# CURRICULUM VITAE

**Dr. Sk Riyajuddin**
**DST-INSPIRE Faculty**
**Department of Physics**
**IIT(ISM), Dhanbad India**
**Email: skriyajuddin@iitism.ac.in, riyaj5303@gmail.com**
**Phone:** (+91) 8791639582
**Homepage**: Click Here, **Google Scholar Profile**: Click Here, ORICD ID- 0000-0002-9401-4037

## Professional Experience

**DST-INSPIRE Faculty (2024 to till date)**
Indian Institute of Technology Dhanbad India

**Post-Doctoral Experience (2022-2024)**

- University of Wyoming, Laramie, Wyoming, USA
- TATA Institute of Fundamental Research, Hyderabad, India
- Institute of Nano and Science and Technology, Mohali, India

## Educational Qualification

### Doctor of Philosophy (Gold Medal-Best Thesis Award)

- **Institute:** Indian Institute of Science Educational & Research, Mohali, India
- **Thesis title:** "Investigation of Nano-Carbon/Non-Carbon Material Interfaces for Electronics and Renewable Energy Conversion Applications"
- **Supervisor:** Prof. Kaushik Ghosh, Professor, Scientist-F
- **Timeline:** January 2017-December 2021
- **Course work Grade:** 8.3/10

### Master's in Physics (Condensed Matter Physics)

- **Institute:** Aligarh Muslim University
- **Percentage:** 67.37%
- **Timeline:** 2013-2015

### B.Sc. (Hons) in Physics

- **Institute:** Aligarh Muslim University
- **Percentage:** 62.73%
- **Timeline:** 2010-2013

## Research Interests

- Electrochemistry and Catalyst
- Energy storage Battery and Supercapacitor device
- $CO_2$ reduction, Oxygen reduction
- Water Splitting, green hydrogen generation, Oxygen evolution
- Nano Device Fabrication using Electron beam Lithography/Photo-lithography
- 2D Material
- Synthesis of Grapheme, CNTs through TCVD and PECVD
- Graphene /CNT Field Emission and Piezoresistive Strain Sensor

## Instrumental and Technical Experiences

- Scanning Electron Microscope. (SEM) [JEOL JSM IT 300]
- Powder X-Ray Diffraction (PXRD). [BRUKER, ecoD8 ADVANCE]
- Electrochemical workstation [Metrohm Autolab, CHI660, CHI760E]
- VTI Measurement System [Oxford Instrument]
- Photo/Electron Beam Lithography
- TCVD/PECVD. [AIXTRON BM PRO]

- Thermogravimetric Analyzer [Perkin Elmer, STA 8000]
- UV-Vis Spectrometer. [SHIMADZU, UV-2600]
- UV-Vis-NIR Spectrometer [Agilent, Cary Series]
- FTIR. [Agilent, Cary660]
- Spectrofluorometer [EDINBURG INSTRUMENTS]
- Confocal Raman Spectrometer. [WITEC alpha 300 R]
- BET Surface Analyzer [QUANTACHROME. ASIQCOV602-5]
- Source Meter Unit [Keithley 2600]
- E-beam/Thermal Evaporator. [Excel Instrument]
- Sputtering System. [Excel Instrument]
- Plasma Bonder. [Omicron Scientific]
- Drop Shape Analyzer (KRUSS-DSA25)

## Awards and Achievements:

- **DST-INSPIRE Faculty Research Grand-112 lakh** ($133284)-DST/INSPIRE/04/2023/001577,2024, Government of India
- Awarded **'Prof. C.N.R Rao Best Thesis Award 2021'** by Institute of Nano Science and Technology, Mohali, India
- Qualified National level test **'GATE in Physics-2016'-AIR-608** (A National Level Test for Pursuing Ph.D. in IITs, TIFR, NIT, IISc, IISER, and other Research institutes of India).
- Qualified National level test **'National Eligibility Test-AIR-84 (NET-LS)-2017'** (A National Level Test Eligible for the Assistant Professor)
- **Research Excellence Award 2020,** Institute of Scholars (INSC)-2020
- **University Post Graduate Merit Financial Award** in 2014 &2015
- Awarded **Michigan USA Scholarship** by "A.M.U Alumni Association" Of Michigan from 2010-2015.
- Awarded **California USA Scholarship** by "A.M.U Alumni Association" Of California from 2013-2015.
- Awarded **Sitaram Jindal Foundation Scholarship** by the President of SJF, 2011, India.

