



Dr. Durai Murugan Kandhasamy

Assistant Professor
Department of Chemistry
Thiagarajar College, Madurai

PROFESSIONAL SUMMARY

An accomplished experimental physical chemist with over a decade of experience in laser spectroscopy, ultrafast lasers, and multidimensional data analysis. Adept at conducting high-impact research and teaching undergraduate and postgraduate students. Expertise includes materials synthesis, characterization, biosensors, and optics. Proven track record of securing competitive funding and publishing in high-impact journals.

CONTACT

Phone: +91-7708074319

Email: kdmurugangmail.com

Address:

Department of Chemistry
Thiagarajar College
Madurai, Tamil Nadu
India

PROFESSIONAL EXPERIENCE

Assistant Professor & Head | August 2022- May 2025

Syed Hameedha Arts and Science College

- Established a research laboratory in the department
- Created teaching content for the undergraduate course
- Improved research environment in the college by conducting conferences and seminars as R & D Coordinator

RUSA Postdoctoral Fellow | August 2019- May 2022

Department of Bioelectronics and Biosensors, Alagappa University

- Synthesised TMDCs/GR heterostructures by liquid phase exfoliation for optical and electrical sensors
- Studied the effect of hypersonic shock wave on inclusion complexes

Postdoctoral Fellow | August 2017- August 2019

Soft Condensed Matter Physics, Raman Research Institute

- Optimized micropore resistive sensor for the measurement of cell mechanics
- Built Laser Optical Tweezer to probe the mechanical properties of DNA and its complexes

Research Associate | November 2016- May 2017

Centre for Nano-Optics, Georgia State University Atlanta

- Built and Characterized Confocal microscopic system to measure photoluminescence from monolayer TMDCs
- Investigated the degradation of black phosphorus using NSOM

PBC Postdoctoral Fellow | October 2012- October 2015

Institute of Chemistry, Hebrew University of Jerusalem, Israel

- Implemented 3-dimensional coincidence imaging of anion photo-fragmentation
- Designed and implemented pump-probe technique in the intense field photo-fragmentation.

CSIR Senior Research Fellow | March 2010- September 2012

National Center for Ultrafast Processes, University of Madras

- Built and Characterized Fluorescence Correlation Spectrometer
- Studied the Dynamics of polyelectrolytes in solution

Junior Research Fellow DST Project | September 2006 - May 2009

National Center for Ultrafast Processes, University of Madras

- Prepared and characterized different fluorophores attached to PMAA/PAA
 - Studied the dynamics of polyelectrolytes in different time scales using time-resolved methods
-

ACADEMIC HISTORY

Doctor of Philosophy (Ph D) in Chemistry | September 2007-2012
National Center for Ultrafast Processes, University of Madras

Supervisor: Prof. P. Natarajan

Master of Philosophy (M. Phil) in Chemistry | July 2005 – August 2006
SN College Madurai (Madurai Kamaraj University)

Supervisor: Dr. I. Baskaran
First Class

Master of Science (M. Sc) in Chemistry | July 2002 – April 2004
SN College Madurai (Madurai Kamaraj University)

First Class

Bachelor of Science (B. Sc) in Industrial Chemistry | July 1999 – April 2002
SN College Madurai (Madurai Kamaraj University)

First Class

ACHIEVEMENTS AND AWARDS

- **Employee of the Year 2022-2023**, Syed Hameedha Arts and Science College
- **RUSA Postdoctoral Fellowship** by Alagappa University sponsored by MHRD India
- **The PBC(Israel) outstanding post-doctoral fellowship** for the year 2013/2014
- **Senior Research Fellowship** by Council of Scientific and Industrial Research, India
- **Junior Research Fellowship**, DST-Ramanna Project
- Qualified in Graduate Aptitude Test in Engineering- GATE-2006
 - Score: 404; All India Rank: 261

PROFESSIONAL AFFILIATIONS

- **Member**, of the American Chemical Society since 2020
- **Reviewer**, Spectrochimica Acta A: Molecular and Biomolecular Spectroscopy & other journals
- **Coordinator**, Research and Development Cell, Syed Hameedha Arts and Science College
- **Head of the Department**, Department of Chemistry, Syed Hameedha Arts and Science College
- **Criterion Head for Criteria III** on the NAAC accreditation process

