Name: Rajeshwari A

Designation: Assistant Professor

Department: Biotechnology

Date of Joining: 17.07.2023

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Academic details:

Course	Name of the institution	Board/ university	Year of completion
Ph.D.	Vellore Institute of Technology (VIT), Vellore	VIT	2017
M. Tech (NanoScience and Technology)	Mepco Schlenk Engineering College, Sivakasi	Anna University Tirunelveli	2011
B. Tech (Biotechnology)	Bharathidasan Institute of Technology, Trichy	Bharathidasan University	2009

Research Interest

Nanoparticles synthesis, Nanosensor, Nanotechnology in health care, and Environmental nanotechnology.

Research Experience:

- Jul 9, 2014 – Mar 31, 2017: As a **Junior Research Fellow (DST-WTI)** in project, "Surface Plasmon Resonance (SPR) based colorimetric sensing of Mercury and Chromium species in the contaminated waters".
- Apr 1, 2013 – Jul 8, 2014: As a **Research Associate** in Centre for Nanobiotecnology, VIT University, Vellore. I have handled lab for Genetic Engineering.
- Apr 30, 2012 – Mar 29, 2013: As a **Junior Research Fellow (LSRB-DRDO)** in project, "Studies on ecotoxicological impact of engineered nanoparticles used in defence application".

Ph.D. Research work

Thesis Title: Synthesis and characterization of gold nanoparticles for sensing application and their bio-safety assessment

Supervisor: Dr. Amitava Mukherjee, Senior Professor, Centre for Nanobiotechnology, Vellore Institute of Technology, Vellore, Tamil Nadu, India.

- Synthesis and characterization of spherical- [different sizes] and rod-shaped [different capping] of gold nanoparticles
- Study of the interaction between the gold nanoparticles and amino thiols to developed a colorimetric probe
- Development of spectrometric probe for inorganic and organic mercury detection using gold nanorods
- Cytogentic study of three different sizes of gold nanoparticles by *A. cepa* bioassay
- Cytotoxicity evaluation of gold nanorods based on surface capping by *A. cepa* bioassay

Project summary

- **Master's Thesis:** Dec, 2010 – June, 2011: "Cyclodextrin based Nanosponge for pollutants removal" under the guidance of Dr. R Mala, Dept. of Biotechnology, Mepco Schlenk Engineering College, Sivakasi.

- **Bachelor's Thesis:** Mar – May 2009: "DNA characterization of available Sea cucumber in the Gulf of Mannar using RFLP technique" under the guidance of Dr. A K Kumaraguru, Centre for Marian and coastal studies, Madurai Kamaraj University, Madurai.

- **Mini project:** Apr – Jul 2008: "Genotoxicity assessment of Mercuric chloride to marine edible fish *Terapon jarbua"* under the guidance of Dr. A K Kumaraguru, Centre for Marian and coastal studies, Madurai Kamaraj University, Madurai.

Technical expertise

UV–visible spectroscopy, Fluorescence spectroscopy, Dynamic Light Scattering and zeta potential analysis, ELISA, Optical Microscopy, Glove box workstation, Planetary Ball Mill, Fourier Transform Infrared Spectrophotometer, Electrochemical workstation, Sputtering, Langmuir Blodgett, Imaging tool – XEI, Image J.

Publications

TOTAL NUMBER OF PUBLICATIONS: 26

Total Impact Factor: 76.257
As First author : **10**
As co-author: **16**
Book chapters: **2**

Citations: **596**
h-index: 13

Scopus ID: 55372108400

1. **Rajeshwari, A**., Chandrasekaran, N., & Mukherjee, A. (2017) Spectrometric determination of methylmercury using gold nanorods. Sensor Lett.15(9), 762-770.

2. **Rajeshwari, A.,** Garg, K., Elavarasi, M., Chandrasekaran, N., & Mukherjee, A. (2017) Interaction of citrate-capped gold nanoparticles with the selected amino thiols for sensing applications. Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci., 87(1), 23-30. [Citation – 9]

3. **Rajeshwari, A.,** Roy, B., Chandrasekaran, N., & Mukherjee, A. (2016) Cytogenetic evaluation of gold nanorods using *Allium cepa* test. Plant Physiol. Bioch. 109, 209-219. [Impact Factor – 6.5; Citation – 31]

4. Paul, I.E.**, Rajeshwari, A**., Raichur, A.M., Chandrasekaran, N., & Mukherjee, A. (2016) Fluorescence based study for Melamine detection using gold colloidal solutions. J. Fluoresc. 26(6), 2225-2235. [Impact Factor – 2.7; Citation – 7]

5. **Rajeshwari, A**., Karthiga, D., Chandrasekaran, N. & Mukherjee, A. (2016). Anti-aggregation-based spectrometric detection of Hg(II) at physiological pH using gold nanorods. Mat Sci Eng C-Bio S. 67, 711–716. [Impact Factor – 8.457; Citation – 13]

