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Basic Information: Date of Birth: 22nd April 1996 Gender: Male Marital Status: Single

Father's name: P. Kuttralam Mother's name: K. Kalyani

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General and Research Details

I will do my best with the full of dedication in the job. My research explores the eco-friendly greener mediated various nanoparticles in biomedical applications, pre and post-harvesting applications and enhancement of plant growth. My research work focused on the synthesis of nanoparticles for preserving vegetables and fruits without any diseases, plant growth without any plant pathogenic affection and diversified biomedical applications with microscopically validation.

Education

Doctor of Philosophy – Department of Physics 2018 – 2022
Alagappa University, Karaikudi, India.

Advisor: Prof. S. Sudhakar, Ph.D. Status:

Highly commendable

Master of Science – Department of Physics 2016 – 2018
Alagappa University, Karaikudi, India.

Advisor: Prof. S. Sudhakar, Ph.D.

CGPA: 7.80 Medium of instruction-English

Bachelor of Science – Department of Physics 2013 – 2016
Ayya Nadar Janaki Ammal College, Madurai Kamaraj University, Sivakasi, India.

Advisor: Prof. S. Kalaiarasu, M.Phil.

CGPA: 7.880 Medium of instruction-English

School Education – S.H.N. Edward Higher Secondary School, Sattur, Tamil Nadu, India.

SSLC-93.6 % & HSC-81.58 % Medium of instruction-English Board-Tamil Nadu State Board

Languages known: Tamil, English, Hindi **Typewriting:** Tamil, English (Lower & Higher)

Research Experience

Post-Doctoral Research Fellow – Department of Plant Pathology 2023 - 2026

Agricultural College, Guizhou University, Guizhou Province, Guiyang, China.

Advisor: Prof. Yong Wang, Ph.D.

Research Title: Evaluation of different natural products mediated synthesis of nanoparticles for effective plant growth and post-harvest applications.

- An eco-friendly mediated synthesis and characterization of curcumin, graphene oxide, nickel oxide and zinc oxide nanomaterials for in vitro biomedical, plant growth and post-harvest preservation applications.
- Published three research papers in reputed international journals as a first author.

Senior Research Fellow – Department of Physics

2022 - 2023

Research Centre, SSN College of Engineering, Anna University, Chennai, India.

Advisor: Prof. K. Aravindh, Ph.D.

Research Title: Eco-friendly synthesis of metal/metal oxide nanoparticles for in vitro and in vivo biomedical applications.

- An eco-friendly mediated synthesis and characterization of nickel oxide, and magnesium oxide nanomaterials for in vitro and in vivo biomedical applications.
- Published two research papers in reputed international journals as a corresponding author.

Doctoral Researcher – Department of Physics

2018 – 2022

Alagappa University, Karaikudi, India.

Advisor: Prof. S. Sudhahar, Ph.D.

Thesis Title: A Comprehensive exploration on green synthesized metal oxide nanoparticles using Panicoideae (edible grass-millet crops) subfamily grains extract for emerging biological applications.

- A new millet-grains approach mediated the synthesis and characterization of copper oxide, zinc oxide, iron oxide, and silver oxide nanomaterials for biomedical and plant growth applications.
- Investigated the metal oxide nanoparticles activities in the biomedical field including antibacterial, antioxidant, anti-inflammatory, anti-diabetic, larvicidal, insecticidal, and anticancer aspects.
- Examined the growth of seedlings and plants in stem, root, and leaf aspects.
- Mentored 5 Master's thesis and 1 Master of Philosophy dissertation with development of the project, timely research inputs, and research publications.

Master of Science – Department of Physics

2017 – 2018

Alagappa University, Karaikudi, India.

Advisor: Prof. S. Sudhahar, Ph.D.

Project Title: Synthesis, Growth and Structural, Optical and Spectral studies on Piperazinium Salicylate and Vanillinium 3,4-Dimethoxybenzoate Single Crystal.

- Developed new organic single crystals such as piperazinium salicylate, vanillinium 3,4-dimethoxybenzoate for non-linear applications.
- Investigated organic single crystal's their optical, structural, functional, growth, and non-linear properties.
- Completed Master's thesis with development of the project and timely research inputs.

Bachelor of Science – Department of Physics

2015 – 2016

Ayya Nadar Janaki Ammal College, Madurai Kamaraj University, India.

