Dr. Monalisa Mukherjee, FRSC

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Professor, Amity Institute of Biotechnology (**AIB**)
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Current Area of Research –

1. To design and engineer Nano materials with precisely controlled optoelectronic properties. Graphene based zero dimensional materials bestowed with unique rewards of high crystallinity, high photobleaching threshold, water solubility, chemical stability, high quantum efficiency, narrow absorption and wide emission spectral profiles, exceptional biocompatibility aims to afford long term bioimaging and multiplexing, targeted, cavernous anatomical penetration and low scattering making them indispensable in the bioimaging arena and label free detection method.

2. To developing a variety of physically cross linked, pH sensitive SMART hydrogels and their Nano-composites with exotic nanostructure along with tunable formulations, possessing microporous interiors, resembling a honeycomb framework. To address pitfalls in transdermal drug delivery, gene delivery, wound healing and soft tissue repair with controllable drug release at a pH and tissue engineering.

Education and Training

2000-2006	Ph.D, Center for Bio-Medical Engineering, Indian Institute of Technology, New Delhi
1997-1999	M.Sc. in Chemistry (specialization in Organic Chemistry) University of North Bengal, West Bengal. Ist Class.
1993-1996	B.Sc. (Honors) in Chemistry University of North Bengal, West Bengal. Ist Class. University Rank – 2nd

Professional Experience

July 2018	Professor, Amity Institute of Biotechnology (AIB), Amity University UP
Jan. 2016	Director, Amity Institute of Click Chemistry Research and Studies (AICCRS), Amity University UP
May 2015	Associate Professor, Amity Institute of Biotechnology (AIB), Amity University UP
Sept 2010	Assistant Professor, Amity Institute of Biotechnology (AIB), Amity University UP
April 2009	Senior Lecturer, Amity Institute of Biotechnology (AIB), Amity University UP
April 2008	Lecturer, Amity Institute of Biotechnology (AIB), Amity University UP
Dec. 2005	Project Associate, Center for Bio-Medical Engineering, IIT Delhi, New Delhi.
March 1999	Research Assistant, Indian Association of Cultivation of Science, Jadavpur, Kolkata

Selected Publication

1. Garg P., Sangam S., Kochhar D., Pahari S., Kar C., **Mukherjee M*.** Exploring the role of triazole functionalized Hetero atom co-doped carbon quantum dot against human coronavirus. ***Nano Today***, 2020, *35*, 1010001. **(IF: 17)** https://doi.org/10.1016/j.nantod.2020.101001.

2. Singh, A.; Kochhar, D; Jeevanandham, S.; Kar, C; Bhattacharya, R.; Shakeel, A; and **Mukherjee, M*** Emergence of heptazine based graphitic carbon niride within hydrogel nanocomposites for scarless healing of burn wounds." ***ACS Applied Polymer Materials* . 2020,** *2*, 12, 5743-5755 (**IF: 10.5**)

3. Shakeel A., Bhattacharya R., Jeevanandham S., Kochhar D., Singh A., Ghufran M., Mehra L., Garg P., Sangam S., Biswas S., Tyagi A., Kalyanasundaram K., Chakrabarti S., **Mukherjee M***. Graphene Quantum Dots in the game of directing polymer self-assembly to exotic Kagomé Lattice and Janus Nanostructures. ***ACS Nano,*** **2019,** 13*(8)*, 9397-9407. (**IF: 14.6**)

4. Singh, A.; Bhattacharya, R.; Shakeel, A.; Sharma, A.; Jeevanandham, S.; Kumar, A.; Chattopadhyay, S.; Bohidar, B. H.; Ghosh, S.; Chakrabarti, S.; Rajput, K. S.; and **Mukherjee, M*** Hydrogel Nanotube with Ice Helix as Exotic Nanostructure for Diabetic Wound Healing. ***Mater. Horiz.*** **2019,** *6*, 274-284. (**IF: 14.4**) **Came as Cover page and** part of **Horizons Community Board Themed Collection - Nanobiomedicine**