6. Karthiga, D., **Rajeshwari, A**., Chakravarty, S., Chandrasekaran, N. & Mukherjee, A. (2016). Determination of Mercury (II) ions in aqueous solution using silver nanorods as a probe. Anal. Methods. 8(18), 3756-3762. [Impact Factor – 3.1; Citation – 14]

7. **Rajeshwari, A.,** Suresh, S., Chandrasekaran, N., & Mukherjee, A. (2016) Toxicity evaluation of gold nanoparticles using an *Allium cepa* bioassay. RSC Advances. 6:24000-24009. [Impact Factor – 3.9; Citation – 66]

8. Paul, I.E., Sangeetha, S., **Rajeshwari, A**., Alex, S.A., Raichur, A.M., Chandrasekaran, N., & Mukherjee, A. (2016) Label-free colorimetric detection of bacterial lipopolysaccharide in food samples using gold nanorods. Sensor Lett. 14(1), 19-25. [Citation – 2]

9. Kumari, J., Mathur, A., **Rajeshwari, A**., Venkatesan, A., Satyavati, S., Chandrasekaran, N., Nagarajan, R., & Mukherjee, A. (2015) Individual and Co Transport Study of Titanium Dioxide NPs and Zinc Oxide NPs in Porous Media, PLoS ONE, 10(8), e0134796. [Impact Factor – 3.7; Citation – 10]

10. Ravikumar, K. V. G., Kumar, D., **Rajeshwari A**., Madhu, G. M., Mrudula, P., Chandrasekaran, N., & Mukherjee, A. (2015) A comparative study with biologically and chemically synthesized nZVI: Applications in Cr (VI) removal and ecotoxicity assessment using indigenous microorganisms from chromium contaminated site, Environ. Sci. Pollut. R. 23(3), 2613-2627. [Impact Factor – 5.8; Citation – 54]

11. Kumar, D., **Rajeshwari, A**., Jadon, P.S., Chaudhuri, G., Mukherjee, A., Chandrasekaran, N., & Mukherjee, A. (2015) Cytogenetic studies of Chromium (III) Oxide Nanoparticles on *Allium cepa* root tip cells. J. Environ. Sci. 38, 150-157. [Impact Factor – 6.9; Citation – 43]

12. **Rajeshwari, A**., Kavitha, S., Kumar, D., Alex, S.A., Mukherjee, A., Chandrasekaran, N., & Mukherjee, A. (2015) Cytotoxicity of Aluminium Oxide Nanoparticles on *Allium cepa* root tip - Effects of oxidative stress generation and bio uptake. Environ. Sci. Pollut. R. 22:11057-11066. [Impact Factor – 5.8; Citation – 104]

13. Kumar, D.N., **Rajeshwari, A**., Alex, S. A., Sahu, M., Raichur, A.M, Chandrasekaran, N., & Mukherjee, A. (2015) Developing acetylcholinesterase-based inhibition assay by modulated synthesis of silver nanoparticles: Application for sensing of organophosphorus pesticides, RSC Advances 5, 61998-62006. [Impact Factor – 3.9; Citation – 31]

14. Alex, S. A., Elavarasi, M., Kumar, D. N., **Rajeshwari, A**., Chandrasekaran, N., & Mukherjee, A. (2015) Reply to the 'Comment on "Simple fluorescence-based detection of Cr(III) and Cr(VI) using unmodified gold nanoparticles"' by M. R. Hormozi-Nezhad, J. Mohammadi and A. Bigdeli, Analytical Methods, 2015, 7, DOI: 10.1039/c5ay00005j, Anal. Methods, 6035-36. [Impact Factor – 3.1]

15. Kumar, D.N., **Rajeshwari, A**., Alex, S.A., Chandrasekaran, N., & Mukherjee, A. (2015) An ultrasensitive colorimetric sensor for efficient detection of Hg^{2+} at physiological pH. Anal. Methods, 7(6), 2268-2272. [Impact Factor – 3.1; Citation – 4]

16. **Rajeshwari, A**., Amrita, K., N. Chandrasekaran, & Mukherjee, A. (2015). Spectroscopic studies on TiO_2 nanoparticles–BSA interaction under visible light and dark conditions. Asian J. Chem., 27(5), 1798-1804.