Advisor: Prof. S. Kalaiarasu, M.Phil.

Project Title: Preparation and Characterization on Corn Starch-Potassium Iodide Bio-Polymer Electrolyte.

- Synthesized corn starch-potassium iodide biopolymer electrolyte for battery applications.
- Characterized the structural and electrochemical impedance properties of the electrolyte.
- Completed Bachelor's project report with development of the project and timely research inputs.

Research Publications

1. **K. Velsankar**, M. Sathiyamoorthy, S. Denisdon, Wenzhou Feng, Yong Wang, Guy Smagghe, Green synthesis and characterization of GO-ZnO nanoparticles: Antifungal and Post-harvest applications, *Particulate Science and Technology*, (2026), DOI: <https://doi.org/10.1080/02726351.2026.2656647>. (I.F.: 2.0).

2. **K. Velsankar**, M. Sathiyamoorthy, S. Denisdon, Wenzhou Feng, Yong Wang, Guy Smagghe, Green synthesis of Curcumin-GO-NiO nanoparticles and its post-harvest and plant growth applications, *Chemical and Biological Technologies in Agriculture*, 13 (2026) 33. (I.F.: 5.8).
3. **K. Velsankar**, Wenzhou Feng, Yong Wang, Guy Smagghe, San-Wei Yang, Biosynthesis and characterization of ZnO nanoparticles using *Kigelia africana* seed extract: Antifungal, biochemical and biomedical investigations, *Ceramics International*, 51 (26) Part C (2025) 50565-50581. (I.F.: 6.0).
4. **K. Velsankar**, K. Aravinth, P.S. Ana Cláudia, Y. Wang, F. Ameen, S. Sudhahar, Effect of biosynthesized MgO nanoparticles in antioxidant, anticancer, anti-diabetic and hemolytic biomedical activities, *Biocatalysis and Agricultural Biotechnology*, 53 (2023) 102870. (I.F.: 4.6).
5. **K. Velsankar**, K. Aravinth, Y. Wang, S. Mohandoss, Y.R. Lee, P.S. Ana Cláudia, NiO nanoparticles, an algorithm of their biosynthesis, toxicity, and biomedical activities, *Journal of Molecular Structure*, 1291 (2023) (I.F.: 4.9).
6. **K. Velsankar**, G. Parvathy, S. Mohandoss, M. Krishna Kumar, S. Sudhahar, *Celosia argentea* leaf extract-mediated green synthesized iron oxide nanoparticles for bio-applications, *Journal of Nanostructure in Chemistry*, 12 (2022) 625-640. (I.F.: 19.2).
7. **K. Velsankar**, G. Parvathy, S. Mohandoss, R. Mohan Kumar, S. Sudhahar, Green synthesis and characterization of CuO nanoparticles using *Panicum sumatrense* grains extract for biological applications, *Applied Nanoscience*, 12 (2022) 1993-2021.
8. **K. Velsankar**, G. Parvathy, S. Mohandoss, S. Sudhahar, Effect of green synthesized ZnO nanoparticles using *Paspalum scrobiculatum* grains extract in biological applications, *Microscopy Research and Technique*, 85(9) (2022) 3069-3094. (I.F.: 2.1).
9. **K. Velsankar**, G. Parvathy, K. Sankaranarayanan, S. Mohandoss, S. Sudhahar, Green synthesis of silver oxide nanoparticles using *Panicum miliaceum* grains extract for biological applications, *Advanced Powder Technology*, 33 (2022) 103645. (I.F.: 4.5).
10. **K. Velsankar**, G. Parvathy, S. Mohandoss, G. Ravi, S. Sudhahar, *Echinochloa frumentacea* grains extract mediated synthesis and characterization of iron oxide nanoparticles: A greener nano drug for potential biomedical applications, *Journal of Drug Delivery Science and Technology*, 76 (2022) 103799. (I.F.: 5.2).
11. **K. Velsankar**, A. Venkatesan, P. Muthumari, S. Suganya, S. Mohandoss, S. Sudhahar, Green inspired synthesis of ZnO nanoparticles and its characterizations with biofilm, antioxidant, anti-inflammatory, and anti-diabetic activities, *Journal of Molecular Structure*, 1255 (2022) 132420. (I.F.: 4.9).
12. **K. Velsankar**, S. Suganya, P. Muthumari, S. Mohandoss, S. Sudhahar, Ecofriendly green synthesis, characterization and biomedical applications of CuO nanoparticles synthesized using leaf extract of *Capsicum frutescens*, *Journal of Environmental Chemical Engineering*, 9(5) (2021) 106299. (I.F.: 7.5).
13. **K. Velsankar**, V. Vinothini, S. Sudhahar, M. Krishna Kumar, S. Mohandoss, Green Synthesis of CuO nanoparticles via *Plectranthus amboinicus* leaves extract with its characterization on structural, morphological, and biological properties, *Applied Nanoscience*, 10(10) (2020) 3953- 3971.
14. **K. Velsankar**, R.M. Aswin Kumar, R. Preethi, V. Muthulakshmi, S. Sudhahar, Green synthesis of CuO nanoparticles via *Allium sativum* extract and its characterizations on antimicrobial, antioxidant, antilarvicidal activities, *Journal of Environmental Chemical Engineering*, 8(5) (2020) 104123. (I.F.: 7.5).
15. **K. Velsankar**, R. Preethi, P.S. Jeevan Ram, M. Ramesh, S. Sudhahar, Evaluations of biosynthesized Ag nanoparticles via *Allium Sativum* flower extract in biological applications, *Applied Nanoscience*, 10(9) (2020) 3675-3691.
16. **K. Velsankar**, S. Sudhahar, G. Parvathy, R. Kaliammal, Effect of cytotoxicity and Antibacterial activity of biosynthesis of ZnO hexagonal-shaped nanoparticles by *Echinochloa frumentacea* grains extract as a reducing agent, *Materials Chemistry and Physics*, 239 (2020) 121976. (I.F.: 5.2).
17. **K. Velsankar**, S. Sudhahar, G. Maheshwaran, M. Krishna Kumar, Effect of biosynthesis of ZnO nanoparticles via *Cucurbita* seed extract on *Culex tritaeniorhynchus* mosquito larvae with its biological applications, *Journal of Photochemistry and Photobiology B: Biology*, 200 (2019) 111650. (I.F.: 4.0).

