Curriculum Vitae

Dr. Priyakshree Borthakur

Female; **DOB:** 20th July, 1990

Nationality: Indian

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Corresponding Address: Department of Chemistry, Pragjyotish College, Guwahati, 781009, Assam, India

EDUCATIONAL QUALIFICATIONS

Ph.D. in Chemistry (2015-2020), (Thesis title: **Transition metal sulphide nanoparticles fabricated on 2D nanosheets: Synthesis, characterization and their applications in environmental remediation**).

Supervisor: **Dr. Manash R. Das,** Principal Scientist & Associatet Professor (AcSIR), CSIR-North East Institute of Science and Technology, Jorhat, Assam, India

Institute: *CSIR-North East Institute of Science and Technology, Jorhat, Assam, India*

Year	Degree/Exam	Institute	Marks (%)
2011-2013	M. Sc in Chemistry	Dibrugarh University, Dibrugarh Assam, India	81.60%
2009-2011	B. Sc in Chemistry	Dibrugarh University, Dibrugarh, Assam, India	79.30%
2006-2008	12th Passed	Assam Higher Secondary Education Council, Guwahati, Assam	82.20%
2006	10th Passed	Secondary Education Board of Assam, Guwahati, Assam	81.00%
2014	National Eligibility Test (NET)	CSIR, New Delhi	NA
2014	State Level Eligibility Test (SET)	SLET Commission, Assam	NA

RESEARCH INTEREST

1. Development of two dimensional nanosheets and metal sulphide based nanocomposite
2. Development of metal/graphene nanocomposite
3. Sensing

4. Colorimetric detection
5. Photocatalysis

INSTRUMENTAL KNOLEDGE

1. Powder X-ray diffractometer (XRD) (ULTIMA IV, Rigaku, Japan)
2. Raman Spectrometer (Thermo-Scientific DXR2, Smart Raman)
3. Zeta potential (Nano ZS, Malvern, UK)
4. Fourier Transform Infrared Infra-red Spectrometer (FTIR) (Shimadzu, Japan)
5. Photoluminescence spectroscopy (PL) (Horiba Instruments Inc. Edison, NJ USA)
6. UV-visible spectrophotometer (Shimadzu, Japan)

WORKING EXPERIENCE

February 2021-Till date		Assistant Professor, Department of Chemistry, Pragjyotish College, Santipur-09
November 2020-February 2021		Guest Faculty, Department of Applied Sciences, Tezpur University
April 2017-February, 2020	:	SRF, DST-INSPIRE, Materials Sciences & Technology Division, CSIR-NEIST, Jorhat, Assam, India
September 2014-March 2017	:	JRF, DST-INSPIRE, Materials Sciences & Technology Division, CSIR-NEIST, Jorhat, Assam, India
August 2013-July 2014	**:**	Assistant Professor (contract) at Devicharan Barua Girls' College, Jorhat, Assam

List of Publications in International SCI based Journals (Total publications: 22; Total IF: 134.749; Average IF: 6.123; Highest IF: 9.965)

(1) **Priyakshree Borthakur,** Purna Kanta Boruah, and Manash R. Das, "CuS and NiS Nanoparticle-Decorated Porous-Reduced Graphene Oxide Sheets as Efficient Peroxidase Nanozymes for Easy Colorimetric Detection of Hg(II) Ions in a Water Medium and Using a Paper Strip" ***ACS Sustainable Chem. Eng.***, **2021, 9, 39, 13245–13255 (IF: 9.224)**

(2) **Priyakshree Borthakur,** Purna K. Boruah, Punamshree Das, Manash R. Das, "CuS nanoparticles decorated MoS_2 sheets as an efficient nanozyme for selective detection and photocatalytic degradation of hydroquinone in water" ***New Journal of Chemistry,*** **2021, 45, 8714 - 8727 (IF: 3.925)**

