

## **Dr. Jamespandi Annaraj**

Associate Professor & Head  
Department of Materials Science, School of Chemistry,  
Madurai Kamaraj University, Madurai – 625 021.

Email: [annaraj.chem@mkuniversity.org](mailto:annaraj.chem@mkuniversity.org), [jjannaraju@gmail.com](mailto:jjannaraju@gmail.com)

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### **Research Interest**

Bioinorganic Chemistry, Organic/Phyto and Inorganic Nanomaterials for Drug Delivery Systems, Biosensors, Biomimicking Non-heme Enzyme models and Photocatalytic nanocomposites.

### **Education**

#### **Ph.D**

Subject: Chemistry (Bioinorganic Chemistry)  
Institute: Madurai Kamaraj University, Tamilnadu, India  
Year: June, 2004

#### **Master of Science**

Subject: Chemistry (General)  
University: A.V.V.M Sri Pushpam College (Autonomous), Tanjore,  
Bharathidasan University, Trichirappalli, Tamil Nadu, India  
Year: June 1996 - April 1998  
Grade: First Class

#### **Bachelor of Science**

Subjects: Physical Sciences (Chemistry, Physics and Human Nutrition)  
University: Arul Anandar College (Autonomous) Madurai Kamaraj University, Madurai,  
Tamil Nadu, India.  
Year: June 1992 - April 1995  
Grade: First Class

### **Teaching Experience**

Teaching to M.Sc., Chemistry and M.Phil Materials Science.

### **Research Experience**

#### **Post Doctoral Experience** (September 2004 – March 2010)

More than six years post-doctoral research experience on “High Valent Metal Oxo, Peroxo Intermediates” at Ewha Womans University, Seoul, South Korea

**Ph.D** (August 2000 - Oct 2004)

Thesis title: “Synthesis and Characterization of Curcumin based Metal Complexes and a Study on Their Biological Activities”

School of Chemistry, Madurai Kamaraj University, Madurai, Tamilnadu, India.

Area of research: Bio-inorganic Chemistry

**M.Sc** (June 1996 - April 1998)

Department of Chemistry, A.V.V.M Sri Pushpam College (Autonomous), Tanjore, Bharathidasan University, Trichirappalli, Tamil Nadu, India.

Major: Industrial Chemistry

### **Personal Profile**

Gender: Male

Date of birth: 13-07-1974

Marital status: Married

Nationality: Indian

### **Present and Permanent Address**

Dr. J. Annaraj,  
Kovilangulam (Post) – 625514,  
Madurai (Dist),  
Tamilnadu, India.

**h-index = 23**

<https://scholar.google.co.in/citations?user=aKktBzaxFZ4C&hl=en>

### **List of Publications and Conferences**

**Number of Ph.D produced : 7      Ongoing: 4**

#### **(A) Publications**

1. S.M.Gowtham, R.Dhivya, L.Muthulakshmi, S.Sureshkumar, M.Ashraf, M.Pandi, J.Mayandi, **J. Annaraj**, S. Sagadevan, Environmentally benign and biocompatible CuO@Si core-shell nanoparticles: As electrochemical l-cysteine sensor, antibacterial and anti-lung cancer agents, **Ceramics International**, **2022** (in press). **Impact factor: 5.532**
2. A. Balamurugan, N. Vimalasundari, **J. Annaraj**, B. Kavitha, P. Selvakumar R. Sayee Kannan, M. Chiesac, Synthesis of MnO<sub>2</sub> decorated mesoporous carbon nanocomposite for electrocatalytic detection of antifungal drug, **Microchemical Journal**, **2022**, **107891**. **Impact factor: 5.304**
3. Antibiofilm efficacy of novel biogenic silver nanoparticles from Terminalia catappa