18. F. Kousi, S. Suganya, A. Venkatesan, Adel El-marghany, S. Sambasivam, **K. Velsankar**, Fabrication of tin oxide @ graphitic carbon nitride quantum dot nanocomposites as an electrode material for supercapacitor application, *Diamond and Related Materials*, 155 (2025) 112336. (I.F: 5.2).
19. S. Suganya, F. Kousi, S. Sambasivam, Ammar M. Tighezza, **K. Velsankar**, S. Sudhahar, Investigations of ternary Cu-Mn-Zn oxide nanocomposites as potential electrode for hybrid supercapacitors by one-pot hydrothermal method, *Journal of Energy Storage*, 109 (2025) 115181. (I.F.: 10.7).
20. A. Nivedhitha Bharathi, V. Kousalya Devi, S. Sambasivam, Munirah D. Albaqami, M. Krishna Kumar, **K. Velsankar**, S. Sudhahar, Investigating MnSe@Y₂O₃ nanocomposite as an electrode for asymmetric hybrid supercapacitor, *Journal of Alloys and Compounds*, 1009 (2024) 176867. (I.F.: 6.7).
21. V. Kousalya Devi, A. Nivedhitha Bharathi, S. Sambasivam, Kholood A. Dahlous, T.C. Sabari Girisun, **K. Velsankar**, S. Sudhahar, Structural, optical and theoretical studies of 2,4- dichlorobenzoic acid benzamide in nonlinear optical applications using Z-scan technique, *Journal of Molecular Structure*, 1311 (2024) 138431. (I.F.: 4.9).
22. Venkatesan Vinayagam, Dhivya Chandren, Prithiba Arthur, Senthil Theerthagiri, **K. Velsankar**, Yong wang, Design, synthesis, characterization, DNA binding, biological activities and DFT studies of copper (II) complexes containing 1,10-phenanthroline, iminodiacetic acid and 4-amino benzoic acid, *Inorganic Chemistry Communications*, 161 (2024) 112116. (I.F: 5.9).
23. F. Mascarenhas-Melo, M. Marques Ribeiro, K. Hatami Kahkesh, **K. Velsankar**, Niraj Kumar Jha, F. Veiga, A.C. Paiva-Santos, Bakuchiol: an alternative or a retinol teammate for skin treatments?, *Phytochemistry Reviews*, 23 (2024) 1377-1413. (I.F:6.3).
24. S. Mohandoss, S. Ganesan, S. Anand, A.J. Kumar, S. Palanisamy, S.G. You, **K. Velsankar**, S. Sudhahar, H.M. Lo, Y.R. Lee, Multiple heteroatom dopant carbon dots as a novel photoluminescent probe for the sensitive detection of Cu²⁺ and Fe³⁺ ions in living cells and environmental sample analysis, *Environmental Research*, 219 (2023) 115106. (I.F.: 8.2).
25. S. Mohandoss, S. Ganesan, S. Palanisamy, S.G. You, **K. Velsankar**, S. Sudhahar, H.M. Lo, Y.R. Lee, Nitrogen, sulfur, and phosphorus co-doped carbon dots-based ratiometric chemosensor for highly selective sequential detection of Al³⁺ and Fe³⁺ ions in logic gate, cell imaging, and real sample analysis, *Chemosphere*, 313 (2023) 137444.
26. S. Mohandoss, S. Ganesan, **K. Velsankar**, S. Sudhahar, F.H. Alkallas, A.B.G. Trabelsi, F.V. Kusmartsev, H.M. Lo, Y.R. Lee, Fabrication and characterization of Ag nanoparticle-embedded k-Carrageenan-Sodium alginate hydrogels potential antibacterial and cytotoxicity activities, *Journal of Biomaterials Science, Polymer Edition*, 34(6) (2023) 715-733. (I.F.: 3.5).
27. K. Punyawudho, M. Anbu Arasi, A.A. Shah, M. Ramesh Prabhu, M. Kouthaman, **K. Velsankar**, R. Gayathri, M. Raja Pugalanthi, Designing high performance electrospun SPEEK nanofibers composite membrane for PEMFC application, *Materials Letters*, 339 (2023) 134117. (I.F.: 2.6).
28. Ana Cláudia Paiva-Santos, Tatiana Gonçalves, Diana Peixoto, Patrícia C. Pires, Kiran, **K. Velsankar**, Niraj Kumar Jha, Vivek P. Chavda, Imran Shair Mohammad, Letícia Caramori Cefali, Priscila Gava Mazzola, Filipa Mascarenhas-Melo, Francisco Veiga, Rosacea Topical Treatment and Care: From Traditional to New Drug Delivery Systems, *Molecular Pharmaceutics*, 20(8) (2023) 3804-3828. (I.F: 4.9).
29. S.M. Fathima Khyrun, Z. Mohamed Riyas, R. Vaishnavi, S. Sulthana Sabura, N. Vinothini, **K. Velsankar**, S. Sudhahar, M. Ramesh Prabhu, G. Mydhili, M. Thiruvengadam, B. Venkidasamy, C. Janani, S. Thevasundari, Environmental and biomedical applications in the synthesis and structural, optical, elemental characterizations of Mg-doped ZnO nanoparticles using *Coleus aromaticus* leaf extract, *South African Journal of Botany*, 151 (2022) 290-300. (I.F.: 3.1).
30. G. Parvathy, R. Kaliammal, **K. Velsankar**, G. Vinitha, D. Satheesh, G. Ravi, S. Sudhahar, Experimental and theoretical approach of novel third-order nonlinear optical single crystal: benzamide 5-chloro-2-hydroxybenzoic acid, *Journal of Materials Science: Materials in Electronics*, 33 (2022) 4579–4597. (I.F.: 3.2).

