

Bio-Data



1. **Name** : Dr. R. Raj Muhamed

2. **Date of Birth** : 01st June 1968.

3. **Address** :

Residential :

217, JK Nagar,

Kajamalai, Tiruchirappalli – 620 023

Phone: 9443888287

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Department of Physics,

Jamal Mohamed College (Autonomous),

Trichy – 620 020.

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4. **Designation** : Associate Professor in Physics

5. Educational Qualifications

	Examination Passed	Year
i) Master's Degree	M. Sc	1992
ii) Research Degree	M. Phil	1994
	Ph. D	2007
iii) Any other degree/ Diploma / Certificate	B. Ed	1993
	PGDCA	1997
iv) NET / SELT	SELT	2000

6. Experience

i) UG : 27 years

ii) PG : 27 years

7. **Area of Specialization** : Liquid State Ultrasonics, Spectroscopy & Material Science

8. **Languages Known** : Tamil, English

9. **Subject Taught** : Undergraduate: Atomic Physics

Postgraduate : Mathematical Physics

10. Research Supervision

Name of the Degree	No of Candidates		
	Awarded	Submitted	Pursuing
M. Phil	68	---	--
Ph. D	06	---	05

11. Details of Publications-11

- Molecular interaction in Aqueous Sodium Chloride Through Ultrasonic Speed Measurement, Jamal Academic Research Journal, Volume II, 2, 2005 (National)
- “Internal Pressure and Free Volume of Amino-Acid Solutions” in the Acta Ciencia Indica, Vol XXXI, P.No.3,395.(2005) (International)
- Acoustical behaviour of DL-NORLEUCINE solutions in the temperature range 303K – 323K, Acta Ciencia Indica, Vol. XXXVI, P. No: 1, 47 (2010) (International)
- Acoustical properties of Insulin solutions at different temperatures, Acta Ciencia Indica, Vol. XXXVI, P. No: 1, 43 (2010) (International)
- Ultrasonic study of molecular interactions in Acetone in 2,6-Diphenyl-3-Methyl Pipendine-4-One at in the temperature Range 305K-325K, (International– Communicated)
- Studies on free energy of solvation of certain nitrogen containing heterocyclic compounds, Thermochemica Acta 554, 32–38 (2013) (vol. 52, Jan 2014, pp.19-23(National), IF - 2.184)
- Polarizable continuum solvation model analysis of halogen substituted 6-nitropyridines, Indian journal of pure & applied physics, vol. 52, Jan 2014, pp.19-23(National)
- On the Thermal properties of Aspartic acid using ultrasonic technique, vol. 6, No.7, pp 3685-3689 Sep-Oct 2014, (international)
- Determination of thermodynamic properties for protonation equilibrium between isomeric cresols and N, N-dimethylaniline in n-hexane medium, Journal of Molecular Liquids 207 28–38 (2015) (International, IF - 2.515)
- Determination thermodynamic properties for hydrogen bonded complexes of phenols with N-methylaniline in n-hexane medium at different temperatures using ultrasonic technique, (International– Communicated)

1	Studies on free energy of Salvation of certain nitrogen containing heterocyclic Compounds	Dr. R. Raj Muhamed	Thermochimica Acta, 554(2013), 32-38 (International)	2013				
2	Studies on free energy of Salvation of certain nitrogen containing heterocyclic Compounds	Dr. R. Raj Muhamed	Thermochimica Acta, 554(2013), 32-38 (International)	2013				
3	Polarizable continuum salvation model analysis of halogen substituted 6-nitropyridines	Dr. R. Raj Muhamed	Indian Journal of Pure & applied Physics, Vol.52, January 2014, PP. 19-23	2014				
4	On the Thermal properties of Aspartic acid using Ultrasonic Technique.	Dr. R. Raj Muhamed	J. ChemTech Res. Volume : 6, 2014, Pages : 3685-3689.	2014				
5	Determination of thermodynamic properties for protonation equilibrium between isomeric cresols and N, N-dimethylaniline in n-hexane medium.	Dr. R. Raj Muhamed	Journal of Molecular Liquids Volume: 207, 2015, Pages : 28–38.	2015				
6	Determination of thermodynamic properties for protonation equilibrium between isomeric cresols and N, N-dimethylaniline in n-hexane medium	Dr. R. Raj Muhamed	Journal of Molecular Liquids 207 28–38 (2015)	2015				
7	Effect of Mg^{2+} , Ca^{2+} , Sr^{2+} and Ba^{2+} metal ions on the antifungal activity of ZnO nanoparticles tested against Candida albicans.	Dr. R. Raj Muhamed	Journal of Materials Science and Engineering: C Volume : 52, 2015, Pages : 171–177.	2015				
8	Molecular structure, first order hyperpolarizability, NBO and HOMO-LUMO analysis of cinnoline-4-carboxylic acid,	Dr. R. Raj Muhamed	Journal of Molecular Structure, 1130 (2017) 367–373.	2017				
9	Synthesis, Spectroscopic (FT-IR, FT-Raman, NMR, UV-Visible), Fukui function, antimicrobial and molecular docking study of (E)-1-(3-bromobenzylidene) semicarbazide by DFT method,	Dr. RAJ MUHAMED R	Journal of Molecular Structure, 1130 (2017) 374–384.	2017		www.elsevier.com	http://dx.doi.org/10.1016/j.molstruc.2016.10.045	Yes
10	Synthesis, spectroscopic	Dr. RAJ	Journal of Molecular	2017		www.elsevier.com	http://dx.doi.org/10.1016/j.molstruc.2016.10.045	Yes

