

## Dindyal Mandal, PhD

### Current Position:

Senior Research Associate

### Professional Experience

2011 - Present: Associate Professor, School of Biotechnology, KIIT University, Bhubaneswar, India

2008 - 2011: Research Associate, University of Rhode Island, Kingston, RI, USA

2006 - 2008: Postdoctoral fellow, UT M D Anderson Cancer Center, Houston, TX, USA

2005 - 2006: Research Fellow, Mayo Clinic College of Medicine, Rochester, MN, USA

2004 - 2005: Postdoctoral Fellow, Southern Illinois University at Carbondale, IL, USA

### Academic

1998-2004 - Ph. D. (Chemistry), National Chemical Laboratory (NCL), Pune, India

1993-1995- M. Sc. (Organic Chemistry), University of Burdwan, West Bengal, India

### Research interests

- Nanobiotechnology
- Peptide self-assembly
- Drug delivery
- Biotransformation
- Sensor

### Fellowship / Award

- CSIR Fellowship (Govt. of India): 1998 – 2003
- Best oral presentation award at International Conference (IPCAT-2) on Catalysis at NCL, Pune, India, Jan 2001
- Best paper award by NCL Research Foundation, Pune (2002) for the paper entitled 'Enzyme mediated extracellular synthesis of CdS Nanoparticles by the Fungus, *Fusarium oxysporum*,. *J. Am. Chem. Soc.* 124: 12108-12109, 2002'

### Teaching experience (2011 - present)

BT 1005: Chemistry I (Undergraduate level)

BT 1006: Chemistry II (Undergraduate level)

BT4012: Fundamentals of Nanobiotechnology (Elective subject, Postgraduate level)

BT 5009: Advanced Nanobiotechnology (Elective, Postgraduate level)

### Administrative experience

Examination-in-charge, School of Biotechnology, KIIT Deemed to be University, Bhubaneswar, India 2014- 2018

### Served as Reviewer in

- *Biotechnology progress*
- *Colloid and Surface Science B: Bio interface*
- *Journal of Photobiology*
- *Nanomedicine*
- *Chemosphere*
- *Current Nanoscience*
- *Applied Microbiology and Biotechnology*
- *Langmuir*
- *Chemical Society Reviews*
- *RSC Advances*
- *Int. J. Pharm.*
- *Mol. Pharm.*

### Previous Sponsored Projects

1. 'Self assembled peptide nanostructures for siRNA delivery'- sponsored by Department of Biotechnology (DBT), Govt. of India (2015-2019)
2. 'Peptide-generated metal nanoparticles and their potential biomedical applications'- sponsored by Department of Science and Technology (DST)-Nanomission, Govt. of India (2015-2018)
3. 'Synthesis of peptide stabilized quantum dots for imaging applications'- sponsored by BRNS, Department of Atomic Energy (DAE), Govt. of India (2015-2019)

### List of publications

1. P. P. Rath, S. S. Behera, B. Priyadarshini, S. R. Panda, D. Mandal, T. Sahoo, S. Mishra, T. R. Sahoo, P. K. Parhi. Influence of Mg doping on ZnO NPs for enhanced adsorption activity of congo red dye. *Appl. Surf. Sci.* 491, 256-266, **2019** (IF: 5.1)
2. B. Panigrahi, S. Mishra, R. Singh, D. Mandal. Peptide generated anisotropic gold nanoparticles as efficient siRNA vectors. *Int. J. Pharm.* 563, 198 - 207, 2019 (IF: 3.8)
3. S. S. Behera, Subhendu K. Panda, D. Mandal, P. K. Parhi. Ultrasound and microwave assisted leaching of neodymium from waste magnet using organic solvent. *Hydrometallurgy* 185, 61-70, **2019** (IF: 3.3)

