

Profile

Dr. B. SYLAJA M.Sc., M.Phil., Ph.D.

Assistant Professor

Department of Physics

D G Vaishnav College

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Qualification:

S No.	Degree	Subject	Name of the College	Name of the University	Year of Passing	Class
1	UG - B.Sc.	Physics	C.T.T.E College for Women	University Of Madras	1994	I
2	PG - M.Sc.	Physics	Pachaiyappa's College	University Of Madras	1997	I
3	M. Phil.	Physics	Manonmaniam Sundaranar University	Manonmaniam Sundaranar University	2003	I
4	Ph.D.	Physics	Presidency College	University Of Madras	2017	

Teaching Experience

- Total Teaching Experience is 17 years 5 months
- Assistant Professor in Department of Physics D.G.Vaishnav college, Arumbakkam, Chennai handling both UG & PG Physics from 25th August 2003 to till date
- Handled Distance Education classes for Post graduate course (Physics) at Institute of Distance Education, University of Madras from 2005 to 2012
- Handled Distance Education classes for Post graduate course (Physics) at Madurai Kamaraj University for 3 years.
- Handled Distance Education classes for under graduate course (Physics) at IGNOU

Projects

- M.Sc** : Rolling Text Display using 8085 Microprocessor
- M.Phil** : Spectroscopic Measurements and Qualitative analysis of some ornamental stones
- Ph.D** : Vibrational spectra, quantum chemical and molecular docking studies of some benzodiazepine derivative drugs

Professional Skills

Teaching: Microprocessor & Electronics, Digital Electronics, Integrated Electronics, Mathematical Physics, Nuclear Physics, Classical Mechanics, Condensed Matter Physics, Statistical Mechanics, Quantum Mechanics and Computational Methods and C programming.

Research Activities:

No. of students for M.Sc Project as guide: 11

PUBLICATIONS

List Of International/National Journal Publications

- 1. B. Sylaja** and S. Srinivasan, “ *Experimental and theoretical investigation of spectroscopic properties of diazepam*”, Int. J. ChemTech Res., 4, 1 (2012) 361-376.
- 2. Bachu Sylaja**, Shanmugam Srinivasan, “ *Ab Initio and Density Functional Theory (DFT) Study on Clonazepam*”, Open Journal of Bio Physics, 2 (2012) 80-87.
- 3. B. Sylaja**, S. Gunasekaran, S.Srinivasan, " *Spectroscopic and quantum chemical studies of molecular geometry, frontier molecular orbital, NLO, NBO analysis of 7-chloro-1 methyl-5-phenyl-1,5-dihydro-benzo[1,4]diazepine-2,4-dione*", Optik, 127 (2016) 5055-5064.

4. **B. Sylaja**, S. Gunasekaran, S.Srinivasan, "*Spectroscopic investigation, molecular interactions and molecular docking studies on 8-chloro-1-methyl-6-phenyl-4H-[1,2,4]triazolo[4,3-a][1,4]benzodiazepine*", *Optik*, 127 (2016) 6559-6573.
5. **B. Sylaja**, S. Gunasekaran, S.Srinivasan, "*The spectroscopic investigation, NLO, NBO, NMR, HOMO-LUMO and molecular docking analysis on Clonazepam, Mater. Res. Innov.*" 22 (4) (2018) 187-199.
6. **B. Sylaja**, S. Gunasekaran, S.Srinivasan, "*Vibrational, NLO, NBO, NMR, frontier molecular orbital and molecular docking studies on diazepam*", *Mater. Res. Innov.* 22 (6) (2018) 361-373.
7. N. Dharani Rajan, S. Jayakumar, S. Krishnan, G.M. Rajesh, **Sylaja** and R. Sambasivam, "*Ultrasonic, XRD and micro-hardness studies on single crystal of aluminum ammonium sulfate (AAS)*", *J. Pure Appl. Ultrason.* 42 (2020) 16-20.

Conference/Seminar attended

Presentation of papers national /International Seminars/Conference .

1. **B. Sylaja** and S. Srinivasan, "*Molecular geometry, ¹H NMR chemical shift and vibrational spectroscopy investigation using ab initio and density functional theory on clonazepam*" 3rd International Conference on Science, Engineering and Technology (SET), November 17-18, 2011, School of Mechanical and Building Sciences, VIT University, Vellore.
2. **B.Sylaja**, S.Gunasekaran and S.Srinivasan, "*Computation and interpretation of vibrational spectra on the structure of Alprazolam using semi-empirical and density functional methods*", National Seminar on Recent Advances in Physics – 2014, March 7 – 8, 2014, Presidency College, Chennai.
3. **B.Sylaja**, S.Gunasekaran and S.Srinivasan, "*Density Functional Theory, Restricted Hartree-Fock simulations and vibrational spectroscopic studies of chlordiazepoxide*", National Conference in Advanced Materials and its Applications (NCAMA – 2014), April 4 - 5, 2014, Annamalai University, Annamalai Nagar.

