

CURRICULAM VITAE

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Educational Qualification

Jan 2014 – July 2021 - Ph.D in Technology- titled “Phytochemicals mediated synthesis and functionalization of iron oxide, CuO/ZnO nanoparticles and chitosan films for enhanced antimicrobial property and biocompatibility” – Department of Applied Science and Technology, AC Tech campus, Anna University, Chennai-25.

Aug.2013 - Aug.2016 - CSIR – Senior Research Fellow (SRF) - Sponsored project titled “Investigation of Compositional, Structural and Mechanical properties of nanocrystalline TiN/VN multilayers using Reactive Magnetron Sputtering” at the Department of Applied Science and Technology - Anna University, Chennai-25

2013 - M.Tech - Nanoscience & Technology- 9.45 CGPA - First Class with Distinction, Anna University, Chennai-25

2009 - B.Tech Biotechnology - 88% - First class with distinction & **college topper. Anna University Ranking - 30th in the State** - Sri Nandhanam College of Engineering & Technology, Tirupattur, Vellore dist., Tamilnadu.

2006 - 12th CBSE (science + maths) - 84.6% at K.V. INS Rajali, Arakkonam, Vellore dist., Tamilnadu.

2003 - 10th CBSE (science + maths) - 89.6% at K.V. INS Rajali, Arakkonam, Vellore dist., Tamilnadu.

Achievements

- Granted CSIR-Senior Research Fellowship (SRF-Direct) for the duration from 2017-2020.
- Received Prime Minister’s (P.M.) Award for the year 2013-14.
- Gate qualified for the year 2013.
- National ranking in English, among 0.01% of successful students in AISSE examination.
- Passed with merit in Business English certificate preliminary course conducted by Cambridge University.

Publication Details

- 1) **J Sandhya**, S Kalaiselvam, '*UV responsive quercetin derived and functionalized CuO/ZnO nanocomposite in ameliorating photocatalytic degradation of rhodamine B dye and enhanced biocidal activity against selected pathogenic strains*', **Journal of Environmental Science and Health-Part A**, 2021, Vol. 56(8), pp.835-848. (I.F.: 2.2)
- 2) **J Sandhya**, S Veeralakshmi, S Kalaiselvam, '*Tripolyphosphate crosslinked Triticum aestivum (wheatgrass) functionalized antimicrobial chitosan: Ameliorating effect on physicochemical, mechanical, invitro cytocompatibility and cell migration properties*', **Journal of Biomolecular Structure and Dynamics**, 2021, Vol. 39(5), pp.1635-1644. (I.F.:3.3)
- 3) **J Sandhya**, S Kalaiselvam, '*Biogenic synthesis of magnetic iron oxide nanoparticles using inedible borassus flabellifer seed coat: characterization, antimicrobial, antioxidant activity and in vitro cytotoxicity analysis*', **Materials Research Express**, 2020, Vol.7(1), pp.015045. (I.F.: 1.9)
- 4) S Nehru, S Veeralakshmi, S Kalaiselvam, SP Subin David, **J Sandhya**, S Arunachalam, '*DNA binding, antibacterial, haemolytic and anticancer studies of some fluorescent emissive surfactant-ruthenium (II) complexes*', **Journal of Biomolecular Structure and Dynamics**, 2021, Vol. 39(6), pp.2242-2256. (I.F.:3.3)
- 5) S Nehru, S Veeralakshmi, S Kalaiselvam, SP Subin David, **J Sandhya**, S Arunachalam, '*Protein binding and antioxidant studies of diimine based emissive surfactant–ruthenium (II) complexes*', **Journal of Biomolecular Structure and Dynamics**, 2021, Vol. 39(5), pp.1535-1546. (I.F.:3.3)
- 6) SP Subin David, S Veeralakshmi, **J Sandhya**, S Nehru, S Kalaiselvam, '*Room temperature operatable high sensitive toluene gas sensor using chemiresistive Ag/Bi₂O₃ nanocomposite*', **Sensors and Actuators B: Chemical**, 2020, Vol.320, 128410. (I.F.: 7.1)
- 7) S Kalaiselvam, **J Sandhya**, KV Hari Krishnan, A Kedharnath, G Arulkumar, A Ameelia Roseline, '*Investigation of Structural, Compositional and Anti-Microbial Properties of Copper Thin Film Using Direct Current Magnetron Sputtering for Surgical Instruments*', **International Journal of Nanoscience**, 2017, Vol.16(2) , pp. 1650025. (I.F.: Pending)
- 8) Sangeetha.J, **Sandhya.J**, John Philip, '*Biosynthesis and functionalization of silver nanoparticles using Nigella sativa, Dioscorea alata and Ferula asafetida*', **Science of Advanced Materials**, 2014, Vol.6, pp-1-10. (I.F.: 1.3)

Instrumentation (Handled)

- Knowledge and hands on experience in various spectroscopic techniques such as UV-Visible Spectroscopy, Fluorescence spectrometer, Fourier Transform Infra-red Spectroscopy (FTIR) and Photon Correlation Spectroscopy (PCS), X-Ray diffraction (XRD), High Performance Liquid Chromatography (HPLC), Differential Scanning Calorimeter(DSC).