4. R. K. Singh, S. Mishra, B. Panigrahi, B. Das, R. Jayabalan, P. K. Parhi, **D. Mandal\***. pH triggered green synthesized silver nanoparticles toward selective colorimetric detection of kanamycin and hazardous sulfide ions. *J. Mol. Liquids* 269, 269-277, **2018** (IF: 4.5)
5. B. Panigrahi, R. K. Singh, S. Mishra, **D. Mandal\***. Cyclic peptide based nanostructures as efficient siRNA carriers. *Artificial Cells, Nanomedicine and Biotechnology* (October **2018**, IF: 3.0)
6. R. K. Singh, S. Mishra, S. Jena, B. Panigrahi, B. Das, R. Jayabalan, P. K. Parhi, **D. Mandal\***. Rapid colorimetric sensing of Gadolinium by EGCG-derived AgNPs: the development of nanohybrid bioimaging probe. *Chem. Commun.* 54, 3981-3984, **2018** (IF: 6.3)
7. S. Das, S.S. Behera, B.M. Murmu, R.K. Mohapatra, **D. Mandal**, R. Samantray, P.K. Parhi, G. Senanayake. Extraction of scandium(III) from acidic solutions using organo-phosphoric acid reagents: A comparative study. *Separation and Purification Technology* 202, 248-258, **2018** (IF: 3.3)
8. S. Jena, R. K. Singh, B. Panigrahi, M. Suar, **D. Mandal\***. Photo-bioreduction of Ag<sup>+</sup> ions towards the generation of multifunctional silver nanoparticles: Mechanistic perspective and therapeutic potential. *J. Photochem. Photobiol. B: Biology* 164, 306-313, **2016** (ISSN: 1011-1344, IF: 3.0)
9. A. N. Shirazi, N. S. El-Sayed, **D. Mandal**, R. K. Tiwari, K. Tavakoli, M. Etesham, K. Parang. Cysteine and arginine-rich peptides as molecular carriers. *Bioorg. Med. Chem. Lett.* 26 (2), 656-61, **2016** (ISSN: 0960-894X, IF: 2.3)
10. T. Akbarzadeh, A. Rafinejad, A. Fallah-Tafti, R. Tiwari, A. Nasrolahi Shirazi, **D. Mandal**, K. Parang, A. Foroumadi. Synthesis and evaluation of ethyl 2,4-dioxo-4-arylbutanoate derivatives as src kinase inhibitors. *J of Sciences Islamic Republic of Iran* 26, 321-325, **2015**
11. S. Jena, B. Das, R. Bosu, M. Suar, **D. Mandal\***. Bacteria generated antibacterial gold nanoparticles and potential mechanistic insight. *J. of Cluster Science* 26 (5), 1707-1721, **2015** (ISSN: 1040-7278 , IF: 1.3)
12. A. N. Shirazi, K. L. Paquin, N. G. Howlett, **D. Mandal**, K. Parang. Cyclic peptide capped gold nanoparticles for enhanced siRNA delivery. *Molecules* 19, 13319-13331, **2014** (ISSN 1420-3049, IF: 2.8)

13. **D. Mandal\***, A. N. Shirazi, K. Parang\*. Self assembly of peptides to nanostructures. (Review) *Org. Biomol. Chem.* 12, 3544-3561, **2014** (ISSN (printed): 1477-0520, IF: 3.5)
14. **D. Mandal\***, A. N. Shirazi, R. Tiwari, A. Banerjee, A. Yadav, K. Parang\*. Self-Assembled Surfactant Cyclic Peptide Nanostructures as Stabilizing Agents. *Soft Matter* 9, 9465-9475, **2013** (ISSN: 1744-683X , IF= 3.8)
15. A. N. Shirazi, R. Tiwari, D. Oh, B. Sullivan, K. McCaffrey, **D. Mandal**, K. Parang. Surface Decorated Gold Nanoparticles by Linear and Cyclic Peptides as Molecular Transporters. *Mol. Pharm.* 10 (8), 3137–3151, **2013** (ISSN 1543-8384, IF= 4.5)
16. A. N. Shirazi, **D. Mandal**, R. Tiwari, L. Guo, W. Lu, K. Parang. Cyclic Peptide-Capped Gold Nanoparticles as Drug Delivery Systems. *Mol. Pharm.* 10(2), 500-11, **2013** (IF=4.5)
17. A. N. Shirazi, R. K. Tiwari, A. Brown, **D. Mandal**, G. Sun, K. Parang. Cyclic Peptides Containing Tryptophan and Arginine as Src Kinase Inhibitors. *Bioorg. Med. Chem. Lett.* 23(11), 3230-4, **2013** (ISSN: 0960-894X , IF=2.3)
18. H. K. Agarwal, B. S. Chhikara, S. Bhavaraju, **D. Mandal**, G. Doncel, K. Parang. Emtricitabine Prodrugs with Improved Anti-HIV Activity and Cellular Uptake. *Mol. Pharm.* 10(2), 467-76, **2013** (ISSN 1543-8384, IF=4.5)
19. A.N. Shirazi, R. Tiwari, B. Chhikara, **D. Mandal**, K. Parang. Design and Evaluation of Cell-Penetrating Peptide-Doxorubicin Conjugates as Prodrugs. *Mol. Pharm.* 10(2), 488-99, **2013** (ISSN 1543-8384, IF=4.5)
20. B. S. Chhikara, **D. Mandal**, K. Parang. Synthesis, Anticancer Activities, and Cellular Uptake Studies of Lipophilic Derivatives of Doxorubicin Succinate. *J. Med. Chem.* 55, 1500, **2012** (ISSN 0022-2623, IF= 6.2)
21. R. K. Sharma, S. Singh, R. Tiwari, **D. Mandal**, C. E. Olsen, V. S. Parmar, K. Parang, Prasad AK. O-Aryl  $\alpha,\beta$ -d-ribofuranosides: synthesis & highly efficient biocatalytic separation of anomers and evaluation of their Src kinase inhibitory activity. *Bioorg Med Chem.* 20(23), 6821, **2012** (ISSN-09680896, IF=2.9)
22. A. Rafinejad, A. Fallah-Tafti, R. Tiwari, A. N. Shirazi, **D. Mandal**, A. Shafiee, K. Parang, Alireza Foroumadi, Tahmineh Akbarzadeh. 4-Aryl-4H-naphthopyrans derivatives: One-pot synthesis, evaluation of Src kinase inhibitory and anti-proliferative activities. *DARU Journal of Pharmaceutical Sciences* 20,100, **2012** (IF=0.7)