## Publications: Google Scholar Profile: Click Here

1. Super-Hydrophilic Hierarchical Ni-Foam-Graphene-Carbon Nanotubes-$Ni_2P$-$CuP_2$ Nano-Architecture as Efficient Electrocatalyst for Overall Water Splitting; **Sk Riyajuddin**, Kashif Azmi, Mansi Pahuja, Sushil Kumar, Takahiro Maruyama, Chandan Bera, and Kaushik Ghosh*; **ACS Nano, 2021, 15, 3, 5586–5599.**
2. Super-Hydrophilic leaf-like $Sn_4P_3$ on Porous Seamless Graphene-Carbon Nanotube Heterostructure as an Efficient Electrocatalyst for Solar-Driven Overall Water Splitting; **Sk Riyajuddin**, Mansi Pahuja, Parrydeep Kaur Sachdeva, Kashif Azmi, Sushil Kumar, Mohd Afshan, Firdaus Ali, Jenifar Sultana, Takahiro Maruyama, Chandan Bera, and Kaushik Ghosh*; **ACS Nano 2022, 16, 4861-4875**.
3. 3D-Graphene Decorated with g-$C_3N_4$/$Cu_3P$ composite: A Noble Metal-free Bifunctional Electrocatalyst for overall water splitting; **Sk Riyajuddin**, Tarik Aziz, Sushil Kumar, Gilbert D Nessim, Kaushik Ghosh*; **ChemCatChem, 2020, 12, 1394-1402.**
4. p-i-n Silicon Nanowire Array-NGQD: A Metal-Free Electrocatalyst for Photoelectrochemical Hydrogen Evolution; **Sk Riyajuddin**, Sushil Kumar, Damini badhwar, Shumile Ahmed Siddhiqui, jenifar sultana, Kaushik Ghosh*; **Sustainable Energy and Fuels, 2021, 5, 3160-3171.**
5. Silicon Nanowire-$Ta_2O_5$-NGQD heterostructure: An efficient photocathode for Photoelectrochemical hydrogen evolution; **Sk Riyajuddin**, jenifar sultana, Shumile Ahmed Siddhiqui, Sushil Kumar, Damini badhwar, , Shyam Sundar Yadav, Saveena Goyal, Ananth Venkatesan, Suvankar Chakraverty, Kaushik Ghosh*; **Sustainable Energy and Fuels, 2022, 6, 197-208.**
6. Se-Incorporated Porous Carbon/$Ni_5P_4$ Nanostructures for Electrocatalytic Hydrogen Evolution Reaction with Waste Heat Management; **Sk Riyajuddin**, Mansi Pahuja, Mohd Afshan, Shumile Ahmed Siddhiqui, jenifar sultana, Takahiro Maruyama Kaushik Ghosh***; ACS Applied Nano Materials, 2022, 5, 1385-1396.**
7. Study of field emission property of pure graphene-CNT heterostructure connected *via* seamless interface; **Sk Riyajuddin**, Sushil Kumar, Khushboo Soni, Surender P. Gaur, Damini Badhwar and Kaushik Ghosh*; **Nanotechnology, 2019, 30, 385702.**
8. Linear Piezoresistive Strain Sensor based on Graphene/g-$C_3N_4$/PDMS Heterostructure; **Sk Riyajuddin**, Sushil Kumar, Aakanksha Sud, Takahiro Maruyama, Md Ehasan Ali*, Kaushik Ghosh*; **Nanotechnology, 2020, 31, 295501.**
9. Strategy to improve the super-capacitive and hydrogen evolution performance of graphitic carbon nitrides via enrichment of carbon content; Sushil Kumar, **Sk Riyajuddin**, Kulvinder Singh, Lalit Yadav Takahiro Maruyama, and Kaushik Ghosh*; **Journal of Alloys and Compounds, 2021, 858, 157671.**
10. *In-situ* growth of Urchin Manganese Sulfide Anchored Three-Dimensional Graphene (γ-MnS@3DG) on Carbon Cloth as Flexible Asymmetric Supercapacitor; Sushil Kumar, **Sk Riyajuddin**, Mohd Afshan, SK Tarik Aziz and Kaushik Ghosh*; **The Journal of Physical Chemistry Letters, 2021, 12, 6574-6581.**
11. Bimetallic Phosphides for Hybrid Supercapacitors; SK Tarik Aziz, Sushil Kumar, **Sk Riyajuddin**, Kaushik Ghosh, * Gilbert Daniel Nessim,* Deepak P. Dubal*; **Journal of Physical Chemistry Letters, 2021, 12, 5138-5149.**

