
DR. TANMAY KUMAR GHORAI

Professor

Department of Chemistry
Indira Gandhi National Tribal University
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✚ Date of Birth : 22nd August 1978

✚ Professional /Teaching Experience :

- **Professor**, Dept. of Chemistry, IGNTU, Amarkantak, MP (29.03.2019 – Continuing)
- **Head & Member of Academic Council**, GGV, Bilaspur (14.02.2020 – 27.11.2020)(on Lien)
- **Professor**, Dept. of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur, CG, India (15.01.2020 – 27.11.2020) (on Lien)
- **Chairman of BOS**, Dept. of Chemistry, IGNTU, Amarkantak (15.11.2016 – 14.01.2020)
- **Member of Academic Council**, IGNTU, Amarkantak (18.04.2016 – 14.01.2020)
- **Head & Chairman of DRC**, Dept. of Chemistry, IGNTU (18.04.2016 – 14.01.2020)
- **Associate Professor**, Dept. of Chemistry, IGNTU, Amarkantak, MP, India (29.03.2016 – 28.03.2019)
- **Associate Professor**, Dept. of Chemistry, University of Gour Banga, Malda, W.B., India (01.08.2014 - 28.03.2016)
- **Assistant Professor**, Dept. of Chemistry, West Bengal State University, Barasat, W.B., India (17.03.2009 – 31.07.2014)
- **Lecturer in Chemistry (Assist. Prof.)**, Dept. of Chemistry, Bajkul Milani Mahavidyalaya, Bajkul, Purba Medinipur, W.B., India (06.05.2005 – 16.03.2009)
- **Assistant Teacher**, D. B. G. S. T. Institution, Keshiary, Paschim Midnapore, W.B., India, (15.07.2002 – 05.05.2005)

✚ Academic Career :

- **Postdoctoral Research Associate**: Postdoctoral research work pursuing under Prof. George Christou, Department of Chemistry, University of Florida, Gainesville, Florida, USA, funded by prestigious BOYSCAST Fellowship, DST, Govt. of India, 2011 – 2012.
- **PhD awarded on 2009** from Department of Chemistry, Vidyasagar University, Midnapore, W.B., India and entire research work was carried out at IIT KGP under Prof. Panchanan Pramanik. Title of PhD Thesis: “*Studies on the Photochemical Reactions with Nano sized Inorganic Oxides*”
- **M.Sc.**, Inorganic Chemistry (Specialization), Banaras Hindu University, 2001
- **B. Sc.**, Chemistry Hons, Vidyasagar University under Midnapore College, 1999
- **12th Class**, W.B.C.H.S.E, 1996
- **10th Class**, W.B.H.S.E, 1994

✚ Award/Recognition/Fellowship:

- Received DST-FIST Programm@IGNTU as Convener/Coordinator, 2017-2018 for Development of Departmental Research Facility
- YOUNG SCIENTIST AWARD, DST- Fast Track Scheme, Govt. of India, 2010
- BOYSCAST Fellowship, DST, Govt. of India, 2011 – 2012
- NOMINATED TOP 100 SCIENTIST, International Biographical Centre, Cambridge, ENGLAND, 2012
- NET-CSIR, Dec. 2001
- GATE, conducted by IISc Bangalore, Feb. 2002

✚ Total Teaching Experience: More than 15 Years

✚ Broad Research Area: Nanoscience, Catalysis, Single Crystals and SMMs

✚ Research Interest:

- Green Synthesis of metal oxide based nanocomposites / nanoparticles from plant extract.
- Design & Synthesis of novel homo/heteronuclear transition/rare earth metal clusters/ Single Crystals/ Single Molecular Magnets.
- Potential application: Catalysis, Photocatalysis, Organic transformation reactions, Sensors, Biological Activity and Magnetic properties.

