

Dr. SANGEETHA SOMASUNDARAM

M.Sc., B.Ed., M.Phil., Ph.D

Assistant Professor

Department of Chemistry

Tamilavel Umamaheswaranar Karanthai Arts College

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ACADEMIC QUALIFICATION

Research Degree : (Ph.D) Chemistry

Bharathidasan University, Tiruchirappalli.

Title of Thesis: Structure-Activity Relationship Study of Copper(II) and Ruthenium(II) Complexes: DNA Binding and Cleavage, BSA Interaction and Anticancer Activity

: M.Phil., (Chemistry)

National College, Tiruchirappalli.

Masters Degree : M.Sc., (Chemistry)

Annamalai University, Chidambaram.

Bachelors Degree : B.Sc., (Chemistry)

Holy Cross College, Tiruchirappalli.

Professional Degree : B.Ed., (Physical Science)

J J College of Education, Tiruchirappalli.

ACADEMIC EXPERIENCE :

Worked as Assistant Professor (6 Years) in National College (Autonomous), Tiruchirappalli, Assistant Professor in T. U. K. Arts College, Karanthai, 7 Years till date (Both UG and PG)

SPECIALIZATION: Coordination Chemistry, Bioinorganic Chemistry, Cancer Biology

CITATION : 70

h - index : 4

i10 – index : 3

PROJECTS COMPLETED : M.Sc Students - 50
M.Phil. Students - 5

RESOURCE PERSON :

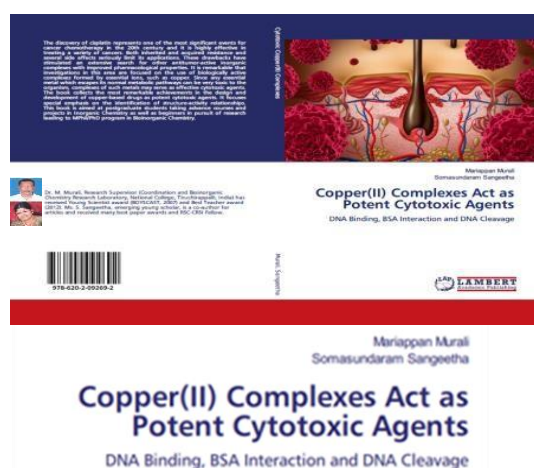
1. Active Role as a JUDGE of the Organizing Committee of the State Level Symposium on Energy, Environment and Employment (RSC-SLSEEE-2019) held at Department of Chemistry, National College, Trichy on 21st – 22nd March 2019.
2. Speak about “ Protein in Our Everyday Life” One Day Seminar organized by Enathi Rajappa Arts and Science College, Pattukkottai held on 14th September 2023.

INVITED LECTURE :

3. ANRF- Science and Engineering Research Board Organize Scientific Social Responsibility – Student Interaction Programme held at Department of Chemistry, National College, Trichy on 01st October 2024.
4. “ A New Class of Promising Metallo-Antitumor Drugs 2022” under DBT-STAR College Scheme and Royal Society of Chemistry Student’s Chapter Organized by Department of Chemistry, National College, Trichy on 27th May 2022.

BOOK PUBLISHED

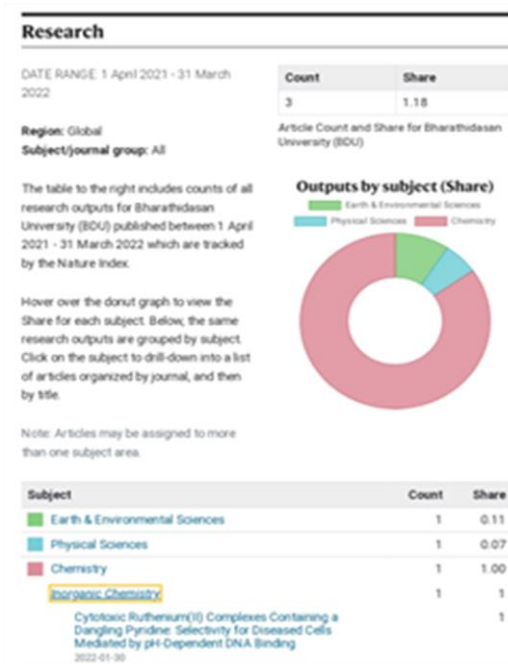
1. “Copper(II)Complexes Act as Potent Cytotoxic Agent” **S.Sangeetha** and **M.Murali** LAMBERT Academic Publishing.,
ISSN No. 978-620-2-09269-2, 2017.



