

## Dr. Debalina Bhattacharya

**Designation: Assistant Professor**



### **Qualifications: M.Sc, Ph.D.**

- UGC-CSIR Lecturership (NET-LS) in 2008
- Graduate Aptitude Test in Engineering (GATE) in 2009
- State Government Fellowship of Jadavpur University in 2009.
- PhD from Jadavpur University from 2014 on synthesis, characterization of metallic nanoparticles and their applications towards therapy.

**Brief Introduction:** I have done my graduation in Microbiology from University of Calcutta (Sarsuna College) in 2006. Then I have completed my Masters from the Department of Life Science and Biotechnology, Jadavpur University in 2008. I have finished my Ph.D. from Department of Life Science and Biotechnology, Jadavpur University in 2014 in the area of Nano-Biotechnology. I have awarded prestigious UGC-Dr. DS Kothari post doctoral fellowship in 2015 and successfully finished my research in 2018 from Department of Biochemistry, University of Calcutta. Thereafter I have received my second postdoctoral research grant from DST-SERB (National Post Doctoral Fellowship) in 2018 and perused my research in Department of Biotechnology, University Calcutta up to September 2019.

**Current Teaching:** Assistant Professor in Microbiology at Maulana Azad College under University of Calcutta.

### **Research Interests:**

- Autophagic response pathway in type two diabetes or different cancerous cell lines
- Nanotechnology or polymer based targeted drug delivery in malignant cell lines
- Anticancer activity of various medicinal plants

### **Awards/Recognitions/ Invited Talk:**

Best Poster Award in International Conference on Molecular Biology and its Application, Department of Life Science and Biotechnology, Jadavpur University in 2014.

### **Selected Publications:**

#### **Review Article:**

- ❖ **Bhattacharya D**, Ghosh B, Mukhopadhyay M, (2019) “Development of nanotechnology for advancement and application in wound healing: A review” IET Nanobiotechnology, DOI: 10.1049/iet-nbt.2018.5312.
- ❖ Ghosh B, Saha R, **Bhattacharya D**, Mukhopadhyay M, (2019) “Laccase and its source of sustainability in an enzymatic biofuel cell” Bioresource Technology Reports,6:268-278.
- ❖ **Bhattacharya D**, Mukhopadhyay M, Bhattacharyya M, Karmakar P,(2018) “ Is autophagy associated with Diabetes Mellitus and its complication? A Review” EXCLI,17:709-720.

#### **Research Article:**

- ❖ Sengupta S, Saha R, **Bhattacharya D**, Chakrabarti K, Mukhopadhyay M (2018) “Characterization of thermoadaptive serine metalloprotease and application in waste management” Bioresource Technology Reports,2:53-61.
- ❖ Santra RC, Ganguly D, **Bhattacharya D**, Karmakar P, Saha A, Das S, (2017) “  $\gamma$  radiation-induced damage of nucleic acid bases, calf thymus DNA and DNA within MCF-7 breast cancer cells by [Cu<sub>2</sub>(OAc)<sub>4</sub>(tnz)<sub>2</sub>]: a potential radiosensitizer” New J. Chem., 41, 11679
- ❖ **Bhattacharya D**, Bhattacharyya A, Karmakar P, (2016) “Induction of cytotoxicity in human cervical cancer cells: comparison between rod and spherical shape zinc oxide nanoparticles” Bionanoscience 6:1-14 DOI:10.1007/s12668-015-0186-5.
- ❖ Das P, **Bhattacharya D**, Karmakar P, Das S, (2015) “Influence of Ionic Strength on the Interaction of Purpurin with Calf Thymus DNA and Effect of It along with Its Cu<sup>(II)</sup> Complex on MCF-7 Breast Cancer Cells” RSC Advance. 5:73099-73111.
- ❖ Bhowmick R, Alam R, Mistri T, **Bhattacharya D**, Karmakar P, Ali M, (2015) “Morphology directing synthesis of Rhodamine-based fluorophore microstructures and application towards extra and intracellular detection of Hg<sup>2+</sup>” ACS Applied Materials & Interfaces. 7(14):7476–7485
- ❖ **Bhattacharya D**, Santra CR, Ghosh AN, Karmakar P, (2014) “Differential toxicity of rod and spherical shape zinc oxide nanoparticles on human peripheral blood mononuclear cells” Journal of Biomedical Nanotechnology 10:707-716
- ❖ **Bhattacharya D**, Samanta S, Mukherjee A, Santra CR, Ghosh AN, Niyogi SK, Karmakar P, (2012) “Antibacterial activities of Poly Ethylene Glycol, Tween 80 and Sodium Dodecyl Sulphate coated silver nanoparticles in normal and multi-drug resistant bacteria”, Journal of Nanoscience and Nanotechnology 12(3):2513-2521
- ❖ **Bhattacharya D**<sup>#</sup>, Dey R<sup>#</sup>, Karmakar P, Debajyoti Ghoshal, (2012) “Syntheses, characterizations and biophysical studies of Cu (II) diphenyl phosphate complexes: effect of co ligands on their biological properties”, Polyhedron 48:157-166 [<sup>#</sup> authors contributed equally.]