✚ Google Scholar Citations

Cited by

	All	Since 2016
Citations	574	294
h-index	13	9
i10-index	13	9

✚ Research Guidance:

- Master Thesis : **29** (Completed)
- PhD Awarded : **04** (02 – University of Gour Banga, Malda, WB
01 – West Bengal State University, Barasat, WB
01 – Indira Gandhi National Tribal University,
Amarkantak, MP)

✚ Details of PhD Awarded Students:

1. **Dr. Sayantan Pathak:** Assistant Teacher, Bhalika R.M.M.M. Vidyapith (H.S.), Bhaluka Bazar, Malda – 732125, W.B., India
Thesis Title: “*Synthesis and Characterization of New Homo/Heterometallic Transition Metal Cluster and Study on Their Single Molecule Magnetic Behaviour and Biological Activities*” (**PhD registration no. 1519607 & Date of registration – 08/03/2016; Thesis awarded on 20.07.2018**)
2. **Dr. Suranjan Das:** Assistant Professor, Department of Chemistry, Govt. General Degree College at Kushmandi, Kushmandi, Dakshin Dinajpur, W.B., India.

Thesis Title: “*Designing, Synthesis and Study of Photocatalytic Effects of Semiconductor Based Nanocomposites*” (PhD registration no. 1519608 & Date of registration – 08/03/2016; Thesis awarded on 20.09.2018)

- Dr. Niladri Biswas:** Assistant Professor (Contractual), Institute of Genetic Engineering, Badu, Kolkata-700128, WB, India
Thesis Title: “*Design, Synthesis and Characterization of Some Transition Metal Complexes*” (PhD registration no. 10014417111000003 & Date of registration – October 2013; Thesis awarded on 17.01.2019)
- Dr. Mithun Kumar Ghosh:** Assistant Professor (Guest), Pt. S. N. Shukla University, MPEB Colony, Shadol, Madhya Pradesh – 484001, India
Thesis Title: “*Synthesis of new transition/rare earth metal clusters and their possible applications in Catalysis/Biological activity*” (PhD registration no. 16165003 & Date of registration 26/07/2016; Thesis awarded on 06.03.2020)

✚ **Project Ongoing: 02**

- MPCST, A/R&D/RP-2/ Phy & Engg./2017-18/271 Amount Rs. 8,14,790/-
- DST-FIST, SR/FST/CS-I/2017/2 Amount Rs. 112 lakhs

✚ **Project Completed: 02**

Sl No.	Title of The Project	Duration	Total Cost	Funding Agency
01 (PI)	Synthesis of different transition metal doped titanium dioxide $M_xNb_xTi_{1-2x}O_{2-x/2}$ (M = Cr, Fe; where x = 0.01, 0.03, 0.05, 0.1, 0.2) nanocatalysts and studied their Photocatalytic properties DST Sanctioned No: SR/FT/CS-021/2010 dated 03-Nov-2010	3/11/2010-30/5/2013	22 lakhs	DST
02 (Co-PI)	Design, Synthesis, Characterisation of Transition Metal Complexes: Feasibility study of Nanocrystalline Dye-Sensitised Solar Cell CSIR Sanc. No. 01(2537)/11/ EMR-II, Dt: 12/12/2011	12/12/2011-20/02/2015	14 lakhs	CSIR

✚ **Training Course Attend:**

- Refresher Course : 01 (UGC – Academic Staff College, Jadavpur University)
- Orientation Programme: 01 (UGC – Academic Staff College, Jadavpur University)

✚ **Other Professional Activities:**

✚ **Reviewer of International/National Journal**

ACS, RSC, Elsevier, Springer, Wiley & Hindawi Journals and Journal of Indian Chemical Society

✚ **Evaluation of PhD Thesis**

1. Examined PhD Thesis: **01** (Kochin University of Science & Technology)

✚ **Co-ordinator/Convener in National Seminar/Outreach programme**

1. International Webinar on “Emerging Areas in Chemical Sciences: opportunities and Challenges (EACS)” Organised by Department of Chemistry, GGV and Chemical Research Society in India (CRSI), Bangalore on 12-13 August 2020, GGV, Bilaspur.
2. National Seminar on “Recent Developments in Chemical Sciences (RDSCS-2018)” 23-24 February 2018, IGNTU, Amarkantak
3. Organise an **Outreach programme** for science encouragement of tribal students on 9-10th November 2017 at IGNTU campus with collaboration of Institute of Nano Science & Technology, Mohali.
4. National Seminar on “National Symposium on Chemical Science” 12th March 2016, University of Gour Banga, Malda