Tracked by the Nature Index

“Cytotoxic Ruthenium(II) Complexes Containing a Dangling Pyridine: Selectivity for Diseased Cells Mediated by pH-Dependent DNA Binding” **S. Sangeetha**, and M. Murali, *Inorg. Chem.*, 2022, 61, 2864 - 2882.

This Paper Included in the Counts of Research Outputs for Bharathidasan University Published Between April 2021 and March 2022 Which were Tracked by the **Nature Index**



PAPERS PUBLISHED

1. Non-covalent DNA binding, protein interaction, DNA cleavage and cytotoxicity of [Cu(quamol)Cl]·H₂O” **S. Sangeetha** and M. Murali, *I. J. Biol. Macro.*, 2018, 107, 2501- 2511. <https://doi.org/10.1016/j.ijbiomac.2017.10.131>
2. “Affinity of Cytotoxic Copper(II) Complex to Bovine Serum Albumin” **S. Sangeetha** and M. Murali, *J. Environ. Nanotechnol.*, 2016, 5, 9-19. <https://doi.org/10.13074/jent.2016.09.163200>
3. “Water Soluble Copper(II) Complex [Cu(dipica)(CH₃COO)]ClO₄: DNA Binding, pH Dependent DNA cleavage and Cytotoxicity “ **S. Sangeetha** and M. Murali, *Inorg. Chem. Commun.*, 2015, 59, 46-49. <https://doi.org/10.1016/j.inoche.2015.06.032>
4. “DNA and BSA Interaction, DNA Cleavage and In Vitro Cytotoxicity of Copper(II) Complexes: [Cu(bba)(phen)](ClO₄)₂ is Promising Chemotherapeutic Scaffold” **S. Sangeetha** and M. Murali, *J. Sci. Res.*, 2020, 12, 111-133. <https://doi.org/10.3329/jsr.v12i1.42745>

5. "Copper(II) complexes of 2-methyl-8-hydroxyquinoline and tri/diimine co-ligand: DFT calculations, DNA and BSA binding, DNA cleavage, cytotoxicity and induction of Apoptosis" **S. Sangeetha** and M. Murali, New J. Chem., 2021, 45, 7578–7593.
<https://doi.org/10.1039/D1NJ00392E>
6. "DNA Binding, In Vitro Cytotoxicity and Anticancer Drug Mechanism Of Copper(II) Complex Containing Pyridyl-Triazine Ligand" **S. Sangeetha**, J. Manivel and M. Murali, J. Adv. Sci. Res., 2021, 12, 166 - 175.
<https://doi.org/10.55218/JASR.202112121>
7. "Characterization of [Ru(bpy)₂(diamine)]²⁺ cComplexes and Their DNA Binding and Cleavage, BSA interaction, Cytotoxic, and Anticancer Mechanistic Properties" **S. Sangeetha**, J. Latha, P. Arul Prakash, B. Selvakumaran, M. Mohamed Jaabir and M. Murali, Polyhedron., 2022, 223, 115925.
<https://doi.org/10.1016/j.poly.2022.115925>
8. "Cytotoxic Ruthenium(II) Complexes Containing a Dangling Pyridine: Selectivity for Diseased Cells Mediated by pH-Dependent DNA Binding" **S. Sangeetha**, and M. Murali, Inorg. Chem., 2022, 61, 2864 - 2882.
<https://doi.org/10.1021/acs.inorgchem.1c03399>

BEST PAPER AWARD

1. "Synthesis and Spectral Properties of Certain mixed-ligand Copper(II) Complexes Containing Bis(2-benzimidazolyl)ethane " in the **National Conferences** on Recent Advances in Metalloorganic Chemistry held at Department of chemistry, **Periyar University, Salem** on 16th -17th October, 2008.
2. "Apoptosis-inducing Ternary Copper(II) Complexes as Anticancer agents for Human Cervical Carcinoma (SiHa) Cell Line" in the **National Conference** on Frontiers Areas in Chemistry (FCFAC-2011), Department of Chemistry, **Pondicherry University, Puducherry**, India, on 22nd December, 2011.
3. "Copper(II) Complexes Containing Benzimidazoles as Apoptosis Inducers in Human Cervical Carcinoma (SiHa) Cell Line" in the **National Conference** on Emerging Trends in Chemistry (NCETC-2012), held at Department of Chemistry, **Bishop Heber College, Tiruchirappalli**, India, on 11th January, 2012.

