

## Resume

### Dr. Suman Bhandary

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### SUMMARY OF SKILLS

**Microbiology:** Isolation, Identification, Culture and maintenance of bacteria, Sterility testing, Environmental Monitoring, Microbiological testing of water, Bacterial Endotoxin Test.

**Molecular Biology and Biotechnology:** Animal cell culture with cancer cell lines, *in vitro* and *in vivo* toxicity assay. DNA and RNA extraction from human and animal species, plasmid DNA isolation, PCR, Agarose gel electrophoresis, Western blotting.

**Cancer Biology:** Animal cell culture with cancer cell lines, *in vitro* and *in vivo* toxicity assay, mice model, flow cytometry, fluorescence microscopy, confocal microscopy, ICC, IHC, *in vivo* imaging.

**Biophysics:** Fluorescence microscopy, UV-Vis Spectroscopy, Fluorescence spectroscopy, DSC, DLS. **Nanotechnology:** Synthesis of polymeric, metallic, mesoporous silica and TiO<sub>2</sub> nanoparticles, X-ray diffraction (XRD), Scanning electron microscope (SEM), Transmission electron microscope (TEM), Fourier transform infrared spectroscopy (FTIR) for nanoparticle characterization.

### TEACHING INTERESTS

- ❖ Introduction to Microbiology and Microbial Diversity
- ❖ Bacteriology
- ❖ General Microbiology & Microbial Physiology
- ❖ Biochemistry
- ❖ Advanced Microbial Technology
- ❖ Industrial Microbiology and Biotechnology
- ❖ Nanobiotechnology
- ❖ Medical microbiology
- ❖ Virology
- ❖ Immunology
- ❖ Modern Techniques and Instrumentation

## RESEARCH INTERESTS

- ❖ Green synthesis of metallic nanoparticles
- ❖ Phytochemical analysis
- ❖ Antimicrobial nanocomposites
- ❖ Synthesis and physicochemical characterizations of biocompatible porous nanocarriers
- ❖ Dual loading of drugs in porous nano carrier followed by cellular uptake and release study
- ❖ Evaluation of the synergistic effect of drugs on growth and migration of triple negative breast cancer and glioblastoma cells

## PROFESSIONAL EXPERIENCE (Teaching/Industrial/Research): (IN CHRONOLOGICAL ORDER FROM CURRENT TO PAST)

S.N.	Organization	Location	Designation	From	To
01	Adamas University	Barasat, West Bengal, 700126	Assistant Professor	05/10/2020	Till date
02	Brainware University	Barasat, West Bengal, 700125	Assistant Professor	04.06.2019	03.10.2020
03	Shoolini University	Solan, Himachal Pradesh, 173212	Assistant Professor	02.07.2018	31.05.2019
04	Bose Institute	Kolkata, West Bengal	Research Associate	29.05.2017	29.06.2018
05	Bose Institute	Kolkata, West Bengal	Post-Doctoral Research Associate	07.05.2013	06.05.2016
06	North Eastern Hill University	Shillong, Meghalaya	Post-Doctoral Research Associate	03.09.2012	01.02.2013
07	West Bengal University of Technology	Kolkata, West Bengal	Research Associate	10.08.2011	31.11.2011
08	Shyamsundar College	Burdwan, West Bengal	Contractual Lecturer	06/08/2005	06/11/2006
09	Kalyani Yeast	Kalyani, Nadia, West Bengal	Microbiologist (Fermentation Controller)	01/03/2005	05/08/2005

## EDUCATION (X, XII, UG, PG, M.PHIL., PH.D AND OTHERS)

S. N.	Name of Examination	Board/ University	Year of passing	Subject/ Branch	Percentage/C GPA/Grade/ CPI	Specialization (if any)
01	X	West Bengal Board of Secondary Education	1996	Science	78.77	
02	XII	West Bengal Council of Higher Secondary Education	1998	Science	70.9	
03	U.G	University of Burdwan	2002	Chemistry	52.87	
04	P.G	Kalyani University	2004	Microbiology	63.25	
05	Ph. D.	Jadavpur University	2011	Science	--	Biophysics and Microbiology
06	Diploma	KPS Clinical Services, Noida	2009	Clinical Trial Management	56.50	

