

Curriculum Vitae

Personal Information

Dr. Debasis Ghosh,
PhD, IIT Kharagpur, India



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Permanent Address:

Vill & Post: Panchgeria, Dist-Paschim Medinipur, PIN-721156; West Bengal

Current Position:

Associate Professor (since March 2024-till date)

Centre for Nano and Material Sciences,

Jain University, Bangalore

Responsibility: Research & Teaching (M.Sc. Chemistry)

<https://cnms.jainuniversity.ac.in/Faculty-Debasis.htm>

<https://scholar.google.com/citations?user=Ap2X6wUAAAAJ&hl=en>

Professional Experience:

- **July 2017-February 2024-** Assistant Professor, Centre for Nano & Material Science, JAIN University.
- **April 2016-June 2017-** Postdoctoral fellow in Chemical Engineering, University of Waterloo, Canada.
- **January 2015-December 2015-** Postdoctoral fellow at KAIST, South Korea.

Education:

Degree	University /	Thesis title/Specialization	Duration	Class
PhD	Materials Science Centre, IIT Kharagpur	Development of graphene, carbon nanotube and carbon fiber-based hybrid material for supercapacitor application	2011-2014	NA
M.Sc	Vidyasagar University	Chemistry	2008-2010	1 st (79.58%)
B.Sc	Vidyasagar University	Chemistry (Honours)	2005-2008	1 st (65.25%)
H.S	W.B.C.H.S.E	Science	2003-2005	1 st (74.7%)
M.P	W.B.B.S.E	General	2003	1 st (88.38%)

Achievements:

- Awarded prestigious 'Brain-Pool Invited Scientist' fellowship from NRF Korea (2022).
- Early career research grant from SERB (2019).
- Received Postdoctoral fellowship from Natural Sciences and Engineering Research Council of Canada, 2016.
- Received Postdoctoral fellowship from Institute for Basic Science, South Korea, 2015
- UGC-CSIR (NET-JRF)-Chemical Sciences awarded by CSIR, Government of India, New Delhi, India from January 2011
- GATE qualified in Chemical science: 2010

Research expertise/experience

I have been working on the development of functional nanomaterials, nanocomposites and electrolytes for electrochemical energy storage and conversion for the past 12 years, including my PhD work on graphene-based materials production, processing, and incorporation into electrochemical energy storage devices such as supercapacitors.

<https://cnms.jainuniversity.ac.in/Faculty-Debasis-publications.htm>

<https://scholar.google.co.in/citations?hl=en&user=Ap2X6wUAAAAJ>

My PhD research (2011-2014) include:

- Wet chemical synthesis of functional nanomaterials like diverse metal (mainly Ni, Co and Mn based) oxides/hydroxides/molybdate/sulphide/carbonate and electrochemical study.
- Synthesis of Conducting polymers and detail study of effects of doping (proton/transition metal ion) on structure and property.
- Synthesis of graphene and CNT based binary and ternary nanocomposites with inorganic metal oxides and conducting polymer, and characterization as supercapacitor electrode material.
- Fabrication of hybrid supercapacitor/solid state flexible supercapacitor.

During my first postdoc at KAIST, South Korea, (2015-2016) my research area was:

- Synthesis, liquid phase exfoliation and delamination and functionalization of 2D Mxenes.
- Surface engineering of graphene to form stable gels for high performance battery/supercapacitor application.

During my second postdoctoral work at **University of Waterloo, Canada (2016-2017)**, I worked on a NSERC (Canada) funded Industry (**NanoXplore, Canada**)-Academia joint project at University of Waterloo. My key research area was:

- Development of graphene-based lithium-sulfur batteries by developing inexpensive, simple processing methods to intimately mix sulfur and graphene with polymer system (US patent).
- Development of strategy to fabricate graphene based high voltage supercapacitor with engineered IL electrolyte, with unprecedented electrochemical performance. Through our techniques we have overcome some fundamental bottlenecks in the areas of flexible supercapacitor.

Current Research as Assistant Professor at CNMS, JAIN University (2017-till date)

Understanding materials behaviour, task specific modification and incorporation into electrochemical energy storage and conversion devices

- *Development of aqueous zinc- ion batteries*
- *Development of rechargeable Lithium-sulfur and sodium-sulfur batteries*
- *Development of all climate's operational flexible supercapacitors*
- *Development of hard carbon anode for Na-ion batteries*
- *Fast charging anodes for Li-ion batteries*
- *Explore high entropy materials as conversion-based anodes in Li-ion batteries and as bifunctional electrocatalyst.*

External Project Undertaken

Title	Role	Awarding agency	Amount	Ongoing/To be start
Towards Designing High Performance Rechargeable Zinc Ion Aqueous Batteries	PI	CPRI	Rs. 3497000.00	Ongoing (March 2023-March 2025)
Towards Developing Flexible Miniaturized Lithium Sulfur Batteries	PI	SERB	Rs. 3435360.00	Complete
Biomass Derived Heteroatom Doped Graphene and Hard Carbon Composites for Energy Storage Application	PI-2	DST- Hydrogen and Fuel cell (Technology Mission Division)	Rs. 6585392.00	Complete

Thesis Supervision (PhD-2 guided, 1 submitted, PhD-3 ongoing, M.Sc-2, M.Tech-2)