INDIVIDUAL GRANTS RECEIVED

S. No	Funding Agency	Title of Project	Period	Nature of Support	Grant Received
1.	Council of Scientific and Industrial Research (CSIR-India)	Photophysical studies of phenazine and thiazine dyes covalently attached to polyacrylic acids	Apr 2010 – Aug 2012 (2 Years 5 months)	CSIR-Senior Research Fellowship (CSIR-SRF)	₹ 6.5 Lakhs
2.	Planning and Budget Committee of Israel (PBC Israel) & Hebrew University of Jerusalem	3D Coincidence imaging of anion photo fragmentation in the intense field	Oct 2013 – Sep 2015 (2 Years)	PBC Outstanding Postdoctoral Fellowship 2013-2014	₪(ILS) 2.0 Lakhs (~ ₹ 34.0 Lakhs)
3.	Mohamed Sadhak Trust, Chennai	To conduct the national conference CHEMResearch 2023	February 2-3, 2023 (2 Days)	Convener	₹ 1.0 Lakh
4.	Indian Institute of Technology, Madras	To carry out an experiment at ELETRRA, Italy on 'Inducing molecular bond breaking by targeted guest-host interaction'	12 October 2023 – 8 November 2023	Personal Expenses (including travel & accommodation) and Stipend	~ ₹ 3.0 Lakhs
5.	Mohamed Sadhak Trust, Chennai	To conduct the international multidisciplinary conference SMART 2025	June 5-6, 2025 (2 Days)	Coordinator	₹ 1.7 Lakh (Approval Received)

EVENTS ORGANISED (Conference/Seminar/Workshop)

1. **Convener**, National Conference on Current Trends in Healthcare and Environmental Materials Research 2023 (CHEMResearch 2023) organised by the Department of Chemistry at Syed Hameedha Arts and Science College on 2-3 February 2023
2. **Organizing Secretary**, National Seminar on Food Analysis and Opportunities organised by Department of Chemistry at Syed Hameedha Arts and Science College on 16 August 2023
3. **Coordinator**, 'EXPLORE 2K24' National Science Day celebration organised by Research & Development Cell at Syed Hameedha Arts and Science College on 28th February 2024
4. **Convener**, International Seminar on Green Chemistry and Sustainable Development (GCSD-2024) organized by the Department of Chemistry at Syed Hameedha Arts and Science College on 03 October 2024

PUBLICATIONS

Google Scholar Profile: <https://scholar.google.com/citations?hl=en&user=csON6IYAAAAJ>

ORCHID iD: <https://orcid.org/0000-0003-2925-4728>

Cumulative Impact Factor	66.24	Average Impact Factor/Article	3.89
h-index	10	i10-index	10



S. No	Title of the paper	Journal Name, Volume and Page Number	Journal Quartile	First/Corresponding/Co-Author	Impact Factor (2020)
Journal Publications					
Publications on custom-built instruments					
1.	Structure and dynamics of poly(methacrylic acid) and its interpolymer complex probed by covalently bound rhodamine-123. (Custom built Fluorescence Correlation spectrometer (FCS), interfacing, data acquisition and analysis)	Spectrochimica. Acta. A. 248 (2021), 119166	Q2	First & Corresponding Author	4.831
2.	Ultrafast Dynamics of Poly(Methacrylic Acid) in Aqueous Solution Probed Using Covalently Attached Proflavine (Femtosecond fluorescence up-conversion optics alignment, data acquisition & analysis)	J. Mol. Str. 1258 (2022); 132676	Q2	First & Corresponding Author	3.841
3.	Single Stage Liquid Phase Exfoliated MoS ₂ /Graphene Hetero-Structure with Enhanced Brightness for Live Cell Imaging. (A new scalable approach to produce vertical heterostructure of 2D materials)	ACS Omega 7 (2022); 629–637	Q2	First & Corresponding Author	4.132
4.	Measurement of Alcohol-Dependent Physiological Changes in Red Blood Cells Using Resistive Pulse Sensing. (Design, optimization of micropore resistive pulse technique, data acquisition and analysis)	ACS Sensors. 5 (2020), 3892–3901	Q1	Co-Author	9.618
5.	3D Coincidence imaging disentangles intense field double detachment of SF ₆ ⁻ . (Implementation of 3D coincidence imaging, data acquisition and analysis)	J. Chem. Phys. A.119 (2015) 8076	Q2	First Author	2.944