31. Z. Mohamed Riyas, R. Gayathri, **K. Velsankar**, S. Sudhahar, M. Ramesh Prabhu, Green Synthesis and biomedical behavior of Mg-doped ZnO nanoparticle using Leaf extract of *Ficus religiosa*, *Ceramics International*, 48(17) (2022) 24619-24628. (I.F.:6.0).
32. R. Kaliammal, G. Parvathy, G. Maheshwaran, **K. Velsankar**, V. Kousalya Devi, M. Krishnakumar, S. Sudhahar, *Zephyranthes candida* flower extract mediated green synthesis of silver nanoparticles for biological applications, *Advanced Powder Technology*, 32(11) (2021) 4408-4419. (I.F.: 4.5).
33. G. Parvathy, R. Kaliammal, **K. Velsankar**, V. Mohankumar, K. Sankaranarayanan, S. Sudhahar, Physicochemical and computational perspectives of 8-hydroxyquinoline 5-chloro-2-hydroxybenzoic acid: a novel second-order nonlinear optical crystal, *Applied Physics A*, 127(12) (2021) 1-12. (I.F.: 3.0).
34. G. Parvathy, R. Kaliammal, **K. Velsankar**, G. Vinitha, K. Sankaranarayanan, R. Mohan Kumar, S. Sudhahar, Piperazinium bis (5-chlorosalicylate)–A new third order nonlinear optical single crystal, *Journal of Molecular Structure*, 1228 (2021) 129728. (I.F: 4.9).
35. G. Parvathy, R. Kaliammal, **K. Velsankar**, M. Krishna Kumar, K. Sankaranarayanan, S. Sudhahar, Studies on structural, optical, homo-lumo and mechanical properties of piperazinium p-hydroxybenzoate monohydrate single crystal for nonlinear optical applications, *Chemical Physics Letters*, 758 (2020) 137934. (I.F.: 2.9).
36. R. Kaliammal, S. Sudhahar, G. Parvathy, **K. Velsankar**, K. Sankaranarayanan, Physicochemical and DFT studies on new organic Bis-(2-amino-6-methylpyridinium) succinate monohydrate good quality single crystal for nonlinear optical applications, *Journal of Molecular Structure*, 1212 (2020) 128069. (I.F.: 4.9).
37. G. Maheshwaran, **K. Velsankar**, G. Parvathy, R. Kaliammal, M. Krishna Kumar, S. Sudhahar, Effective growth and characterization of piperazinium orthophthalate single crystal yielding high second harmonic generation efficiency, *Chinese Journal of Physics*, 64 (2020) 65-78. (I.F.: 5.3).