✚ **Member of Various Professional Society/Bodies (National/International)**

1. Member of American Chemical Society, (2019-20, 20-21)
2. Life Member of International Association of Advanced Materials (LM No. 78822191716) (2016)
3. Life Member of American Nano Society, USA (No. 114335, 18/04/2011)
4. Life Member of MRSI, IISc Bangalore (LMB1873, 12/04/2011)
5. Life Member of Indian Chemical Society, Kolkata (F/7276, 17/03/2011)
6. Life Member of Society for Materials Chemistry, BARC (LM 80, 15/12/2008)

✚ **List of Research Publications:**

2020

1. Mithun Kumar Ghosh, Barun Jana and **Tanmay Kumar Ghorai***, “Single Molecule Magnets of Co₂ and Co₂La MOFs Synthesized by New Schiff Base Ligand N,N'-bis(*o*-Vanillinidene) Ethylenediamine (*o*-VEDH₂)”, *Frontiers in Chemistry*, 2020, Volume 8 | Article 571223, **Impact Factor: 3.693**.
2. Mithun Kumar Ghosh, Sanjay Sahu, Indresh Gupta and **Tanmay Kumar Ghorai***, “Green synthesis of copper nanoparticles from an extract of *Jatropha curcas* leaves: characterization, optical properties, CT-DNA binding and photocatalytic activity”, *RSC Adv.*, 2020, 10, 22027, **Impact Factor: 3.06**
3. Mithun Kumar Ghosh, Kavita Jain, Siddiquie Khan, Kalpataru Das and **Tanmay Kumar Ghorai***, “A new dual functional and reusable bimetallic Y₂ZnO₄ nanocatalyst for organic transformation under Microwave/Green approach”, *ACS Omega*, 2020, 5; 5(10): 4973-4981. **Impact Factor: 2.87. DOI: 10.1021/acsomega.9b03875**
4. Mithun Kumar Ghosh, Sanjay Kumar Sahu, Debasis Sahoo, and **Tanmay Kumar Ghorai***, “Green Synthesis, Characterization and Photocatalytic Study of Cu based ZrO₂ nanoparticles” *Journal of Indian Chemical Society*, September 2020, Vol. 97, pp. 1-7. **Impact Factor: 0.145**

5. Mithun Kumar Ghosh, Santanav Giri and **Tanmay Kumar Ghorai***, “Single pot reaction of Co(III) and Ni(II) Hydrogen-bonded Organic Frameworks and Multidisciplinary Application in Dye adsorption, Separation and DNA binding”, *Journal of Molecular Structure*, **2020**, *1206*, 127727. **Impact Factor: 2.011**. DOI: [10.1016/j.molstruc.2020.127727](https://doi.org/10.1016/j.molstruc.2020.127727)
6. Sandip Chandraker,; Mishri Lal, Mithun Ghosh, Vivek Tiwari, **Tanmay Kumar Ghorai** and Ravindra Shukla, “Green synthesis of copper nanoparticles with leaf extract of *Ageratum houstonianum* Mill.: Photocatalytic degradation of congo red and antibacterial activity” *Nano Express*, **2020**, *1* 010033. **Impact Factor: 1.449**. <https://doi.org/10.1088/2632-959X/ab8e99>.