6.	Multiple Detachment of the SF ₆ ⁻ Molecular Anion with Shaped Intense Laser Pulses. (<i>Ion beam production and alignment in Wiley McLaren spectrometer. Pulse shaping and alignment of femtosecond laser.</i>)	J. Phys. Chem. A 118, (2014), 388	Q2	Co-Author	2.944
Other publications on Photochemistry & Spectroscopy					
7.	Realization of Enhanced Refrigeration Capacity with Non-hysteretic Behavior in Ni ₄₀ Gd ₅ Co ₅ Mn ₃₇ In ₁₂ Si ₁ Alloy Near Room Temperature at 2T	ACS Appl. Energy Mater. 5 (2022) 15959	Q1	Co-Author	6.959
8.	Photophysical properties of linear, net-structured and branched polybenzimidazoles.	J. Fluoresc. 33 (2022) 125	Q3	Co-Author	2.525
9.	Discovery of carbon nanotubes in sixth century BC potteries from Keeladi, India.	Sci. Rep 10, (2020) 19786	Q1	Co-Author	4.996
10.	Intense Field Double Detachment of Electrostatically Bound F ⁻ (NF ₃) _n Cluster Anions.	J. Phys. Chem. A. 120 (2016), 3246	Q2	Co-Author	2.944
11.	Intense field double detachment of atomic versus molecular anions.	Phys. Rev. A: Rapid Commun 92, (2015), 061401(R).	Q1	Co-Author	2.971
12.	Z-scan method for nonlinear saturation intensity determination, using focused intense laser beams.	Phys. Rev. A 90, (2014), 053422	Q1	Co-Author	2.971
13.	Formation of fractals by the self-assembly of interpolymer adducts of polymethacrylic acid with complementary polymers in aqueous solution.	J. Chem. Sci 124, (2012), 375 (Cover page of the issue)	Q3	First Author	2.150
14.	Photoprocesses of Coordination Compounds and Dyes in Solution and Nanoporous Materials: Evolution from Milliseconds to Femtoseconds.	J. Chem. Sci 123, (2011), 531	Q3	Co-Author	2.150
15.	Studies on the structural transitions and self-organization behaviour of polyacrylic acids with complementary polymers in aqueous solution by laser flash photolysis method using the triplet state of covalently bound phenosafranin.	Eur. Polym. J 47, (2011), 1664	Q1	First Author	5.546
16.	Metal oxide-assisted chemical synthesis of poly(α-naphthylamine) and characterizations.	J. Mater. Sci 44, (2009), 3542	Q1	Co-Author	4.682
17.	Clay-catalyzed synthesis of bio-degradable poly(glycolic acid)	Chin. J. Polym. Sci 26 (2008), 393	Q1	First Author	3.815
Manuscripts under preparation					
18.	Liquid Phase Exfoliated MoS ₂ /Graphene Hetero-structure as an Effective Platform for Electrochemical DNA Sensor	Under Preparation	---	First & Corresponding Author	NA
19.	Effect of metal-to-insulator transition on the electrochemical detection efficiency of VO ₂ on doxorubicin	Under Preparation	---	First & Corresponding Author	NA
20.	Shock Wave Stows Thioflavine-T into the Cavity of Sulphonato Calixarene [6]: Consequences on the Photophysics of the Guest	Under Preparation	---	First & Corresponding Author	NA
Book Chapter					
8.	Recent Developments on the Dynamics of Fluorescently Labeled Macromolecules	Photophysics of supramolecular architecture by Bentham Science Publishers ISBN: 978-981-5049-20-6		First & Corresponding Author	NA

9.	Abstract book of CHEMResearch-2023	Research and Development Cell, Syed Hameedha Arts and Science College ISBN: 978-93-5780-478-3	Author & Editor	NA
----	------------------------------------	--	-----------------	----