4. "DNA and Protein Binding, DNA Cleavage and Cytotoxic Activity of Square-planar $[Cu^{II}(\text{quinmol})Cl]$ Complex" in 7th RSC-CRSI and 15th CRSI **National Symposium** in Chemistry, held at Department of Chemistry, **Banaras Hindu University, Varanasi, India** on 1st - 3rd February, 2013.

(**Won CRSI-RSC Fellowship Award**)



5. "Square-Planar Copper(II) Complex Induces Conformational Changes in DNA and BSA" in **National Seminar** on Recent Trends in Crystal growth and Nano Materials, held at Department of Physics, **National College (Autonomous), Tiruchirappalli, India** on 13th - 15th March, 2013.
6. "DNA and Protein Binding, pH Dependent DNA Cleavage, Cytotoxic Activities of Hetero-functionalised Imine-Phenolate Ruthenium(II) Complexes" in **National Symposium** on Recent Advances in Chemistry, Department of Chemistry, **Pondicherry University, Puducherry, India** March 22nd – 23rd March, 2013.
7. "DNA and Protein Interaction and Anticancer Activity of Ru(II) Complexes" National Seminar on Cancer Biology & Epidermic Diseases, Department of Chemistry, Meenakshi Chandrasekaran College of Arts and Science for Women, Pattukkottai India January 31st , 2020.
8. "Cu(II)-Phenolate Complexes: DNA and Protein Binding, DNA Cleavage, and Apoptosis Induction Activity" in Indo-French Seminar on Bio-inorganic Approaches to Current Health Problems, Department of Chemistry, **Pondicherry University, Puducherry, India** March 24th - 28th March, 2014.
9. "Ruthenium(II) Polypyridyl Complexes Incorporating Asymmetric Co-ligand: Synthesis, Characterization, DNA and BSA Binding Properties" **International Conference** on Advances in New Materials (ICAN 2014), Department of Inorganic Chemistry, **University of Madras, Chennai, India** June 20-21, 2014.
10. "Cu(II) Complexes of CuNS Core; elective Cytotoxicity to Cancerous Cells, ROS Generation and Induction of Apoptosis". **2nd International Conference** on Frontiers in Chemical Sciences (ICFCS-2023) held at Department of Chemistry, **Karunya Institute of Technology and Sciences, Coimbatore, TamilNadu, India** on 26th and 27th October, 2023.

PAPERS PRESENTED IN SEMINARS / CONFERENCES

1. "Synthesis and Spectral Properties of Certain mixed-ligand Copper(II) Complexes Containing Bis(2-benzimidazolyl)ethane " in the national Conferences on Recent Advances in Metalloorganic Chemistry held at Department of chemistry, Periyar University, Salem on 16th-17th October, 2008.
2. "Ternary Copper(II) Complexes of Bis(2-benzimidazolyl)ethane: Synthesis, Spectral and Redox Properties and Anticancer Activity" in 13th CRSI & 5th CRSI-RSC Symposium in Chemistry, held at the NISER & KIIT University, Bhubaneswar, India, on 4th - 6th February, 2011.
3. "Apoptosis-inducing Ternary Copper(II) Complexes as Anticancer agents for Human Cervical Carcinoma (SiHa) Cell Line" in the National Conference on Frontiers Areas in Chemistry (FCFAC-2011), Department of Chemistry, Pondicherry University, Puducherry, India, on 22nd December, 2011.
4. "Copper(II) Complexes Containing Benzimidazoles as Apoptosis Inducers in Human Cervical Carcinoma (SiHa) Cell Line" in the National Conference on Emerging Trends in Chemistry (NCETC-2012), held at Department of Chemistry, Bishop Heber College, Tiruchirappalli, India, on 11th January, 2012.
5. "DNA and Protein Binding, DNA Cleavage and Cytotoxic Activity of Square-planar [Cu^{II}(quinmol)Cl] Complex" in 7th RSC-CRSI and 15th CRSI National Symposium In Chemistry, held at Department of Chemistry, Banaras Hindu University, Varanasi, India on 1st - 3rd February, 2013. (**Won CRSI-RSC Fellowship Award**)
6. "Square-Planar Copper(II) Complex Induces Conformational Changes in DNA and BSA" in National Seminar on Recent Trends in Crystal growth and Nano Materials, held at Department of Physics, National College (Autonomous), Tiruchirappalli, India on 13th - 15th March, 2013.
7. "DNA and Protein Binding, pH Dependent DNA Cleavage, Cytotoxic Activities of Hetero-functionalised Inime-Phenolate Ruthenium(II) Complexes" in National Symposium on Recent Advances in Chemistry, Department of Chemistry, Pondicherry University, Puducherry, India March 22nd - 23rd March, 2013.
8. "Apoptosis-Inducing Copper(II)-Phenolate Complexes as Anticancer Agents" International Conference on Chemical and Environmental Research (ICCER-2014), PG and Research Department of Chemistry, Jamal Mohamed College (Autonomous), Tiruchirappalli, India March 11-12, 2014.