2019

5. Mithun Kumar Ghosh, Sayan Pathak and **Tanmay Kumar Ghorai***, “Synthesis of Two Mononuclear Schiff Base Metal (M = Fe, Cu) Complexes: MOF Structure, Dye Degradation, H₂O₂ Sensing, and DNA Binding Property”, *ACS Omega*, **2019**, *4*, 16068-16079. **Impact Factor: 2.87**.
6. Sandip Kumar Chandraker, Mithun Kumar Ghosh, Mishri Lal, **Tanmay Kumar Ghorai*** and Rabindra Shukla, “Colorimetric sensing of Fe³⁺ and Hg²⁺ and photocatalytic activity of green synthesized silver nanoparticles from leaf extract of *Sonchus arvensis* L.” *New Journal of Chemistry*, **2019**, *43*, 18175-18183. **Impact Factor: 3.069**.
7. Mithun Kumar Ghosh, Sandip Kumar Chandraker, Rabindra Shukla, Manab Mandal, Vivekananda Mandal and **Tanmay Kumar Ghorai***, “Molecular Interaction, Antimicrobial, Antioxidant, Cytotoxic and Magnetic Properties of Mn12 Benzoate”, *Journal of Cluster Science*, **2020**, *31*, 575–589. (Accepted **2 019**), **Impact Factor: 1.73**, doi.org/10.1007/s10876-019-01633-5
8. Sayantan Pathak, Mithun Kumar Ghosh, Manab Mandal, Vivekananda Mandal, Arnab Bhattacharyya and **Tanmay Kumar Ghorai***, “Synthesis of a new Acetate Bridged Cu(II) Building Block Generated 1D Polymer and Studies on Structural, Magnetic, Antibacterial and Anticancer properties”, *New Journal of Chemistry*, **2019**, *43*, 2019-2029. **Impact Factor: 3.069**. DOI: [10.1039/C8NJ04937H](https://doi.org/10.1039/C8NJ04937H)

2018

9. Sayantan Pathak, Mithun Kumar Ghosh and **Tanmay Kumr Ghorai***, “Luminescence, Dye degradation and DNA binding properties of a dinuclear nona-coordinated Y(III) Complex”, *ChemistrySelect*, **2018**, *3*, 13501-13506. **Impact Factor: 1.81**.
10. **Tanmay Kumar Ghorai***, Suranjan Sikdar, Supriya Das, Sayantan Pathak, Sutanuka Pattanayak and Niladri Biswas, “First Time Synthesis, Characterization And Synergistic Photocatalytic Effect Of GO/Bi₂O₃/Nb₂O₅ Nanocomposites”, *Materials Today: Proceedings*, **2018**, *5*, 9760–9770. Impact Factor: 0.694.

2017

11. Sayantan Pathak, Barun Jana, Manab Mandal Vivekananda Mandal and **Tanmay Kumar Ghorai***, “Antimicrobial Activity Study of a μ_3 -oxoBridged [Fe₃O(PhCO₂)₆(MeOH)₃](NO₃)(MeOH)₂”, *Journal of Molecular Structure*, **2017**, *1147*, 480-485. **Impact Factor: 2.011**

12. Sayantan Pathak, Mithun Kumar Ghosh, Barun Jana and **Tanmay Kumar Ghorai***, “(C₇H₇NO₄Mo)_n: Synthesis, Characterization and Thermal Stability of a new Oxo-bridged Helical-1D-Polymer cluster” *Journal of Molecular Structure*, **2017**, 1149, 662-668. **Impact Factor: 2.011**
13. Sayantan Pathak, Barun Jana and **Tanmay Kumar Ghorai***, “[Mn(C₁₆N₂O₄H₁₁S)₂(CH₃OH)₄]: facile synthesis of a new type of Mn complex formed by extensive π-π stacking interaction”, *Journal of Indian Chemical Society*, **2017**, 94, 1055-1062. **Impact Factor: 0.145**
14. Suranjan Sikdar, Mithun Kumar Ghosh and **Tanmay Kumar Ghorai***, ‘Photocatalytic Degradation of Naphthol Orange Under Cr_{0.9}Zr_{0.1}O₂ Nanoparticles and Visible Light” *Advanced Science, Engineering and Medicine*, **2017**, 9, 713-718, **Impact Factor: 1.006**.

2016

15. **Tanmay Kumar Ghorai***, Sayantan Pathak and Suranjan Sikder, “Synthesis, Characterization and Environmental Applications: Using Metal-Niobium-Titanate {M_xNb_xTi_{1-2x}O_{2-x/2} (M = Cr, Fe; x = 0.01–0.2)} Nano-Composites”, *Advanced Science Letters*, **2016**, 22 (1), 167-174. **Impact Factor: 0.117**

2015

16. **Tanmay Kumar Ghorai***, “Synthesis of spherical mesoporous titaniamodified iron-niobate nanoclusters for photocatalytic reduction of 4-nitrophenol”, *Journal of Materials Research & Technology*, **2015**, 4(2), 133-143. **Impact Factor: 5.218**.
17. Suranjan Sikder, Sayantan Pathak and **Tanmay Kumar Ghorai***, “Aqueous Phase Photodegradation of Rhodamine B and P-nitrophenol Destruction Using Titania Based Nanocomposites”, *Advanced Materials Letters*, **2015**, 6(10), 867-873. **Impact Factor: 1.15**.

