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Raja Rammohunpur, Dist- Darjeeling, West Bengal, Pin-734013, India.

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Department of Chemistry

Print

Dr. Nitish Roy

B.Sc. M.Sc. Ph.D.,

Assistant Professor

Membership: Regular member of Royal Chemical Society of Japan and Electrochemical Society of Japan.

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Subject Specialization: Physical Chemistry

Areas of Research Interest: Nanomaterials. Sustainable Catalysis. Water Splitting. CO_2 Reduction. Energy and Environment

No. of Ph.D. students: **(a) Supervised:** Nil **(b) Ongoing:** Nil

No. of M.Phil. students: **(a) Supervised:** Nil **(b) Ongoing:** Nil .

No. of Publications: **(a) Scientific Papers:** 14 (b) **Books/Book Chapter:** 01

Achievement & Awards: Nil

Administrative Experiences: Nil

Research Funding:

- **Project title:** Studies of the Adsorption Dynamics of CO_2 on Photocatalyst Surfaces and Subsequent Conversion into Value Added Chemicals under Light Irradiation
- **Funding agency:** SERB
- **Duration:** 2019-2022

Research Experience:

- Postdoc Fellow (2015-2018), Tokyo University of Science, Supervisor: Prof. Akira Fujishima
- Research Associate (2014-2015),IIT Kharagpur, Supervisor: Prof. Debabrata Pradhan
- PhD (2011-2014), IIT Kharagpur, Supervisor: Prof. Debabrata Pradhan

Volunteer Service:

- President (2012-2013), Materials Science Society, Materials Science Centre, IIT Kharagpur
- Reviewer of the International Journals

List of Publications:

Book chapter:

- P. Sudhagar, **N. Roy**, K. Nakata, C. Terashima, and A. Fujishima. Hydrogen and CO2 Reduction Reactions. Mechanisms and Catalysts. **Springer**2016, 105–160.

Review article:

- **N. Roy**,* N. Suzuki, C. Terashima, and A. Fujishima. Recent Improvements in the Production of Solar Fuels: From CO2 Reduction to Water Splitting and Artificial Photosynthesis. **Bullet. Chem. Soc. Japan** 2019, 92, 178–192.

Article

- **N. Roy**, Y. Sohn, and D. Pradhan. Synergy of Low-Energy {101} and High-Energy {001} TiO2 Crystal Facets for Enhanced Photocatalysis. **ACS Nano** 2013, 7, 2532–2540. **Impact Factor: 13.9**
  Citation: 310 (Google Scholar)
  Top Five Most Downloaded in a Month, Source: ACS Nano web
  Generated a new concept on facets dependent activities of the materials

- **N. Roy,** Y. Park, Y. Sohn, K. T. Leung, and D. Pradhan. Green Synthesis of Anatase TiO2 Nanocrystals with Diverse Shapes and their Exposed Facets Dependent Photoredox Activity. ACS Appl. Mater. Interfaces 2014, 6, 16498–16507. Impact Factor: 7.5
  Citation: 53 **(Google Scholar)**
  Top Ten Most Downloaded in a Month, Source: ACS Appl. Mater. Interfaces web Replaced HF by greener amine

- **N. Roy**, K. T. Leung, Y. Sohn, and D. Pradhan. Engineered Electronic States of Transition Metal Doped TiO2 Nanocrystals for Low Overpotential Oxygen Evolution Reaction. **J. Phys. Chem. C** 2014, 118,29499–29506. **Impact Factor: 4.5**
  Citation: 60 **(Google Scholar)**
  Top Ten Most Downloaded in a Month, Source: J. Phys. Chem. C web

- Y, Na, S. W. Lee, **N. Roy**, D. Pradhan, and Y. Sohn. Room Temperature Light Induced Recrystalization of Cu2O Cubes to CuO Nanostructures. **CrysEnggComm** 2014, 16, 8546–8554. **Impact Factor: 3.8**