12. Three-Dimensional Graphene Decorated Copper-Phosphide ($Cu_3P$@ 3DG) Heterostructure as Effective Electrode for Supercapacitor; Subodh Kumar, Tarik Aziz, Sushil Kumar, **Sk Riyajuddin**, Gili Yaniv, Louisa Meshi, Gilbert D Nessim*, Kaushik Ghosh*; **Frontiers in Materials, 2020, 7, 30.**
13. Boosting the Supercapacitive Performance via incorporation of Vanadium in Nickel Phosphide Nanoflakes: A High Performance Flexible Renewable Energy Storage Device**,** Mohd Afshan, Sushil Kumar, SK Tarik Aziz, Rishita Ghosh, Mansi Pahuja, Shumile Ahmed Siddhiqui, Kehkashan Alam, Seema Rani, Daya Rani, Takahiro Maruyama, **Sk Riyajuddin*** Kaushik Ghosh* **ACS Energy and Fuel, 2022, 36, 4076-4086**.
14. Electrodes Based on Se Anchored on NiCoP and Carbon Nanofibers for Flexible Energy Storage Devices**;** Mohd Afshan, Sushil Kumar, Daya Rani, Mansi Pahuja, Rishita Ghosh, Shumile Ahmed Siddiqui, **Sk Riyajuddin***, Kaushik Ghosh* **ACS Applied Nano Materials, 2022,5, 15328-15340.**
15. A Janus cerium-doped bismuth oxide electrocatalyst for complete water splitting; S.K. Tarik Aziz, Mayuri Ummekar, Imran Karajagi, **Sk Riyajuddin**, KVR Siddhartha, Abhishek Saini, Ajay Potbhare, Ratiram G.Chaudhary, Vikram Vishal, Prakash C. Ghosh, Arnab Dutta*; **Cell Reports Physical Science, 2022, 3, 101106.**
16. Harnessing Environmental Sensitivity in SnSe-Based Metal–Semiconductor–Metal Devices: Unveiling Negative Photoconductivity for Enhanced Photodetector Performance and Humidity Sensing; Seema Rani, Subhabrata Das, Shumile Ahmed Siddiqui, Ayushi Jain, Daya Rani, Mansi Pahuja, Nikita Chaudhary, Mohd Afshan, Rishita Ghosh, Devansh Swadia, **Sk Riyajuddin,** Chandan Bera, Kaushik Ghosh*; **ACS Applied Materials & Interfaces, 2024, 16, 26899-26914**
17. Graphene-intercalated $P_4Se_3$@CNF hybrid electrode for sustainable energy storage solution: Enabling high energy density and ultra-long cyclic stability Daya Rani, Raheel Hammad, Mohd Afshan, E M Harini, Mansi Pahuja , Rajashri Urkude , Seema Rani , Shumile Ahmed Siddiqui , Subhabrata Das , Nikita Chaudhary , Rishita Ghosh , **Sk Riyajuddin** , Soumya Ghosh , Kaushik Ghosh*; **Carbon, 2024, 227, 119225**
18. Porous Carbon Template Decorated with MOF-Driven Bimetallic Phosphide: A Suitable Heterostructure for the Production of Uninterrupted Green Hydrogen via Renewable Energy Storage Device; Mohd Afshan, Parrydeep Kaur Sachdeva, Daya Rani, Subhabrata Das, Mansi Pahuja, Shumile Ahmed Siddiqui, Seema Rani, Rishita Ghosh, Nikita Chaudhary, Jyoti, **Sk Riyajuddin**, Chandan Bera, Kaushik Ghosh* **Small, 2023, 19, 2304399**
19. Transition metal phosphides as cardinal electrocatalytic materials for alkaline hydrogen production; S.K. Tarik Aziz, Sabiha Sultana, Ashwani Kumar, **Sk Riyajuddin**, Manodip Pal, and Arnab Dutta*, **Cell Reports Physical Science, 2023, 4, 101747**