	(FT-IR, FT-Raman, NMR, UV-Visible), first order hyperpolarizability, NBO and molecular docking study of (E)-1-(4-bromobenzylidene) semicarbazide	MUHAMED R	Structure 1128 (2017) 481–492.			ver.con	g/10.1016/j.molstruc.2016.09.017	
11	Molecular structure, first order hyperpolarizability, NBO and HOMO-LUMO analysis of cinnoline-4-carboxylic acid	Dr. RAJ MUHAMED R	International Journal of Advanced Scientific Technologies in Engineering and Management Sciences 3 (2017) 10-15	2017		www.ijastems.org	http://dx.doi.org/10.22413/ijastems/2017/v3/i1/41312	Yes
12	spectroscopic (FT-IR, FT-Raman), first order hyperpolarizabilities, NBO, Fukui function and molecular docking study of N-(4-Chloro-3-methylphenyl)-2phenylacetamide	Dr. RAJ MUHAMED R	Optik 140 (2017) Elsevier	Mar 2017	ISSN: 1127 - 1142	www.elsevier.com	http://dx.doi.org/10.1016/j.jleoe.2017.03.120	Yes
13	Investigation of steric effect in the formation of hydrogen bonded complexes of isomeric chlorophenols with N,N-dimethylaniline	Dr. RAJ MUHAMED R	Journal of Molecular liquids 244 (2017) 405-414. International	2017	24693	www.springer.com	https://doi.org/10.1016/j.molliq.2017.08.068	Yes
14	Synthesis, spectroscopic (FT-IR,FT-Raman,NMR,UV-Visible) NLO,NBO,Homo-Lumo,Fukui function and molecular docking study of (E)-1-(5-bromo-2-hydroxybenzylidene)se micarbazide	Dr. RAJ MUHAMED R	Journal of Molecular structure 1141(2017) 284-298. International	2017	24702	www.springer.com	https://doi.org/10.1016/j.molstruc.2017.03.117	Yes
15	Spectroscopic (FT-IR,FT-Raman),first order hyperpolarizabilities,NBO ,Fukui function and molecular docking study of (N)-4-chloro-3-methylphenyl)-2-phenylacetamide	Dr. RAJ MUHAMED R	Optik 140(2017)1127-1142. International	2017	36525	www.sciencedirect.com	https://doi.org/10.1016/j.jleoe.2017.03.120	Yes
16	The Synthesis and Characterization of (Z)-1-(1Himidazol-1-Yl)-3-(3-Nitrophenyl) Prop-2-En-1-One – A Quantum Chemical Study	Dr. R. RAJ MUHAMED	International Journal of Scientific & Technology Research Volume 8, Issue 12, December 2019 Issn 2277-8616	2019	ISSN 2277-8616	http://www.ijstr.org	https://library.net/document/y8ke9e4y	Yes
17	DFT investigation of	Dr. R. RAJ	Heliyon, Volume 5,	2019	Elsevier	www.elsevier.com	https://doi.org/	Yes