9. "Ruthenium(II) Polypyridyl Complexes Incorporating Asymmetric Co-ligand: Synthesis, Characterization, DNA and BSA Binding Properties" International Conference on Advances in New Materials (ICAN 2014), Department of Inorganic Chemistry, University of Madras, Chennai, India June 20-21, 2014.
10. "Remote Substituent effect of Ruthenium(II) Complexes on Non-Covalent DNA Binding, pH Dependent DNA Cleavage, BSA Interaction and Cytotoxicity" in 8th RSC-CRSI and 16th CRSI National Symposium in Chemistry, held at Department of Chemistry, Indian Institute of Technology, Bombay, India on 7th - 9th February, 2014.
11. "Copper(II) Phenolate Complexes: DNA Binding and Cleavage, Protein Binding , Cytotoxicity and Apoptosis Induction Activity" Indo-French Seminar on Bio-Inorganic Approaches to Current Health Problems held at Department of Chemistry, Pondicherry University, Puducherry, India on 24th - 28th March, 2014.
12. "Apoptosis Inducing Copper(II) Complexes: DNA and BSA Interaction, Molecular Docking, DNA Cleavage and Cytotoxicity" in 13th Eurasia Conference on Chemical Sciences held at Department of Chemistry, Indian Institute of Science, Bangalore, India on 14th - 18th December 2014.
13. "Copper(II) Complexes with 3N Pyridylaldimines and 1,10-Phenanthroline: Enhanced in vitro DNA and Protein Interaction and Cytotoxicity" in 9th RSC-CRSI and 17th CRSI National Symposium in Chemistry, held at CSIR – National Chemical Laboratory, Pune, India on 6th - 8th February, 2015.
14. "Non-Covalent DNA and BSA Binding, DNA Cleavage and Cytotoxicity of Ruthenium(II) Luminophore". UGC Sponsored National Conference on SMART MATERIALS (NCSM -2015) held at Department of Chemistry, University of Calicut, Kerala, India on 24th and 25th March, 2015.
15. "Oxovanadium(IV) Complexes of Schiff Base and Diimine: Crystal Structure, DNA Binding and Anticancer Mechanism" in 24th CRSI National Symposium in Chemistry, held at CSIR –CLRI, Adyar, Chennai, India on 8th - 10th February, 2019.
16. "DNA and Protein Interaction, Anticancer Activities of Ruthenium(II) Complex". National Seminar on Cancer Biology and Epidermic Diseases held at Department of Chemistry, Meenakshi Chandrasekaran College of Arts and Science for Women, Pattukkottai, India on 31st January, 2020.

17. "Cu(II) Complexes of CuNS Core; elective Cytotoxicity to Cancerous Cells, ROS Generation and Induction of Apoptosis'. 2nd International Conference on Frontiers in Chemical Sciences (ICFCS-2023) held at Department of Chemistry, Karunya Institute of Technology and Sciences, Coimbatore, TamilNadu, India on 26th and 27th October, 2023.
18. "Square Planar Copper(II) Complexes: DNA Binding and Cleavage, Protein Binding, Cytotoxicity and Induction of Apoptosis" Second International Conference on Advances in Chemistry with Specific Reference to Catalysis, Sensors, Drug Delivery, energy Materials and Anticancer Studies (ICACSEM 2022), Department of Physical Chemistry, University of Madras, Chennai, India on 28th - 29th March, 2022.