20. Silicon Distyryl-BODIPY Hybrid Photodiode: Moving a Step Ahead from Organic Interface Layer to Type II Band Alignment Nikita Chaudhary , Komal Gill , Mansi Pahuja , Seema Rani , Subhabrata Das , Manoj,K. Choudhary,ShumileAhmed Siddiqui , Daya Rani , Mohd Afshan , Rishita Ghosh , **Sk Riyajuddin** , Soumyaditya Mula, Kaushik Ghosh* **Journal of Alloys and Compounds, 2024, 978, 173389.**
21. Phosphorus-Doped Nickel Oxide Micro-Supercapacitor: Unleashing the Power of Energy Storage for Miniaturized Electronic Devices; Shumile Ahmed Siddiqui, Subhabrata Das, Seema Rani, Mohd Afshan, Mansi Pahuja, Ayushi Jain, Daya Rani, Nikita Chaudhary, Jyoti, Rishita Ghosh, **Sk Riyajuddin**, Chandan Bera, Kaushik Ghosh* **Small, 2024,20, 2306756**
22. Harvesting Green Hydrogen from the Deep Blue: Seawater-Compatible SnSe-P Decorated Graphene-CNTs Based Electrocatalyst Under Universal pH; Mansi Pahuja, Saptarshi Ghosh Dastider, Jyoti, Kehkashan Alam, Seema Rani, Subhabrata Das, Rajashri Urkude, Mohd Afshan, Daya Rani, Nikita Chaudhary, Shumile Ahmed Siddiqui, **Sk Riyajuddin**, Rishita Ghosh, Krishnakanta Mondal, Kaushik Ghosh* **Small, 2024, 2406113.**
23. Strategy to Improve the Photovoltaic Performance of Si/CuO Heterojunction via Incorporation of $Ta_2O_5$ Hopping Layer and MXene as Transparent Electrode; Jenifar Sultana, Shumile Ahmed Siddiqui, Mohd Afshan, Rishita Ghosh, Shyam Sundar Yadav, **Sk Riyajuddin**, Mansi Pahuja, Firdaus Ali, Seema Rani, Daya Rani, Kehkashan Alam, Sushil Kumar, Ananth Venkatesan, Kaushik Ghosh*; **ACS Applied Energy Materials, 2022,5, 3941-3951.**
24. Room-Temperature Ammonia Detection Using Layered Bi2Se3/Bi2O3: A Next-Generation Sensor; Biswajit Das, **Sk Riyajuddin**, Kaushik Ghosh, Ranajit Ghosh*; **ACS Applied Electronic Materials, 2023, 5, 948-956.**
25. Single-walled carbon nanotubes patterned as aromatic element rings through chemical refluxation method; Swasti Saxena*, Ankit Kumar Srivastava, **Sk Riyajuddin**, Siddhartha Samanta, Sabyasachi Khatua, Aakash Singh; **Materials Today: Proceedings, 2023, https://doi.org/10.1016/j.matpr.2023.01.300**
26. Amino acid-capped transition metal ion-doped iron oxide nanoparticles: evaluating drug delivery carrier efficiency and in vitro magnetic resonance image contrasting ability; Bindi Sanghavi, Sucheta De Mondal*, Urja Verma, Suresh Balakrishnan**,** **Sk Riyajuddin**, Kaushik Ghosh, Mitesh Sarkar, Hemant P Soni* * **Journal of the Iranian Chemical Society, 2023, 20,1605-1620.**
27. Seamless Architecture of Porous Carbon Matrix Decorated with Ta2O5 Nanostructure-based Recyclable Photocatalytic Cartridge for Toxicity Remediation of Industrial Dye Effluents; Mansi Pahuja, Indranil De, Shumile Ahmed Siddiqui,