(3) **Priyakshree Borthakur,** Meysam Aryafard, Zeenat Zara, Řeha David, Babak Minofar, Manash R. Das, Meththika Vithanage, "Computational and experimental assessment of pH and

specific ions on the solute solvent interactions of clay-biochar composites towards tetracycline adsorption: Implications on wastewater treatment" ***Journal of Environmental Management,*** **2021, 283, 111989 (IF: 8.91)**

(4) **Priyakshree Borthakur,** Purna K. Boruah, Manash R. Das, Mohamed M. Ibrahim, Tariq Altalhi, Hamdy S. El-Sheshtawy, Sabine Szunerits, Rabah Boukherroub, Mohammed A. Amin, "*CoS_2 Nanoparticles Supported on rGO, g-C_3N_4, BCN, MoS_2, and WS_2 Two-Dimensional Nanosheets with Excellent Electrocatalytic Performance for Overall Water Splitting: Electrochemical Studies and DFT Calculations"* ***ACS Applied Energy Materials,*** **2021, 4, 2, 1269–1285 (IF: 6.959)**

(5) **Priyakshree Borthakur*,** Purna K. Boruah, Manash R. Das*****, *"Facile synthesis of CuS nanoparticles on two-dimensional nanosheets as efficient artificial nanozyme for detection of Ibuprofen in water"* ***Journal of Environmental Chemical Engineering,*** **2020, 9(1), 104635 (IF: 7.968)**

(6) **Priyakshree Borthakur,** Manash R. Das, Sabine Szunerits, Rabah Boukherroub, "CuS Decorated Functionalized Reduced Graphene Oxide: A Dual Responsive Nanozyme for Selective Detection and Photoreduction of Cr(VI) in Aqueous Medium" ***ACS Sustainable Chemistry and Engineering,*** **2019, 7, 16131−16143 (IF:9.224)**

(7) **Priyakshree Borthakur,** Purna K. Boruah, Manash R. Das, Sabine Szunerits, Rabah Boukherroub, "Cu(0) nanoparticle-decorated functionalized reduced graphene oxide sheets as artificial peroxidase enzymes: application for colorimetric detection of Cr(VI) ions" ***New Journal of Chemistry,*** **2019, 43, 1404—1414 (IF: 3.925)**.

(8) **Priyakshree Borthakur,** Purna K. Boruah, Manash R. Das, Sofya B. Artemkina, Pavel A. Poltarak, Vladimir E. Fedorov, "Metal free MoS_2 2D sheets as peroxidase enzyme and visible-light-induced photocatalyst towards detection and reduction of Cr(VI) ion" ***New Journal of Chemistry,*** **2018, 42, 16919—16929 (IF: 3.925)**.

(9) **Priyakshree Borthakur,** Purna K. Boruah, Manash R. Das, Natallia Kulik, Babak Minofar, "Adsorption of 17α-ethynyl estradiol and β-estradiol on graphene oxide surface: An experimental and computational study" ***Journal of Molecular Liquids,*** **2018, 269 ,160–168 (IF: 6.633)**

(10) **Priyakshree Borthakur,** Manash R. Das, "Hydrothermal assisted decoration of NiS_2 and CoS nanoparticles on the reduced graphene oxide nanosheets for sunlight driven photocatalytic degradation of azo dye: Effect of background electrolyte and surface charge" ***Journal of Colloid and Interface Science,*** **2018, 516, 342–354**. **(IF: 9.965)**

(11) **Priyakshree Borthakur**, Najrul Hussain, Gitashree Darabdhara, Purna K. Boruah, Bhagyasmeeta Sharma, Prandeep Borthakur, Archana Yadav, Manash R. Das, "Adhesion of the gram-negative bacteria onto the α-Al_2O_3 nanoparticles: A study of surface behaviour and interaction mechanism*"* ***J. Environ. Chem. Eng.*****, 2018, 6, 3933–3941. (IF: 7.968)**

(12) **Priyakshree Borthakur**, Purna K. Boruah, Najrul Hussain, Yumnam Silla Devi, Manash R. Das, **"**Specific ion effect on the surface properties of Ag/reduced graphene oxide nanocomposite and its influence on photocatalytic efficiency towards azo dye degradation" ***Applied Surface Science,*** **2017 , 423, 752–761. (IF:7.392)**