- against food-borne *Listeria monocytogenes* ATCC 15,313 and mechanisms investigations in-vivo and in-vitro, L. Muthulakshmi, K. Suganya, M. Murugan, **J. Annaraj**, J. Arockiaraj, **Journal of King Saud University – Science** **34 (2022) 102083, Impact Factor: 3.829.**
4. E. Abel Noelson, M. Anandkumar, M. Marikkannan, V. Ragavendran, A. Thorgersen, S. Sagadevan, J. Annaraj, J. Mayandi, Excellent photocatalytic activity of Ag<sub>2</sub>O loaded ZnO/NiO nanocomposites in sun-light and their biological applications, **Chemical Physics Letters**, **796 (2022) 139566. Impact Factor: 2.328.**
  5. M. Manimegalai, **J. Annaraj**, Synthesis and structural analysis of beta cobalt hydroxide (β-CoOH) nanosheets derived from ZIF 67 metal-organic framework, **Mater. Res. Express** **9 (2022) 025002. Impact Factor: 2.025.**
  6. A. Balamurugan, N. Vimalasundari; **J. Annaraj**, R. Sayee Kannan, Barium Titanate Nanoparticles based Disposable Sensor for nanomolar level Detection of Haematotoxic Pollutant Quinol in aquatic systems, **New J. Chem.**, **2022, 46, 3006-3016. Impact factor: 3.925**
  7. A. Balamurugan, N. Vimalasundari, N.P. Krishnan, **J. Annaraj**, R. Sayee Kannan, Fabrication of wurtzite ZnO embedded functionalized carbon black as sustainable electrocatalyst for detecting endocrine disruptor trichlorophenol, **Microchemical Journal** **175 (2022) 107202. Impact factor: 5.304**
  8. N. Vimalasundari, A. Balamurugan, J. Annaraj, R. Sayee Kannan, Design of Rutile nanospheres Decorated rGO/β-CD nanoflakes composite: A Sustainable electrocatalyst for effective non-enzymatic determination of L-Tyrosine, **Sensors and Actuators B: Chemical**, **351, 2022, 130955, Impact factor: 9.221**
  9. P. Adwin Jose, M. Sankarganesh, J. Dhaveethu Raja, A. Sakthivel, **J. Annaraj**, S. Jeyaveeramadhavi, A. Girija, Spectrophotometric and fluorometric detection of DNA/BSA interaction, antimicrobial, anticancer, antioxidant and catalytic activities of biologically active methoxy substituted pyrimidine-ligand capped copper nanoparticles, **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy** **267 (2022) 120454. Impact factor: 4.831**
  10. L. Muthulakshmi, T. Vijayakumar, P. Selvam, **J. Annaraj**, S. Ranjan, N. Dasgupta, Strong and nonspecific synergistic antibacterial/antibiofilm impact of nano-silver biosynthesized and decorated with active ingredients of *Oscimum basilicum* L, **3 Biotech.** **11 (2021) 153. Impact factor: 2.893**
  11. A. Senthil Murugan, M. Kiruthika, E.R. Abel Noelson, P. Yogapandi, G. Gnana kumar and **J. Annaraj**, Fluorescent sensor for in-vivo bio-imaging, precise tracking of Fe<sup>3+</sup> ions in Zebrafish embryos and visual measuring of Cu<sup>2+</sup> ions in pico-molar level, **Arabian Journal of Chemistry**, **Arabian Journal of Chemistry (2021) 14, 102910. Impact factor:**

