

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
(Autonomous), Phone: 9443888287
E-mail: ponnu_68@yahoo.co.in

Office:

Department of Physics,
Jamal Mohamed College
Trichy – 620 020.
Phone: 0431 – 2331135 * 326

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 / SLET	SLET	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	---	06

11. DETAILS OF PUBLICATIONS

- ❖ Acoustical behaviour of DL-NORLEUCINE solutions in the temperature range 303K – 323K, Acta Ciencia Indica, Vol. XXXVI, P. No: 1, 47 (2010) (International)
- ❖ 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)
- ❖ First order hyperpolarizabilities, NBO, Fukui function and molecular docking study of N-(4-chloro-3-methylphenyl)-2-phenylactamide
- ❖ Theoretical spectroscopic investigation of 3,5-bis (trifluoromethyl) phenyl isothiocyanate, Journal of Advanced Applied Scientific Research (JOAASR) – ISSN: 2454-3225
- ❖ Molecular structure, NBO, first order hyperpolarizability and HOMO-LUMO analysis of 7-Azathieno[2,3-c] cinnoline, Indian Journal of Chem Tech Research, Vol: 8, No. 12, PP : 721-733, ISSN: 0974-4290
- ❖ 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)
- ❖ Acoustical studies in aqueous solutions of cellulose and carbohydrate binary complex formation, SS International Journal of Multidisciplinary Research, Vol: 2 (2016), ISSN: 2395-7964

- ❖ Ultrasonic and spectral studies on charge transfer complexes of anisole and certain aromatic amines, Chemical Physics, Elsevier, 478(2016)34–44, <http://dx.doi.org/10.1016/j.chemphys.2016.05.028>, ISSN : 0301-0104 chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.researchgate.net/profile/V-Kannappan/publication/309575022_1-s20-S0301010416301367-main/links/581821e208aeb720f689ba87/1-s20-S0301010416301367-main.pdf
- ❖ Spectroscopic (FT-IR, FT-Raman), first order hyperpolarizabilities, NBO, Fukui function and molecular docking study of N-(4-Chloro-3-methylphenyl)-2-phenylacetamide, Optik, Urban & Fischer, 1127-1142, https://scholar.google.co.in/citations?view_op=view_citation&hl=en&user=v4rNzpMAAAAJ&citation_for_view=v4rNzpMAAAAJ:W7OEmFMy1HYC
- ❖ Spectroscopic and quantum mechanical investigations of (2E)-3-(2H-1,3-benzodioxol-5-yl)-N-phenylprop-2-enamide using density functional theory method, Indian Journal of Pure & Applied Physics, Vol. 56, Jan 2018, pp: 34-47
- ❖ Molecular structure, Vibrational spectra, NBO, Fukui Function, HOMO-LUMO analysis and molecular docking study of 6-[(2-Methylphenyl)]-5-Propylpyrimidine-2,4(1H,3H)-Dione, MJCCA9-727 (2016)
- ❖ Synthesis, Spectroscopic (FT-IR, FT-Raman), first order hyperpolarizability and HOMO-LUMO analysis of (2E)-N-phenyl-3-(4H-pyran-4-yl) prop-2-enamide, International Research Journal of Engineering and Technology, ISSN: 2395-0072, Volume: 04, 2017, 1399-1406, <https://www.irjet.net/archives/V4/i7/IRJET-V4I7302.pdf>
- ❖ Molecular docking, Spectroscopic, NLO, NBO and antimicrobial analysis of (Z)-3-(3-bromophenyl)-1-(1H-imidazol-1-yl) prop-2-en-1-one, International Journal of Advanced Research and Development, 2017
- ❖ Molecular structure, first order hyperpolarizability, NBO and HOMO-LUMO analysis of cinnoline-4-carboxylic acid, International Journal of Advanced Scientific Technologies in Engineering and Management Sciences 3 (2017) 10-15, <https://doi.org/10.22413/IJASTEMS/2017/V3/I1/41312>
- ❖ Molecular docking, Spectroscopic, NLO, NBO and antimicrobial analysis of (Z)-3-(3-bromophenyl)-1-(1H-imidazol-1-yl) prop-2-en-1-one, 2017

- ❖ Synthesis, Spectroscopic (FT-IR, FT-Raman), first order hyperpolarizability and HOMO-LUMO analysis of (2E)-N-phenyl-3-(4H-pyran-4-yl) prop-2-enamide, International Research Journal of Engineering and Technology (IRJET), -ISSN: 2395-0056, Volume: 04 Issue: 07 | July -2017

- ❖ Investigation of steric effect in the formation of hydrogen-bonded complexes of isomeric chlorophenols with N, N-dimethylaniline, Journal of Molecular Liquids, Vol. 244, pp. 405-414, 2017

- ❖ 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)semicarbazide, Journal of Molecular structure 1141(2017) 284-298, <https://doi.org/10.1016/j.molstruc.2017.03.117>