#### NET/GATE QUALIFIED:

Name of Examination	Score/Percentile/Percentage	Year
GATE	84.21	2005
NET (ICAR)	Qualified	2019

#### ADDITIONAL COURSES AND TRAINING:

- Advanced Post Graduate Program in Clinical Research and Management, Clinovation, Kolkata, 2011.
- Professional Diploma in Clinical Trial management, KPS Clinical Services, Noida, 2009.
- Training on UV-vis spectrophotometer, Atomic Absorption spectrophotometer, Gas chromatography, High performance liquid chromatography, Fluorescence spectrophotometer and their applications, Jadavpur University, 2006.

#### PUBLICATIONS (Recent to Past):

1. Kusumita Acharya, Swarna Shaw, Sudipta Paul Bhattacharya, Shatarupa Biswas, Suman Bhandary\*, Arijit Bhattacharya\*, Pigments from pathogenic bacteria: a comprehensive

update on recent advances, *World Journal of Microbiology and Biotechnology* (2024) 40:270. (I.F.: 4.0) (\*Corresponding author)

2. S Dutta, S Bhandary, S Haldar, S Bandyopadhyay, HPLC based Phytochemicals Analysis of *Phyllanthus emblica* (Indian Gooseberry/Amla): A mini Review, *Journal of Experimental Biology and Agricultural Sciences*, 12 (2024) 266 – 273.
3. Rupali Sarkar, Souradeep Biswas, Rituparna Ghosh, Priya Samanta, Shampa Pakhira, Mrinmoyee Mondal, Yashaswi Dutta Gupta, Suman Bhandary, Prosenjit Saha, Arijit Bhowmik and Subhadip Hajra, Exosome-sheathed porous silica nanoparticle-mediated co-delivery of 3,3'-diindolylmethane and doxorubicin attenuates cancer stem cell-driven EMT in triple negative breast cancer, *Journal of Nanobiotechnology*, 22 (2024) 285. (I.F.: 10.2)
4. Neelanjana Bag, Jhulik Roy, Dhananjay Mondal, Saheli Ghosh, Souravi Bardhan, Shubham Roy, Suman Bhandary and Sukhen Das, Utilization of experimental and theoretical piezoresponse of BTO nanocrystal for rapid decomposition of the pathogenic coliform bacteria, *Ceramics International*, 50 (2024) 7998–8009. (I.F.: 5.532)
5. Yashaswi Dutta Gupta, Yuri Mackeyev, Sunil Krishnan and Suman Bhandary, Mesoporous silica nanotechnology: promising advances in augmenting cancer theranostics, *Cancer Nanotechnology*, (2024) 15:9 <https://doi.org/10.1186/s12645-024-00250-w>. ( I.F.: 7.917)
6. Somtirtha Banerjee, Biswajoy Bagchi, Kunal Pal, Suman Bhandary, Arpan Kool, Nur Amin Hoque, Prosenjit Biswas, Pradip Thakur, Kaustuv Das, Parimal Karmakar, Sukhen Das, Essential oil impregnated luminescent hydroxyapatite: Antibacterial and cytotoxicity studies, *Materials Science and Engineering: C*, (2020)116, 111190, DOI: 10.1016/j.msec.2020.111190. (I.F.: 5.88)
7. Pijush Kanti Mandal, Priyanka Samanta and Suman Bhandary, BIO-INSPIRED SYNTHESIS OF SILVER NANOPARTICLES AND THEIR POTENTIAL ANTIBACTERIAL APPLICATIONS, *J. Environ. & Sociobiol.*, 17(2): 19-25, 2020.
8. S. Banerjee, B. Bagchi, S. Bhandary, A. Kool, N. A. Hoque, P. Biswas, K. Pal, P. Thakur, K. Das, P. Karmakar and S. Das, Antimicrobial and biocompatible fluorescent hydroxyapatite-chitosan nanocomposite films for biomedical applications, *Colloids and Surfaces B: Biointerfaces*, ISSN: 09277765, (2018), 171, 300- 307, DOI: 10.1016/j.colsurfb.2018.07.028. (I. F.: 3.997)
9. S. Banerjee, B. Bagchi, S. Bhandary, A. Kool, N. Hoque, P. Thakur and S. Das, A facile vacuumassisted synthesis of nanoparticle impregnated hydroxyapatite composites having excellent antimicrobial properties and biocompatibility, *Ceramics International*, ISSN: 02728842, (2018),