## 6.212

12. L. Muthulakshmi, B. Anand Kumar, A. Rajasekar, **J. Annaraj**, C.I. Pruncu, The benefits of k-Carrageenan-gelatin hybrid composite coating on the medical grade stainless steel (SS304) used as anticorrosive barrier **Materials Chemistry and Physics** **258**, **2021**, **123909**. **Impact factor: 4.778**
13. L. Muthulakshmi, **J. Annaraj**, S. Ramakrishna, S. Ranjan N. Dasgupta S.M. Rangappa, S. Siengchin, A sustainable solution for enhanced food packaging via a science-based composite blend of natural-sourced chitosan and microbial extracellular polymeric substances, **J. Food Processing and Preservation**, **2020** doi:10.1111/jfpp.15031, **Impact factor: 2.609**
14. N. Priyanga, A. Sahaya Raja, M. Pannipara, A.G.Al-Sehemi, S.-M. Phang, Y. Xia, S.-Y. Tsai, J. Annaraj, S. Sambathkumar, G. Gnana kumar, Hierarchical MnS@MoS<sub>2</sub> architectures on tea bag filter paper for flexible, sensitive, and selective non-enzymatic hydrogen peroxide sensors, **J. Alloys and Compounds**, **855**, **2020**, **157103**. Impact factor: 4.650, **Impact factor: 6.371**
15. S.Kathiresan, **J. Annaraj**, Synthesis, Characterization and studies on the biological applications of novel amide based mixed ligand Cu(II) ciomplexes, **International E-Conference on Materials Processing and Characterization**, **2020**, 206-210.
16. A. Senthil Murugan, A. Jegan, Mehboobali Pannipara, Abdullah G. Al-Sehemi, Siew-Moi Phang, G. Gnana Kumar, **J. Annaraj**, Synthesis of new Schiff's base copper conjugate for optically and electrochemically tuning of L-cysteine in cancer cells and bovine serum albumin, **Sensors & Actuators: B. Chemical** **316 (2020) 128082**. **Impact factor: 9.221**
17. C Abinaya, R Manjula Devi, P Suresh, N Balasubramanian, N Muthaiya, N D Kannan, **J. Annaraj**, V Shanmugaiah, J M Pearce, P Shanmugapriya, J Mayandi, **Nano Express** **2020**, **1**, **010029**. **Impact factor: 2.241**
18. L.S. Athira, S. Balachandran, **J. Annaraj**, E. Abel Noelson, Molecular Structure, Spectroscopic, Solvatochromic, Dyeing Performance and Biological Evaluations of Heterocyclic Azo Dye, 4-[(E)-(4-hydroxy-2-methylphenyl)diazanyl]-1,5-dimethyl-2-phenyl-1,2-dihydro-3h-pyrazol-3-one, **J. Molecular Structure** **1195 (2019) 556-569**, **Impact factor: 3.841**
19. S.S.J. Xavier, T. Raj kumar, M. Ranjani, D.J. Yoo, V. Archana, L. Charles, J. Annaraj, G. Gnana kumar, Environmentally Benign Carbon Nanodots Prepared from Lemon for the Sensitive and Selective Fluorescence Detection of Fe(III) and Tannic Acid, **J Fluoresc** **(2019)**. <https://doi.org/10.1007/s10895-019-02360-w>, **Impact factor: 2.525**
20. S. Ayyanaar, M. P. Kesavan, G. Sivaraman, B.Maddiboyina, J. Annaraj, J. Rajesh, G.

- Rajagopal, A novel curcumin-loaded PLGA micromagnetic composite system for controlled and pH-responsive drug delivery, **Colloids and Surfaces A: Physicochemical and Engineering Aspects**, **573**, (2019) 188-195, **Impact factor: 5.518**
21. K.R. Soumya, P. Jishma, R. Dhivya, **J. Annaraj**, S. Sugathan, J. Mathew, E. K. Radhakrishnan, Role of Nanocurcumin as a Surface Modifying Agent with Excellent Preventive Effect on Device-Related CoNS Infections, **Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci.** **2019**. <https://doi.org/10.1007/s40011-019-01075-z>, **Impact factor: 0.96**
  22. R. Dhivya, S. Kathiresan, M. Vigneshwar, J. Ranjani, J. Rajendhran, N.S.P. Bhuvanesh, J. Annaraj, Bioactive mono/bis (carboxamide) based Co(II), Ni(II) and Cu(II) complexes: Synthesis, Characterization, DNA binding and Anticancer Potentials, **Appl Organometal Chem.** **2019;33:e4660**. **Impact Factor: 4.072**.
  23. A. Senthil Murugan, N. Vidhyalakshmi, U. Ramesh, **J. Annaraj**, In vivo bio-imaging of sodium meta-arsenite and hydrogen phosphate in zebrafish embryos using red fluorescent zinc complex, **Sensors and Actuators B: Chemical**, **281**, (2019) 507-513. **Impact Factor: 9.221**.
  24. A. Senthil Murugan, N. Vidhyalakshmi, U. Ramesh, **J. Annaraj**, In vivo bio-imaging studies of highly selective, sensitive rhodamine based fluorescent chemosensor for the detection of Cu<sup>2+</sup>/Fe<sup>3+</sup> ions, **Sensors & Actuators: B. Chemical** **274** (2018) 22–29. **Impact Factor: 9.221**.
  25. M. Manimegalai, **J. Annaraj**, Growth and characterization of semi organic Tris Thiourea Cerium Chloride crystal (TTCeC), **Int. J. Advance Engineering and Research Development**, **5**, (2018) 1711-1717. **Impact Factor: 5.71**
  26. M. Manimegalai, F.A.Selvin, P.N. Selvakumar, **J. Annaraj**, S. Chandrasekaran, Growth, structural and optical properties of new semi-organic crystal of tris-thiourea zirconium chloride (TTZrC), **Invertis Journal of Renewable Energy**, **8** (2018) 39-45. **Impact Factor: 6.2**.
  27. S. S. J. Xavier, G. Siva, **J. Annaraj**, A.R. Kim, D.J. Yoo, G. Gnanakumar, Sensitive and selective turn-off-on fluorescence detection of Hg<sup>2+</sup> and cysteine using nitrogen doped carbon nanodots derived from citron and urine. **Sensors and Actuators B: Chemical**, **259**, (2018) 1133-1143. **Impact Factor: 6.393**.
  28. R. Dhivya, J. Ranjani, J. Rajendhran, J. Mayandi, **J. Annaraj**, pH triggered curcumin release from PMMA-AA coated ZnO nanoparticles for excellent anti-gastric cancer, **Journal of Material Sciences & Engineering**, **7**, 2018. (doi: 10.4172/2169-0022.1000414). **Impact Factor: 5.447**
  29. G.G. Vinoth Kumar, M.P. Kesavan, G. Sivaraman, **J. Annaraj**, K. Anitha, A. Tamilselvi, S. Athimoolam, B. Sridhar, J. Rajesh, Reversible NIR fluorescent probes for Cu<sup>2+</sup> ions detection and its living cell imaging. **Sensors and Actuators B** **255** (2018) 3235–3247. **Impact Factor: 9.221**.