Subhabrata Das, Mohd Afshan, Kehkashan Alam, **Sk Riyajuddin**, Seema Rani, Rishita Ghosh, Daya Rani, Komal Gill, Manish Singh*, Kaushik Ghosh* **Separation and Purification Technology, 2023, 320, 123685.**

28. Constructing a metal-free 2D covalent organic framework for visible-light-driven photocatalytic reduction of $CO_2$: a sustainable strategy for atmospheric $CO_2$ utilization; Priyanka Sarkar, Arpita Hazra Chowdhury, **Sk Riyajuddin**, Swarbhanu Ghosh, Sk Manirul Islam*; **Reaction Chemistry & Engineering, 2023, 8, 365-376.**
29. Photo-Thermal Catalytic Reduction of Carbon Dioxide: Recent Status and Future Prospects; Sushil Kumar, **Sk Riyajuddin**, Gushandeep Kaur, Kaushik Ghosh*; **Advanced in Nanoscience and Nanotechnology, 2021, 5, 5-19.**
30. Reduction of carbon dioxide with mesoporous $SnO_2$ nanoparticles as active photocatalysts under visible light in water; Arpita Hazra Chowdhury, Anjan Das, **Sk Riyajuddin**, Kaushik Ghosh, Sk Manirul Islam*; **Catalysis Science & Technology, 2019, 9, 6566-6569.**
31. Mesoporous covalent organic framework: An active photo-catalyst for formic acid synthesis through carbon dioxide reduction under visible light; Priyanka Sarkar, **Sk Riyajuddin**, Anjan Das, Arpita Hazra Chowdhury, Kaushik Ghosh, Sk Manirul Islam*; **Molecular Catalysis, 2020, 484, 110730.**
32. Chitosan-Graphene Oxide Hydrogels with Embedded Magnetic Iron Oxide Nanoparticles for Dye Removal; Nirbhai Singh, **Sk Riyajuddin**, Kaushik Ghosh, Surinder K Mehta, Abhijit Dan*; **ACS Applied Nano Materials, 2019, 2, 7379-7392.**
33. Mussel-Inspired UV Protective Organic Coatings via Layer-by-Layer Assembly; Arshdeep Kaur Gill, **Sk Riyajuddin**, Mujeeb Alam, Kaushik Ghosh, Debabrata Patra*; **European Polymer Journal, 2020, 124, 109455.**
34. Catalytic Synthesis of Benzimidazoles and Organic Carbamates by Polymer Supported Zinc Catalyst through $CO_2$ Fixation; Imdadul Haque Biswas, Surajit Biswas, Md Sarikul Islam, **Sk Riyajuddin**, Priyanka Sarkar, Kaushik Ghosh, SM Islam*; **New Journal of Chemistry, 2019, 43, 14643-14652.**
35. Cu-NPs@COF: A potential heterogeneous catalyst for $CO_2$ fixation to produce 2-oxazolidinones as well as benzimidazoles under moderate reaction conditions; Resmin Khatun, Surajit Biswas, Imdadul Haque Biswas, **Sk Riyajuddin**, Najirul Haque, Kaushik Ghosh, Sk Manirul Islam*; **Journal of $CO_2$ Utilization, 2020, 40, 101180.**
36. Synthesis of Benzimidazolones and N-phenyl formamides by CO2 fixation Under Mild Reaction Conditions Using Polymer Supported Zinc Complex as Catalyst; Priyanka Basu, Tusar Kanto Dey, **Sk Riyajuddin**, Surajit Biswas, Kaushik Ghosh, Sk. Manirul Islam*; **New Journal of Chemistry, 2020, 44, 12680-12691.**
37. Modified Graphene Oxide based Zinc composite: an efficient catalyst for N-formylation and carbamate formation reactions through $CO_2$ fixation; Resmin Khatun, Surajit Biswas, Md. Sarikul Islam, Imdadul Haque Biswas, **Sk Riyajuddin**, Kaushik Ghosh, Sk Manirul Islam***; ChemCatChem, 2019, 11, 1303-1312.**
38. Zinc (II) incorporated porous organic polymeric material (POPs): A mild and efficient catalyst for synthesis of dicoumarols and carboxylative cyclization of propargyl alcohols and $CO_2$ in ambient conditions; Sk Safikul Islam, Noor Salam, Rostam Ali Molla, **Sk Riyajuddin**, Nasima Yasmin, Debasis Das, Kaushik Ghosh, Sk Manirul Islam*; **Molecular Catalysis, 2019, 477, 110541.**
39. Zn (ii)@ TFP-DAQ COF: an efficient mesoporous catalyst for the synthesis of N-methylated amine and carbamate through chemical fixation of $CO_2$; Priyanka Sarkar, Arpita Hazra Chowdhury, **Sk Riyajuddin**, Surajit Biswas, Kaushik Ghosh, Sk Manirul Islam*; **New Journal of Chemistry, 2020, 44, 744-752.**
40. Silver nanoparticles architectured HMP as a recyclable catalyst for tetramic acid and propiolic acid synthesis through $CO_2$ capture at atmospheric pressure; Swarbhanu Ghosh, Aniruddha Ghosh, **Sk Riyajuddin**, Somnath Sarkar, Arpita Hazra Chowdhury, Kaushik Ghosh*, Sk Manirul Islam*; **ChemCatChem, 2020, 12, 1055-1067.**
41. Visible light assisted chemical fixation of atmospheric $CO_2$ into cyclic Carbonates using covalent organic framework as a potential photocatalyst; Anjan Das, Ranjan Das, Pekham Chakrabortty, **Sk Riyajuddin**, Arpita Hazra Chowdhury, Swarbhanu Ghosh, Aslam Khan, Kaushik Ghosh, Sk Manirul Islam*; **Molecular Catalysis, 2021, 499, 111253.**
42. Synthesis and architecture of polystyrene-supported Schiff base-palladium complex: Catalytic features and functions in diaryl urea preparation in conjunction with Suzuki-Miyaura cross-coupling reaction by reductive carbonylation; Priyanka Basu, **Sk Riyajuddin**, Tusar Kanto Dey, Aniruddha Ghosh, Kaushik Ghosh*, Sk Manirul Islam*; **Journal of Organometallic Chemistry, 2018, 877, 37-50.**
43. Polymer immobilized [Mg@PS-anthra] complex: An efficient recyclable heterogeneous catalyst for the incorporation of carbon dioxide into oxiranes at atmospheric pressure and Knoevenagel condensation reaction under solvent-free condition; Ranjan Kumar Mondal, **Sk Riyajuddin**, Aniruddha Ghosh, Swarbhanu Ghosh, Kaushik Ghosh*,Sk Manirul Islam*; **Journal of Organometallic Chemistry, 2019, 880, 322-332**.
44. Effect of ionic size compensation by Ag+ incorporation in homogeneous Fe-substituted ZnO: studies on structural, mechanical, optical, and magnetic properties; Gaurav Bajpai, Tulika Srivastava, N. Patra, Igamcha Moirangthem, S. N. Jha, D. Bhattacharyya, **Sk Riyajuddin**, Kaushik Ghosh, Dharma R. Basaula, Mahmud Khan, Shun-Wei Liu, Sajal Biring* and Somaditya Sen*; **RSC Advance, 2018, 8, 29228-29229.**