- ❖ **Bhattacharya D** #, Laha D #, Pramanik A, Santra CR, Pramanik P, Karmakar P,(2012) “Evaluation of copper iodide and copper phosphate nanoparticles for their potential cytotoxic effects” *Toxicology Research* 1:131-136 [# authors contributed equally.]
- ❖ Pramanik A, Laha D, **Bhattacharya D**, Pramanik P, Karmakar P,(2012) “A novel study of antibacterial activity of copper iodide nanoparticle mediated by DNA and membrane damage” *Colloids Surf B Biointerfaces* 1(96):50-55.

#### **Book Chapters:**

- ❖ Saha R, **Bhattacharya D**, Mukhopadhyay M, Biofuel Production from Algal Biomass. Kuila A (Ed.) *Sustainable Biofuel and Biomass*, Apple Academic Press (2019) 119-144.
- ❖ Saha R, **Bhattacharya D**, Mukhopadhyay M, Biofuel Cell from Biomass. Kuila A (Ed.) *Sustainable Biofuel and Biomass*, Apple Academic Press (2019)95-118.
- ❖ Sengupta S, Konar D, **Bhattacharya D**, Mukhopadhyay M, Production of Biosyngas for Biofuels and Chemicals. Kuila A (Ed.) *Sustainable Biofuel and Biomass*, Apple Academic Press (2019)73-94.
- ❖ Ghosh B, **Bhattacharya D**, Mukhopadhyay M, Pre-treatment of lignocellulose for production of biofuels. Kuila A, Sharma V. (Eds.) *Principles and Applications of Fermentation Technology*, Scrivener Publishing (2018) 307-350.
- ❖ Ghosh B, **Bhattacharya D**, Mukhopadhyay M, Use of fermentation technology for value added industrial research. Kuila A, Sharma V. (Eds.) *Principles and Applications of Fermentation Technology*, Scrivener Publishing (2018) 141-162.
- ❖ Ghosh B, **Bhattacharya D**, Mukhopadhyay M, Modeling and kinetics of fermentation technology. Kuila A, Sharma V. (Eds.) *Principles and Applications of Fermentation Technology*, Scrivener Publishing (2018) 15-44.
- ❖ Mukhopadhyay M, **Bhattacharya D**, Application of lignocellulosic biomass in paper industry. Kuila A, Sharma V. (Eds.) *Lignocellulosic biomass production and industrial application*, Scrivener Publishing, (2017) 265-278.

#### **Participation in Seminars / Conferences / Workshops:**

- ❖ **Bhattacharya D**, Bhattacharyya A, Karmakar P, “Zinc oxide nanoparticles: Shape dependent effects on human primary lymphocytes and cervical cancer cell line”, International Conference on Molecular Biology and its Application, Dept of Life Science and Biotechnology, Jadavpur University, Kolkata, India, 2012, page- 48
- ❖ **Bhattacharya D**, Karmakar P, “A study of antibacterial activities of poly ethylene glycol, tween 80 and sodium dodecyl sulphate coated silver nanoparticles”, International Conference and Workshop on Nanostructured Ceramics and other Nanomaterials (ICWNCN-2012), Dept. of Physics and Astrophysics, University of Delhi, Delhi110007, India, 2012, Page-272-273
- ❖ **Bhattacharya D**, Karmakar P, “In vitro evaluation of antibacterial activities of silver nanoparticles coated with poly ethylene glycol, tween 80 and sodium dodecyl sulphate” One Day National Seminar On Emerging Trends In Cell And Molecular Biology, Dept. of Life Science and Biotechnology, Jadavpur University, Kolkata, India, 2012, page- 45
- ❖ Das P, **Bhattacharya D**, karmakar P, Das S, “Comparison of cytotoxicity on MCF-7 breast cancer cells and the formation of superoxide by 1,2,4-trihydroxy-9,10-anthraquinone and its Cu(II) complex : Indications for these compounds resembling doxorubicin”, International Conference on Recent Advances in Chemical and Physical Biology, SINP, INDIA and Mechanobiology Institute, NUS, Singapore, 2012, page-87-88
- ❖ **Bhattacharya D**, Saha B, Mukherjee A, Santra C, Karmakar P, “Studies on Gold Nanoparticles conjugated antibiotics: In vitro structural and functional evaluation”, International Conference on Advancement of Nanoscience and Nanotechnology (ICOANN-2010), Dept. of Nanoscience and Technology, Alagappa University, Karaikudi-630003, India, 2010, Page 140-141
- ❖ **Bhattacharya D**, Saha B, Mukherjee A, Santra C, Karmakar P, “Studies on the stability of gold nanoparticles conjugated antibiotics” International Symposium on Modern Biology in 21st century”, Dept. of Biophysics, Molecular biology and Bioinformatics, University of Calcutta, Kolkata, India, 2010, page-6

**Workshop:** Workshop on Scanning Electron Microscopy in Life Sciences” NICED, Kolkata and EMSI, 2013

#### **Contact Details:**

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#### **Other Information:**

Life member of DNA Society of India (DSI) LM35

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