44, 1066-1077. doi: 10.1016/j.ceramint.2017.10.051. (I.F: 2.986)

10. S. Bhandary, A. Bhowmik, A. Ghosh, S. Saha, U. Pal, N. Roy, N. Chakraborty, A. Chakraborty, M. K. Ghosh and P. C. Sen, Targeting IL-6/IL-6R signaling axis in triple-negative breast cancer by a novel nifetepimine- loaded cascade pH responsive mesoporous silica based nanoplatform, *Glob. J Nanomed.*, ISSN: 25732374, (2017), 3, 42-65. doi: 10.19080/GJN.2017.03.555609. (I.F: 0.649)

11. A. Bhowmik, S. Chakravarti, A. Ghosh, R. Shaw, S. Bhandary, S. R. Bhattacharyya, P. C. Sen and M.K. Ghosh, Anti-SSTR2 Peptide based targeted delivery of potent PLGA encapsulated 3,3'- diindolylmethane nanoparticles through blood brain barrier prevents glioma progression, *Oncotarget*, ISSN: 19492553, (2017), 8, 65339–65358. doi: 10.18632/oncotarget.18689. (I.F: 5.168)

12. B. Bagchi, S. Banerjee, A. Kool, P. Thakur, S. Bhandary, N. Hoque and S. Das, Synthesis of eucalyptus/tea tree oil absorbed biphasic calcium phosphate–PVDF polymer nanocomposite films: a surface active antimicrobial system for biomedical application, *Phys. Chem. Chem. Phys.*, ISSN: 14639076, (2016), 18,16775-16785. doi: 10.1039/c6cp03493d. (I.F: 4.123)

13. A. Ghosh, A. Bhowmik, S. Bhandary, S. Putatunda, A. Laskar, A. Biswas, A. Dolui, B. Banerjee, R. Khan, N. Das, A. Chakraborty, M.K. Ghosh and P.C. Sen, Formulation and antitumorigenic activities of nanoencapsulated nifetepimine: A promising approach in treating triple negative breast carcinoma, *Nanomedicine: Nanotechnology, Biology, and Medicine*, ISSN: 15499634, (2016), 12, 1973– 1985. doi: 10.1016/j.nano.2016.04.011. (I.F: 6.692)

14. S. Bhandary, and K. Aguan, Pyruvate dehydrogenase complex deficiency and its relationship with epilepsy frequency– An overview, *Epilepsy Research*, ISSN: 09201211, (2015), 116, 40–52. doi: 10.1016/j.eplepsyres.2015.07.002. (I.F: 2.367)

15. A. Ghosh, T. Banerjee, S. Bhandary and A. Surolia, Formulation of nanotized curcumin and demonstration of its antimalarial efficacy, *International Journal of Nanomedicine*, ISSN: 11769114,(2014), 9, 5373-5387. doi: 10.2147/IJN.S62756. (I.F: 4.3)

16. S. Bhandary, R. Basu, S. Das and P. Nandy, Influence of Calcium Phosphate Nanoparticle in Promotion of Liposomal Fusion, *Journal of Nanoengineering and Nanomanufacturing*, ISSN: 2157-9326 (2014), 4, 209–214. doi:10.1166/jnan.2014.1193.

17. S. Kar, B. Bagchi, B. Kundu, S. Bhandary, R. Basu, P. Nandy and S. Das, Synthesis and characterization of Cu/Ag nanoparticle loaded mullite nanocomposite system: a potential candidate for antimicrobial and therapeutic application, *BBA- General subjects*, ISSN: 03044165, (2014), 1840, 3264– 3276. doi: 10.1016/j.bbagen.2014.05.012. (I.F: 4.702)