45. Role of $Li^{+}$ and $Fe^{3+}$ in modified ZnO: Structural, vibrational, opto-electronic, mechanical and magnetic properties; Gaurav Bajpai, Igamcha Moirangthem, Shuvam Sarkar, Sudipta Roy Barman, CP Vinod, Shubhra Bajpai, **Sk Riyajuddin**, Kaushik Ghosh, Dharma R Basaula, Mahmud Khan, Shun-Wei Liu, Sajal Biring*, Somaditya Sen*; **Ceramics International, 2019, 45,7232-7243.**
46. Structural, opto-electronics and magnetic study of Fe/Si doped ZnO; Gaurav Bajpai, **Sk Riyajuddin**, Kaushik Ghosh, Shubhra Bajpai, Dharma R Basaula, Subhash Bhatt, Mahmud Khan, Shun-Wei Liu, Sajal Biring, Somaditya Sen*; **Journal of Materials Science: Materials in Electronics, 2019, 30, 9344-9355.**
47. Structure, dielectric, and optical properties of $PbTi_{(1-x)}(V_{0.50}\,Fe_{0.50})_xO_3$ perovskite ceramics ; Arun Kumar Yadav, Anita Verma, Sunil Kumar, **Sk Riyajuddin**, Kaushik Ghosh, Sajal Biring, Somaditya Sen*; **Applied Physics A, 2019, 125, 418.**
48. Polymer incarcerated Palladium catalyzed facile in situ carbonylation for the synthesis of aryl aldehydes and diaryl ketones using CO surrogates at ambient conditions; Tusar Kanto Dey, Priyanka Basu, **Sk Riyajuddin**, Aniruddha Ghosh, Kaushik Ghosh, SM Islam*; **New Journal of Chemistry, 2019, 43, 9802-9814.**
49. Pd NPs decorated on POPs as recyclable catalysts for the synthesis of 2-oxazolidinones from propargylic amines via atmospheric cyclizative $CO_2$ incorporation; Swarbhanu Ghosh, **Sk Riyajuddin**, Somnath Sarkar, Kaushik Ghosh, Sk Manirul Islam*; **ChemNanoMat, 2020, 6, 160-172.**
50. POP-Pd (II) catalyzed easy and safe in-situ carbonylation towards the synthesis of α-ketoamides from secondary cyclic amines utilizing $CHCl_3$ as the carbon monoxide surrogate; Safikul Islam, **Sk Riyajuddin**, Rostam Ali Molla, Nasima Yasmin, Kaushik Ghosh, Sk Manirul Islam*; **New Journal of Chemistry, 2020, 44, 1979-1987.**
51. Exploring the $Ce^{3+}$ ions doping effect on Optical and Magnetic Properties of NiO Nanostructures; M Naseem Siddique, Ateeq Ahmed, **Sk Riyajuddin**, Mohd Faizan, Kaushik Ghosh, P Tripathi*; **Journal of Magnetism and Magnetic Materials, 2019, 500, 166323.**
52. Intrinsic Structural Distortion assisted Optical and Magnetic Properties of Orthorhombic rare-earth perovskite $La_{1-x}Eu_xCrO_3$: Effect of t-e hybridization; M. Naseem Siddique, Mohd Faizan*, **Sk Riyajuddin**, P Tripathi, Shabbir Ahmad, Kaushik Ghosh; **Journal of Alloys and Compounds, 2020, 850, 156748.**
53. In-situ carbonylative synthesis of aromatic esters in assistance of polymer supported palladium catalyst; Tusar Kanto Dey, Priyanka Basu, **Sk Riyajuddin**, Surajit Biswas, Aslam Khan, Kaushik Ghosh, Sk Manirul Islam*; **Chemistry Select, 2020, 5, 10355-10366.**
54. Tunable luminescence in $Ce^{3+/}$ $Mn^{2+}$ co-doped $ZrO_2$ nanophosphor integrated with theoretical studies on possible $(ZrO_2)_n$ clusters using DFT method; Mohd Faizan*, M. Naseem Siddique, P Tripathi, Shabbir Ahmad, **Sk Riyajuddin**; **Journal of Alloys and Compounds, 2020, 853, 157378.**

