

Curriculum Vitae

Kazi Hasibur Rahman,

Ph.D., Dept. of Physics
Indian Institute of Technology (Indian School of Mines) Dhanbad,
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Current employment details:

- **Assistant Professor (Regular)** at Swami Vivekananda University, Kolkata, Department of Basic Sciences (Physics) (1.03.2024-till date)
- **Assistant Professor (Regular)** at TKR College of Engineering, Hyderabad, Department of Physics(Science and Humanities) (22.09.2023-31.01.2024)
- **Assistant Professor (Regular)** at Lords Institute of Engineering and Technology, Hyderabad, Department of Physics(Science and Humanities) (3.06.2023-20.09.2023)
- **Postdoctoral Research Associate** at Centre for High Energy Systems and Sciences (CHESS), DRDO, Hyderabad (23rd May, 2022-14th June,2023)

Research Interest:

Area of Specialization:

- Heterogeneous catalysis, Photocatalytic dye degradation activity, Advanced oxidation process, Waste water detoxification, Hydrogen production,
- Metal oxide semiconductor, Material characterizations, optical properties, Polymerization,
- Toxic organic dyes, decolouration,
- Molecular structure, physical chemistry, photo-physical properties, materials science
- High energy science

Current Interest:

- Catalysis, fuel cells, solar cells, hydrogen production, CO₂ reduction process, biomass conversion, chemical engineering
- Optical studies, Spectroscopy, XRD, XPS, TGA/DSC, electrochemical test, Physical chemistry,
- Kinetic modelling,
- Charge carrier generation and recombination, Charge transfer phenomenon,
- Electrical studies, Electrochemical synthesis method
- Laser science, optics, spectroscopy, high energy, Directed energy

Academic Qualifications:

• **2016-2021: Ph.D.**

Institution: Indian Institute of Technology (Indian School of Mines) Dhanbad, India.

Thesis Title: “**Development of composite and doped TiO₂ nanomaterials for the UV and visible light driven photocatalysis for waste water detoxification**”

Thesis Supervisor: **Prof. Asit Kumar Kar,**

Date of Final Defence Viva – **21.06.2021**

Coursework – Passed (Research Methodology & Statistics, Research and Technical Communication, Physics of Electronic Materials & Devices, Materials Characterization)

• **2013-2015: M.Sc. (Applied Physics)**

Indian Institute of Technology (Indian School of Mines) Dhanbad, India.

OGPA – 8.19 /10

• **2010-2013: B.Sc. (Physics(Hon.), Mathematics, Chemistry)**

Vidyasagar College, Calcutta University, West Bengal, India.

Percentage – 47.25 %

• **2009: Higher Secondary (12th)**

Institution: Krishnath college school, Murshidabad, West Bengal, India.

Percentage – 84.8%

• **2007: Madhyamik (10th)**

Institution: Krishnath college school School, Murshidabad, West Bengal, India.

Percentage – 87.875%

Academic Achievements:

- 2016-2021 Institute fellowship funded by **MHRD**, Govt. of India, from IIT (ISM) Dhanbad.
- 2014 (May-June) Two months research internship at Variable energy cyclotron centre (VECC)
- September,2014- March,2015 Six month project fellow at IIT (ISM) Dhanbad, India
- 2015 Qualified TOEFL English proficiency test
- 20th December, 2019- 17th June, 2020 Six month research internship program through Taiwan Experience Education Program from Taiwan Ministry of Education at NPUST, Taiwan
- 2009 Merit-cum Scholarship (West Bengal govt.)

Research Experience:

PhD Research (2016-2021):

Thesis Title: Development of composite and doped TiO₂ nanomaterials for the UV and visible light driven photocatalysis for waste water detoxification

Institute: Indian Institute of Technology (Indian School of Mines), Dhanbad

Doctoral Research Internship (12/2019-06/2020):

Title: Extended work of PhD thesis research work

Institute: National Pingtung University of Science and Technology (NPUST), Taiwan

Msc. Summer Research Internship (5/2014-7/2014):

Project Title: A Study on Capacitance of Electrode Assembly of Penning Ion Trap

Institute: Variable Energy Cyclotron Center (VECC), Kolkata

Msc. Project (9/2014-4/2015):

Project Title: To Study the Propagation Characteristics of Photonic Crystal Fibre

Institute: Indian Institute of Technology (Indian School of Mines), Dhanbad

International Journal Publications:

1. “Titanium-di-oxide (TiO₂) concentration-dependent optical and morphological properties of PAni-TiO₂ nanocomposite” by **Kazi Hasibur Rahman** and Asit Kumar Kar. (2019). *Materials Science in*

Semiconductor Processing, 105, 104745. (<https://doi.org/10.1016/j.mssp.2019.104745>) **(I.F.-4.644)**, Elsevier, Q2, H index: 68

2. "Effect of precursor concentration of microstructured titanium-di-oxide (TiO₂) thin films and their photocatalytic activity" by **Kazi Hasibur Rahman** and Asit Kumar Kar. (2019). *Materials Research Express*, 6(9), 096436. (<https://doi.org/10.1088/2053-1591/ab3240/meta>) **(I.F.-1.941)**, IOP publishing, Q2, H index: 43

