

RAMA RANJAN BHATTACHARJEE (PhD)

56 Binoy Palli, Bansdroni

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ramaranjanb89@gmail.com**Total Citations:1133**

h-index: 15

i10-index: 22

CSIR-NET & GATE

Total Publications: 51



I have been involved in research and teaching for the last twenty-three years. My expertise is in nanophotonics, surface chemistry, catalysis, CO₂ Capture and its conversion, nanobiotechnology, nanoformulations, polymer nanocomposites, sustainable drug release, energy storage, smart textiles, smart coatings, nano-sensors and nano-geotechnology. I am an innovator and thus like to work towards providing innovative solutions to societal problems through development of new smart materials and sustainable chemistry. Currently as the head of all research activities at my current institution (Vice President of IIC) and IPR Nodal officer, I have been actively involved in promoting research and innovation activities at the university level and connecting industry & academia for providing collaborative and sustainable solutions for societal growth and environment.

<https://scholar.google.com/citations?user=UvQWF48AAAJ&hl=en>

Experience (Teaching experience: 14+ years; Research experience: 23 years; Administrative experience: 7 years)

Currently: Professor of Chemistry, Sister Nivedita University, New Town, Kolkata

Research areas:

- Developed polymer-nanocomposite based moisture sensor prototype with Novatec Inc., USA
- CO₂ capture and its catalytic reduction
- Developed Hemp oil-based nano formulations for controlled drug release and selective separation of amino acids
- Development of robust nanomaterials for oil exploration in collaboration with Saudi Aram Co.
- Development of nanomaterial coated fiber for puncture resistant cloth with Kimberly-lark, USA
- Leading researcher in the KAUST-Cornell Centre
- Development of sustainable catalyst for nylon production with EXXON Mobil & INVISTA, UK
- Development of synthesis protocol for selective catalytic conversion of cyclic alkanes to aldehyde
- Development of gas-chromatography-based analytical technique to detect intermediate peroxide during catalytic oxidation
- Developed porous silica-based dryer with Novatec Inc., USA
- Developed carbon based eco-friendly thermally conducting nanofluid for solar cells with SUNNYRAY SOLUTIONS PVT. LTD.
- Designing smart hand-held food sensors with national food laboratory
- Development of carbon-based conducting ink for sensing volatile organics
- Development of carbon material from waste for catalytic conversion of used oil into biodiesel and photocatalytic conversion of CO₂ to methanol
- Initiate industry-academia interactions on behalf of Amity University Kolkata
- Development of polyoxometalate-based liquid catalyst for sustainable and water-based chemistry
- Development of nano-drug systems for sustainable release

- Development of liquid like nano-formulations for sustainable fish feed development with Nutricape Pvt. Ltd., Chennai
- Developed patient selective drug-delivery agent based on magneto-liposomal formulations
- Development of nano-fluids for industrial applications
- Development of light activated fluidic nano switch
- Large scale production of nanomaterials
- Carbon-based nano tracers for geophysical explorations
- Smart textiles for wound management for SUN ECOTECH VENTURES PVT. LTD., Kolkata
- Development of optically active nano-fluids

Patents: Total 07: 02 (Published); Filed in India: 05; International:(02); Granted: 02

Important MoUs & industrial collaboration: Aditya Birla Science & Technology Pvt. Ltd., TATA Steel (TATA Carbon) & BOHECO, Mumbai, HUNTSMANN India, Sunnyray Solutions Pvt. Ltd., NOVATEC INC., USA, Prophecysensorlytics Pvt. Ltd.; Nutricape Pvt. Ltd. Chennai; Sun Eco Tech Ventures Pvt. Ltd.

Consultancy: Three industrial consultancies done till date (Two international projects)

PhDs guided: Three. PhD awarded (02); One PhD ongoing; MPhil Guided: Two; Major project student: more than 20

List of sponsored research projects: 13

Sl. No.	Title	Funding agency	Amount (INR)	Status
1	Synthesis & characterization of magnetic nanoparticle based tracers for oil recovery	Department of Science & Technology	24 lakhs	2012-15
2	Design & synthesis of liposome based magnetic nanoparticles for controlled drug release	Department of Atomic Energy, BRNS	17 lakhs	2012-13
3	Large Scale Synthesis and Screening of Nanoparticle-based Tracers using Granitoids retrieved from Borehole Excavation as Simulated Porous Media	Ministry of Earth & Sciences	23 lakhs	2014-16
4	Smart textiles for singlet oxygen generation	Department of Atomic Energy, BRNS	18 lakhs	2014-17
5	Development & testing of nanoparticle tracers for understanding ground water flow dynamics in various geo-environments	DST, WTI	18 lakhs	2016-18
6	Development of magnetorheological nanofluids	DRDO (CARS)	10 lakhs	2015-16
7	Utilization of Novel Carbon Quantum Dots (CQDs) as Acceptor Component in Hybrid Photovoltaic: A Solution based Approach	DST-SERB	As Co-PI	Sanctioned (2017-2019)
8	Development of VOC sensors using nano-ink technology	Novatec Inc., USA	32 Lakhs	2019-onwards running
9	Post radiative effects on carbonaceous nanomaterials	UGC-DAE-CSR	1.35 Lakhs	2019-21