Sl. No	Title of Thesis.	Name of the student (Institute)	Guide/Co-guide	PhD/M.Sc/ M.Tech	Ongoing/complete
1	Investigations on functional nanomaterials and nanocomposites for electrochemical energy storage	Dr. Radha Nagaraj	Guide	PhD	Complete
2	Synthesis and Characterization of Electrode materials for Lithium-ion batteries	Dr. Pranav Kulkarni	Co-guide (Guide: Prof. Geetha R Balakrishna)	PhD	Complete
3	Design and Optimization of Transition Metals Based Composites as High Performance Electrocatalysts in Fuel Cells and as Electrodes in Li-ion Batteries	Mr. Hemanth K Beere	Guide	PhD	Submitted
4	Developing in-plane flexible rechargeable Zn-ion batteries	Mr. T Prahalada	Guide	PhD	Ongoing (2019 onwards)

5	Biomass derived carbonaceous materials as electrodes in metal ion batteries/capacitors	Ms. Pooja B. Naik	Guide	PhD	Ongoing (2019 onwards)
6	Development of cathode materials for Li-S batteries	Mr. Naveen S	Guide	PhD	Ongoing (2021 onwards)
7	Investigation of the effect of concentration and additive on an electrolyte for aqueous Zn-ion batteries	Ms. Phenicia Shabong	Guide	M. Tech	Complete
8	Synthesis and characterization of molybdenum sulfide as cathode material for aqueous zinc ion batteries.	Mr. Mohammed Waheeb Wakeel	Guide	M. Tech	Complete
9	Deep Eutectic Solvent as an Electrolyte for Rechargeable Zinc ion Batteries	Mr. T. Prahalada	Guide	M.Sc	Complete
10	Development of vanadium oxide based Cathode for aqueous Zn ion batteries	Mr. Souradeep Banerjee	Guide	M.Sc	Complete

List of Publications:

Citations: 2630 (Google Scholar),

h-index = 32,

i-10 index = 55

S. No.	Author(s)	Title	Name of Journal	Volume	Page	Year	Impact factor 2023	index
1	P. Yadav, K. Samanta, V. Arya, D. Biswas, H-S. Kim, C. Bakli*, H. Y. Jung*, <u>D. Ghosh*</u>	A 2.5 V in-plane flexi-pseudocapacitor with unprecedented energy and cycling efficiency for all-weather applications	Small	https://doi.org/10.1002/sml.202400975	2400975	2024	13.3	Q1
2	HK Beere, NS Reddy, P Kulkarni, K Samanta, HY Jung, <u>D Ghosh*</u>	Compositionally complex ball-in-ball type metal oxide anode via laser-induced fast fabrication for binder-free high-capacity Li-ion batteries	Journal of Energy Storage	80	110325	2024	9.4	Q1
3	HK Beere, KV Yatish, K Aravind, <u>D Ghosh*</u> , RG Balakrishna,* K Pramoda*	Unveiling favorable synergy of tubules-like NiMoSe ₂ with defect-rich borocarbonitride over graphene or MXene for efficient hydrogen evolution reaction electrocatalysis	International Journal of Hydrogen Energy	54	1582-1592	2024	7.2	Q1

4	H. K.Beere, P. Kulkarni, U. N.Maiti, R. G. Balakrishna, P. Mukherjee, H. Y. Jung, K. Samanta, <u>D. Ghosh</u> *	Realizing Favourable Oxygen Electrocatalytic Activity with Compositionally Complex Metal Molybdates	Sustainable Energy and Fuels	7	4303-4316	2023	5.6	<i>Q1</i>
5	A. Juno Rose, A. Samage, <u>D. Ghosh</u> ,* S.K. Nataraj*	Preparation of sustainable and binder-free electrode materials for high energy asymmetric supercapacitor applications: A cleaner alternative	Journal of cleaner production	417	13795-6	2023	11.1	<i>Q1</i>
6	P. Yadav, S. K. Nataraj, P. B. Naik, H. K. Beere, K. Samanta, N. S Reddy, J. S. Algethami, M. Faisal, F. A. Harraz, <u>D. Ghosh</u> *	Fabrication of an energy dense, binder-free Zn/V ₅ O ₁₂ .6H ₂ O solid state in-plane flexible battery via a rapid, and scalable approach	ACS Applied Energy Materials	6	1799-1809	2023	6.4	<i>Q1</i>
7	P. Kulkarni, H. Jung, <u>D. Ghosh</u> *, M. Jalalah, M. Alsaiani, F A Harraz, R G. Balakrishna	A comprehensive review of pre-lithiation/sodiation additives for Li-ion and Na-ion batteries	Journal of Energy Chemistry	76	479-494	2023	13.1	<i>Q1</i>
8	B.Munisha, B. Mishra, J. Nanda*, N. K Sahoo, <u>D. Ghosh</u> , KJ Sankaran, S. Suman	Enhanced photocatalytic degradation of 4-nitrophenol using polyacrylamide assisted Ce-doped YMnO ₃ nanoparticles	Journal of Rare Earths	41	1541-1550	2023	4.9	<i>Q1</i>
9	Radha N, Rangaswamy P, P. Yadav, H. K. Beere, S. N. Upadhyay1, S. K. Nataraj, S. Pakhira, and <u>D. Ghosh</u> *	Aging Responsive Phase Transition of VOOH to V ₁₀ O ₂₄ .nH ₂ O vs. Zn ²⁺ Storage Performance as Rechargeable Aqueous Zn-Ion Battery Cathode	ACS Applied Materials & Interfaces	14	56886	2022	9.5	<i>Q1</i>
10	P. Yadav, P. B. Naik, H. K. Beere, N. S Reddy, K. Samanta, S. K. Nataraj, J. S. Algethami, M. Faisal, F. A. Harraz, <u>D. Ghosh</u> *	Developing a high performance in-plane flexible aqueous Zinc-ion batteries with laser scribed carbon supported all electrodeposited electrodes	Langmuir	38	16203	2022	3.9	<i>Q1</i>
11	P. B. Naik, P. Yadav, R. Nagaraj, H. K. Beere, U. N. Maiti, C. Mondal, S. K. Nataraj, <u>D. Ghosh</u> *	Developing High Performance Flexible Zinc Ion Capacitor from Agricultural Waste Derived Carbon Sheets	ACS Sustainable Chemistry & Engineering	10	1471-1481	2022	8.4	<i>Q1</i>

