

## Curriculum Vitae

**Mrs. SWATHY J S**

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### Carrier Objectives:

Willing to work in an esteemed organization that enables me to utilize my skills and acquired knowledge thereby contributing continuously towards the progress of the organization and career growth as well.

### Educational Qualification:

Degree	Specialization	Year of Passing	Marks (CGPA)	Institute/University
PhD	Nano-biotechnology	2019	-	Vellore Institute of Technology, Vellore, India
M.Tech.	Nanotechnology	2013	8.65	Noorul Islam University, Kumaracoil, India
B.Tech	Bio-informatics	2011	8.4	Bharath University, Chennai, India

### About PhD Thesis:

**Title:** “Formulation, Characterization of Bio-based Oil Nanoemulsion Towards Controlling Bacterial Infection in Aquaculture”

**Supervisor:** Dr. N. Chandrasekaran, Senior Professor, Centre for Nanobiotechnology, Vellore Institute of Technology, Vellore, Tamil Nadu, India.

### Thesis description:

- The management of food demand and the infection due to the microorganisms are the major setback for the aquaculture industry. Several antimicrobial drugs have been developed to provide protection against the dreadful microbial pathogens.
- Bio-based oil (Neem, clove, olive and Black pepper oil) nanoemulsion can replace these harmful antibacterial agents.
- The formulation of bio-based oil nanoemulsion using high pressure homogenization method and checking its antibacterial efficiency against the bacteria isolated from aquaculture farm. Biosafety study of formulated nanoemulsion was carried out using non targeted species such as *Artemia salina*, *Closterium* species and Zebra fish. This study

outcome has helped in better understanding of the implications of nanoemulsion to the aquaculture field

- The encapsulation of the nanoemulsion using the suitable biopolymers like sodium alginate and gelatin provided sustained release and enhanced protection of active ingredient from degradation in environment. The aforementioned studies on plant-based oil nanoemulsion provide a concrete support for its use in infection management in aquaculture and an environment friendly alternative to antimicrobial drugs.

### **Professional Experience**

<b>Period</b>	<b>Designation</b>	<b>Place of work</b>
June 2022- present	Assistant Professor	K S R College of Technology, Erode
June 2021- June 2022	Research Assistant	Quantum Dots Pvt Ltd, Trivandrum
Feb 2021- July 2021	Chief scientific officer	Xcellogen Biotech Pvt Ltd, Trivandrum
August 2020- Jan 2021	Research Scientist	Zumheilen Diagnostics and therapeutic Pvt Ltd, Trissur
June 2017 – May 2018	Teaching cum Research Associate	VIT, Vellore
Nov 2015 – Nov 2016	Senior Research Fellow Funding agency : DST- SERB	VIT, Vellore
Dec 2013 - Nov 2015	Junior Research Fellow Funding agency : DST- SERB	VIT, Vellore

### **Research Skills in Nanobiotechnology:**

- ❖ Nanoemulsion preparation and process optimization using High pressure homogenizer
- ❖ HPLC - method development and validation (according to ICH guidelines)
- ❖ *In-vitro and In-vivo* toxicity studies
- ❖ Synthesis and characterization of Nanoparticle (both chemical and biological synthesis)

### **Hands on experience of laboratory test organism**

1. Daphnia (isolation, growth and maintenance)
2. Zebra fish (spawning, embryo development and dissection)
3. *Donax faba* (culturing and maintenance)
4. Culturing post larval stage of shrimp
5. *Artemia salina* (hatching, culturing and maintenance)