30. R. Dhivya, J. Ranjani, J. Rajendhran, J. Mayandi, **J. Annaraj**, Enhancing the anti-gastric cancer activity of curcumin with biocompatible and pH sensitive PMMA-AA/ZnO nanoparticles, *Materials Science & Engineering C* **82** (2018) 182–189. **Impact Factor – 7.328**
31. M.P. Kesavan, S. Ayyanar, V. Vijayakumar, J. Dhaveethu Raja, **J. Annaraj**, K. Sakthipandi, J. Rajesh, Magnetic Iron Oxide Nanoparticles (MIONs) Cross-linked Natural Polymer Based Hybrid Gel Beads: Controlled Nano AntiTB Drug Delivery Application, *J Biomed Mater Res A*. **106**(2018) 1039-1050. **Impact Factor: 4.854, (UGC) 21639**
32. S. Kathiresan, **J. Annaraj**, Nattamai S.P Bhuvanesh, Cu(II) and Ni(II) Complexes of Anthracene-Affixed Schiff Base: A Conflict between Covalent and Stacking Interactions with DNA Bases, *Chemistry Select*, **2017**, **2**, 5475–5484. **Impact Factor – 2.327**
33. R. Dhivya, J. Ranjani, P.K. Bowen, J. Rajendhran, J. Mayandi, **J. Annaraj**, Biocompatible curcumin loaded PMMA-PEG/ZnO nanocomposite induce apoptosis and cytotoxicity in human gastric cancer cells, *Materials Science and Engineering: C*, **2017**, **80**, 59–68. **Impact Factor – 7.328**
34. A. Senthil Murugan, N. Vidhyalakshmi, U. Ramesh and **J. Annaraj**, A Schiff's base receptor for red fluorescence live cell imaging of Zn<sup>2+</sup> ions in zebrafish embryos and naked eye detection of Ni<sup>2+</sup> ions for bio-analytical applications, *J. Mater. Chem. B*, **2017**, **5**, 3195-3200. **Impact Factor: 7.571**
35. S. Kathiresan, S. Mugesh, M. Murugan and **J. Annaraj**, Mixed-ligand copper(II) Schiff base complexes: the vital role of co-ligands in DNA/protein interactions and cytotoxicity, *New J. Chem.*, **2017**, **41**, 1267-1283. **Impact Factor: 3.925**
36. A. Senthil Murugan, M. Pandi, **J. Annaraj**, A Single and Simple Receptor as a Multifunctional Chemosensor for the Al<sup>3+</sup>/Cu<sup>2+</sup> ions and its Live Cell Imaging Applications. *Chemistry Select*, **2017**, **2**, 375–383. **Impact Factor – 2.237**
37. A. Senthil Murugan, E.R. Abel Noelson, **J. Annaraj**, Solvent dependent colorimetric, ratiometric dual sensor for copper and fluoride ions: Real sample analysis, cytotoxicity and computational studies *Inorganica Chimica Acta.*, **2016**, **450**, 131–139. **Impact Factor: 2.545**
38. S. Kathiresan, S. Mugesh, M. Murugan, F. Ahamed, **J. Annaraj**, Mixed-ligand copper(II)-phenolate complexes: structure and studies on DNA/protein binding profiles, DNA cleavage, molecular docking and cytotoxicity. *RSC Adv.*, **2016**, **6**, 1810-1825. **Impact Factor: 4.036.**
39. S. Kathiresan, R. Dhivya, M. Vigneshwar, M. Rajasekaran, J. Ranjani, J. Rajendhran, S. Srinivasan, S. Mugesh, M. Murugan, PR. Athappan, **J. Annaraj**, Biological evaluation of redox stable cisplatin/Cu(II)-DNA adducts as potential anticancer agents, *J. Coord. Chem.*, **2015**, **68**, 1-15. **Impact Factor: 1.795**