18. B. Bagchi, S. Kar, S. Dey, S. Bhandary, D. Roy, S. Das, T. K. Mukhopadhyay, S. Das and P. Nandy, In Situ Synthesis of Copper Nanoparticle Loaded (adsorbed and intercalated) Montmorillonite for Therapeutic Applications, *Colloids and Surfaces B: Biointerfaces*, ISSN: 09277765, (2013), 108, 358- 365. doi: 10.1016/j.colsurfb.2013.03.019. (I.F: 4.152)
19. S. Bhandary, S. Das and S. Ghoshdastidar, Influence of thioridazine hydrochloride on the phase profile of phosphatidylcholine liposome, *Advanced Science, Engineering and Medicine*, 5 (2013) 325- 329.
20. B. Bagchi, S. Dey, S. Bhandary, S. Das, A. Bhattacharya, R. Basu and P. Nandy, Antimicrobial Efficacy of Copper Nanoparticle Adsorbed Mullite Aggregates: Synthesis, characterization and application, *Materials Science and Engineering C*, ISSN: 09284931, (2012), 32, 1897-1905. doi: 10.1016/j.msec.2012.05.011. (I.F: 3.42)
21. S. Bhandary, R. Basu, S. Das and P. Nandy, Lipid Polymorphism and Associated Changes in Elastic Properties of Organized Phospholipid Assembly, *Advanced Science, Engineering and Medicine* 4,(2012) 267–270.
22. S. Bhandary, S. Chaki, S. Mukherjee, S. Das, S. Mukherjee, K. Chaudhuri and S. G. Dastidar, Degradation of bacterial DNA by a natural antimicrobial agent with the help of biomimetic membrane system, *Indian Journal of Experimental Biology*, ISSN: 09751009, (2012), 50, 491-496. (I.F: 1.39)
23. S. Bhandary, P. Sultana, R. Basu, S. Das and P. Nandy, A study on the modulation of the phase behavior of lipid aggregates - effect of some metal nanoparticles, *Advanced Science, Engineering and Medicine*, 3 (2011) 213-218.
24. P. Nandy, S. Bhandary, R. Basu, S. Das and S. Bhattacharya, Nanoparticles and membrane anisotropy, *Homeopathy*, ISSN: 14754916, (2011), 100, 194. doi: 10.1016/j.homp.2011.04.001. (I.F: 1.17)
25. S. Bhandary, R. Basu, S. Das and P. Nandy, Comparison of the effect of anti-hyperlipidemic drugs from different groups on the phase profile of liposomal membrane - a fluorescence anisotropy study, *Phase Transitions*, ISSN: 01411594, (2010), 83, 821-830. doi: 10.1080/01411594.2010.495924. (I.F: 1.002)
26. S. Bhandary, R. Basu, S. Das and P. Nandy, Elastic property of organized lipid assembly – effect of water incorporation and chain melting, *Physica A*, ISSN: 03784371, (2010), 389, 685-688. doi:10.1016/j.physa.2009.11.027. (I.F: 2.243)

27. S. Bhandary, R. Basu, S. Das and P. Nandy, Effect of Statins on physicochemical properties of DPPC Vesicles: A fluorescence anisotropy study, Phase Transitions, ISSN: 01411594, (2009), 82, 821- 830. doi: 10.1080/01411590903432616. (I.F: 1.002)

28. S. Bhandary, R. Basu, S. Manna, S. Das and P. Nandy, Role of nonlamellar-forming lipid in promotion of liposomal fusion, Phase Transitions, ISSN: 01411594, (2009), 82, 221-227. doi:10.1080/01411590902741942. (I.F: 1.002)

#### **Book chapter:**

1. Glycosylation-Based Therapeutics: A Precision Approach, Suman Bhandary and Yash Dutta Gupta, IIPSeries, Futuristic Trends in Biotechnology, (2024) Volume 3, Book 14, Part 2, Chapter 4, e-ISBN: 978- 93-6252-531-4.

2. Artificial intelligence for understanding mechanisms of antimicrobial resistance and antimicrobial discovery: a new age model for translational research, Suman Bhandary and Yash Dutta Gupta, 2024. Chapter 5, ISBN: 978-1-394-23417-2, Wiley.

3. Forest Fungi Nanotechnology and their applications, Suman Bhandary, Yash Dutta Gupta and Ritika Chakraborty, 2024, Chapter 27, ISBN: 978-0-443-18870-1, Elsevier.