INVITED TALKS

1. **Invited Talk** on 'Coherent Control of Chemical Reactions in the Intense Field' at Tata Institute of Fundamental Research, Mumbai 28 June 2017.
2. **Invited Talk** on 'Dynamics of Polyelectrolytes in Different Time Scales: From Structural Relaxation to Solvent Re-organization' at Raman Research Institute, Bangalore, 7 July 2017.
3. **Invited Talk** on 'Coincidence Imaging of Multiple Detachment of Anions in the Intense Field Regime' at Vellore Institute of Technology, Vellore 17 July 2017
4. **Invited Talk** on 'Effect of Ethanol on Red Blood Cell Volume Measured by High-Resolution Resistive Pulse Sensing' at the NANOSE-2019 International Conference held at Alagappa University, Karaikudi, 27-29 November 2019
5. **Invited Talk** on 'Optical and Electrical Properties of Liquid Phase Exfoliated MoS₂ & WS₂ Heterostructures for Biosensor Applications' at the Workshop on Advanced Nanomaterials for Sustained Energy and Sensor Applications Alagappa University, March, 04- 06,2020
6. **Resource Lecture** on 'Sustainable Photocatalysis' at the AICTE-ATAL sponsored FDP on 'Green Materials and Methodology for Sustainable Development' at Mohamed Sathak A J College of Engineering on 10 December 2024.

CONFERENCE PRESENTATIONS

S. No	Authors	Paper Title	Conference	Organisers	Date
1.	K. Durai Murugan, S. Naveen Kumar and M. Dhanesh	Effect of Metal to Insulator (MIT) Transition on Electrochemical Sensing of an Anticancer Drug	International Conference on Advanced Materials for Energy, Environment and Biological Applications (ICAMEEBA-2024).	Alagappa Government Arts College, Karaikudi, India	March 1-2, 2024
2.	V. Venkatesh, M. Pichayammal and K. Durai Murugan	Enhanced SERS Detection of Biomolecule using Sequentially Fabricated MoS ₂ on Monolayer Gold Nanoparticle	International Conference on Advanced Materials for Energy, Environment and Biological Applications (ICAMEEBA-2024).	Alagappa Government Arts College, Karaikudi, India	March 1-2, 2024
3.	Durai Murugan K, Muthumareeshwaran. P, Selvaraju, C, Dharuman. V.	Förster Resonance Energy Transfer (FRET) from Covalently Bound Proflavine to In-situ Synthesized Silver Nanoclusters	International Conference on Advances in Chemistry (ICACSEM- 2020)	University of Madras, Chennai. India	January, 9-10, 2020
4.	B L Mahesh, Durai Murugan. K and Gautam V. Soni	Single-molecule DNA stretching studies by Flow channels and Laser Optical Tweezer	RRI In-house Meeting -2018	Raman Research Institute, Bangalore	April 11-13, 2018