(13) **Priyakshree Borthakur,** Gitashree Darabdhara, Manash R. Das, Rabah Boukherroub, Sabine Szunerits, "Solvothermal synthesis of CoS/reduced porous graphene oxide nanocomposite for selective colorimetric detection of Hg(II) ion in aqueous medium" ***Sensor and Actuators, B: Chemical,*** **2017, 244, 684-692. (IF: 9.221)**

(14) **Priyakshree Borthakur,** Purna K Boruah, Najrul Hussain, Bhagyasmeeta Sharma , Manash R Das, Sara Matić, David Reha, Babak Minofar, "An Experimental and Molecular Dynamics Simulation of Specific Ion Effect on the Graphene Oxide Surface and Investigation of Their Influence on Reactive Extraction of Model Dye Molecule at Water/Organic Interface" ***Journal of Physical Chemistry C,*** **2016, 120, 14088−14100. (IF: 4.177)**

(15) **Priyakshree Borthakur,** Purna K Boruah, Gitashree Darabdhara, Pinaki Sengupta, Manash R. Das, Andrei I. Boronin, Lidiya S. Kibis, Mariia N. Kozlova, Vladimir E. Fedorov, "Microwave assisted synthesis of CuS-reduced graphene oxide nanocomposite with efficient photocatalytic activity towards azo dye degradation" ***J. Environ. Chem. Eng.*****, 2016, 4, 4600-4611. (IF: 7.968)**

(16) Purna K. Boruah, **Priyakshree Borthakur,** Gayatri Neog, Benjamin Le Ouay, Nazim Uddin Afzal, Prasenjit Manna, Manash R. Das, "Porous Nitrogen-Doped Crumpled Graphene Nanoparticles: A Metal-Free Nanozyme for Selective Detection of Dopamine in Aqueous Medium and Human Serum", ***ACS Appl. Nano Mater.*** **2023, 6, 3, 1667–1677. (IF: 6.14)**

(17) Lylia Amirache, Fatiha Barka-Bouaifel, Priyakshree Borthakur, Manash R. Das, Hania Ahouari, Herv´e Vezin, Alexandre Barras, Baghdad Ouddane, Sabine Szunerits, Rabah Boukherroub, "Cobalt sulphide-reduced graphene oxide: An efficient catalyst for the degradation of rhodamine B and pentachlorophenol using peroxymonosulfate"**,** ***Journal of Environmental Chemical Engineering,*** **2021, 9, 106018 (IF: 7.968)**

(18) Abir Swaidan, **Priyakshree Borthakur,** Purna K Boruah, Manash R Das, Alexandre Barras, Salah Hamieh, Joumana Toufaily, Tayssir Hamieh, Sabine Szunerit, Rabah

Boukherroub, *"*A facile preparation of CuS-BSA nanocomposite as enzyme mimics: Application for selective and sensitive sensing of Cr(VI) ions*"* ***Sensor and Actuators B: Chemical,*** **2019, 294, 253-262. (IF: 9.221)**

(19) Purna K. Boruah, **Priyakshree Borthakur**, Gitashree Darabdhara, Chaitanya K. Kamaja,Indrapal Karbhal, Manjusha V. Shelke, Pallabi Phukan, Dulen Saikia, Manash R. Das, "Sunlight assisted degradation of dye molecules and reduction of toxic Cr(VI) in aqueous medium using magnetically recoverable Fe_3O_4/reduced graphene oxide nanocomposite", ***RSC Advances,*** **2016, 6(13), 11049-11063. (IF: 4.036**)

(20) Punamshree Das, **Priyakshree Borthakur**, Purna K. Boruah, Manash R. Das, "Peroxidase mimic Activity of Au-Ag/L-Cys-rGO Nanozyme towards Detection of Cr (VI) Ion in Water: Role of TMB Adsorption" ***Journal of Chemical Engineering Data,*** **2019, 64, 4977-4990. (IF:3.119)**