5. Sangam, S.; Gupta, A.; Shakeel, A.; Bhattacharya, R.; Sharma, A.; Suhag, D.; Chakrabarti, S.; Garg, S.; Chattopadhyay, S.; Basu, B.; Kumar, V., Rajput, S. K., Dutta, M. K.; **Mukherjee, M***. Sustainable Synthesis of Single Crystalline Sulphur-Doped Graphene Quantum Dots for Bioimaging and Beyond. ***Green Chem.*** **2018,** 20, 4245. (**IF: 9.4**) **Came as Cover Page**

6. Khanra, A.; Sangam, S.; Shakeel, A.; Suhag, D.; Mistry, S.; Rai, M.; Chakrabarti, S.; **Mukherjee, M***. Sustainable Growth and Lipid Production from Chlorella Pyrenoidosa Using N-Doped Carbon Nanosheets: Unravelling the Role of Graphitic Nitrogen. ***ACS Sustain Chem Eng.*** **2018**, *6*, 774-780. (**IF: ~ 7.6**)

7. Shakeel, A.; Singh, A.; Das, S.; Suhag, D.; Sharma, A.; Rajput, S.; **Mukherjee, M*.** Synthesis and Morphological Insight of New Biocompatible Smart Hydrogels. ***J. Polym. Res.*** **2017**, *24*. (**IF: 2.4)**

8. Kaur, N.; Sharma, A.; Shakeel, A.; Kumar, V.; Singh, A.; Gupta, A.; Suhag, D.; Rajput, S.; **Mukherjee, M***. Therapeutic Implications of Superoxide Dismutase and Its Importance in Kinase Drug Discovery. ***Curr Top Med Chem.*** **2017**, *17*. (**IF: 3.4)**

9. Suhag, D.; Kumar Sharma, A.; Rajput, S.; Saini, G.; Chakrabarti, S.; **Mukherjee, M***. Electrochemically Synthesized Highly Crystalline Nitrogen Doped Graphene Nanosheets with Exceptional Biocompatibility. ***Nature Sci Rep*** **2017**, *7*, 537. Doi:10.1038/s41598-017-00616-8 (**IF: 4.0)**

10. Suhag, D.; Sharma, A.; Patni, P.; Garg, S.; Rajput, S.; Chakrabarti, S.; **Mukherjee, M***. Hydrothermally Functionalized Biocompatible Nitrogen Doped Graphene Nanosheet Based Biomimetic Platforms for Nitric Oxide Detection. ***J. Mater. Chem. B*** **2016**, *4*, 4780-4789. (**IF: 5.4)**

Inventions, Patents, Copyrights

1. "Process for preparation of Iron (III) porphyrin catalyst immobilized on Dowex resin and its application thereof in biomimetic oxidation", **Mukherjee, M**.; Indian Patent Appl. (2011) No. **813/DEL/2009**. Patent No. : 289167, **Granted on 2/11/2017**

2. "Regiospecific oxidation of C-M bond of organometallic compound with hydrogen peroxide using chiral iron(III) salen complexes as catalyst", **Mukherjee, M**.; Srivastava, A. K.; Indian patent Appl. (2011) No. **1098/DEL/2009, Granted on 24/5/2018**

3. "Development of novel nanocomposites as chemical sensor using functionalized graphite nanoparticles, and grafted polymers through chemical ligation, **Rattan, S**.; **Mukherjee. M**; Moses, E. J.; Indian patent Appl. (2012) **806/DEL/2012**, **Granted on 15/10/2019**

4. "N-doped carbon nanosheet based hydrogel composite for wound healing", Singh A.; Shakeel A.; **Mukherjee M.**; Chakrabarti; Rajput S.K; Bohidar H.B.; Rawat K. (2018) **E-101/41081/2018-DEL** Application number 201811021906. **CRN: 2944**

5. "Graphene based chemical sensor for the detection of toxic heavy metal complexes in drinking water, Chakraborti, S.; **Mukherjee. M**.; Moses, E. J.; Indian patent Appl. (2012) **1030/DEL/2012**. **Granted on 1/01/2020**