40. S. Kathiresan, T. Anand, S. Mugesh, **J. Annaraj**, Synthesis, Spectral Characterization and DNA bindings of Tridentate N<sub>2</sub>O donor Schiff base Metal(II) Complexes, *J. Photochem. Photobio. B: Biology*, 2015, 148, 290–301. **Impact Factor: 6.814**
41. R. Dhivya, J. Ranjani, J. Rajendhran, M. Rajasekaran, J. Annaraj, pH responsive curcumin/ ZnO nanocomposite for drug delivery, *Adv. Mater. Lett.*, 2015, 6, 505-512. **Impact Factor: 1.76**
42. R. Ramanathan, R. Ramasamy, **J. Annaraj**, Comparison of Physical and Morphological Properties of Mandura Bhasma and Iron Oxide Nanoparticles, *Int. J. Res. Ayurveda Pharm.*, 2015, 6, 788-792. **Impact Factor: 1.6**
43. M. Rajasekaran, **J. Annaraj**, A Lucid Build-Up of Nanostructured Curcumin, Quercetin and Their Interaction with DNA, *J. Nanosci. Nanotech.*, 14 (2014) 4874-4879. **Impact Factor: 1.48**
44. **J. Annaraj**, R. Dhivya, M. Vigneshwar, K. Dharaniyambigai, G. Kumaresan, M. Rajasekaran Studies on The Enhanced Biological Applications of PVA Loaded Nanocurcumin, *Journal of Nanoscience Nanotechnology*, 2, 490-495, 2014. **Impact Factor 1.354**
45. R.S. Priya, S. Balachandran, V.P. Vineetha, K.G. Raghu, M. Vigneshwar, **J. Annaraj**, P.V. Mohanan, The Possible Role of Reactive Centre's of Curcumin in Deciding its Biological Activity, *Journal of Materials Science & Engineering B*, 4, 269-278, 2014. **Impact Factor: 4.706**
46. S.D.S. Parveen, A. Affrose, B.S. Kumar, J. Annaraj, K. Pitchumani, Synthesis, Characterization, and DNA Binding Studies of Nanoplumbagin, *Journal of Nanomaterials*, (2014) 1-9 (<http://dx.doi.org/10.1155/2014/179149>). **Impact Factor: 1.98**
47. S.M. Kumar, K. Dhahagani, J. Rajesh, K. Nehru, J. Annaraj, G. Chakkaravarthi, G. Rajagopal, Synthesis, characterization, structural analysis and DNA binding studies of nickel(II)–triphenylphosphine complex of ONS donor ligand – Multisubstituted thiosemicarbazone as highly selective sensor for fluoride ion, *Polyhedron*, 59 (2013) 58–68. **Impact Factor: 2.975**
48. Jaeheung Cho, Ritimukta Sarangi, **Jamespandi Annaraj**, Sung Yeon Kim, Takashi Ogura, Edward I. Solomon and Wonwoo Nam, “Geometric and Electronic Structure and Reactivity of a Mononuclear “Side-On” Nickel(III)-Peroxo Complex”. *Nature Chemistry*. 1 (2009) 568-572. **Impact factor: 25.87**
49. **Jamespandi Annaraj**, Jaeheung Cho, Yong-Min Lee, Sung Yeon Kim, Reza Latifi, Sam P. de Visser and Wonwoo Nam, “Structural Characterization and Remarkable Axial

