Nath " Nickel Selenide As High-efficiency Catalyst for Oxygen Evolution Reaction ", 228th ECS Meeting, October 11-15, 2015, Phoenix, AZ, USA.
21. **J. Masud**, A. Swesi, W. P. Liyanage, N. Ashokaan and M. Nath, " Cobalt-Based Metal Chalcogenides Nanostructure Arrays as highly efficient bifunctional catalyst for Oxygen Reaction ", 250th ACS Meeting, August 16-20, 2015, Boston, MA, USA.
20. A. Swesi, **J. Masud** and M. Nath, " Transition metal selenide nanostructures as highly efficient catalysts for oxygen evolution reaction", 250th ACS Meeting, August 16-20, 2015, Boston, MA, USA.
19. **J. Masud**, A. Swesi and M. Nath, "Selenide as an efficient bifunctional catalyst for ORR and OER" 2015 Missouri Inorganic Day, May 9, 2015, Columbia, Missouri, USA.
18. **J. Masud**, A. Swesi and M. Nath " Patterned Electrodeposition of cobalt Selenide Nanostructure Arrays as a Highly Efficient Bifunctional Catalyst for Oxygen Reduction Reaction (ORR) and Oxygen Evolution Reaction (OER)", 227th ECS Meeting, May 24-28, 2015, Chicago, Illinois, USA.
17. **J. Masud**, A. Swesi and M. Nath " Patterned electrodeposition of cobalt selenide nanostructure arrays as effective ORR catalysts", 249th ACS Meeting, March 22- 26, 2015, Denver, Colorado, USA.
16. G. Lin, P. Y. Chong, T. V. Nguyen, **J. Masud**, R. Wycisk, and P. N. Pintauro, "Advanced Hydrogen-Bromine Flow Battery for Energy Storage", ECS and SMEQ Joint International Meeting, October 5-10, 2014, Cancun. Mexico.
15. T. V. Nguyen, V. Yarlagadda, D. Konwar, **J. Masud**, G. Lin, "Advances in H₂-Br₂ Fuel Cell Research", 225th ECS Meeting, May 11-16, 2014, Orlando, Florida, USA.
14. **J. Masud** and T. V. Nguyen, "Rhodium Sulfide Electrocatalysts for HER/HOR in HBr solution", 2nd Industrie De Nora Research Symposium, De Nora Tech, November 12 - 13, 2013, OH, USA.
13. **J. Masud**, J. Walter, T. V. Nguyen, G. Lin, N. Singh, E. McFarland, H. Meitu, M. Ikenberry, K. Hohn, C. J. Pan and B. J. Hwang, "Rhodium Sulfide Catalysts for HER/HOR in H₂-Br₂ Fuel Cells", AIChE Annual Meeting, November 3-8, 2013, San Francisco, CA, USA.
12. **J. Masud**, J. Walter, T. V. Nguyen, G. Lin, N. Singh, E. McFarland, H. Meitu, M. Ikenberry, K. Hohn, C. J. Pan and B. J. Hwang, " Synthesis and Characterization of Rh_xSy/C Catalysts for HOR/HER in HBr", 224th ECS Meeting, October 27-November 1, 2013, San Francisco, CA, USA.
11. **J. Masud**, M. T. Alam, M.R. Miah, T. Okajima and T. Ohsaka, "Enhanced Electrooxidation of Formic Acid at TaO_x-modified Pt Electrode", 3rd G-COE International Forum, December, 9-14, 2010, Ishigaki-Jima Island, Okinawa, Japan.
10. **J. Masud**, M. T. Alam, M.R. Miah, T. Okajima and T. Ohsaka, "Enhanced Electrooxidation of Formic Acid at TaO_x-modified Pt Electrode", The Autumn Meeting of The Electrochemical Society of Japan, September 2-3, 2010, Tokyo, Japan.

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