## Statistical Softwares

1. ORGIN Pro 8.0
2. Graph Pad Prism
3. EPA probit analysis
4. Image J

## Research Publications:

1. Jayasurya B R, **Swathy J S**, Susha D, Sameer Sharma, "Virtual screening of *Boswellia serrata* phytochemicals as cancer therapeutics to target growth factor receptors: An In-silico approach", International Journal of Applied Pharmaceutics, 2023 ,15(4).
2. **Swathy. J S**, Prabhakar Mishra, Amitava Mukherjee and Natarajan Chandrasekaran," Screening of potent antimicrobial activity of encapsulated nanometric neem oil emulsion against *Vibrio alginolyticus*" Mechanics, Materials Science & Engineering Journal, 2018(15), ISSN 2412-545.
3. **Swathy. J S**, Prabhakar Mishra, Amitava Mukherjee and Natarajan Chandrasekaran," Antimicrobial potency of high-energy emulsified black pepper oil nanoemulsion against aquaculture pathogen", Aquaculture, 2018, 491, 210–220 (**Impact factor- 2.71**).
4. **Swathy. J S**, Prabhakar Mishra, John Thomas, Amitava Mukherjee, Natarajan Chandrasekaran," Nanometric neem oil emulsification through high-pressure homogenization and its therapeutic potential against *Aeromonas culicicola* in *Cyprinus carpio*" Flavour and Fragrance journal, 2018, **0** (0), 1-11 (**Impact factor- 1.95**).
5. **Swathy. J S**, Prabhakar Mishra, Amitava Mukherjee and Natarajan Chandrasekaran," Comparative study between two different high-energy emulsification strategies for the preparation of bio-oil based nanoemulsion", Advanced science letters, 2017, 24 (8), 5953-5959.
6. **Swathy. J S**, Amitava Mukherjee and Natarajan Chandrasekaran," Essential oil nanoemulsion: an emerging therapeutic tool to control pathogenic infection prevalent in aquaculture", Polymers Research Journal, 2017, 11(3), 95-119.
7. M.R. Madhav, S. Einstein Mariya David, R.S. Suresh Kumar, **J.S. Swathy**, M. Bhuvaneshwari, Amitava Mukherjee, N. Chandrasekaran," Toxicity and accumulation of Copper oxide (CuO) nanoparticles in different life stages of *Artemia salina*", Environmental Toxicology and Pharmacology, 2017, **52**, 227-238 (**Impact factor- 2.80**).
8. Prabhakar Mishra & A.P.B. Balaji & **Swathy J.S.** & Aruna L. Paari & Merlyn Kezhiah & B.K. Tyagi & Amitava Mukherjee & Natarajan Chandrasekaran," Stability assessment of hydro dispersive nanometric permethrin and its biosafety study towards

the beneficial bacterial isolate from paddy rhizome”, Environmental Science and Pollution Research, 2016, 23(24), 24970-24982 (**Impact factor- 2.80**).

9. **Swathy J S**, Praseetha P K, Sakthivel G, “Targeted therapy for breast cancer cells by herbal drug formulations of iron oxide nanoparticles” Asian J Pharm Clin Res, 2016, 9 (1), 347-353 (**Impact factor- 0.40**).

#### **Book Chapter:**

1. **Swathy J.S**, Amitava Mukherjee, Natarajan Chandrasekaran. A comprehensive review on essential oil Nanoemulsions as an alternative to control microbial pathogenicity. AAP, CRC Press (In press) (ISBN: 9781771887199).

#### **Patent:**

**Patent Application No:** 201741013374

**Patent No:** 358827

**Title:** Neem oil nanoemulsion (none) formulation with antimicrobial activity against *Aeromonas* species in aquaculture.

**Inventors:** N. Chandrasekaran, A. Mukherjee, **J.S. Swathy**

#### **Conference Presentations:**

1. Participated in the RRRLF sponsored SALIS 2022: National conference on Transformation of Learning Resource Centres in the Digital Era- Tutorial Session on SWAYAM-NPTEL& IR AT KSRCT, Tiruchengode, Erode on 2022.
2. Participated in the International webinar on Advances in Life science organized by the Department of Biochemistry, Vellore (2021).
3. Participated in the webinar entitled with “Mesoporous Nanomaterial in Cancer Therapeutics” under MHRD-RUSA 2.0 “Biomaterials” project by University of Madras (2021).
4. Presented paper on the Research topic” Screening of potent antimicrobial activity of encapsulated nanometric neem oil emulsion against *vibrio alginolyticus*” at ICAMST 2017, held at VIT University, Tamilnadu (2017).
5. Presented a poster on the Research topic” Neem oil nanoemulsion: An emerging therapeutic tool to control pathogenic infection prevalent in aquaculture” at 85<sup>th</sup> annual meeting of society of biological chemists (India), conference organised by CSIR, Mysuru, India (2016).