3. "Effect of band gap variation and sensitization process of polyaniline (PANI)-TiO₂ p-n heterojunction photocatalysts on the enhancement of photocatalytic degradation of toxic Methylene blue with UV irradiation" by **Kazi Hasibur Rahman** and Asit Kumar Kar, *Journal of Environmental Chemical Engineering*, 8(5), 2020 104181 <https://doi.org/10.1016/j.jece.2020.104181> **(I.F.-7.968)**, Elsevier, Q1, H index: 90

4. "Oxygen Vacancy and Adsorbed Superoxides Dependent Photocatalytic Activity of TiO₂ Quantum Dot Thin Films for Degradation of Methylene Blue with Variation of Precursor Concentration" by **Kazi Hasibur Rahman** and Asit Kumar Kar, *ECS Journal of Solid State science and Technology*, <https://doi.org/10.1149/2162-8777/ac1d25>, 2021 **(I.F.-2.070)**, IOP publishing, Q2, H index: 56

5. "A Review on the Pathways of the Improved Structural Characteristics and Photocatalytic Performance of Titanium Dioxide (TiO₂) Thin Films Fabricated by the Magnetron-Sputtering Technique" by Kuan-Chung Chen, **Kazi Hasibur Rahman**, Yu-Hsiang Wang, Chih-Chao Wu and *Catalysts* 2020, 10(6),598; <https://doi.org/10.3390/catal10060598>, **(I.F.-4.39)**, MDPI, Q2, H index:53

6. "Role of bridging oxygen vacancy on reduced anatase TiO₂ (101) for photodegradation of Rhodamine-B" by **Kazi Hasibur Rahman** and Asit Kumar Kar, *ECS Journal of Solid State science and Technology*, 2021, 10(11), 116004, doi: 10.1149/2162-8777/ac33f1/meta: **(I.F.-2.070)**, IOP publishing, Q2, H index: 56

7. "Hydroxylation induced defect states and formation of bidentate acetate adstructure of TiO₂ catalysts with acetic acid variation for catalytic application" by **Kazi Hasibur Rahman** and Asit Kumar Kar, *Semiconductor Science and Technology*, <https://doi.org/10.1088/1361-6641/ac48dc> **(I.F.-2.654)**, IOP publishing, Q2, H index: 117

8. "Oxidation-induced catalytic performance of heterostructured Ni-TiO₂ nanoparticles and formation of Leuco-Methylene blue" by **Kazi Hasibur Rahman**, Asit Kumar Kar and Kuan-Chung Chen, *Research on Chemical Intermediates*, volume 48, pages 4475–4501 (2022), <https://doi.org/10.1007/s11164-022-04838-y> **(I.F.-3.134)**, Springer, Q2, H index:54

9. "Highly effective Fe-doped TiO₂ nanoparticles for removal of toxic organic dyes under visible light illumination", by **Kazi Hasibur Rahman**, Asit Kumar Kar, Kuan-chung Chen and Ching-Jung Chen, *Nanotechnology*, 34(24), 245707, 2023 doi: 10.1088/1361-6528/acc407 **(I.F.-3.953)**, IOP Publishing, Q1, H index-211

10. "Synergic effect of polyaniline and ZnO to enhance the photocatalytic activity of their nanocomposite" by Keya Sahu, **Kazi Hasibur Rahman** and Asit Kumar Kar. (2019) *Materials Research Express*, 6(9), 095304. <https://iopscience.iop.org/article/10.1088/2053-1591/ab2c5f/meta> **(I.F.-1.941)**, IOP Publishing, Q2, H index: 35

11. Chen, C. J., Wu, C. C., Rahman, K. H., & Chen, K. C. (2023). A study on photodegradation of trichloroethylene using an optical fiber coated with different photocatalysts. *Materials Science in Semiconductor Processing*, 163, 107538.

National Journal Publications:

1. "Influence of catalyst loading on photocatalytic degradation efficiency of CTAB assisted TiO₂ photocatalyst towards Methylene blue dye solution" by **Kazi Hasibur Rahman** and Asit Kumar Kar, *Bulletin of Materials Science*, 2021, doi: 10.1007/s12034-021-02600-5

Book Chapter Publications:

1. *Materials Technology for the Energy and Environmental Nexus*, Volume 2, IOP publishing

Chapter 11: "Recent trends and materials used for environmental monitoring and applications" by C Rajkumar, Kazi Hasibur Rahman, P V Chandrasekar and Kuan-Chung Chen, doi:10.1088/978-0-7503-5729-6ch11

International/ National conference proceedings Publications:

1. "The effect of monomer concentration in cationic surfactant assisted synthesis of polyaniline (PANI) and its application in visible light irradiated degradation of methylene blue" by **Kazi Hasibur Rahman** and Asit Kumar Kar. *AIP Conference Proceedings*, Vol. 2220, 020041 (2020); <https://doi.org/10.1063/5.0001627>

2. "Optical properties of titanium-di-oxide (TiO₂) prepared by hydrothermal method " by **Kazi Hasibur Rahman**, Sayari Biswas and Asit Kumar Kar. *AIP Conference Proceedings*, Vol. 1953 (1), 030022, Date: 08.05.2018.