	role of N – H...O and N – H... π interactions in the stabilization of the hydrogen bonded complexes of anisole with aromatic amines	MUHAMED	Issue 7, Page e02155, Elsevier, 4 September 2019.			ver.com	10.1016/j.heliyon.2019.e02155	
18	Synthesis, Spectroscopic elucidation (FT-IR, FT-Raman, UV-Vis), electronic properties and biological activities (antimicrobial, docking) of semicarbazide derivative	Dr. R. Raj Muhamed	Materials Today: Proceedings, Publisher: Elsevier	6.11.2020	ISSN No.: 2214-7853	https://www.sciencedirect.com/science/article/pii/S2214785320372850	https://doi.org/10.1016/j.matpr.2020.09.569	Yes
19	Quantum chemical designing of 2-(3,4-dihydroxyphenyl)-3,5,7-trihydroxychromenium as a efficient sensitizer for dye sensitized solar cell	Dr. R. Raj muhamed	Journal of Optoelectronic and Biomedical Materials,	Sep 2021	ISSN 2066-0049	https://chalcogen.ro/	https://chalcogen.ro/107_MaryjosephineX.pdf	Yes



Name of the Faculty Member	Editorial Board Member / Reviewer	Name of the Journal	Publisher and Place
Dr.R.Raj Muhamed	Reviewer	Spectroscopy Letters	Taylor & Francis
	Reviewer	Journal of Cluster Science	Springer

12. Details of Paper Presented: 36 (National and International)

- Ultrasonic Study of Molecular Interactions in Aqueous Electrolytic Solutions at Different Temperatures, National Seminar on Emerging Trends in Molecular Physics, Annamalai University, Annamalai Nagar, 8 March, 2004.
- Acoustical parameters of zinc sulphate in aqueous medium at different temperatures Proceedings of the International Conference on Spectrophysics, Pachaiyappa's College, Chennai-600030, 9-12, February, 2005.
- Study of Molecular Interaction of Cupric Sulphate through Ultrasonic Speed Measurement Proceedings of the International Conference on Spectrophysics, Pachaiyappa's College, Chennai-600030, 9-12, February, 2005.
- Study of Intermolecular Interaction in Glycine at Different Temperatures, Proceedings of the International Conference on Spectrophysics, Pachaiyappa's College, Chennai-600030, 9-12, February, 2005.
- Ultrasonic Study of Molecular Interactions In Benzene-Iodine Mixture, National Conference on Ultrasonics , Holy Cross College, Tiruchirappalli, 1-2 Dec. 2005
- Molecular Interaction in Insulin Through Ultrasonic Velocity Measurements At Different Temperatures, National Conference on Ultrasonics , Holy Cross College, Tiruchirappalli, 1-2 Dec. 2005
- Study of Molecular Interactions in Sodium Chloride Through Ultrasonic Velocity Measurement, National Conference on Ultrasonics , Holy Cross College, Tiruchirappalli, 1-2 Dec. 2005
- Ultrasonic study of molecular interaction in binary mixtures, International Conference on Vibrational Spectroscopy, Meerut (UP) College, Meerut, 25 - 28, Feb. 2006.
- Acoustical study of strontium chloride in aqueous medium, International Conference on Vibrational Spectroscopy, Meerut(UP) College, Meerut, 25- 28, Feb. 2006.
- Ultrasonic study of molecular interaction in Insulin, International Conference on Vibrational Spectroscopy, Meerut(UP) College, Meerut, 25-28, Feb'2006.
- Molecular interaction in Amino-Acids in aqueous medium, International Conference on Vibrational Spectroscopy, Meerut College, Meerut, 25-28, Feb. 2006.
- Internal Standard Measurement and Qualitative Analysis on Adrenocortical Steroid Drugs, National Conference on Recent Advances in Vibrational Spectroscopy, Department of Physics, Periyar University, Salem January 29-30, 2007
- Characterization of Cloxacillin by Spectral Measurement, National Conference on Recent Advances in Vibrational Spectroscopy, Department of Physics, Periyar University, Salem, January 29-30, 2007
- Acoustical Studies on Insulin, National conference on "ECO, Sono and Nano chemistry and recent advancement in chemistry, Postgraduate and Research Department of Chemistry, The New College, Chennai-600014, February – 2007.