(21) Gitashree Darabdhara, Purna Boruah, **Priyakshree Borthakur**, Najrul Hussain, Manash R Das, Tansir Ahamad, M. Saad Alshehri, Victor Malgras, Kevin C.W. Wu, Yusuke Yamauchi, "Reduced graphene oxide nanosheets decorated with Au-Pd bimetallic alloy nanoparticles towards efficient photocatalytic degradation of phenolic compounds in water*",* ***Nanoscale,*** **2016, 8, 8276 – 8287. (IF:8.307)**

(22) Gitashree Darabdhara, Purna K. Boruah, Najrul Hussain, **Priyakshree Borthakur**, Bhagyasmeeta Sharma, Pinaki Sengupta, Manash R. Das, "Magnetic nanoparticles towards efficient adsorption of gram positive and gram negative bacteria: An investigation of adsorption parameters and interaction mechanism*"* ***Colloid Surface, A: Physicochem. Engine. Aspects,*** **2017,516, 161-170. (IF:5.518)**

BOOK CHAPTER

1. **Priyakshree Borthakur,** Purna K Boruah, Bhagyasmeeta Sharma, Manash R Das **"Nanoemulsion: Preparation and its Application in Food Industry" Book Title:** Emulsion**, Volume:** 3, **Publisher:** Elsevier, **Editor:** Alexandru Mihai Grumezescu, **Chapter** -05, **ISBN:** 978-0-12-804306-6.

2. Purna K. Boruah, **Priyakshree Borthakur** and Manash R. Das "**Magnetic metal/metal oxide nanoparticles and nanocomposite materials for water purification, Materials in Water Purification" Book Title:** Nanoscale Materials in Water Purification, **Publisher:** Elsevier, **Editors:** Sabu Thomas Daniel Pasiquini Shao-Yuan Leu Deepu Gopakumar**, Chapter**-18, **ISBN:** 9780128139264.

3. Gitashree Darabdhara, **Priyakshree Borthakur**, Manash R Das, Sabine Szunerits and Rabah Boukherroub **"Iron Oxide Nanoparticles-Graphene Composite Materials: Synthesis, Characterization and Applications." Book Title:** Handbook of Carbon Nano Materials **Publisher:** World Scientific, **Editor**: Francis D'Souza (University of North Texas, USA), Karl M Kadish (University of Houston, USA), **Chapter**-05, **ISBN:** 978-981-4678-90-2.

4. Manash J. Deka, Punamshree Das, Purna K. Boruah, **Priyakshree Borthakur**, Abinash Gogoi and Manash R. Das "**Plasmonic Nanoparticles Decorated Graphene Sheets for Detection of Water Pollutants." Book Title:** Sensors in Water Pollutants Monitoring: Role of Material **Publisher:** Springer, **Editor:** D. Pooja, Praveen Kumar, Pardeep Singh and Sandip Patil, **Chapter**-06, **ISBN:** 978-981-15-0670-3.

CONFERENCE PAPER

1. **Priyakshree Borthakur**, Manash R. Das, oral presentation on "***Facile synthesis of CuS nanoparticles decorated functionalized graphene oxide sheets as efficient catalyst towards selective detection of toxic Cr(VI) ions"*** presented in The National Seminar on "Science, Technology and Innovation" held in Arya Vidyapeeth College, Guwahati 29th February, 2020.

2. **Priyakshree Borthakur**, Manash R. Das, Poster presentation on "***CuS nanoparticles decorated functionalized graphene oxide sheets as efficient catalyst towards selective detection and photocatalytic reduction of toxic Cr(VI) ions"*** presented in The International Conference on "Engineering Sciences and Technologies for Environmental Care (ESTEC-2020)" held in CSIR-North East Institute of Science and Technology, Jorhat from 20th February to 22nd February, 2020.