## Book Chapter:

1. Large Area Graphene and Their Use as Flexible Touchscreens; Surender P. Gaur [#], **Sk Riyajuddin**[#], Sushil Kumar, Kaushik Ghosh*; Carbon Nanomaterial Electronics: Devices and Applications, **Springer, 2021, ISBN No-978-981-1610-51-6** (#-both authors have an equal contribution).

## Conference Proceeding Publication:

1. 3D-Ni-Foam/Graphene Heterostructure Decorated with $Cu_3P$ composite: A Noble-Metal free Electrocatalyst for Hydrogen Evolution Reaction; **Sk Riyajuddin**, Kashif Azmi, Sushil Kumar, Firdaus Ali and Kaushik Ghosh* **AIP Conference Proceedings, 2020, 2265, 030593.**
2. 3D-Ni-Foam/Graphene Heterostructure Decorated with g-$C_3N_4$ composite: A Noble-Metal free Electrocatalyst for Hydrogen Evolution Reaction; **Sk Riyajuddin**, Firdaus Ali, Sushil Kumar, Kashif Azmi and Kaushik Ghosh* **AIP Conference Proceedings, 2020, 2265, 030598.**
3. Low temperature growth of pyroelectric triglycine sulfate single crystal for passive infrared sensing; Surender P Gaur*, Sandhya, Sushil Kumar, **Sk Riyajuddin,** Sunny Kumar, Damini Badhwar, Kaushik Ghosh; **AIP Conference Proceedings, 2019, 2115, 030400.**
4. Influence of Rare Earth Ions on Microstructural and Optical Properties of ZnO Nanostructures; **Sk Riyajuddin***, Swaleha Naseem, Wasi Khan, Shabbir Ahmad, M.Faizan and A.H Naqvi; **AIP Conference Proceedings, 2016, 1731, 050040.**

## Conference Presentation:

1. Poster presentation **"Influence of Rare Earth Ions on Microstructural and Optical Properties of ZnO Nanostructures"** **60th Solid State Physics Symposium, Amity University, 2015, UP, India.**
2. Poster presentation **"Theoretical investigation of Piezoresistive behavior of graphene/g-$C_3N_4$ heterostructure under strain condition"** **3rd CRICK Nano Science conference, CSIO, 2017, Chandigarh, India. (Selected for best poster award).**

