



ENLIGHTENMENT TO EXCELLENCE

UNIVERSITY OF NORTH BENGAL

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Raja Rammohunpur, Dist- Darjeeling, West Bengal, Pin-734013, India.



Department of Bio-Technology



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M.Sc., Ph.D. POSTDOC

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Subject specialization: Nanobiotechnology, Enzymology

Areas of Research Interest: Nanobiotechnology, Antibacterials, Drug delivery, Nanofibers for biomedical applications, Enzymology and Sensors.

No. of Ph.D. students: (a) Supervised: Nil (b) Ongoing: Nil

No. of M.Phil. students: (a) Supervised: Nil (b) Ongoing: Nil

No. of Publications: 13

Achievement & Awards:

- Qualified national level competitive examination "Graduate Aptitude Test in Engineering (GATE) 2008" organized by Ministry of Human Resource Development (MHRD), Government of India.
- Awarded scholarship funded by Department of Biotechnology, Government of India for M.Sc. Biotechnology programme in year 2004-2006.
- Brain Korea (BK21) Plus research fellowship at Korea University, Seoul, South Korea in 2014.

Professional Experiences:

- September, 2018 - till date, Assistant Professor of Biotechnology, University of North Bengal.

Administrative Experiences: Nil

Scientific services:

- Peer reviewer of Nanotechnology, Materials Research Express, Journal of Material Chemistry B, RSC Advances and IEEE Transactions on NanoBioscience.

Selective List of Publications:

- Ojha, B., Singh, A.K., Adhikari, M.D., Ramesh, A. and Das, G. (2010). 2-Alkylmalonic acid: Amphiphilic chelator and a potent inhibitor of metalloenzyme. *Journal of Physical Chemistry B* 114, 10835-10842.
- Adhikari, M.D., Panda, B.R., Vudumala, U., Chattopadhyay, A. and Ramesh, A. (2012). A facile method for estimation viable bacteria cells in solution based on " subtractive-aggregation" of gold nanoparticles. *RSC Advances* 2, 1782-1793
- Adhikari, M.D., Das, G. and Ramesh, A. (2012). Retention of nisin activity at elevated pH in an organic acid complex and gold nanoparticle composite. *Chemical Communications* 48, 8928-8930.
- Vudumala, U., Adhikari, M.D., Ojha, B., Goswami, S., Das, G. and Ramesh, A. (2012). Tuning the bactericidal repertoire and potency of quinoline-based amphiphiles for enhanced killing of pathogenic bacteria. *RSC Advances* 2, 3864-3871.
- Singh, A.K., Mukherjee, S., Adhikari, M.D. and Ramesh, A. (2012). Fluorescence-based comparative evaluation of bactericidal potency and food application potential of anti-listerial bacteriocin produced by lactic acid bacteria isolated from indigenous samples. *Probiotics and Antimicrobial Proteins* 4, 122-132.
- Kar, C., Adhikari, M.D., Ramesh, A. and Das, G. (2012). Selective sensing and effective separation of Hg²⁺ from aqueous medium with a pyrene based amphiphilic ligand. *RSC Advances* 2, 9201-9206.

- **Adhikari, M.D.**, Goswami, S., Panda, B.R., Chattopadhyay, A. and Ramesh, A. (2013). Membrane-directed high bactericidal activity of gold nanoparticle-polythiophene composite for niche applications against pathogenic bacteria. *Advanced Healthcare Materials* 2, 599-606.
- Kar, C., **Adhikari, M.D.**, Ramesh, A. and Das, G. (2013). NIR and FRET-based sensing of Cu²⁺ and S²⁻ in physiological conditions and in live cells. *Inorganic Chemistry* 52, 743-752.
- Mukherjee, S., Singh, A. K., **Adhikari, M.D.** and Ramesh, A. (2013). Quantitative appraisal of probiotic attributes and in vitro adhesion potential of anti-listerial bacteriocin-producing lactic acid bacteria. *Probiotics and Antimicrobial Proteins* 5, 99-109.
- Goswami, S., **Adhikari, M.D.**, Kar, C., Thiyagarajan, D., Das, G. and Ramesh, A. (2013). Synthetic amphiphiles as therapeutic antibacterials: Lessons on bactericidal efficacy and cytotoxicity and potential application as an adjuvant in antimicrobial chemotherapy. *Journal of Materials Chemistry B* 1, 2612-2623.
- Kar, C., **Adhikari, M.D.**, Datta, B. K., Ramesh, A. and Das, G. (2013). A CHEF-based biocompatible turn ON ratiometric sensor for sensitive and selective probing of Cu²⁺. *Sensors and Actuators B* 188, 1132-1140.
- **Adhikari, M.D.**, Mukherjee, S., Saikia, J., Das, G. and Ramesh, A. (2014). Magnetic nanoparticles for selective capture and purification of an antimicrobial peptide secreted by food-grade lactic acid bacteria. *Journal of Materials Chemistry B*, 2, 1432-1438.
- Shirke, P. U., Thiyagarajan, D., Goswami, S., **Adhikari, M.D.**, Das, G. and Ramesh, A. (2014). Amphiphile-mediated enhanced antibiotic efficacy and development of a payload nanocarrier for effective killing of pathogenic bacteria. *Journal of Materials Chemistry. B*, 2, 5818 – 5827.