10	Testing carbon tracers in mining area	DST-WTI	38 Lakhs	2021-running
11	Thin films of carbon allotropes and their applications in designing sensors	UGC-DAE-CSR	15 Lakhs	2023 running
12	Wound care bandage development	DBT-NER BIRAC (in collaboration with NIT Sikkim)	50 Lacs	2023 running
13	Development of nanoformulation for improved fish food	DBT-BIG BIRAC (in collaboration with Nutricape Pvt. Ltd., Chennai)	50 Lacs	2023 running

Educational Qualifications:

B.Sc.: Chemistry (Honors), Calcutta University, India (1995-1999)
M.Sc.: Chemistry (Physical Chemistry Specialization), Calcutta University, India (1999-2001)
Ph. D: Polymer Science Unit, Indian Association for the Cultivation of Science, India (2001-2006)
Thesis: Synthesis and Characterization of Nano-structured Gold-Polymer Hybrid Materials
Indian Association for the Cultivation of Science (IACS, Jadavpur)
CSIR-NET & GATE Qualified

Publications:

Total 51 International Publications; including International conference Proceedings, Book Edited & Book chapter as authors

Selected High Impact Publications

[Polarization induced dynamic photoluminescence in carbon quantum dot-based ionic fluid](#)

L Bhattacharjee, K Mohanta, K Pal, AL Koner, RR Bhattacharjee
Journal of Materials Chemistry A 4 (6), 2246-2251; Impact Factor=14.5

[Conducting carbon quantum dots—a nascent nanomaterial](#)

L Bhattacharjee, R Manoharan, K Mohanta, RR Bhattacharjee
Journal of Materials Chemistry A 3 (4), 1580-1586; Impact Factor=14.5

[A plasmonic fluid with dynamically tunable optical properties](#)

RR Bhattacharjee, R Li, L Estevez, DM Smilgies, A Amassian, ...
Journal of Materials Chemistry 19 (46), 8728-8731; Impact Factor=14.5

[Tuning optical properties of printable carbon quantum dots using near-field environment](#)

L Bhattacharjee, K Pal, SK Jat, AL Koner, J Ravichandran, ...
Carbon 125, 409-418; Impact Factor=11.3

[Polymer-mediated chain-like self-assembly of functionalized gold nanoparticles](#)

RR Bhattacharjee, TK Mandal
Journal of colloid and interface science 307 (1), 288-295; Impact Factor= 9.9

[Low-temperature polymer-assisted synthesis of shape-tunable zinc oxide nanostructures dispersible in both aqueous and non-aqueous media](#)

MH Rashid, M Raula, RR Bhattacharjee, TK Mandal

Journal of colloid and interface science 339 (1), 249-258; Impact Factor= 9.9

[Reversible Light-Responsive Solventless-Liquid Switch: Polarization-Induced Dynamic Surface Ordering–Disordering in Liquid-Like Carbon Quantum Dots](#)

L Bhattacharjee, K Mohanta, SK Batabyal, A Saha, RR Bhattacharjee

The Journal of Physical Chemistry Letters 11 (12), 4726-4733; Impact Factor= 6.8

[Synthesis and characterization of titanium dioxide phases in mesostructured silica matrices with photocatalytic activity](#)

DS Gopala, RR Bhattacharjee, R Haerr, B Yeginoglu, OD Pavel, ...

ChemCatChem 3 (2), 408-416; Impact Factor= 5.5

[Phosphotungstic acid-Jeffamine® hybrid catalyst for one-pot Biginelli reaction starting from benzyl alcohol](#)

T Suppan, HP Mahendran, S Jeyaraj, K Mohanta, RR Bhattacharjee

Applied Catalysis A: General 603, 117734; Impact Factor= 5.7

[Reversible association of thermoresponsive gold nanoparticles: polyelectrolyte effect on the lower critical solution temperature of poly \(vinyl methyl ether\)](#)

RR Bhattacharjee, M Chakraborty, TK Mandal

The Journal of Physical Chemistry B 110 (13), 6768-6775; Impact Factor= 3.5

[Synthesis of spongy gold nanocrystals with pronounced catalytic activities](#)

MH Rashid, RR Bhattacharjee, A Kotal, TK Mandal

Langmuir 22 (17), 7141-7143; Impact Factor= 4.3

[A mechanistic and kinetic study of the formation of metal nanoparticles by using synthetic tyrosine-based oligopeptides](#)

S Si, RR Bhattacharjee, A Banerjee, TK Mandal

Chemistry–A European Journal 12 (4), 1256-1265; Impact Factor=5.0

[Organic ligand-mediated synthesis of shape-tunable gold nanoparticles: An application of their thin film as refractive index sensors](#)

MH Rashid, RR Bhattacharjee, TK Mandal

The Journal of Physical Chemistry C 111 (27), 9684-9693; Impact Factor= 4.17

[PSS functionalized and stabilized carbon nanodots for specific sensing of iron in biological medium](#)

M Ghosh, U Dasgupta, S Nayek, A Saha, RR Bhattacharjee, ...

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy 293, 122445; Impact Factor = 4.1