- Study of Solute – Solvent interaction in Polyvinyl alcohol through ultrasonic velocity measurements, UGC & CSIR sponsored National level conference on Spectro physics NCONS (2012) organized by Indian Spectro Physics Association (ISPA), held at Pachiyappa's College, Chennai on 07th & 08th March 2012.
- Study of Insulin in human blood samples through ultrasonic velocity, UGC & CSIR sponsored National level conference on Spectro physics NCONS (2012) organized by Indian Spectro Physics Association (ISPA), held at Pachiyappa's College, Chennai on 07th & 08th March 2012.
- Thermodynamic properties of binary mixture at different temperatures, UGC & CSIR sponsored National level conference on Spectro physics NCONS (2012) organized by Indian Spectro Physics Association (ISPA), held at Pachiyappa's College, Chennai on 07th & 08th March 2012.
- Ultrasonic Investigation of Amino acid in aqueous medium, UGC & CSIR sponsored National level conference on Spectro physics NCONS (2012) organized by Indian Spectro Physics Association (ISPA), held at Pachiyappa's College, Chennai on 07th & 08th March 2012.
- Ultrasonic studies of molecular interaction in water with Succinic acid solutions at different temperatures, UGC sponsored National level seminar on Recent Trends in Crystal Growth and Nano Materials (NSCGNM-2012) held at National College, Trichy on 15th – 17th March 2012.
- Acoustical behavior of oxalic acid in aqueous medium, UGC sponsored National level seminar on Recent Trends in Crystal Growth and Nano Materials (NSCGNM-2012) held at National College, Trichy on 15th – 17th March 2012.
- Molecular interactions in binary mixtures through ultrasonic velocity measurements, UGC sponsored National level seminar on Recent Trends in Crystal Growth and Nano Materials (NSCGNM-2012) held at National College, Trichy on 15th – 17th March 2012.
- Ultrasonic studies of Molecular Interactions in water & succinic acid, International Conference on Emerging trends in Physics (ICETP-2013) held at ST. Joseph's College of Arts and Science(Autonomous), Cuddalore-1 on 22th-22th February 2013.
- CP-64 Molecular interaction of Glycine and Sodium Hydroxide solutions, UGC sponsored National seminar on Recent Trends in Crystal Growth and Nano Materials (NSCGNM-2013) held at National College, Trichy on 13th – 15th March 2013.
- Molecular interaction Parameters of ternary mixtures of M-Cresol in hexane and N, N-Dimethyl formamide at different temperature using Ultrasonic technique, International Conference on Recent Advances in Physics 2013 (ICRAP-2013) held at Sri Vidya Mandir Arts and Science College, Krishnagiri on 12th-13th August 2013.
- Molecular interaction Parameters of ternary mixtures of M-Cresol in hexane and N, N-Dimethyl formamide at different temperature using Ultrasonic technique, International Conference on Recent Advances in Physics 2013 (ICRAP-2013) held at Sri Vidya Mandir Arts and Science College, Krishnagiri on 12th-13th August 2013.
- Study of Molecular Interactions of Glycine with Formic Acid, NaOH and water At various temperatures, International Conference on Chemical and Environment Research (ICCER-2014) held at Jamal Mohamed College (Autonomous), Trichy on 11th-12th March 2014.