12	H. K. Beere, S. Pakhira, P. Yadav, A. Singh, S. N. Upadhyay, P. B. Naik, Nataraj S. K., <u>D. Ghosh*</u>	Realizing Favorable Synergism Toward Efficient Hydrogen Evolution Reaction with Heterojunction Engineered Cu ₇ S ₄ /CuS ₂ /NiS ₂ and Functionalized Carbon Sheet Heterostructures	Advanced Materials Interfaces	9	2201478	2022	5.4	Q1
13	A. Samage, M. Halkarni, <u>D. Ghosh*</u> , S. K. Nataraj*	High power, long cycle life capacitive carbon from agricultural biomass waste with simultaneous value addition in environment application	Chemical Engineering Journal	435	134952	2022	15.1	Q1
14	P. Rangaswamy; H.K Beere, P. Yadav, M. Jalalah, M. Faisal, F. Harraz, <u>D. Ghosh*</u>	Troubleshooting the limited Zn ²⁺ storage performance of Ag ₂ V ₄ O ₁₁ cathode in zinc sulfate electrolyte via favourable synergism with reduced graphene oxide	ACS Applied Energy Materials	5	8292–8303	2022	6.4	Q1
15	Rangaswamy, P., R.K. Pai, <u>D. Ghosh*</u>	Recent Progress in Quantum Dots Based Nanocomposites Electrodes for Rechargeable Monovalent Metal-ion and Lithium Metal Batteries	Journal of Materials Chemistry A	10	508-553	2022	11.9	Q1
16	A.Majumdar, P. Dutta, A. Sikdar, H. Lee, <u>D. Ghosh</u> , S. N. Jha, S.Tripathi, Y. T. Oh,U. N. Maiti	Impact of Atomic Rearrangement and Single Atom Stabilization on MoSe ₂ @NiCo ₂ Se ₄ Heterostructure Catalyst for Efficient Overall Water Splitting	Small	18	2200622	2022	13.3	Q1
17	Rangaswamy P, C. Mondal, D. Mondal, <u>D. Ghosh*</u>	An account on the deep eutectic solvents-based electrolytes for rechargeable batteries and supercapacitors	Sustainable Materials and Technologies	33	e00477	2022	9.6	Q1
18	P. Kulkarni, H. K. Beere, M. Jalalah, M. Alsaiari, F A Harraz, R G. Balakrishna, <u>D. Ghosh*</u>	Developing a high-performance aqueous zinc battery with Zn ²⁺ pre-intercalated V ₃ O ₇ ·H ₂ O cathode coupled with surface engineered metallic zinc anode	Journal of Electroanalytical Chemistry	924	116851	2022	4.5	Q1
19	Rangaswamy P., S. K. Nataraj, <u>D. Ghosh*</u>	Rational designing of inorganic and organic materials based nanocomposites hybrid as Na-ion battery electrodes	Materials Advances	2	5006-5046	2021	5.0	Q1