6. Presented paper on the Research topic” Comparative study between two different high-energy emulsification strategies for the preparation of bio-oil based nanoemulsion” at ICNAN’16, held at VIT University, Tamilnadu (2016).
7. Presented a paper on” Assessment of stability and therapeutic potential of ultrasonic emulsified nanometric neem oil emulsion against *vibrio alginolyticus*” in the national conferences held at Vignan’s University, Guntur (2014)
8. Presented a paper (“Apoptotic effect of Rauwolfia Serpentina bioconjugated nanoparticles against MCF-7 breast cancer cell lines”) - international conferences on” Material for Energy and Nanoconvergences 2013” held at Hindustan University.
9. Presented a paper (Bioconjugation of iron oxide nanoparticles with herbal anticancer drug) in the 3<sup>rd</sup> national conferences on Micro and Nanotechnologies held at PSG college of Technology (2013).
10. Presented a paper (Doxorubicin loaded PVP coated iron oxide nanoparticles for targeted drug delivery towards ovarian cancer) -National conferences on “Emerging Novel avenues and oppurtunities in Biological sciences” held at M.R. Government Arts college (2013).
11. Participated international conferences on Modelling Optimization and Computing conducted in Noorul Islam University.
12. Attended National conferences on “Emerging trends in communicative English and applied sciences” conducted in Bharath university.

#### **Workshop & FDP Participated:**

1. Attended Four days course on Zebrafish Developmental Biology and Advanced Molecular Techniques” organized by Centre for Molecular and Nanomedical Sciences, Sathyabama Institute of Science and Technology, Chennai (2023).
2. Attended Faculty development programme on IPR conducted by Institution’s Innovation Council, Cauvery College for Women, Trichy (2023).
3. Attended Faculty development programme on Blooms taxonomy in teaching and learning conducted by SanSnow’s Nobel Professional Foundation (Approved by MSME and Ministry of Corporate Affairs, Government of India) (2023).
4. Attended Faculty development programme on Biomedical Nanotechnology conducted by NPTEL-AICTE (2022).
5. Attended one week STTP on “Creation of startups in campuses- Adopting Experiential Pedagogical Teaching Methods” conducted by Department of Management studies, KSRCT, Thiruchengode (2022).
6. Six days’ workshop on hands-on training on Molecular Diagnostic Techniques sponsored by DBT held at PG & Research Department of Zoology, C. Abdul Hakeem College, Vellore (2018).
7. One-day workshop on Nano Characterization held at Central Manufacturing Technology Institute, Bangalore (2016)
8. One-day workshop on Biomaterials and Nanomaterials in Medicine and Wound Management with Biomimetic Polymeric Materials held at VIT University, vellore

(2016).

9. Two days' workshop on Electron Microscopy conducted by Department of mechanical engineering, MEPCO SCHLENK engineering college, Sivakasi (2014).

#### **Additional Credentials:**

1. Completed FDP on Inculcating Universal Human Values in Technical Education organized by AICTE (2022).
2. NPTEL Online certification in the course Biomedical Nanotechnology (Elite) conducted on September 2022.
3. Attended Innovation Ambassador Training "Foundation Level" by MoE's innovation cell & AICTE during the IIC calendar year 2021-2022.
4. Conducted two days training on Basic Technique in Microbiology held at Xcellogen Biotech Pvt Ltd, Trivandrum (2021)
5. Conducted one day training on Herbal Extraction Technique and Phytochemical analysis held at Xcellogen Biotech Pvt Ltd, Trivandrum (2021)
6. Research Award 2016, 2017 and 2018 from Vellore Institute of Technology (VIT), Vellore, Tamil Nadu, India for publishing research articles
7. Participated in Faculty Development Program (FDP) titled with "Scope of Research and Development in the Food Processing Sector" held at VIT University, Vellore (2016)
8. Participated in Faculty Development Program (FDP) titled with "Food Borne Microbes, their role in Food Fermentation, Health and Pathogenesis- what we know and how we can use them? held at VIT University, Vellore (2016).
9. Participated in "Hand Training Program & Demonstration of Technique in System Biology and Computational Biology" conducted in Bharath university.

#### **Declaration:**

I hereby declare that the details provided above are true and I am solely responsible for its accuracy.

**Dr. SWATHY J S**

**Place: Tiruchengode**

**Date: 26-08-2023**