Technical skills

- Development of herbal anti-biofilm formulations (using spin coating and solvent casting methods) for biomedical applications.
- Isolation of phytoconstituents with antimicrobial and anticancer properties and their application in nanoparticle synthesis.
- Fabrication of nanoparticles incorporated phase change systems for antimicrobial and thermal regulation applications.
- Fabrication of biocompatible herbal polymers using spin coating method and characterizing them using various in-vitro cytotoxicity and cell viability assays for therapeutic applications.
- Knowledge on the chemical and biogenic synthesis and various characterizations of nanoparticles like Iron oxide, Zinc Oxide, Cadmium Oxide, Titanium Dioxide, Zinc doped Cadmium Sulphide, Manganese doped Zinc Sulphide, Cadmium Oxide, Tin dioxide thin films by sol-gel spin coating.
- Protein purification using chromatographic techniques.
- Isolation and sub-culturing of microbial cultures.
- Molecular weight determination using SDS-PAGE.
- DNA isolation from plant and animal sources.
- Sequence analysis using bioinformatics tools: BLAST, FASTA.
- Insilico prediction of Protein 3D structure and active binding site using modeller software.

Seminars, Workshops and Conferences

- Participated in One week e-Faculty Development Programme on “ Recent Advances and Opportunities in Industrial Biotechnology” organized by the department of

Biotechnology, Ramaiah Institute of Technology and Association of Biotechnology Led Enterprises (ABLE) , India, 04-09 October 2021.

- Participated in the five days training Programme on the State of Art –Analytical Instruments Sponsored by UGC XII Plan Scheme – New extension Activities and Outreach programme at Anna University, organised by Chennai, 10-14th February, 2020.
- Participated in the seven days workshop on “Advances in Nanomaterials for health care applications” organised by Department of Textile Technology, Anna University, 19-25th March, Chennai, 2018.
- Participated in “Springer Nature Author Workshop” jointly organized by University Library ,Anna University and Springer Nature , 27th February, 2017.
- Participated in UGC sponsored short term course on “New materials, their characterization and applications” organised by Department of Aerospace engineering, Mechanical engineering, Crystal growth Centre and Centre for Nanoscience and Technology, 13&14th October 2015.
- Participated in UGC sponsored Training Programme on “The State of the Art – Analytical Instruments”, organised by Department of Chemical engineering and Applied Science and Technology, Anna University, Chennai, 26th -30th October 2015.
- Participated in UGC sponsored short term course on “new materials, their characterization and applications” organized by centre for nanoscience and Technology, crystal growth centre and mechanical engineering department, 9&10th October 2014.
- Presented paper in National Conference on “Green synthesis of Silver nanoparticles” in Meenakshi College for Women, Chennai, 2013.
- Presented paper in National Symposium on Nanotechnology in Human Welfare on “Nanoliposomes in drug delivery for cancer treatment” in V.M.K.V Engineering College , Salem, 28th & 29th September, 2012.
- First Prize in paper presentation of Axion’09-National Level Technical symposium – Department of Electronics and Communication Engineering, Sri Nandhanam College of Engg. and Technology-21st March 2009.
- Secured second prize in poster presentation in National level conference –Zenera’09 – Department of Biotechnology,20th April ,2009.
- First Prize in Paper presentation in National level conference –Zenera’09 – Department of Biotechnolsogy,20th April ,2009.
- First in “My idea programme”paper presentation on energy conservation in the technical symposium organized by VIT and IIT.
- Secured first prize in paper presentation at CIT – TECHNOVATION 2007 national level symposium on the topic of Nanotechnology.

- Secured first prize in electronics and communication department, SNCET symposium on “biobatteries and artificial blood cells” paper presentation
- Secured second place in technical paper on water problem and solutions in the technical symposium organized by joint initiative of VIT and IIT.
- First prize in technical programme in ELITE’07-National level Technical symposium- Department of computer science, Sri Nandhanam College of Engg. and Technology-16th March,2007.