20	Rangaswamy P., Radha N., P. Kulkarni, H. K. Beere, S. N. Upadhyay, R. G. Balakrishna, Nataraj, S. K. S. Pakhira,* <u>D. Ghosh*</u>	Constructing a High-Performance Aqueous Rechargeable Zinc-ion Battery Cathode with Self-assembled Mat-like Packing of Intertwined Ag(I) Pre-inserted V ₃ O ₇ .H ₂ O Microbelts with Reduced Graphene Oxide Core	ACS Sustainable Chemistry and Engineering	9	3985-3995	2021	8.4	Q1
21	P Kulkarni, <u>D. Ghosh*</u> , Geetha r Balakrishna*	Recent Progress in 'Water-in-Salt' and 'Water-in-Salt'- Hybrid Electrolytes Based High Voltage Rechargeable Batteries	Sustainable Energy and Fuels	5	1619-1654	2021	5.6	Q1
22	P. Kulkarni, R. Geetha Balkrishna,* <u>D. Ghosh</u> , R.S. Rawat, R. Medwal, B.V.R Choudhuri, M.V. Reddy*	Molten salt synthesis of CoFe ₂ O ₄ and its energy storage properties	Materials Chemistry and Physics	257	123747	2021	4.6	Q1
23	M. Mandal, R. Nagaraj, K. Chattopadhyay, M. Chakraborty, S. Chatterjee, <u>D. Ghosh</u> , S. K. Bhattacharya*	A high-performance pseudocapacitive electrode based on CuO–MnO ₂ composite in redox-mediated electrolyte	Journal of Materials Science	56	3325-3335	2021	4.5	Q1
24	R. Nagaraj, S. Pakhira, K. Aruchamy, P. Yadav, D. Mondal, K. Dharmalingm, N. S. Kotrappanavar,* <u>D. Ghosh*</u>	Catalyzing the Intercalation Storage Capacity of Aqueous Zinc-Ion Battery Constructed with Zn (II) Preinserted Organo-Vanadyl Hybrid Cathode	ACS Applied Energy Materials	3	3425-3434	2020	6.4	Q1
25	G Wen, S Rehman, TG Tranter, <u>D. Ghosh</u> , Z Chen, JT Gostick, MA Pope	Insights into multiphase reactions during self-discharge of Li-S batteries	Chemistry of Materials	32	4518-4526	2020	8.6	Q1
26	K. Aruchamy, Radha N., HM Manohar, MR Nidhi, D. Mondal, S. K. Nataraj, <u>D. Ghosh*</u>	One-Step Green Route Synthesis of Spinel ZnMn ₂ O ₄ Nanoparticles Decorated on MWCNTs as a Novel Electrode Material for Supercapacitor Materials	Materials Science and Engineering B: Solid-State Materials for Advanced Technology,	252	114481	2020	3.6	Q2
27	K.Aruchamy, Nidhi. Nidhi, M.R. H.M. Manohara, A. Mahto, N. Radha, D. Kalpana, <u>D. Ghosh</u> , D. Mondal, S. K. Nataraj.	Ultrafast Synthesis of Exfoliated Manganese Oxides in Deep Eutectic Solvents for Water Purification and Energy Storage	Chemical Engineering Journal	379	122327	2020	15.1	Q1

28	N Radha, A Kanakaraj, HM Manohar, MR Nidhi, D. Mondal, S. K. Nataraj, <u>D. Ghosh*</u>	Boosting the electrochemical performance of polyaniline based all-solid-state flexible supercapacitor using NiFe ₂ O ₄ as adjuvant	Journal of Electroanalytical Chemistry	851	113482	2019	4.5	Q1
29	N Radha, A Kanakaraj, HM Manohar, MR Nidhi, D. Mondal, S. K. Nataraj, <u>D. Ghosh*</u>	Binder free self-standing high performance supercapacitive electrode based on graphene/titanium carbide composite aerogel	Applied Surface Science	481	892-899	2019	6.7	Q1
30	P. Kulkarni, C. Varnika, B. Low, Yi. Tong, D. Ghosh , G. Balakrishna, R S Rawat, S Adams, MV Reddy	Investigating the role of precipitating agents on the electrochemical performance of MgCo ₂ O ₄	Journal of Electroanalytical Chemistry	851	113403	2019	4.5	Q1
31	S. Chakraborty, H. M. Manohara; K. Aruchamy, Kanakaraj; N. Singh, K. Prasad, D. Kalpana, <u>D. Ghosh</u> , S. K. Nataraj, D. Mondal	A Facile Process for Metallizing DNA in Multi-Tasking Deep Eutectic Solvent for Eco-friendly C-C Coupling Reaction and Nitrobenzene Reduction	ACS Sustainable Chemistry & Engineering	7	14225	2019	8.4	Q1
32	P. Kulkarni, <u>D. Ghosh</u> , G. Balakrishna, R. S Rawat, M. V Reddy, S. Adams	Facile high yield synthesis of MgCo ₂ O ₄ and investigation of its role as anode material for lithium ion batteries	Ceramics International	45	14775	2019	5.2	Q1
33	P. Kulkarni, <u>D. Ghosh</u> , G. Balakrishna, R. S Rawat, S Adams, M.V Reddy	Investigation of MnCo ₂ O ₄ /MWCNT composite as anode material for lithium ion battery	Ceramics International	45	10619	2019	5.2	Q1
34	H. M. Manohara, S. Chakraborty, K. Aruchamy, <u>D. Ghosh</u> , N. Singh, K. Prasad, D Kalpana, SK Nataraj, D. Mondal	Engineering Fe-doped highly oxygenated solvothermal carbon from glucose-based eutectic system as active microcleaner and efficient carbocatalyst	Journal of Materials Chemistry A	7	4988-4997	2019	11.9	Q1
35	Manohar H.M., K. Aruchamy, S. Chakraborty, <u>D. Ghosh</u> , S. K. Nataraj, D.Mondal	Sustainable Water Purification Using Engineered Solvothermal Carbon Based Membrane Derived from a Eutectic System	ACS Sustainable Chemistry & Engineering	7	10143-10153	2019	8.4	Q1
36	<u>D. Ghosh</u> , M. Gad, I. Lau, M. A. Pope	Trapping and Redistribution of Hydrophobic Sulfur Sols in Graphene–Polyethyleneimine Networks for Stable Li–S Cathodes	Advanced Energy Materials	8	1801979	2018	27.8	Q1