2013

18. **Tanmay Kumar Ghorai*** and Niladri Biswas, “Photodegradation of rhodamine 6G in aqueous solution via SrCrO₄ and TiO₂ nano-sphere mixed oxides”, *Journal of Materials Research and Technology*, **2013**, 2(1), 10-17. **Impact Factor: 5.218**
19. **Tanmay Kumar Ghorai*** and Prasanta Dhak, “New synthetic approach, mesoporous properties and photocatalytic activity of titania adapted chromium-niobate nanocatalysts”, *Advanced Materials Letters*, **2013**, 4(2), 121-130. **Impact Factor: 1.15**

2011

20. **Tanmay Kumar Ghorai***, Mukut Chakraborty and Panchanan Pramanik, “Photocatalytic performance of nano-photocatalyst from TiO₂ and Fe₂O₃ by mechanochemical synthesis”, *Journal of Alloys and Compounds*, **2011**, 509, 8158– 8164. **Impact factor: 4.65**.
21. **Tanmay Kumar Ghorai***, “Photocatalytic degradation of 4-chlorophenol by CuMoO₄-doped TiO₂ nanoparticles synthesized by chemical route”, *Open Journal of physical Chemistry*, **2011**, 1, 28-36. **Impact Factor: 0.88**
22. **Tanmay Kumar Ghorai***, Chirantan Roy Chaudhyry, Suman Biswas, Mukut Chakraborty,

Ranjan Das, Jhimli Sengupta, "Photocatalytic Properties of mixed oxides of BaCrO₄ and TiO₂" *SMC Bulletin*, **June 2011**, Vol 2 (No. 1).

2009

23. **Tanmay Kumar Ghorai***, Susmita Pramanik and Panchanan Pramanik, "Synthesis and photocatalytic oxidation of different organic dyes by using Mn₂O₃/TiO₂ solid solution and visible light", *Applied Surface Science*, **2009**, 255, 9026-9031. **Impact Factor: 6.182**

✦ Conference Proceedings (Full Papers):

1. Sayantan Pathak, Niladri Biswas, Barun Jana and **Tanmay Kumar Ghorai***, "Synthesis and characterization of a nano Cu₂ cluster", *Advanced Materials Proceedings*, **2017**, 2(4), 275-279.
2. Suranjan Sikdar, Sutanuka Pattanayek and **Tanmay Kumar Ghorai***, "Photocatalytic degradation of rhodamine B in water by visible light irradiated BMZ nanocomposite", *Advanced Materials Proceedings*, **2017**, 2(2), 107-112.

✦ List of Book Chapter/Books:

1. **Tanmay Kumar Ghorai**, Graphene oxide based nanocomposites and biomedical applications, Functional Polysaccharides for Biomedical Applications, Edited by Sabyasachi Maiti and Sougata Jana, **Elsevier Publisher, 2019**, ISBN: 978- 0081025550.
2. **Tanmay Kumar Ghorai**, Typical Synthesis and Environmental Application of Novel TiO₂ Nanoparticles, Advance Materials Series, Advanced Materials for Agriculture, Food, and Environmental Safety, Edited by Ashutosh Tiwary and Mikael Syvajarvi, **Scrivener, Publishing, Wiley, USA 2014**, ISBN: 978-1-118-77343-7
3. **Tanmay Kumar Ghorai**, Studies on the Photochemical reactions with nanosized Inorganic oxides, PP. 1-137, LAP LAMBERT Academic Publisng, **2011** ISBN: 978-3-8443-9519-8