23. **D. Mandal**, A. Shirazi, K. Parang. Cell-penetrating homochiral cyclic peptides as nuclear-targeting molecular transporters. *Angew. Chem., Int. Ed.* 50 (41), 9633, **2011** (ISSN: 1521-3773, IF=12.1, citation=12)
24. H. K. Agarwal, K. A. Loethen, **D. Mandal**, G. F Doncel, K. Parang. Synthesis and biological evaluation of Fatty Acyl Ester Derivatives of 2',3'-Didehydro-2',3'-Dideoxythymidine. *Bioorg. Med. Chem. Lett.* 21, 1917, **2011** (ISSN: 0960-894X , IF=2.4, citation=6)
25. B. S. Chhikara, **D. Mandal**, K. Parang. Fatty-Acyl Amide Derivatives of Doxorubicin: Synthesis and In Vitro Anticancer Activities. *Eur. J. Med. Chem.* 46(6), 2037, **2011** (ISSN. 0223-5234, IF=4.8, citation=11)
26. A. Gupta, **D. Mandal**, Y. Ahmadibeni, K. Parang, G. Bothun. Hydrophobicity Drives the Non-specific Cellular Uptake of Short Cationic Peptide Ligands. *Eur. Biophysical J.* 40(6), 727, **2011** (ISSN: 0175-7571, IF=2.2, citation=4)
27. A. Fallah-Tafti, R. Tiwari, A. N. Shirazi, T. Akbarzadeh, **D. Mandal**, A. Shafiee, K. Parang, A. Foroumadi. 4-Aryl-4H-Chromene-3-Carbonitrile Derivatives: Evaluation of Src Kinase Inhibitory and Anticancer Activities. *Med. Chem.* 7 (5), 466, **2011** (ISSN: 1573-4064, Citation=7, IF: 2.3)
28. A. Kumar, I. Ahmad, B. S. Chhikara, R. Tiwari, **D. Mandal**, K. Parang. Synthesis of 3-Phenylpyrazolopyrimidine-1,2,3-Triazole Conjugates and Evaluation of their Src Kinase Inhibitory and Anticancer Activities. *Bioorg. Med. Chem. Lett.* 21, 1342, **2011** (ISSN: 0960-894X , IF=2.3, citation=18)
29. D. Kumar, V. Buchi Reddy, A. Kumar, **D. Mandal**, R. Tiwari, and K. Parang. Click chemistry inspired one-pot synthesis of novel 1, 2, 3-triazoles and their Src kinase inhibitory activity. *Bioorg. Med. Chem. Lett.* 21, 449, **2011**. (IF=2.3, citation=17)
30. B. S. Chhikara, **D. Mandal**, K. Parang. Synthesis and evaluation of fatty acyl esters derivatives of cytarabine as anti-leukemia agents. *Eur J Med Chem* 45, 4601, **2010** (ISSN. 0223-5234, IF=3.4, citation=6)
31. D. Sharma, R. K. Sharma, S. Bhatia, R. Tiwari, **D Mandal**, J. Lehmann, K. Parang, C.E. Olsen, V. S. Parmar, A. K. Prasad. Synthesis, Src kinase inhibitory and anticancer activities of 1-substituted 3 (N-alkyl-N-phenylamino) propan-2-ols. *Biochimie* 92, 1164, **2010**. (ISSN: 0300-9084, IF=3.1, citation=8)