Technical presentations (as first author):

- **Adhikari, M.D.**, Panda, B.R., Singh, A.K., Chattopadhyay, A., Ramesh, A. (2009), Antagonistic activity of a gold nanoparticle-polythiophene composite against pathogenic bacteria. *International Workshop on Nanotechnology and Advance Functional Materials*. National Chemical Laboratory(NCL) Pune, India, 9-11 July 2009.
- **Adhikari, M.D.**, Panda, B.R., Vudumula, U., Chattopadhyay, A., and Ramesh, A., (2010). Facile estimation of bacterial cells based on poly-l-lysine mediated aggregation of gold nanoparticle. *51st Annual Conference of Association of Microbiologists of India (AMI), Ranchi*, 14-17, Dec 2010.
- **Adhikari, M.D.**, Ju, Y., Kim, J. (2016) Pore-size Dependent Adsorption-desorption and pH-responsive Delivery of Insulin using Mesoporous Silica Particles. National Conference on Nanotechnological Application in Biological Research for Human Welfare. University of North Bengal. Siliguri, India, 6-7 February, 2016.
- **Adhikari, M.D.**, Nam, J., Kwon, S.J., Lee, I., Kim, S.H., Dordick, J.S. and Kim, J. (2016) Enzyme Precipitate Coating of Glucose Oxidase on Electrospun Polymer Nanofibers with Efficient Antibacterial Activity. AIChE Annual Meeting 2016. San Francisco. CA, USA, 10-18-November, 2016.

Technical presentations (as contributing author):

- Pal, A., Kumar, R., **Adhikari, M.D.**, Yadav, K.K., Ghosh, S. (2008). Isolation of novel bacterial source for bioplastics: A molecular and biochemical approach. *National Symposium on Diversity and Functionality of Plants and Microbes*. University of North Bengal, Darjeeling, India, 24-25 Jan 2008.
- Vudumula, U., **Adhikari, M.D.**, Ojha, B., Goswami, S., Das, G. and Ramesh, A. (2010). Studies on the Antimicrobial Activity of Synthetic Amphiphiles. *51st Annual Conference of Association of Microbiologists of India (AMI), Ranchi*, 14-17 Dec 2010.
- Singh, A.K., Mukherjee, S., **Adhikari, M.D.** and Ramesh, A. (2010). Antagonistic property and food application potential of anti-listerial bacteriocin produced by lactic acid bacteria. *51st Annual Conference of Association of Microbiologists of India (AMI), Ranchi*, 14-17 Dec 2010.
- Goswami, S., **Adhikari, M.D.**, Kar, C., Das, G. and Ramesh, A. (2011). Structural modulation of synthetic amphiphiles for enhanced bactericidal efficacy. *52nd Annual Conference of Association of Microbiologists of India (AMI), Chandigarh*, 03-06 Nov.
- Mukherjee, S., Singh, A.K., **Adhikari, M.D.**, and Ramesh, A. (2011). Probiotic assessment and in vitro adhesion potential of native lactic acid bacteria. *52nd Annual Conference of Association of Microbiologists of India (AMI), Chandigarh*, 03-06 Nov 2011 (awarded best poster award).
- Durairaj, T., **Adhikari, M.D.**, Goswami, S., Kar, C., Das, G. and Ramesh, A. (2012). Membrane-targeting Bactericidal Activity of a Janus Amphiphile. *53rd Annual Conference of Association of Microbiologists of India (AMI), Bhubaneswar*, 22-25 Nov 2012.
- Pallavi, U.S., Goswami, S., **Adhikari, M.D.**, Das, G. and Ramesh, A. (2012). Potential therapeutic applications of a membrane-acting bactericidal amphiphile. *53rd Annual Conference of Association of Microbiologists of India (AMI), Bhubaneswar*, 22-25 Nov 2012 (awarded best poster award).
- You, J., **Adhikari, M.D.**, Kwon, S.J., Hong, S.G., Sajomsang, W., Dordick, J. S. and Kim, J. (2016) Chitosan Nanoparticles with Immobilized Glucose Oxidase as Efficient Antimicrobial Agents. AIChE Annual Meeting 2016, San Francisco, CA, USA, 10-18 November, 2016.

Genbank submissions :

- Mukherjee, S., **Adhikari, M.D.**, Singh, A.K. and Ramesh, A. (2011) Collagen binding protein gene in *Lactobacillus plantarum* CRA38. Direct Submission, *GenBank* Accession no. JQ231230.1
- Mukherjee, S., **Adhikari, M.D.**, Singh, A.K. and Ramesh, A. (2011) *Lactobacillus plantarum* strain CRA38 bile salt hydrolase gene, partial cds. Direct Submission, *GenBank* Accession no. JN831152.1