6. "Method for preparation of highly fluorescent biocompatible sulphur doped graphene quantum dots from affordable agro-industrial bio-waste cane molasses using hydrothermal synthesis for bioimaging application" Gupta A.; Shakeel A.; Sangam S.; Suhag D.; Kumar V.; Bhattacharya R.; Sinha O.P.; Chakrabarti S.; **Mukherjee M.** (2017) **E-101/27108/2017-DEL** Application number 201711016713. **CRN: 2462**

7. "Graphene quantum dots-based hydrogel nanocomposites for site specific sustained drug release", Shakeel A.; Singh A.; Bhattacharya R.; **Mukherjee M**. (2019) **E-101/24523/2019-DEL** Application number 201911011659**. CRN: 332**

8. "Hydrogels for transdermal drug delivery and a method to manufacture the same", Suhag, D.; Bhatia, R.; Das, S.; Shakeel, A.; Ghosh, A.; Singh.; Chakrabarti, S.; **Mukherjee, M**.; Indian patent Appl. (2015) **1388/DEL/2015**.

9. "The alkali metal tertiary butoxide promoted, thiazolium salt, catalysed synthesis of electron deficient amides", Moses, E. J.; Burnley V. J.; Carbon, G.; Indian patent Appl. (2012) **3453/DEL/2012**.

10. "Efficient organic photovoltaic devices based on photoactive graphene and semiconductor nanoparticles, Chakraborti, S.; Sinha. O.P.; Moses, E. J.; **Mukherjee, M**.; Indian patent Appl. (2012) **1029/DEL/2012**.

Book Chapters

1. "Carbon nanosheets for sustainable production of bioactive compounds from micro algae: Divine approach in drug discovery" Chapter 1, Volume II, *Animal Screening Basics of Drug Discovery*

Conference Presentations - 20

Projects/Funding

Year	Title	Agency	Fund	Role
2021	Enzyme Bioanode for Electricity Generation by Oxidizing Phenolics in Enzymatic Fuel Cell	DBT	Rs.36.5 Lakhs	Co-PI
2020	Iron and zinc biofortification of cereals and vegetables for enhancing micronutrient bioavailability in soil-plant system	DBT	Rs.95 Lakhs	Co-PI
2018	Near infra-red editing graphene quantum dots in bioimaging and theragnostic	DST	Rs.44.95 Lakhs	PI
2018	Smart Hyaluronic Acid hybrid hydrogels via Click chemistry forwound healing	DBT	Rs.40.85 Lakhs	PI
2016	To optimize the uptake of carbon nanomaterials within the cell and to investigate radio sensitization	IUAC	Instrument Facilities	PI
2016	Metal Oxide decorated doped Carbon Nanosheet for detection of Arsenic in Ground water	UGC-DAE	Rs.10.00 Lakhs	PI
2010	Development of Nitric Oxide synthase mimetic material and its application as biosensor	DST	Rs.19.80 Lakhs	PI

Recognition

1. Received the prestigious Fellow of the Royal Society of Chemistry (**FRSC**) Membership ID: 692448

2. Received **Distinguished Visiting Scientist Award** for the year 2011 from University of Nottingham, United Kingdom.

3. Received **DST Young Scientist Award** in March 2010.

4. Qualified Graduate Aptitude Test in Engineering (GATE– 92.5 percentile) in 1998, Subject-Chemistry.

5. National Scholarship award under Govt. of India scheme 1995-96.

Journal Peer Review

1. Editorial Board Member, *Scientific Reports*, Nature Publishing Group : 2018- present
2. Reviewer - *Nature Communications; RSC Advances; Nature Scientific Reports; Journal of Material Chemistry Part B; Nanoscale; ACS Applied Material and Interfaces; Chemical Communications; Advance Functional Materials*

Professional Activities

1. Life Membership − Chemical research Society of India. Membership no.: LM 2434.
2. Annual Membership − American Chemical society (ACS), USA; Royal Society of Chemistry (RSC) UK.