5.	Manohar M, Durai Murugan K , Satish Mehta & Gautam V. Soni	Effect of Alcohol on Red Blood Cell Volumes Measured by Resistive Pulse Technique	RRI In-house Meeting -2018	India	April 11-13 , 2018
6.	K. Durai Murugan and P. Natarajan	<i>Protonation of the mono-cationic dyes in the excited triplet state in an aqueous solution and coiled polyelectrolyte environment</i>	Advanced NanoMaterials-2012 (ANM-2012)	Periyar University, Salem, India	February 06-07, 2012
7.	K. Durai Murugan , C. Selvaraju and P. Natarajan	<i>Synthesis of silver nano-clusters in poly(methacrylic acid) scaffold and photophysical studies in aqueous solution</i>	Chennai Chemistry Conference 2011	Department of Chemistry, IIT Madras, Chennai.	February 11-13, 2011
8.	K. Durai Murugan , C. Selvaraju and P. Natarajan	<i>Fluorescence correlation spectroscopic investigations on the aggregation of dyes due to the conformational transition of polymethacrylic acid (PMAA) and interpolymer adducts in aqueous solution</i>	13 th CRSI- National Symposium in Chemistry	NISER, Bhubaneswar, India	February 4-6, 2011
9.	K. Durai Murugan and P. Natarajan	<i>Flash photolysis studies of the self-organization behaviour of polyacrylic acids with complementary polymers using polymer-bound thionine dye</i>	12 th CRSI- National Symposium in Chemistry	IICT, Hyderabad, India	February 5-7, 2010
10.	K. Durai Murugan and P. Natarajan	<i>Self-organization of poly(methacrylic acid) covalently bound to phenosafranine with synthetic polymers: Laser flash photolysis studies</i>	National Symposium on Radiation and Photochemistry (NSRP)-2009	Kumaun University, Nainital, India	March 12-14, 2009
11.	K. Senthilkumar, K. Durai Murugan and P. Natarajan	<i>Photophysics of dyes adsorbed onto the surface of micro and mesoporous silicate hosts and self-organized micellar segments of polymers</i>	11 th CRSI- National Symposium in Chemistry	NCL, Pune, India	February 6-8, 2009
12.	Durai Murugan. K , Arlin Jose Amali, Natarajan. P	<i>Self-organisation behavior of polyelectrolytes with the synthetic polymers by hydrogen bonding and hydrophobic interactions: Time-resolved fluorescence studies</i>	Modern Trends in Inorganic Chemistry (MTIC - XII) 2007	IIT Madras, Chennai, India	December 6-8, 2007

WORKSHOP & CONFERENCES PARTICIPATED

1. Advanced Nanomaterials-2012 (ANM-2012) held on February 06-07, 2012 at the Centre for Nanoscience and Nanotechnology, Periyar University, Salem, India.
2. Chennai Chemistry Conference-2011 held on February 11-13, 2011 at the Department of Chemistry, IIT Madras, Chennai.
3. Chemical Research Society of India- 13th National Symposium in Chemistry; held on February 4-6, 2011 at NISER, Bhubaneswar

4. Chemical Research Society of India- 12th National Symposium in Chemistry; held on February 5-7, 2010 at the IICT, Hyderabad.
5. Chemical Research Society of India- 10th National Symposium in Chemistry; held on February 1-3, 2008 at the IISc, Bangalore.
6. Modern Trends in Inorganic Chemistry (MTIC-XII) held on December 6-8, 2007 at the Department of Chemistry, IIT Madras, Chennai.
7. Emerging Trends in Chemistry held on July 26-27, 2006 at the Department of Chemistry, CPA College, Bodinayakanur, Tamilnadu.
8. NANOSE-2019 International Conference held at Alagappa University, Karaikudi, 27-29 November, 2019
9. International Conference on Advances in Chemistry (ICACSEM- 2020) January, 9-10 held at University of Madras, Chennai.
10. *FCS-2011; National Fluorescence Workshop held on November 14-18 at ICGEB, New Delhi. (Participated as a core group member and the work done using the constructed FCS instrument was presented)*
11. *Workshop on Radiation and photochemistry held on January 3-5, 2008 at the Radiation and Photochemistry Division, BARC, Mumbai.*
12. *International INDO-POLAND Workshop on Functional Materials for Sustainable Energy and Sensor Applications (FM-SEA 2022) held at Alagappa University between 10-11, November 2022.*

PERSONNEL INFORMATION

Parents: M. Kandhasamy & K. Shanmugavalli

DOB: 10, April, 1982

Gender: Male

Marital Status: Married

Nationality: Indian

Permanent Address:

425/2, Maruthagam
Sadayaneri (Post)
Ramanathapuram
Tamil Nadu, INDIA-623704

REFERENCES

1. Prof. Daniel Strasser
Institute of Chemistry
Hebrew University of Jerusalem
Jerusalem-91904
E-mail: dstrass0@gmail.com
2. Prof. K. Jothivenkatachalam
Professor & Head
Department of Chemistry, BIT. Campus
Anna University, Tiruchirappalli
E-mail: kjothivenkatachalam@gmail.com
3. Prof. C. Sekar
Senior Professor & Head
Department of Bioelectronics and Biosensors
Alagappa University, Karaikudi
Email: sekar2025@gmail.com