32. Y. Wang, **D. Mandal**, S. Wang, E. Kleinerman, R. Pollock, D. Lev, A. Hayes-Jordan. Platelet Derived Growth Factor Receptor Beta Inhibition Increases Tumor Necrosis Factor Related Apoptosis Inducing Ligand sensitivity: Imatinib, TRAIL dual Therapy. *Cancer* 116, 3892, **2010** (ISSN: 1097-0142, IF=6.0, citation=8)
33. Y. X. Wang, **D. Mandal**, S. Wang, D. Hughes, R. E. Pollock, D. Lev, E. Kleinerman, A. Hayes-Jordan. Inhibiting Platelet Derived Growth Factor Beta (PDGFR-B) decreases Ewing's Sarcoma Growth and Metastasis in a Novel Orthotopic Human Xenograft Model. *In Vivo* 23, 903, **2009** (ISSN: 1791-7549, IF=1.2, citation=4)
34. **D. Mandal\***, A. Maran, M. J. Yaszemski, M E Bolander and G Sarkar. Cellular uptake of gold nanoparticles directly cross-linked with carrier peptides by Osteosarcoma cells. *J. Mater. Sci: Mater. Med.* 20, 347, **2009** (ISSN: 1573-4838, IF=2.4, citation=23)
35. Y. Wang, **D. Mandal**, Andrea Hayes-Jordan. Platelet derived growth factor beta (PDGF-B), is required for pericyte requirement and angiogenesis in Fibrosarcoma. *J. Am. College of Surgeons* 205, 3, **2007**
36. **D. Mandal**, A. Srivastava, E. Mahlum, D. Desai, A. Maran, M. Yaszemski, S. M. Jalal, S. Gitelis, F. Bertoni, T. Damron, R. Irwin, M. O. Connor, H. Schwartz, M. E. Bolander and G. Sarkar. Severe suppression of Frzb/sFRP3 transcription in osteogenic sarcoma. *Gene* 386, 131, **2007** (ISSN: 0378-1119, IF=2.3, citation=16)
37. E. Mahlum, **D. Mandal**, C. Halder, A. Maran, M. J. Yaszemski, R. B. Jenkins, M. E. Bolander, G. Sarkar. Engineering a non-carrier to a carrier peptide for non-covalently delivering biologically active proteins into human cells. *Anal Biochem* 365, 215, **2007** (ISSN: 0003-2697, IF=2.5, citation=5)
38. **D. Mandal\***, M. E. Bolander, D. Mukhopadhyay, G. Sarkar and P. Mukherjee. The use of microorganisms for synthesis of metal nanoparticles and their application (Minireview). *Applied Microbiol and Biotechnol* 69, 485, **2006** (ISSN: 1432-0614, IF=3.3, citation=370)
39. H. M. Gardimalla, **D. Mandal**, P. Stevens, M. Yen, and Y. Gao. Superparamagnetic nanoparticle supported enzymatic resolution of racemic carboxylates. *Chem. Commun.* 4432, **2005** (ISSN : 1359-7345, IF=6.1, citation=54)
40. **D. Mandal**, A. Ahmad, M. I. Khan and R. Kumar. Enantioselective bioreduction of acetophenone and its analogous by the fungus *Trichothecium* sp. *J. Mol. Catal. B: Enzym.* 27, 61, **2004** (ISSN 1381-1177, IF=2.8, citation=40)