3. Punamshree Das, **Priyakshree Borthakur,** Purna K Boruah, Manash R. Das, **"*Peroxidase mimic activity of Au-Ag/L-Cys-rGO Nanozyme towards detection of Cr(VI) ion in water"*** presented in The International Conference on "Engineering Sciences and Technologies for Environmental Care" held in CSIR-North East Institute of Science and Technology, Jorhat from 20th February to 22nd February, 2020.

4. **Priyakshree Borthakur**, Manash R Das, Poster presentation on "***Decoration of transition metal sulphide nanoparticles on 2D nanosheets: An investigation of their role in environment remediation*"** presented in "MRSI North-East Chapter Conference On The Frontiers in Chemical Biology" held in CSIR-North-East Institute of Science and Technology, Jorhat from 26th June, 2018 to 28th June, 2018.

5. **Priyakshree Borthakur**, Manash R Das, Oral presentation on "***Sunlight assisted degradation of Congo Red dye molecule in presence of NiS_2 -reduced graphene oxide nanocomposite***"

presented in UGC Sponsored National Seminar On "Recent Trends in Environment Responsive Chemical Processes" held at DR College, Golaghat on 22nd and 23rd September, 2017.

6. **Priyakshree Borthakur,** Manash R Das, Poster presentation on "***Colorimetric Detection of Hg (II) Ions Using Cobalt Sulphide-Reduced Porous Graphene Oxide Nanocomposite*****"** presented in 20th CRSI National Symposium in Chemistry" held in Gauhati University, Guwahati from 3rd February, 2017 to 5th February, 2017.

7. **Priyakshree Borthakur,** Manash R Das, Oral presentation on "***Investigations of peroxidase mimic activity of CoS/rPGO nanocomposites towards heavy metal ion detection*****"** presented in "The 4th International Conference on Advances in Materials & Materials Processing" held in IIT-Kharagpur, from 5th November to 7th November, 2016.

8. **Priyakshree Borthakur**, Purna K. Boruah, Bhagyasmeeta Sharma, Manash R. Das, Poster presentation on **"*Synthesis of CuS Decorated rGO nanocomposite by microwave Irradiation Technique for Degradation of Congo Red dye Molecule*** " presented in "MRSI North-East Symposium on Advanced Materials for Sustainable Applications" held in CSIR-North-East Institute of Science and Technology, Jorhat from 18th February, 2016 to 21st February, 2016.

Professional Recognition/ Award/ Prize/ Certificate, Fellowship received:

Sl. No.	Name of Award	Awarding Agency	Year
1	**Best Poster Award** in The International Conference on "Engineering Sciences and Technologies for Environmental Care (ESTEC-2020)"	CSIR-North East Institute of Science and Technology, Jorhat, Assam	2020
2	**Best performing Senior Research Fellow** during FY 2018-19	CSIR-North East Institute of Science and Technology	2019
3	**Best performing Junior Research Fellow** during FY 2016-17	CSIR-North East Institute of Science and Technology	2017
4	**DST-INSPIRE** Fellowship	DST-INSPIRE, New Delhi	2015
6	**UGC PG Merit Scholarship** for University Rank Holders	UGC, New Delhi	2011

Any other information

I fully know to operate and maintain sophisticated instruments such as XRD, FTIR, UV-Visible Spectrophotometer, High-Temperature Furnace, Zetasizer, Pulverizer, Centrifuge, Tubular Furnace, Rota Vapour etc., which are essential for materials characterization. I am expert to interpreted data of XRD, FE-SEM, TEM, HRTEM, XPS, UV-Visible Spectroscopy, FTIR Spectroscopy, Zeta potential

and XPS. Also, I have well experienced in using graphical software like ChemDraw, Prism, Origin, Image J etc.

PERSONAL DETAILS

Father's Name	**:**	Mr. Bipul Borthakur
Mother's Name	**:**	Mrs. Aditi Borthakur
Spouse's Name	**:**	CMA Samir Kumar Sarmah
Caste	**:**	General
Religion	**:**	Hinduism
Language	**:**	English, Hindi and Assamese

DECLARATION

I do hereby declare that the information provided in this resume is true and correct to the best of my knowledge and belief.

(Priyakshree Borthakur)