Ligand Effect on the Nucleophilic Reactivity of a Nonheme Manganese(III)-Peroxo Complex". *Angew. Chem. Intl Ed.*, 48 (2009) 4150-4153. **Impact factor: 16.82.**

50. **Jamespandi Annaraj**, Soohee Kim, Mi Sook Seo, Yong-Min Lee, Youngmee Kim, Sung-Jin Kim, Young S. Choi, Ho G. Jang, Wonwoo Nam, "An iron(II) complex with a N<sub>3</sub>S<sub>2</sub> thioether ligand in the generation of an iron(IV)-oxo complex and its reactivity in olefin epoxidation", *Inorg. Chim. Acta*, 362 (2009) 1031-1034. **Impact factor: 2.545**
51. Youngrae Jo, **Jamespandi Annaraj**, Mi Sook Seo, Yong-Min Lee, Sung Yeon Kim, Jaeheung Cho, Wonwoo Nam, "Reactivity of a cobalt(III)-peroxo complex in oxidative nucleophilic reactions", *J. Inorg. Biochem*, 102 (2008) 2155–2159. **Impact Factor: 4.336**
52. Mi Sook Seo, Ja Young Kim, **Jamespandi Annaraj**, Youngmee Kim, Yong-Min Lee, Sung-Jin Kim, Jinheung Kim, and Wonwoo Nam, "A Side-On Peroxo Manganese(III) Complex Bearing a Nonheme Ligand, [Mn(TMC)(O<sub>2</sub>)]<sup>+</sup>" *Angew. Chem. Intl. Ed.* 46 (2007) 377-380. **Impact factor: 16.82**
53. Matthew T. Kieber-Emmons, **Jamespandi Annaraj**, Mi Sook Seo, Katherine M. Van Heuvelen, , Takehiko Tosha, Teizo Kitagawa, Thomas C. Brunold, Wonwoo Nam, Charles G. Riordan, "Identification of an "End-on" Nickel-Superoxo Adduct, [Ni(tmc)(O<sub>2</sub>)]<sup>+</sup>", *JACS*, 128 (2006) 14230-14231. **Impact factor: 16.38**
54. **Jamespandi Annaraj**, Yumi Suh, Mi Sook Seo, Sun Ok Kim, Wonwoo Nam, "Mononuclear nonheme ferric-peroxo complex in aldehyde deformylation", *Chem. Commun*, (2005) 4529-4531. **Impact factor: 6.29**
55. **J. Annaraj**, S. Srinivasan, K.M. Ponvel and PR. Athappan, "Mixed ligand copper(II) complexes of phenanthroline/bipyridyl and curcumin diketimines as DNA intercalators and their electrochemical behavior under Nafion<sup>®</sup> and clay modified electrodes". *J. Inorg. Biochem*, 99 (2005) 669-676. **Impact Factor: 4.336**
56. S. Srinivasan, **J. Annaraj**, K.M. Ponvel and PR. Athappan, "Spectral and redox studies on mixed ligand complexes of cobalt(III) phenanthroline/bipyridyl and benzoylhydrazones, their DNA binding and antimicrobial activity" *J. Inorg. Biochem*, 99 (2005) 876-882. **Impact Factor: 4.336**
57. **J. Annaraj**, S. Srinivasan, K.M. Ponvel and PR. Athappan, "Synthesis, spectra and redox behavior of copper(II) complexes of curcumin diketimines as models for blue copper proteins" *Transition. Met. Chem*, 29 (7), 722-727, 2004. **Impact Factor: 2.266**

**Cumulative Impact Factor: 317.397**



### **Book Chapter:**

1. Larvicidal and Antimicrobial Activities of Green-Synthesized Ag Nanoparticles, L. Muthulakshmi, V. Sundarapandian, D. Nagapriyadarshini, **J. Annaraj**, M.T. Mathew, H. Nellaiah, Antimicrobial and Antiviral Materials, CRC Press Taylor & Francis Group, LLC, 2022.