17. Kumar, D.N., **Rajeshwari, A**., Alex, S.A., Chandrasekaran, N., & Mukherjee, A. (2015) Acetylcholinesterase inhibition-based colorimetric determination of Hg^{2+} using unmodified silver nanoparticles. New J. Chem., 39, 1172-1178. [Impact Factor – 3.3; Citation – 15]

18. Kumar, D., **Rajeshwari, A.**, Roy, R., Pakrashi, S., Iswarya, V., Paul, I.E., Mathur, A., Chandrasekaran, N. & Mukherjee, A. (2014) A Temporal Study on the Effects of TiO_2 Nanoparticles in a Fresh Water Microcosm. Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci., 86(2), 415-420. [Citation – 3]

19. **Rajeshwari, A**., Pakrashi, S., Dalai, S., Iswarya, V., Chandrasekaran, N., & Mukherjee, A. (2014) Spectroscopic studies on the interaction of bovine serum albumin with Al_2O_3 nanoparticles. J. Lumin., 145, 859-865. [Impact Factor – 3.6; Citation – 45]

20. Paul, I.E., **Rajeshwari, A**., Prathna, T.C., Chandrasekaran, N., & Mukherjee, A. (2014) Colorimetric detection of Melamine based on the size effect of AuNPs. Anal. Methods, 7, 1453-1462. [Impact Factor – 3.1; Citation – 32]

21. Elavarasi, M., **Rajeshwari, A**., Alex, S.A., Kumar D.N., Chandrasekaran, N., & Mukherjee, A. (2014) Simple Colorimetric sensor for Cr (III) and Cr (VI) speciation using Silver nanoparticle as a probe. Anal. Methods, 6, 5161. [Impact Factor – 3.1; Citation – 66]

22. Elavarasi, M., **Rajeshwari, A**., Chandrasekaran, N., & Mukherjee, A. (2013) Simple colorimetric detection of Cr (III) in aqueous solutions by as synthesized citrate capped gold nanoparticles and development of a paper based assay. Anal. Methods, 5(21), 6211-6218. [Impact Factor – 3.1; Citation – 47]

23. **Rajeshwari. A**, T. C. Prathna, J. Balajee, N. Chandrasekaran, A. B. Mandal & Amitava Mukherjee, (2013) Computational approach for particle size measurement of silver nanoparticle from electron microscopic image, Int. J. Pharm. Pharmaceut. Sci, 5,2, 619-623. [Citation – 12]

24. Elavarasi, M., Paul, M.L., **Rajeshwari, A**., Chandrasekaran, N., Mandal, A. B., & Mukherjee, A. (2012) Studies on fluorescence determination of nanomolar Cr (III) in aqueous solutions using unmodified silver nanoparticles. Anal. Methods, 4(10), 3407-3412. [Impact Factor – 3.1; Citation – 17]

Book Chapter

1. **Rajeshwari, A.,** Chaudhuri, G., Chandrasekaran, N., Mukherjee, A., Detection and Remediation of Environmental Contaminants using Nanoparticles – A Case Study on Chromium in Advances In Nanotechnology, Volume 14, edited by Z. Bartul and J. Trenor, pp. 97 – 121, 2015, Nova Science Publishers, Inc., NY, ISSN: 2159-1490.

2. Paul, I.E., Kumar, D.N., **Rajeshwari, A.,** Alex, S.A., Karthiga, D., Chandrasekaran, N., Mukherjee, A., Detection of food contaminants by gold and silver nanoparticles, Nanobiosensors In Nanotechnology in the Food Industry Volume 8, edited by A.M. Grumezescu, ISBN: 978-0-12-804301-1, pp – 129-159, 2016, Elesvier.

Conferences and Workshop:

- Presented a poster on "Interaction of gold nanoparticles with amino thiols", in International Conference "ICMCT-2014", at VIT University, Vellore.
- Participated in the National seminar on "Research & Development in Nanosensors (REDJN – 2013)" organized by Sathyabama University, Chennai during 24th, August 2013.
- Presented a poster on "Silver nanoparticle based diagnostic assay for cysteine detection in human body fluid" in International Conference CAMTech - India Hackathon 2012, at VIT University, Vellore

- Presented a paper on “Removal of Synthetic Pollutants from Water Using β - Cyclodextrin Nanosponge” in National Conference ‘NAkNOw FIESTA 2k11’ held at Mepco Schlenk Engineering College, Sivakasi.
- Presented a paper on “Cyclodextrin based Nanosponge for pollutants removal” in International National conference on Biotechnology & Global warming ‘ICBGW 2011’ held at Vivekanadha College of Engineering for Women, Tiruchengode
- Presented a paper on “Synthesis and characterization of Copper nanoparticle by Polyol and Biological Reduction Method” in National Seminar ‘NBER 2010’ held at Anna University, Coimbatore.
- Participated in National Level Conference on recent trends in the field of Nano Science & Technology ‘NANO MEET 2010’ held in ANU, Chennai.
- Participated in the Indian Nanoelectronics User Programme One day Awareness workshop in IISC, Bangalore.

Achievements:

- Obtained **Research Award** from **VIT** for publications in 2012, 2013, 2014, 2015, and 2016.

Regular Reviewer for

- Proceedings of the National Academy of Sciences, Biological Sciences