- **N. Roy**, Y. Park, Y. Sohn and D. Pradhan. Controlled Synthesis and Facets Dependent Photocatalysis of TiO2 Nanocrystals. **Semi. Sci. Technol.** 2015, 30, 044005. **Impact Factor: 2.2**
  Included in highlight collections

- **N. Roy,** K. T. Leung, and D. Pradhan. Nitrogen Doped Reduced Graphene Oxide Based Pt−TiO2 Nanocomposites for Efficient Hydrogen Evolution. **J. Phys. Chem. C** 2015, 119, 19117–19125. **Impact Factor: 4.5**
  Citation: 53 **(Google Scholar)**

- N. Roy, C. Terashima, A. Fujishima and D. Pradhan. Citrate Capped Hybrid Au-TiO2 Nanomaterial for Facile and Enhanced Electrochemical Hydrazine Oxidation. ACS Omega 2017, 2,1215−1221. Impact Factor: Yet to publish

- C. Terashima, H. Ryota, **N. Roy**, Y, Sugiyama, S. S. Latthe, K. Nakata, T. Kondo, M. Yuasa, and A.Fujishima. Charge Separation in TiO2/BDD Heterojunction Thin Film for Enhanced Photoelectrochemical Performance.**ACS Appl. Mater. Interfaces** 2016, 8, 1583–1588. **Impact Factor: 7.5**

- **N. Roy*** (* indicates corresponding author), Y.Shibano, C.Terashima, K. Katsumata,K. Nakata, T. Kondo, M. Yuasa, and A. Fujishima. Ionic Liquid Assisted Selective and Controlled Electrochemical CO2 Reduction at Cu Modified BDD Electrode.**ChemElectroChem** 2016, 3, 1044–1047. **Impact Factor: 4.4**

- **N. Roy**, Y. Hirano, K. Katsumata,K. Nakata, T. Kondo, M. Yuasa,C.Terashima and A.Fujishima. Boron-Doped Diamond Semiconductor Electrodes: Efficient Photoelectrochemical CO2 Reduction through Surface Modification.**Scientific Reports** 2016, doi:10.1038/srep38010. **Impact Factor: 4.2**

- Y. Nakabayashi, Y. Hirano, Y. Sakurai, A. Okazaki, H. Kuriyama, **N. Roy,** N. Suzuki, K. Nakata, K. Katsumata, I. Serizawa, A. Fujishima, C. Terashima. Positive Shift in the Potential of Photo-electrochemical CO2 Reduction to CO on Ag-loaded Boron-doped Diamond Electrode by an Electrochemical Pre-treatment. **J. Appl. Electrochem**, 2017, doi.org/10.1007/s10800-017-1132-8. **Impact Factor: 2.2**

- J. Choi, T. Song, H. Han, **N. Roy**, C. Terashima, A. Fujishima, U. Paik, and P. Sudhagar. WO3Nanofibrous Backbone Scaffolds for Enhanced Optical Absorbance and Charge Transport in Metal Oxide (Fe2O3, BiVO4) Semiconductor Photoanodes towards Solar Fuel Generation. **Applied Surface Science** 2018, Accepted, doi: 10.1016/j.apsusc.2018.03.167. **Impact Factor: 3.3**

- **N. Roy,***Y. Hirano, N. Suzuki, C. Terashima and A. Fujishima. Facile Deposition of Cu-SnOx Hybrid Nanostructures on the Lightly Boron-Doped Diamond Electrodes for CO2 Reduction. **ChemElectroChem** 2018, doi.org/10.1002/celc.201800460, **Impact Factor: 4.4**

- T. Adachi, S. S. Latthe, S. W. Gosavi, **N. Roy**, A. Fujishima, and C. Terashima. Photocatalytic, Superhydrophilic, Self-cleaning TiO2 Coating on Cheap, Light-weight, Flexible Polycarbonate Substrates. **Applied Surface Science** 2018, doi.org/10.1016/j.apsusc.2018.07.172**. Impact Factor: 3.3**