### **Conferences:**

No of papers presented: 58

### **Invited Lectures:**

1. Recent Advances and Developments in Chemistry (RADIC'13) Anna University, Trichi, 03.12. 2013
2. Special Lecture at Department of Chemistry, Thiyagarajar College, Madurai on 25.03.2014.
3. Special Lecture at Dr. Zakir Hussain College, Ilaiangudi on 05.08.2015.
4. SERB Sponsored National Conference on Recent Development of Bio-Inorganic Chemistry in Medicinal fields, Mohamed Sathak Engineering College, Kilakarai, Ramanathapuram on 29.08.2015.
5. Invited lecture in the “Dr. Sr. Y. Yesu Thagam Endowment Lecture Series” at Department of Chemistry, Jeyaraj Annabackiyam College for Women on 25.02.2016.
6. TEQIP-II sponsored Two Weeks Faculty Development Programme on "Multi-disciplinary Approaches in Chemical Sciences (MACS' 16)" at The Department of Chemistry, Bharathidasan Institute of Technology (BIT), Anna University, Tiruchirappalli on 20.07.2016.
7. Invited Lecture at AJ College on 23.07.2016.
8. Invited Lecture at Arul Anandar College on 13.05.2017.
9. Special Lecture at Department of Microbiology, Thiyagarajar College, Madurai on 23.10.2018.
10. Special Lecture at Department of Chemistry, Parvathy's Arts and Science College, Madurai on 28.12.2018.
11. Plenary lecture on the International Conference on AMCEHA-2019 at the University of Jaffna, Sri Lanka on 6 to 8.2.2019
12. Invited Lecture in Refresher Course on Advanced Materials, School of Chemistry, MKU on 10-12-2020.
13. Invited Lecture in Summer Training Program in Chemistry-2020 conducted by

Academy of Sciences, Chennai, Chennai and School of Chemistry, Madurai Kamaraj University on 17-07-2020.

14. Invited Lecture in Chemistry-2021 held in the Department of Chemistry, V.H.N.S.N College, Virudhunagar on 14-12-2021.
15. Invited Lecture in Chemistry on pH-Responsive Nanocarriers for Natural Drug Delivery Towards Human Gastric Cancer, held in the Department of Chemistry, Thiravium College of Arts and Sciences for Women on 11.03.2022.
16. Invited Lecture in Chemistry on pH-Responsive Nanocarriers for Natural Drug Delivery Towards Human Gastric Cancer, held in the Department of Chemistry, Fatima College of Arts and Sciences for Women on 03.05.2022.
17. Invited Lecture in Chemistry on pH-Responsive Curcumin Delivery from Biocompatible ZnO/Polymer Core-Shell Nanocomposites for Excellent Anti-Gastric Cancer Therapy (From Kitchen to Clinics), Refresher Course in Chemistry, School of Chemistry, Madurai Kamaraj University on 7-10-2022.
18. Invited Lecture in Chemistry on The Potential of Metalloenzymes in Biocatalysis Reactions: Theory and Research Perspectives, Refresher Course in Chemistry, School of Chemistry, Madurai Kamaraj University on 10-10-2022.
19. Invited Lecture in Chemistry on pH-Responsive Curcumin Delivery from Biocompatible ZnO/Polymer Core-Shell Nanocomposites for Excellent Anti-Gastric Cancer Therapy (From Kitchen to Clinics), Refresher Course in Chemistry, Department of Chemistry, Bharathiar University on 15-10-2022.

### Completed Projects:

DST-SERB: Project Title: Synthesis and Characterization of Biomimetic Micro/Nanocrystalline Metal Complexes: Study on Their Enzymatic Reactions and DNA Interactions - No: SB/FT/CS-175/2011 Dated on 24.05.2013 - **Rs. 23,00,000/-**

UGC: Project Title: Synthesis, Characterization and Applications of Nanostructured Materials in Biological Maters: A Nano-bio approach - F.No. 42-247/2013 (SR) dated 12-03-2013 - **Rs. 10,12,300/-**

DBT (Co-PI): Project Title: Optimization and Identification of Cellular Targets of Potential Cancer Therapeutic Drug Candidates by Nanoparticle Mediated Capture Assays. - No. BT/PR6769/NNT/28/616/2012 - **Rs. 48,39,600/-**

### Ongoing Project:

RUSA: Solvent dependent colorimetric, ratiometric dual sensor for copper and real sample analysis of fluoride ions in environmental water, Rs. 23,00,000/-