WORKSHOPS ATTENDED

1. Participated in National Seminar On Recent Advances in Physical Organic Chemistry held at Department of Chemistry, National College, Trichy on 11th & 12th February 2008.
2. Participated in Two-day Lecture Workshop on Frontiers in Chemistry held at Department of Chemistry, National College, Trichy on 13th & 14th March 2009.
3. Participated in the Workshop on Spectroscopic and Electrochemical Methods held at Department of Chemistry, National College, Trichy on 16th - 18th February 2010.
4. Participated in the Workshop on Frontiers in Bioinorganic Chemistry held at Centre for Bioinorganic Chemistry, School of Chemistry, Bharathidasan University, Tiruchirappalli on 25th – 27th February 2010.
5. Participated in the Workshop on Frontiers in Catalysis Research held at Department of Chemistry, National College, Trichy on 1st October, 2010.
6. Participated in the National Seminar on Recent Advances in Inorganic and nano Chemistry held at Department of Chemistry, Madurai kamaraj University, Madurai on 29th - 30th March 2010.
7. Participated in the Seminar on Prospects in Chemistry held at Department of Chemistry, National College, Trichy on 11th March 2011.
8. Participated in Three-day Lecture Workshop on Emerging Trends in Chemistry held at Department of Chemistry, Queen Mary's College, Chennai on 2nd - 4th December 2011.

9. Participated in One-day Seminar Chemistry and Industry held at Department of Chemistry, National College, Trichy on 9th March 2012.
10. Participated in three-day Workshop on Modern Analytical Techniques held at Department of Chemistry, National College, Trichy on 18th - 20th February 2013.
11. Participated in One-day Workshop on Latest Trends in Sports Science” held at Department of Physical Education, National College, Trichy on 10th April, 2013.
12. Participated in Two-day Workshop on Recent Advances in Material Chemistry held at Department of Chemistry, Bharathidasan Institute of Technology, Anna University, Trichy on 7th - 8th March, 2014.
13. Participated in One-day Workshop on Analytical Techniques held at Department of Chemistry, National College, Trichy on 18th August 2017.
14. Participated in Two-day Workshop on New Development in Chemistry held at Department of Chemistry, National College, Trichy on 24th & 25th February 2023.

STRENGTHS INCLUDE

Instruments Expertise

1. Infrared Spectrophotometer
2. Ultraviolet Spectrophotometer
3. Electron Paramagnetic Spectrophotometer
4. Fluorescence Spectrophotometer
5. Circular Dichroism Spectrophotometer
6. Electrochemical Instrument
7. Atomic Absorption Spectroscopy
8. Gel Electrophoresis

SKILLS INCLUDE

Technical : Passed Type writing (English Lower)

Software and Packages :

1. MS - Office
2. Perkin Elmer Software
3. ChemDraw
4. ISIS Draw
5. Origin – 8.0

6. Mercury
7. Platon
8. Argus lab
9. Hex 4.0
10. Suspdb
11. Autodock 4.0

PARTICIPATION IN EXTRACURRICULAR ACTIVITIES

SPORTS

Participated in Various National Events such as Athletics, (Track Events, High Jump, Javelin Throw, Heptathlon) Cross Country Race and Cycle Race

REPRESENTED ALL INDIA

1. Represented **TAMILNADU** in Amateur Athletic **FEDERATION OF INDIA** Organized by Orissa Amateur Athletic Association held at Barabati Stadium, Cuttack on 9th - 12th January, 1999. **Event : 400 Mts Hurdles**
2. Represented **ALL INDIA** Inter University Athletic Meet Organized by Inter University held at Tirunelveli on 30.12.1998 to 03.01.1999. (**FORM - 3 Certificate to a meritorious Athletics sportsman for employment to a Class III service under Central Government. Issued by Bharathidasan University.)**

SCOUTS

Participated in the Bharat Scouts and Guides, Ninth State Level Camporee held at Sourashtra Higher Secondary School, Madurai. Won **The ADVENTURE AWARD**

PERSONAL DATA

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| Father's Name | : G. Somasundaram |
| Date of Birth | : 04 th June |
| Marital Status | : Married |
| Language Known | : Tamil and English |
| Residential Address | : No. 305, Cholagankarai Road Avidanalla Vijayapuram Orathanadu (TK) Pappanadu Thanjavur – 614 626 |