#### **Patent Publication:**

ANTI-CANCER NIFETEPIMINE NANOFORMULATION, SEN, Dr. Parimal C, GHOSH, Dr. Aparajita, BHANDARY, Dr. Suman (Patent No.- 389777)

#### **Invited lecture in Workshops/Seminars/Conferences:**

1. 15<sup>th</sup> West Bengal State Science Congress, Feb 28 –29, 2008, Bengal Engineering and Science University, Howrah. Presented a paper entitled “Effect of lipid polymorphism on membrane fusion” by S.Bhandary, R. Basu, S. Das and P. Nandy.

2. Bioavailability, biodistribution and drug delivery efficiency of nifetepimine-loaded folic acid functionalized pH responsive highly uniform mesoporous silica nanoparticles for improved breast cancer therapy, S. Bhandary and P.C. Sen, CIRE, Kolkata, 25 Mar, 2017.

#### **Conferences/Seminars/Workshops attended/ conducted:**

1. Copper oxide nanoparticles: green and cost-effective synthesis, characterization and antibacterial activity assessment, Amit Ghosh, Deepak Bhattacharya, Sanjoy Shome, Suman Bhandary, One day international seminar on scientific advances and challenges against cancer and infectious diseases, July 16, 2024.
2. Functionalized mesoporous silica nanoparticles for the delivery of diindolylmethane to triple negative breast cancer cells, Yashaswi Dutta Gupta, Arijit Bhowmik, Rupali Bhowmik, Suman Bhandary, Indo-USA International Conference on Applications of Nanotechnology in Biology, Biotechnology, and Biopharmaceutics (ICNB3), August 11-12, 2022. ISBN: 978-93-94198-05-0.
3. Folated nifetepimine mesoporous silica nanoformulation: a promising nanotherapeutics to combat triple negative breast cancer, S. Bhandary, A. Bhowmik, A. Ghosh and A. Chakraborty, Proceedings of ICN3IC-21, June 11-12, 2021. ISBN: 978-81-950236-5-3.
4. 1<sup>st</sup> National Conference on Biotechnology & Agriculture Based Technological Interventions towards Sustainable Rural Development, 14-15<sup>th</sup> March, 2020, conducted as co-convener and presented a paper.
5. National Seminar-cum-Exposition: Modern Microscopes and their Applications (NSEMMA), 8-9 April, 2010, University of Burdwan, Burdwan. Attended by S. Bhandary.
6. National symposium on “21<sup>st</sup> Century Research in Biochemistry and Biophysics”, Feb 1-3, 2007, Kalyani University, Kalyani. Attended by S. Bhandary.
7. 14<sup>th</sup> West Bengal State Science Congress, Feb 28 –Mar 1, 2007, Jadavpur University, Kolkata. Presented a paper entitled “Phenomenon of Bilayer Lipid Membrane Electroporation in the light of self- organized Criticality” by D. Ghosh, S. De, S. Bhandary and P. Nandy.

#### **Research Projects:**

1. Title: Exosome mediated co-delivery of natural flavonoid Orientin and 5-Fluorouracil for targeting colorectal cancer stem cells involved in angiogenic progression as Co-PI. Funding agency: SERB, Govt. of India

Amount: 34.2 lakhs

Duration: March 2022-March 2025

2. Title: Exploring Antimicrobial Combination Efficacy Network through Profiling Collateral Sensitivity, CrossResistance and Tolerance Trade-Offs during Evolution of Antibiotic Resistance in *Acinetobacter baumannii* as Co-PI. Funding agency: ICMR, Govt. of India

Amount: 27.66 lakhs

Duration: January 2023-December 2025

3. Title: *In situ* grown carbon dot embedded hydroxyapatite nanocomposite for the detection of



Cr (VI) intannery wastewater as PI. Funding agency: Adamas University, SEED Grant

Amount: 1.5 lakhs

Duration: April 2023-March 2025

**Reference Links:**



<https://vidwan.inflibnet.ac.in/profile/181248>



<https://orcid.org/0000-0001-6723-4838>



<https://www.scopus.com/authid/detail.uri?authorId=28767475700>



<https://scholar.google.com/citations?user=d4m6BkcAAA>