41. A. Ahmad, P. Mukherjee, S. Senapati, **D. Mandal**, M. I. Khan, R. Kumar and Murali Sastry. Extracellular biosynthesis of silver nanoparticles using the fungus *Fusarium oxysporum*. *Coll. and Surf. B: Biointerfaces* 28, 313, **2003** (ISSN: 0021-9797, IF=3.8, citation=527)
42. P. Mukherjee, S. Senapati, **D. Mandal**, A. Ahmad, M. I. Khan, R. Kumar and M. Sastry. Extra-cellular Synthesis of Gold Nanoparticles by the Fungus, *Fusarium oxysporum*. *ChemBioChem*. 3, 461, **2002** (ISSN: 1439-4227, IF=2.7, citation=295)
43. **D. Mandal**, A. Ahmad, M. I. Khan and R. Kumar. Biocatalytic transformation of cyclohexanone by *Fusarium* sp. *J. Mol. Catal. A: Chemical* 181, 237, **2002** (ISSN 1381-1169, IF=3.1, citation=11)
44. A. Ahmad, P. Mukherjee, **D. Mandal**, S. Senapati, M. I. Khan, R. Kumar and M. Sastry. Enzyme mediated Extracellular synthesis of CdS nanoparticles by the fungus *Fusarium oxysporum*. *J. Am. Chem. Soc.* 124, 12108, **2002** (ISSN:0002-7863, IF=14.3, citation=184)
45. P. Mukherjee, A. Ahmad, **D. Mandal**, S. Senapati, S. R. Sainkar, M. I. Khan, R. Parishcha, P. V. Ajayakumar, M. Alam, R. Kumar and M. Sastry. Fungus mediated synthesis of silver nanoparticle and their immobilization in the mycelial matrix: A novel biological approach to nanoparticle synthesis. *Nano Lett* 1, 515, **2001** (ISSN 1530-6984, IF=12.0, citation= 434)
46. P. Mukherjee, A. Ahmad, **D. Mandal**, S. Senapati, S. R. Sainkar, M. I. Khan, R. Ramani, R. Parishcha, P. V. Ajayakumar, M. Alam, R. Kumar and M. Sastry, Bioreduction of AuCl<sup>4-</sup> ions by the fungus, *Verticillium* and surface trapping of gold nanoparticle thus formed. *Angew. Chem. Int. Ed. Engl.* 40, 3585, **2001** (ISSN: 1521-3773, IF=12.1, citation=384)
47. P. Mukherjee, S. Laha, **D. Mandal**, and R. Kumar. Organo-functionalized surface modified MCM-41 type mesoporous materials having various organic functional groups. *Stud. Surf. Sci. Catal.* 129, 283, **2000** (Citation=11)

(\*) indicates corresponding author

### Research Work highlighted in

- a) Current Science 2002, 82, 1419
- b) News India (Nature publishing group, India, Oct 2001)
- c) Chemical & Engineering News (ACS publication), 2001, 27
- d) Nanozone 2002 (Nature publishing)
- e) Environmental Science & Technology (ACS publication), 2001, 35, 479A-480A
- f) Science News, July, 2003 (published by Scientific Americana)
- g) Science-Business eXchange4, doi:10.1038/scibx.2011.1100 (6<sup>th</sup> Oct, 2011, Nature publishing)

**Total citation:** 3980 (source: scopus, excluding self citation)

**h-index:** 18

### **Book Chapter**

1. D. Mandal\*, S. Mishra and R. K. Singh. Green Synthesized Nanoparticles as Potential Nanosensors. In: *Environmental, Chemical and Medical Sensors*, pp 137-164, 2018 (ISBN: 978-981-10-7750-0), Springer Nature.
2. D. Mandal. Intracellular delivery of gold nanoparticles: Application in nanomedicine. In: *Biomaterials Developments and Applications*, pp 435-451, 2010 (ISBN: 978-1-60876-476-1), Nova Publishers, NY, USA.

### **Patents**

1. G. Sarkar, M. E. Bolander, D. Mandal, E. Mahlum, M. J. Yaszemski. Transport of biologically active molecules into a cell, mitochondrion, or nucleus. *US pat application no 12/354,142 (2008)*
2. P. Mukherjee, D. Mandal, A. Ahmad, M. Sastry and R. Kumar. Process for the preparation of metal sulfide nanoparticles. *US Pat. 6, 783, 963 (2004)*
3. D. Mandal, A. Ahmad, M. I. Khan and R. Kumar. Process for preparation of lactone from a cyclic ketone. *US Pat. 6, 559, 322 (2003)*
4. P. Mukherjee, D. Mandal, A. Ahmad, M. Sastry and R. Kumar. Process for the Preparation of a nanosized colloidal metal particle. *U.S. Pat. 6, 537, 344 (2003)*
5. P. Mukherjee, A. Ahmad, D. Mandal, S. Senapati, M. I. Khan, M. Sastry and R. Kumar. Process for the preparation of immobilized nanoparticles. *US pat. 7, 759, 098 (2010)*