- Thermo Acoustic studies of 2-Amino-7-Hydroxy-4-Phenyl-4H-Chromene-3-Carbonitrile and 2-Amino-7-Hydroxy-4(Methoxy Phenyl)-4H-Chromene-3-Carbonitrile with Ethanol at different temperature, National Conference in Advance Materials and its Applications(NCAMA-2014) held at Annamalai University, Annamalainagar on 4th-5th April 2014.
- Molecular interaction parameters of some Amino acid with Aqueous CaCl₂, KCl and BaCl at different temperature using Ultrasonic technique” National Conference in Advance Materials and its Applications (NCAMA-2014) held at Annamalai University, Annamalainagar on 4th-5th April 2014.
- Study of molecular interactions in ternary mixtures of Xylene, O-Cresol with N, N- Dimethyl Formamide at different temperature, National Conference in Advance Materials and its Applications (NCAMA-2014) held at Annamalai University, Annamalainagar on 4th-5th April 2014.
- Determination of thermo dynamical properties and Molecular interaction for hydrogen bonded complexes of cresols with N-Dimethylaniline in n-Hexane, TEQIP II sponsored International Conference on Chemistry and Materials (ICCM-2014) held at Anna University, Tiruchirappalli on 14th -15th November 2014.
- Vibrational spectroscopic studies, Normal co-ordinate analysis, first order hyperpolarizability, HOMO-LUMO of 2-Ethylpyridine-4-carbothioamide, UGC sponsored National level Conference on Spectrophysics held at S.T. Hindu College, Nagercoil on 30th-31th January 2015.
- Determination of thermodynamic properties of Hydrogen bonded complexes of phenols with N, N- Dimethylaniline in N-Hexane at different temperatures (298, 303 and 308K) using the Ultrasonic Technique, UGC sponsored International Conference on Energy, Water and Environmental Science & Technology (ICEWEST-2015) held at Presidency College(Autonomous), Chennai-05 on 05th-06th February 2015.
- Ultrasonic and viscometric studies of molecular interaction of some Chlorophenols with N-Methylaniline in THF at different temperatures, DST-SERB sponsored 2nd International Conference on Materials for Modern world (NCMMW-2015) held at Easwari Engineering College, Ramapuram, Chennai -89 on 28th-29th September 2015.
- Molecular structure, Vibrational spectra, Fukui function, HOMO-LUMO Analysis and Molecular Docking study of Ethyl 2-(6-(2-Chloro-6-Ethoxypyridine-4-yl)-3-Cyano-4-(4-Fluorophenyl)pyridin-2-ylthio)Acetate, International Conference on Chemical and Environmental Research (ICCER- 2015) held at Jamal Mohamed College, Trichy on 17th December 2015
- Ultrasonic Investigation on polymers and Surfactant Balents, International Conference on Chemical and Environmental Research (ICCER- 2015) held at Jamal Mohamed College, Trichy on 17th December 2015.
- Vibrational spectroscopic studies, first order hyperpolarizability, HOMO-LUMO, antimicrobial and molecular docking study of 2-(4-bromobenzylidene) hydrazinecarboxamide, KSCSTE, UGC and KSHEC sponsored National Conference on Experimental and Theoretical Approaches to Photonic Materials (ETAP-2016) held at Bishop Moore College, Mavelikara, Kerala from 6-8 January 2016.

13. Details of Seminars / Conferences / Workshops attended : 18

- RSC-SA sponsored workshop on Photocatalysis for sustainability: Fundamentals and Applications” held at Anna University, Tiruchirappalli-024 on 09th October 2013.
- National workshop on “Materials Science and theoretical physics” held at ST. Joseph’s College of Arts and Science (Autonomous), cuddalore-1 on 2nd-3rd September 2015.

14. Details of Seminars / Conferences / Workshops organized: 02

- UGC sponsored State Level Seminar on Applications of Ultrasonics to Organic and Bimolecular Compounds, held at Jamal Mohamed College, Tiruchirappalli-20 on 26-27 September 2005.
- UGC sponsored State Level Seminar on, Advances in the Electronics, held at Jamal Mohamed College, Tiruchirappalli-20 on 20th March 2006.

15. Details of Orientation / Refresher Course attended:

- Orientation program on Research activities in Science for College Teachers, held by Bharathidasan University on 24th and 25th March, 2012.
- Refresher course for College teachers in Physics held at Institute of Mathematical Sciences 10-5-2002 to 05-06-2002
- Orientation Course for National Service scheme, Madras School of Social Work, held at Bharathidasan University on 05th July to 14th July, 2004

16. Details of chairing as Resource Person: 03

- Regional workshop orientation course in physics for PG teachers of Higher secondary schools organized by department of Physics SIGC , Trichy and Tamilnadu state council for science and technology Chennai and National council for science and technology & Communication, New Delhi ‘ 24 – 26th October, 2006.
- Induction training programme for secondary grade teachers, Directorate of teacher education research and training, Chennai-6 at Bishop Heber Hr. Sec. School, Trichy – 03rd – 5th October – 2007.
- Theory and Practical Exposure, In-service training programme for the Science teachers, Directorate of teacher education research and training Chennai-6 at Jamal Mohamed College, Trichy on 06th - 10th February, 2012.

17. Administrative Positions held in the college

□ Additional Camp – Officer, Bharathidasan University CV.(2006-2007)

18. Details of Incharge / Participation in Extracurricular Activities

(NSS, NCC, Sport, Games, Voluntary Association and Cultural Activities), NSS Programme Officer, 2004-2007, Jamal Mohamed College, Trichy

19. Details of participation in consultancy, training, Development etc.

Placement Officer, Department of Physics, Jamal Mohamed College, Trichy