37	A Kanakaraj, M. Bisht, P. Venkatesu, D. Kalpana, N. Maalige, N. Singh, D. Ghosh , D. Mondal, S. K. Nataraj	Direct Conversion of Lignocellulosic Biomass to Biomimetic Tendril-Like Functional Carbon Helices: A Protein Friendly Host for Cytochrome C	Green Chemistry	20	3711-3716	2018	9.8	Q1
38	Z. She, D. Ghosh , M. A. Pope	Decorating Graphene Oxide with Ionic Liquid Nanodroplets: An Approach Leading to Energy Dense, High Voltage Supercapacitors	ACS Nano	11	10077-10087	2017	17.1	Q1
39	M. Mandal, D. Ghosh , K. Chattopadhyay, C. K. Das	A Novel Asymmetric Supercapacitor Designed with Mn ₃ O ₄ @Multi-wall Carbon Nanotube Nanocomposite and Reduced Graphene Oxide Electrodes	Journal of Electronic materials	45	3491-3500	2016	2.1	Q2
40	D. Ghosh , J. W. Lim, R. Narayan, S. O. Kim	High Energy Density All Solid State Asymmetric Pseudocapacitors Based on Free Standing Reduced Graphene Oxide-Co ₃ O ₄ Composite Aerogel Electrodes	ACS Applied Materials and Interfaces	8	22253-22260	2016	9.5	Q1
41	D. Ghosh , C. K. Das	Hydrothermal Growth of Hierarchical Ni ₃ S ₂ and Co ₃ S ₄ on a Reduced Graphene Oxide Hydrogel@Ni Foam: A High-Energy-Density Aqueous Asymmetric Supercapacitor	ACS Applied Materials and Interfaces	7	1122–1131	2015	9.5	Q1
42	D. Ghosh , M. Mandal, C. K. Das	Solid State Flexible Asymmetric Supercapacitor Based on Carbon Fiber Supported Hierarchical Co(OH) _x CO ₃ and Ni(OH) ₂	Langmuir	31	7835	2015	3.9	Q1
43	D. Ghosh , S. O. Kim	chemically modified graphene based supercapacitor for flexible and miniature devices (<i>Invited Review</i>)	Electronics Materials Letter	11	719-734	2015	2.4	Q2
44	C. Mondal, D. Ghosh , M. Ganguly, A. K. Sasmal, A. Roy, T. Pal	Synthesis of multiwall carbon nanotube wrapped Co(OH) ₂ flakes: A high-performance supercapacitor	Applied Surface Science	359	500-507	2015	6.7	Q1
45	C. Mondal, D. Ghosh , T. Aditya, A. K. Sasmal T. Pal	Mn ₃ O ₄ nanoparticles anchored to multiwall carbon nanotubes: a distinctive synergism for	New Journal of Chemistry	39	8373-8380	2015	3.3	Q2

		high performance supercapacitor						
46	S. Giri, D. Ghosh , and C. K. Das	Growth of Vertically Aligned Tunable Polyaniline on Graphene/ZrO ₂ Nanocomposites for Supercapacitor Energy-Storage Application	Advanced Functional Materials	24	1312-1324	2014	19	Q1
47	D. Ghosh , S. Giri, Md. Moniruzzaman, T. Das, M. Mandal, C. K. Das	α MnMoO ₄ /Graphene Hybrid Composite: High Energy Density Supercapacitor Electrode Material	Dalton Transactions	43	11067-11076	2014	4	Q1
48	D. Ghosh , S. Giri, S. Dhibar, C. K. Das	Reduced Graphene Oxide/Manganese Carbonate Hybrid Composite: High Performance Supercapacitor Electrode Material	Electrochimica Acta	147	557-564	2014	6.6	Q1
49	D. Ghosh , S. Giri, M. Mandal, C. K. Das	High performance supercapacitor electrode material based on vertically aligned PANI grown on reduced Graphene oxide/Ni(OH) ₂ hybrid composite	RSC Advances	4	26094-26101	2014	3.9	Q1
50	D. Ghosh , S. Giri, C. K. Das	Hydrothermal Synthesis of Platelet β Co(OH) ₂ and Co ₃ O ₄ : Smart Electrode Material for Energy Storage Application	Environmental Progress & Sustainable Energy	39	1059-1064	2014	2.8	Q2
51	M. Mandal, D. Ghosh , S. Giri, I. Shakir, C. K. Das	Polyaniline-Wrapped 1D CoMoO ₄ .0.75H ₂ O Nanorods as Electrode Materials for Supercapacitor Energy Storage Application	RSC Advances	4	30832-30839	2014	3.9	Q1
52	S. Dhibar, P. Bhattacharya, D. Ghosh , G. Hatui, and C. K. Das	Graphene-Single Walled Carbon Nanotubes-Poly(3-methylthiophene) Ternary Nanocomposite for Supercapacitor Electrode Materials	Industrial and Engineering Chemistry Research	53	13030-13045	2014	4.2	Q1
53	D. Ghosh , S. Giri, C. K. Das	Synthesis, Characterizations and electrochemical performance of Graphene decorated with 1D NiMoO ₄ , nH ₂ O nanorods	Nanoscale	5	10428-10437	2013	6.7	Q1
54	D. Ghosh , S. Giri, C. K. Das	Preparation of CTAB assisted hexagonal platelet Co(OH) ₂ /Graphene hybrid composite as	ACS Sustainable Chemistry and Engineering	1	1135-1142	2013	8.4	Q1