3. "Optical properties of titanium-di-oxide (TiO₂) prepared by dip coating method" by Sayari Biswas, **Kazi Hasibur Rahman** and Asit Kumar Kar. *AIP conference proceedings*, Vol. 1953 (1), 030004, Date: 08.05.2018.

4. "Structural and optical properties of ex-situ polymerized PANi-TiO₂ nanocomposite" by **Kazi Hasibur Rahman** and Asit Kumar Kar. *Materials Today: Proceedings*, 18, 1067-1071.(<https://doi.org/10.1016/j.matpr.2019.06.565>) (2019)

Attended International/National Conferences/Workshops:

December 07-09, 2016	Poster presentation in 23rd National Conference on Liquid Crystals (NCLC-2016) , IIT(ISM), Dhanbad
January 12-13,2017	Poster presented in International conferences on recent trends in chemical sciences, at Govt. Engineering college , Bikaner, Rajasthan Participant
December 06-08, 2017	Oral presentation in International Conference on Nanotechnology: Ideas, Innovations and Initiatives (ICN:3I-2017), IIT Roorkee, Uttarakhand, India
March 14-16, 2018	Poster presented in <i>National Conference on Advances in Spectroscopic Techniques and Materials (ASTM-2018)</i> , IIT (ISM) Dhanbad
December 12-15 2018.	Poster presented in International Conference on PHOTONICS 2018 , OSA at IIT Delhi

31st October -2 November, 2018.	Poster presented in International workshop on nano/micro 2D-3D Fabrication, Manufacturing of Electronic-Biomedical Devices and Applications (IWNEBD 2018), IIT Mandi , Mandi ,Himachal Pradesh, India
January 28-30, 2019	Two Posters presented in 5 th International conference on Nanoscience and Nanotechnology (ICONN 2019)" , SRM university, Chennai, India
October 14-15, 2019	Poster presented in 3rd International Conference on Condensed Matter & Applied Physics (ICC-2019), Bikaner, Rajasthan, India
31st July & 1st August, 2020	Participated in the two day national webinar "Current Challenges in Experimental Physical Chemistry" Organized by Dept. of Chemistry, IIT (ISM) Dhanbad in association with The Royal Society of Chemistry
August 4-6, 2020	Participated in "International webinar on Frontiers in Materials for technological applications" by CSIR-Institute of Minerals and Materials Technology, Council of Scientific and Industrial Research, Bhubaneswar, Odissa, India
September 22-24, 2020	Participated in "Online Workshop on Reitveld Refinement Method" by UGC-DAE Consortium for Scientific Research, Mumbai centre in association with Indore centre
November 23-25, 2020	Participated in three day online workshop on EXPERIMENTAL METHODS IN ANALYTICAL ELECTROCHEMISTRY AND ADVANCED CHEMICAL ENGINEERING" organized by Chemical engineering department of Ujjain Engineering College, Ujjain sponsored by TEQIP III.
February 01-03, 2021	Three Posters presented in 6 th International conference on Nanoscience and Nanotechnology (ICONN 2019)" , SRM university, Chennai, India

Computer and Technical Skills

- Operating Systems:** Windows.
- Programming Languages:** C.
- Mathematical Software:** Matlab and Simulink, Origin, Comsol Multiphysics, Chem model.
- For Documentation:** Microsoft Office (Word, Power Point), Microsoft Excel.
- Instrumentation:** UV-Vis absorption Spectrophotometer, FESEM, FTIR, Photoluminescence Spectrophotometer, XRD, Nanotechnology lab handling, Pallet preparation etc.

Language Skills

- English, Hindi, Bengali (mother tongue).

Other Academic/TA Work done:

- i. Teaching Assistant:
 - a. Physics Practical classes of B.Tech. Common
 - b. Theoretical physics of JRF course work classes.
- ii. Examination invigilation duties.
- iii. Assisted Store verification of the department
- iv. Assisted three (3) Msc. Students in their Msc project dissertation work (experimental, project thesis writing, evaluation, theoretical understanding etc.) as a co-supervisor.

Administrative works:

- i. Assisted my PhD supervisor in marks upload of the students during exam.
- ii. Helped him with many administrative related works.
- iii. Allotted for invigilation duties.

iv. Assisted with evaluation of answer scripts along with my guide, showing copies to students and clearing their doubts etc.

v. Attended many various departmental administrative meetings with my supervisor.

Training profile:

- Training on Comsol Multiphysics software (2017)
 - Workshop and training in Design and style of a PhD Thesis and reference Management using Open source solutions (2018)
 - Training workshop on Faculty Development Center, IIT (ISM) Dhanbad, (2017)
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References

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| 1. Dr. Asit Kumar Kar
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Declaration: I hereby declare that all the details furnished above are true to the best of my knowledge and belief.

Place: Berhampore, West Bengal, India

Kazi Hasibur Rahman

(Kazi Hasibur Rahman)
Signature