✦ Patents: Nil


✦ PRESENT PAPER @ INTERNATIONAL/NATIONAL CONFERENCE

1. **Mithun Kumar Ghosh, and Tanmay K. Ghorai***, "Dye adsorption, separation and DNA binding activity of Cobalt and Nickel complexes of syn-2-Pyridinealdoxime", **International Conference on Complex and Functional Materials (ICCFM-2018), Dec. 13-16, 2018, S. N Bose National Centre for Basic Science, Sector-III, Saltlake, Kolkata-700106, W.B, India.**
2. **Tanmay K. Ghorai***, Sayantan Pathak, "Synthesis and first time report the antimicrobial activity of a μ_3 -oxo bridged Fe₃ cluster", **5th Symposium on Advanced Biological Inorganic Chemistry (SABIC – 2017), 7th – 11th January 2017, IACS Kolkata & TIFR, Mumbai, India.**
3. Mithun Kumar Ghosh and **Tanmay Kumar Ghorai**, "Interaction study of Rhodamine B and antioxidant activity in presence of Mn₁₂ acetate", **National Symposium on Recent Advances in Chemistry and Industry (2017), The Indian Chemical Society and IEST Shibpur.**
4. **Tanmay Kumar Ghorai***, Suranjan Sikdar, Supriya Das, Sayantan Pathak, Sutanuka Pattanayak

and Niladri Biswas, “*First time synthesis, characterization and synergistic photocatalytic effect of GO/Bi₂O₃/Nb₂O₅ nanocomposites*”, **Internal Conference on Functional Nanomaterials (IC-FNM 2016)**, 28 – 29th September, 2016, TEQIP and Dr. M. N. Dastur School of Materials Science and Engineerin (MND-SMSE) at IEST Shibpur, Howrah, W. B., India

5. **Tanmay Kumar Ghorai*** and George Christou, “*New Synthetic Strategy of Butterfly Mn10 Cluster and Study Nano-size Single Molecule Magnetic Properties*”, **National Symposium in Chemical Science**, 12th March 2016, Department of Chemistry, University of Gour Banga, Malda.
6. **Tanmay Kumar Ghorai*** and George Christou, “*First time synthesis and magnetic study of new hetero nuclear Mn₂Zr₂ cluster*”, **National Symposium on Recent Advances in Chemistry & Industry 2015**, 31st July and 1st August 2015, Indian Chemical Society, Kolkata, University of Calcutta
7. **Tanmay Kumar Ghorai***, “*Catalytic effect of CuMoZrO₆ on the reduction of 4-nitrophenol & 2-nitroaniline by using NaBH₄*” **Trends in Surface Science and Related Areas (TSSRA-2015)**, July 25th 2015, West Bengal State University, Barasat, Kolkata.
8. **Tanmay Kumar Ghorai***, “*Synthesis of high nuclearity double-cubane nanoscale Mn₆ Cluster by new route and study SMM properties*”, **World Science Congress, 4th International Conference of World Science Congress**, 16th-18th December 2014, Jadavpur University, Kolkata, India.
9. **Tanmay Kumar Ghorai***, Suranjan Sikdar “*Synthesis, characterization and environmental applications: using metal-niobium-titanate {MXNbXTi1-2XO₂-X/2 (M = Cr, Fe; X = 0.01-0.2)} nano-composites degradation and reduction of Rhodamine B and 4-Nitro phenol in aqueous solution*” **Emerging Materials: Characterization & Application (ICEMCA-2014)**, Dec 4-6, 2014, NIT Durgapur and CGCRI, Kolkata.
10. **Tanmay K. Ghorai** and Niladri Biswas, “*Mesoporous Titania Modified Iron-Niobate Nanoclusters: Used as Catalysts for Reduction of 4-NP to 4-AmP*”, **International Conference in Asia (IUMRS-ICA 2013)**, 16-20 December, 2013, IISc Bangalore, Bangalore-560012, India.
11. **Tanmay K. Ghorai*** and George Christou, “*Typical Synthesis of MnMo₉O₃₂⁶⁻ clusters and study their magnetic properties*” **National Seminar on Recent Developments in Research in Chemistry** West Bengal State University, November 23rd, 2013, Kolkata-700126, India.
12. **Tanmay K. Ghorai**, Attend ACS Conference, FAME-2012, May 17-19, FLACS, “*The 88th Florida Annual Meeting and Exposition*” including a special symposium in the area of the annual ACS Florida Award winner, Innisbrook, Tampa, Florida, USA.

Place: IGNTU, Amarkantak
Date: 31/12/2020


Signature
(Dr. Tanmay Kumar Ghorai)