		efficient supercapacitor electrode material						
55	D. Ghosh , S. Giri, A. Mandal, C. K. Das	Supercapacitor based on H ⁺ and Ni ²⁺ co-doped Polyaniline/MWCNTs Nanocomposite: Synthesis and electrochemical characterization	RSC Advances	3	11676-11685	2013	3.9	Q1
56	D. Ghosh , S. Giri, A. Mandal, C. K. Das	Graphene decorated with Ni(OH) ₂ and Ag deposited Ni(OH) ₂ stacked nanoplate for Supercapacitor application	Chemical Physics Letters	573	41-47	2013	2.8	Q2
57	D. Ghosh , S. Giri, A. Mandal, C. K. Das	H ⁺ , Fe ³⁺ codoped polyaniline/MWCNTs nanocomposite: superior electrode material for supercapacitor application	Applied Surface Science	276	120–128	2013	6.7	Q1
58	D. Ghosh , S. Giri, S. Sahoo, C. K. Das	In Situ Synthesis of Graphene/Amine-Modified Graphene, Polypyrrole Composites in Presence of SrTiO ₃ for Supercapacitor Applications	Polymer-Plastics Technology and Engineering	52	213-220	2013	2.7	Q2
59	S. Giri, D. Ghosh , and C. K. Das	One Pot synthesis of Ilmenite-Type NiMnO ₃ /"Nitrogen-Doped" Graphene nanocomposite as Next Generation Supercapacitors	Dalton Transactions	42	14361-14364	2013	4	Q1
60	S. Giri, D. Ghosh , and C. K. Das	In-Situ Synthesis of Cobalt Doped Polyaniline Modified Graphene Composites for High Performance Supercapacitor Electrode Materials	Journal of electroanalytical chemistry	697	32-45	2013	4.5	Q1
61	S. Giri, D. Ghosh , C. K. Das	A facile synthesis of palladium doped polyaniline modified carbon nanotube composites for supercapacitors application	Journal of Electronic Materials	42	2595-2605	2013	2.1	Q2
62	S. Giri, D. Ghosh , and C. K. Das	Effect of ruthenium (III) incorporation in polyaniline backbone: materials for supercapacitive energy storage application	NANO	8	1350026	2013	1.2	Q3

63	S. Giri, D. Ghosh , A. P. Kharitonov, C. K. Das	Study of copper ferrite nanowire formation in presence of carbon nanotubes and influence of fluorination on high performance supercapacitor energy storage application	Functional Materials Letters	5	1250046	2012	1.3	Q3
64	Md. Moniruzzaman, S. Sahoo, D. Ghosh , C. K. Das, R.Singh	Preparation and Characterization of In-situ Polymerized Polypyrrole/modified MWCNTs Nanocomposites in Presence of BaTiO ₃	Journal of Applied Polymer Science	128	698-705	2012	3	Q2
65	S. Sahoo, P. Bhattacharya, G. Hatui, D. Ghosh , C. K. Das	Sonochemical Synthesis and Characterization of Amine-Modified Graphene/Conducting Polymer Nanocomposites	Journal of Applied Polymer Science	128	1476-1483	2012	3	Q2
66	S. Giri, D. Ghosh , A. Mandal, C. K. Das	Preparation and Characterization of Zr (IV) Doped Polyaniline for Supercapacitor Application	Macromolecular Symposia	327	54-63	2013		Q3
67	A. Mandal, D. Ghosh , A. Malas, P. Pal, C. K. Das	Synthesis and Microwave Absorbing Properties of Cu-Doped Nickel Zinc Ferrite/Pb(Zr _{0.52} Ti _{0.48})O ₃ Nanocomposites	Journal of Engineering	2013	391083	2013	2.7	Q3

Detail of Book Chapter:

Three chapters contributed to the following book

“Metal-Organic Framework-Based Nanomaterials for Energy Conversion and Storage” Editors: Ram Gupta, Tuan Anh Nguyen, Ghulam Yasin; eBook ISBN: 9780323998291

- CHAPTER 7: Recent development in MOFs for oxygen evolution reactions, Hemanth Kumar Beere, Sanna Kotrappanavar Nataraj and Debasis Ghosh*
- CHAPTER 13 MOFs-based nanomaterials for metal-sulfur batteries
Authors: Prahlad Yadav, Sanna Kotrappanavar Nataraj and Debasis Ghosh*
- CHAPTER 14 MOFs-based nanomaterials for metal-ion batteries
Authors: Rangaswamy Puttaswamy, Sanna Kotrappanavar Nataraj and Debasis Ghosh*

Detail of patent:

S.No	Patent Title	Name of Applicant(s)	Patent Publication No./Application No.	Status	Agency/Country
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1.	Graphene-Polymer Porous Scaffold for Stable Lithium Sulfur Batteries	M. A. Pope, D. Ghosh , Y, Zhong, S. Nazarpour	US 11,515,519 B2 Date: 28/11/2022	GRANTED	U.S. Patent Patent No. : US 11,515,519 B2
2	Method for preparing vanadium based cathode material for rechargeable zinc ion batteries	D. Ghosh , S. K. Nataraj, Radha Nagaraj,	Application No. 202141042037 Date of Filing-17/09/2021 Publication Date (U/S 11A) – 20/05/2022	Published	India
3	Silver vanadium oxide-reduced graphene oxide composite and method for synthesis thereof	D. Ghosh , Rangaswamy, P. Radha N	Application Number: 202141046765 Date of Filing-13/10/2021 Publication Date (U/S 11A) – 20/05/2022	Published	India
4	Interdigitated electrode composition and method for synthesis thereof	D. Ghosh , S. K. Nataraj, P. Yadav	Application Number: 202241028663 Date of Filing-18/05/2022 PUBLICATION DATE (U/S 11A) - 03/06/2022	Published	India
5	High entropically stabilized metal Oxides@reduced graphene oxide (HEO@RGO) nanocomposite and method	D. Ghosh , H. K. Beere	Application Number: 202341054382 Ref. No. TEMP/E- 1/59754/2023-CHE Date of filing: 13. 08. 2023	Filed	India

Course taught (2017-2022):

Subject (Chemistry, M.Sc)	Hour (s)/module
Electrochemistry	20
Electrochemical methods	20
Organic Photochemistry	20
Laboratory course	30

Conference/Seminar attended :

- **Session chair** at “International Online Conference on Nano Materials (ICN 2021)”, held at Mahatma Gandhi University Kottayam, Kerala, India, 09th - 11th April 2021.
- **Session Chair** at “ 2nd National Seminar on Frontiers in Materials and Chemical Sciences (NSFMC 2020)” organized by the Center for Nano and Material Sciences, JAIN (DEEMED-TO-BE UNIVERSITY), Bengaluru, India during 31st August to 4th September 2020.
- **Session Chair** at “Virtual International Conference on Sustainable Energy and Environmental Technologies (V-ICSEET-2020), Reva University, Bangalore on 02-04th November 2020.
- **Session Chair** at “International Conference on Frontiers in Materials from Basic Science to Real Time Applications-2019”, CNMS, JAIN University, 13th -16th March, 2019.”

- **Invited talk** (Webinar) on, "Rational Designing of Graphene and Polymer Based Nanocomposites towards Electrochemical Energy Storage" held at JIS Institute of Advanced Studies and Research, Kolkata on 9th September 2020.
- **Invited talk** at "International Online Conference on Nano Materials (ICN 2021)", held at Mahatma Gandhi University Kottayam, Kerala, India, 09th - 11th April 2021.
- **Invited talk** at "International conference F2DM International conference, CNMS, Jain University, Bangalore on 13- 16th March 2019.
- **Invited talk** at RAMAIAH Institute of Technology in the Faculty Development Programme (FDP) on "Recent Trends in Photonic Techniques" during 31st July – 5th August 2017.
- Radha N, Kanakaraj A, Manohara H. M, Nidhi M. R, Dibyendu Mondal, S. K. Nataraj and **Debasis Ghosh***; "Flexible Paper Like Supercapacitive Electrode Based on Graphene/Titanium Carbide Composite Aerogel", International Conference on Green methods for Separation and Purification and Nanomaterial Synthesis (GMSPNS), Jain University, Bangalore, 24th & 25th April 2018. (Poster presentation)
- Radha N, Kanakaraj A, Manohara H. M, Nidhi M. R, Dibyendu Mondal, S. K. Nataraj and **Debasis Ghosh***; "Boosting the Supercapacitive Performance of Polyaniline Using Nickel-iron Oxide as Adjuvant", KSTA Conference, NMKRV College, Bangalore, held at Bangalore on 1- 2nd February 2019. (Poster presentation)
- Radha N, Kanakaraj A, Manohara H. M, Nidhi M. R, Dibyendu Mondal, S. K. Nataraj and **Debasis Ghosh***; "Constructing a High Performance Aqueous Zinc Ion Battery Cathode with a Organo Vanadyl Hybrid Material", International conference F2DM International conference, CNMS, Jain University, Bangalore on 13- 16th March 2019. (**Best Oral Presentation**)
- Radha N and **Debasis Ghosh***; "Stimulating the Zinc Ion Diffusivity Inside Functionalized VO_x Crystal Cathode Material for Aqueous Zinc Ion Battery", International conference International Conference on Functional Materials, IIT Kharagpur, Kharagpur on 06- 08th January 2020. (**Best Poster Presentation**)
- Radha N, S. K. Nataraj and Debasis Ghosh; "Constructing High Performance Rechargeable Zinc Ion Battery Based on the V₁₀O₂₄·12H₂O Cathode", Virtual International Conference on Sustainable Energy and Environmental Technologies (V-ICSEET-2020), Reva University, Bangalore on 02-04th November 2020.
- Rangaswamy P, **Debasis Ghosh***, " Constructing high performance zinc ion battery cathode with structurally engineered V₃O₇·nH₂O" Virtual International Conference on Sustainable Energy and Environmental Technologies (V-ICSEET-2020), Reva University, Bangalore on 02-04th November 2020. (**Best Oral Presentation**)
- Prahlad Yadav, **Debasis Ghosh***, Constructing a Zinc ion miniaturized planer battery with patterned laser scribed carbon supported electrodes, *International Symposium on Materials of the Millennium: Emerging Trends and Future Prospects*, MMETFP-2021, 19th to 21st November 2021, Pandit Deendayal Energy University, Gujrat (**Best Oral presentation**)
- **Debasis Ghosh*** A 2.5 V all climate operational in-plane flexible supercapacitor, International Conference on Women in Electrochemistry (ICWEC-2023) held during April 7-8, 2023, organized by the Electrochemical Society of India, held at IISC Bangalore, India