- ❖ Synthesis, spectroscopic (FT-IR, FT-Raman, NMR, UV-Visible), first order hyperpolarizability, NBO and molecular docking study of (E)-1-(4-bromobenzylidene) semicarbazide, Journal of Molecular Structure 1128 (2017) 481–492, <https://doi.org/10.1016/j.molstruc.2016.09.017>

- ❖ 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, Journal of Molecular Structure, 1130 (2017) 374–384, <https://doi.org/10.1016/j.molstruc.2016.10.045>

- ❖ Spectroscopic and quantum mechanical investigations of (2E)-3-(2H-1,3-benzodioxol-5-yl)-N-phenylprop-2-enamide using density functional theory method, Indian Journal of Pure & Applied Physics, Vol. 56, Jan 2018, pp: 34-47

- ❖ DFT investigation of role of N – H···O and N – H··· π interactions in the stabilization of the hydrogen bonded complexes of anisole with aromatic amines, Heliyon, Volume 5, Page e02155, 2019, <https://doi.org/10.1016/j.heliyon.2019.e02155>

- ❖ Quantum chemical designing of 2-(3,4-dihydroxyphenyl)-3,5,7-trihydroxychromenium as a efficient sensitizer for dye sensitized solar cell, Journal of Optoelectronic and Biomedical Materials,

- ❖ Theoretical Study of D- π -A Structured Malvidin for DSSC Application, Asian Journal of Chemistry; Vol. 35, No. 2 (2023), 522-528, Jan 2023, <https://doi.org/10.14233/ajchem.2023.27004>, <https://asianjournalofchemistry.co.in/Home.aspx>

12. Editorial Board

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



13. Details of Paper Presented: (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 SpectroPhysics 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 2ndInternational 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.
- Synthesis, Spectroscopic, NBO, NLO, antimicrobial and Molecular docking study of 3-(biphenyl-4-yl)-1-(2,4-dichlorophenyl) prop-2-en-1-one, National Seminar on Advanced Topics in Physics (NSATP-19), Department of Physics, Jamal Mohamed College, Trichy on 06-03-2019
- Molecular Structure, Spectroscopic, Nonlinear Optical And Biological Evaluation of 3-(Biphenyl-4-Yl)-1-(4-Chlorophenyl) Prop-2-En-1-One: Experimental And Computational Modeling Approach, National Seminar on Advanced Topics in Physics (NSATP-19), Department of Physics, Jamal Mohamed College, Trichy on 06-03-2019
- The spectroscopic, Quantum computational and Molecular docking study of N-(4-Chloro-3-methylphenyl)-2-phenylacetamide, National Seminar on Advanced Topics in Physics (NSATP-19), Department of Physics, Jamal Mohamed College, Trichy on 06-03-2019

- Synthesis spectroscopic, NLO, NBO,, HOMO-LUMO, Antimicrobial Molecular docking analysis of (2E-) Phenylprop-2-Enamide, 4th International conference on Chemical and Environmental Research - ICCER – 2018, Department of Chemistry, Jamal Mohamed College, Trichy on 19-12-2018
- Molecular Docking, Spectroscopic, first order hyperpolarizability, NBO and Homo-Lumo analysis of (2E)-3-(2E-1,3-Benzodioxol-5-YL)-N-(4-Chlorophenyl)PROP-2-Enamide, National Conference on Advanced functional Materials (NCAFM-2020), Department of Physics, National College (Autonomous), Tiruchirappalli, on 13-02-2020
- Synthesis, spectroscopic, NLO, NBO, Homo-Lumo, antimicrobial and molecular docking analysis of (2E)-3-(1H-Indol-2-yl)-N-phenylprop-2- enamide, 5th International conference on Chemical and Environmental Research (ICCER-2020), Department of Chemistry, Jamal Mohamed College (Autonomous), Tiruchirappalli on 08-01-2020

14. Details of Seminars / Conferences / Workshops attended

- 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.
- National Conference on Recent Advances in Vibrational Spectroscopy, Department of Physics, Periyar University, Salem January 29-30, 2007
- National Seminar on Advanced Topics in Physics (NSATP-19), Department of Physics, Jamal Mohamed College, Trichy on 06-03-2019
- 4th International conference on Chemical and Environmental Research - ICCER – 2018, Department of Chemistry, Jamal Mohamed College, Trichy on 19-12-2018
- National Conference on Advanced functional Materials (NCAFM-2020), Department of Physics, National College (Autonomous), Tiruchirappalli, on 13-02-2020
- 5th International conference on Chemical and Environmental Research (ICCER-2020), Department of Chemistry, Jamal Mohamed College (Autonomous), Tiruchirappalli on 08-01-2020

15. Details of Seminars / Conferences / Workshops organized:

- 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.

16. 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

17. Details of chairing as Resource Person:

- 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.
- Regional Science Fair 2018, Green Valley Public School, Dindigul on 18-10-2018
- National Webinar on Ultrasonics, Ansar Women’s College, Perumpilavu, Kerala

18. Administrative Positions held in the college

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

19. 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

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

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