3. Poster Presentation **"Highly linear response Piezoresistive Strain Sensor based on PDMS/g-$C_3N_4$/Graphene Heterostructure with tunable Bandgap"** **Conference on Spectroscopy of Emerging Functional Materials (SEFM-2017), IIT Mandi, 2017, Himachal Pradesh, India.**
4. Poster Presentation **"Investigation of Field Emission Properties of Seamless Graphene-CNT Heterostructure"** **9th Bengaluru Nano India, DST, 2017, Karnataka, India.**
5. Oral Talk **"3D-Graphene decorated $Cu_3P$/g-$C_3N_4$: Highly Active Noble –Metal free Electrocatalyst for Hydrogen Evolution", International Conference on Advanced Material, Energy& Environmental Sustainability, UPES, 2018, UK, India.**
6. Oral Talk **"Improvement of Field Emission Performance of Graphene-CNT Heterostructure via Seamless Interface" International Conference on Nano-Structured Materials & Devices, Delhi University, 2018, Delhi, India.**
7. Poster Presentation **"Metal free Photoelectrode for Hydrogen Production" First Indian Materials Conclave and 30th AGM of MRSI, IISC Bangalore, 2019, Karnataka, India. (Selected for best poster award).**
8. Oral Talk **"Tailoring the Electrocatalyst performance of $Cu_3P$/g-$C_3N_4$ Heterostructure via 3D Graphene for Hydrogen Evolution", 2nd International Conference on Chemistry, Industry and Environment, AMU-Aligarh, 2019, UP, India.**
9. Poster Presentation **"Enhancing the Electrocatalyst performance of $Cu_3P$/g-$C_3N_4$ Heterostructure via 3D Graphene for Hydrogen Evolution", International Conference on Advanced Materials, JMI, 2019, Delhi, India.**
10. Poster Presentation **"$Ni_2P$-$CuP_2$ Heterostructure on Ni-foam Graphene/CNTs for Hydrogen Evolution", International Conference on Nano Science and Technology (ICONSAT)-S.N. Bose, 2020, Kolkata, West Bengal, India.**
11. Oral Talk **"Hierarchical Bimetallic Phosphide of $Ni_2P$-$CuP_2$ on Ni-Foam-Graphene-CNTs Substrate: Efficient and Super-Stable Electrocatalyst for Overall Water Splitting" MRS spring Meeting and exhibit, 2021, USA.**
12. Oral Talk **"Super-Hydrophilic leaf-like $Sn_4P_3$ on Porous Seamless Graphene-Carbon Nanotube Heterostructure as an Efficient Electrocatalyst for Solar-Driven Overall Water Splitting" Physics of Nano Material: PNM 2021, INST, Mohali, Punjab.**
13. Oral Talk "**Seamless Graphene-Carbon Nanotube-$Sn_4P_3$ Heterostructure: As an Efficient Electrocatalyst for Solar-Driven Overall Water Splitting" Material Research Society of India (MRSI), 2021, IIT Madras, Tamil Nadu.**

## Collaborators:

- Prof. Sk Manirul Islam, Department of Chemistry, University of Kalyani
- Dr. Takahiro Maruyama, Department of Applied Chemistry, Meijo University
- Dr. Deepak Dubal, Centre for Material Science, Queensland University of Technology
- Dr. Chandan Bera, Quantum Material and Device Unit, Institute of Nano Science and Technology
- Prof. Gilbert Daniel Nessim, Department of Chemistry / Nanotechnology, Bar-Ilan University
- Dr. Somaditya Sen, Department of Physics, IIT Indore
- Prof. Ehesan Ali, Quantum Material and Device Unit, Institute of Nano Science and Technology

## Professional Membership:

- Institute of Scholar (InSc)
- Materials Research Society

## Journals Reviewer/Editor:

- International Journal of Basic and Applied Sciences.
- RSC Advances
- Synthetic Metals
- ACS Energy & Fuel
- Nanotechnology
- Material Research Express
- Journal of Fuel
- Editor-Frontiers in Nanotechnology
- Editor of Booked: Futuristic Trends in Chemical Material Sciences & Nano Technology, IIP Proceeding

## References

**Prof. Kaushik Ghosh (PhD Supervisor)**
Professor (Scientist-F) and Head of the Unit
Institute of Nano Science and Technology
Punjab-140306, India,
**Email: kaushik@inst.ac.in**
**Prof. Sk Manirul Islam**
Professor, Department of Chemistry
University of Kalyani,
Kalyani, West Bengal, 741235
**Email: manir65@rediffmail.com**

**Prof. Takahiro Maruyama**
Professor
Department of Applied Chemistry,
Meijo University, Nagoya 468-8502, Japan
**Email: takamaru@meijo-u.ac.jp**