Research and Technical Skills

Materials Synthesis: Pure metal/metal oxide nanoparticles, Metal doped and composite nanomaterials; biopolymer electrolytes; and organic, inorganic, and semi-organic single crystals.

Characterization: Powder XRD, FT-IR, HR-TEM, FE-SEM, EDX, UV-visible and Impedance spectroscopy, and XPS Instruments.

Bio-Characterization: Antibacterial, Antioxidant, Anti-inflammatory, Anti-diabetic, Anticancer, Larvicidal, Plant growth, Food preservation, Pre and Post-harvest preservation from pathogens, Wound- healing, and Insecticidal activities procedures with morphology and histology microscopically analyses and their interpretation.

Software: XPS fitting (CASA), Origin, DFT (Gaussian), and Rietveld refinement.

Article Search: Google Scholar, Scopus, Web of Science, Semantic Scholar, Research Gate, and Science Direct.

Awards, Achievements and Fellowships

- An **Editorial board member** in the **American Journal of Biochemistry and Biotechnology** and **Discover Biotechnology** journals.
- A registered reviewer member in **Springer Nature** and some **Elsevier** international journals.
- A top 2 % scientists category listed in 2025.
- Received **DST-PURSE Ph.D. fellowship** from August 2021 to February 2022 at Alagappa University, Karaikudi.
- Received **RUSA Ph.D. fellowship** from October 2018 to September 2019 at Alagappa University, Karaikudi.

Best poster presentation award: “Antilarvicidal and Antibacterial activity of Biosynthesis of ZnO nanoparticles by *Cucurbita* seed extract as a reducing agent”, poster presentation in the **National Conference on Semiconductors, Surfaces, Alloys Modeling and Preparations (SSAMAP)** organized by **Department of Physics, Sree Sevugan Annamalai College, Devakottai**, during 6th December 2019.

Supervising Activities

Supervision of 5 Master’s students, Alagappa University, India 2018 - 2021

Project planning, co-supervising, and training the students with established methods in the laboratory. Published research articles in the field of green nanotechnology for biomedical applications.

Supervision of 1 Master of Philosophy student, Alagappa University, India 2019 - 2020

Research work planning, co-supervising, and training of scholars with established methods in the laboratory. Published research article in the field of green nanotechnology for biological applications.

References

Prof. Yong Wang

Department of Plant Pathology, Agricultural College, Guizhou University, Guizhou Province, Guiyang, China.

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Prof. S. Sudhahar

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Prof. Guy Smagghe

Institute of Entomology, Guizhou University, Guizhou Province, Guiyang, China.

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Prof. K. Aravinth

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