- **Debasis Ghosh*** Laser Induced Fast Fabrication of a Compositionally Complex Ball-In-Ball Type Metal Oxide Anode with Boosted Redox Reaction for Binder Free High-Capacity Li-Ion Batteries, Organized by SRMIST India, on 26-29th February 2024
- Hemant Kumar Beere, **Debasis Ghosh***, Metal Sulfides loaded Biomass derived Carbon sheets for evolution reaction, *International Symposium on Materials of the Millennium: Emerging Trends and Future Prospects*, MMETFP-2021, 19th to 21st November 2021, Pandit Deendayal Energy University, Gujrat.
- Pooja Naik, **Debasis Ghosh***, Fabrication of a high-performance flexible Zinc ion capacitor with agricultural biomass derived mesoporous layered carbon sheets, *International Symposium on Materials of the Millennium: Emerging Trends and Future Prospects*, MMETFP-2021, 19th to 21st November 2021, Pandit Deendayal Energy University, Gujrat.
- Prahlad Yadav, **Debasis Ghosh***, Designing the miniaturized planar - interdigitated zinc-ion batteries with patterned LSC electrodes, National conference on frontiers in Chemistry (CFC-2021), 21st to 23rd October, 2021, REVA University, Bangalore.
- Hemant Kumar Beere, **Debasis Ghosh***, Catalyzing the Oxygen Evolution Reaction with High Entropy Molybdates, Conference on frontiers in Chemistry (CFC-2021), 21st to 23rd October, 2021, REVA University, Bangalore
- Hemant Kumar Beere, **Debasis Ghosh***, Entropy driven Catalytic Activity for low cost OER electrocatalysis, 7th International conference on Advanced Nanomaterials and Nanotechnology, 14th to 17th December 2021, IIT Guwahati, Assam
- Prahlad Yadav, **Debasis Ghosh***, Fabricating a Zinc ion miniaturized planer battery with patterned laser scribed carbon supported electrodes, International conference on Advanced materials and mechanical characterizations, December, 2021, SRMIT Chennai
- Kanakaraj Aruchamy, Radha N, Manohara H. M, Nidhi M. R, Dibyendu Mondal, **Debasis Ghosh*** and Sanna Kotrappanavar Nataraj* presented poster on the topic “One-step Green Route Synthesis of Spinel ZnMn₂O₄/MWCNT Nano-composites as a Novel Electrode Material for Supercapacitors” in International Conference on Green methods for, Separation and Purification and Nanomaterial Synthesis (GMSPNS), on 24th & 25th April 2018 at CNMS Jain University, Bangalore.
- Debasis Ghosh, Soumen Giri, C.K. Das, In situ synthesis and electrochemical characterisations of Ni²⁺ doped Polyaniline / MWCNT nanocomposite as a supercapacitor electrode material, Nano Tech, September-2012, Kolkata, West Bengal (Oral presentation)
- Debasis Ghosh, Chapal Kumar Das, Synthesis and characterization of H⁺, Fe³⁺ co-doped PANI/MWCNTs as supercapacitor electrode material. KaSAM 2012, May 9-12, 2012, Kathmandu, Nepal. (Oral presentation)
- Debasis Ghosh, Chapal Kumar Das, presented a poster on ‘Preparation of CTAB assisted nanoeplateCo(OH)₂/Graphene hybrid material as efficient supercapacitor electrode material’, ISJPS-2013, February 25-27, 2013, Indian Institute of Technology Kharagpur, India.
- Debasis Ghosh and Chapal Kumar Das, presented a poster on ‘Graphene decorated with Ag deposited Ni(OH)₂: smart electrode material for supercapacitor application’, ICFM-2014, February 5-7, Materials Science Centre, IIT Kharagpur, India.

Others

- Reviewer of prestigious journals, e.g. Nature communication, ACS Nano, Energy storage materials, Chemical Engineering Journals, Small, ACS Applied Energy Materials, ACS Applied Material and Interfaces, Energy & Fuels, Journal of Energy Chemistry, Materials Today Energy, Journal of Materials Chemistry A,

Journal of Materials Chemistry C, RSC Advances, Nano Micro letter, New Journal of Chemistry, Applied Surface Science, SN Applied Sciences, Ionics, Chem Cat Chem, and many more.

- Experience in organizing two international conferences as coordinator.

Declaration:

The above-mentioned information is correct to the best of my knowledge.

Dr. Debasis Ghosh