4. **B.Sylaja**, S.Gunasekaran and S.Srinivasan, "Spectroscopic and quantum chemical studies of molecular geometry, vibrational frequencies and thermodynamic properties of diazepam", National Conference on Advanced Materials (NCAM – 2014), July 18 - 19, 2014, Sri Vidya Mandir Arts & Science College Katteri, Uthangarai, Krishnagiri (DT).
5. **B.Sylaja**, S.Gunasekaran and S.Srinivasan, "Spectroscopic and Quantum Chemical Investigation On Chlordiazepoxide", International Conference on Recent Advances in Applied Sciences (ICRAAS - 2016), February 11 - 13, 2016, St. Peter's University, Chennai, India.
6. **B.Sylaja**, S.Gunasekaran and S.Srinivasan, "Quantum chemical, experimental and NBO analysis of Alprazolam", International Conference on Recent Advances in Applied Sciences (ICRAAS - 2016), February 11 - 13, 2016, St. Peter's University, Chennai, India.
7. **B.Sylaja**, K. Elaiya Bharathi, J. Hepsiba, S.Gunasekaran and S.Srinivasan, "Spectroscopic and quantum chemical studies of NBO, NMR, frontier molecular orbital analysis of N1,N1-bis((E)-2-(2-hydroxy5-bromobenzylideneamino) ethyl) ethane-1,2-diamine", International Conference on Recent Trends in Physics of Materials (NCRTPM-2018), February 9-10, 2018, Pachaiyappa's College, Chennai, India.
8. **B.Sylaja**, E. Padmavathy, S. Rizwana Khanam, "Synthesis, Powder XRD and Spectroscopic analysis (FT-IR, FT-Raman, UV - visible, and NMR) of 5-(furan-2-ylmethylene)pyrimidine-2,4,6(1H,2H,5H)-trione," International Conference on Physics of Advanced Materials and Molecules (ICPAMM-2020), January 30-31, 2020, Dr. Ambedkar Government Arts College, Vyasiradi, Chennai, India.
9. **B.Sylaja**, E. Padmavathy, S. Rizwana Khanam, "Theoretical and Experimental spectroscopic analysis of 5-(furan-2-ylmethylene)pyrimidine-2,4,6(1H,2H,5H)-trione," 8th National Conference on Hierarchically Structured Materials (NCHSM 2020), February 21 -22, 2020, SRM Institute of Science & Technology, Ramapuram Campus, Chennai, India.

State /National /International seminars, Conference, Symposium and Workshop coordinated

1. Coordinated a "State level workshop on Molecular Docking" on 19th September 2018 at Department of Physics, DG Vaishnav College, Chennai.
2. Coordinated an International Webinar on "Silicon and Beyond" on 3rd September 2020, Department of Physics, DG Vaishnav College, Chennai.

Participation in national /International Seminars/Conference/Lecture

1. Attended a lecture on "Some New Partition Theorems from a Partial Theta Identity on Ramanujan" at Science City, Chennai on 18th June 2010.
2. Attended a National symposium on "Light and Light Based Technologies", at Chevalier T. Thomas Elizabeth College for Women, Chennai on 31st August 2015.
3. Attended a "National conference on Neutrino Physics" at Meenakshi College for Women, Chennai during 28th and 29th September 2016.

Participation in national /International Workshop

1. Participated in the UGC funded "State Level Workshop on Practical Troubleshooting in Electronics, Microprocessor & Microcontroller Experiments" organized by Department of Physics, Ethiraj College for Women, Chennai during 1st & 2nd February 2013.
2. Participated in the continuing education program on "A Workshop on Physics Education Program and Research" organized by Department of Physics, IIT, Madras during 18th to 23rd December 2017.
3. Participated in the "One-Day National Level Workshop for College Teachers in Physics (Computer Simulations To Enhance Physics Learning)" held at Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai on 30th November 2018.

4. Participated in the International Workshop on "*Applications of IOT (Internet Of Things)*" organized by PG & Research Department of Computer Science and Applications, Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai held on 16th July 2019.
5. Participated in the "*National seminar and Workshop BioSS 2020*" organized by CAS in Crystallography and Biophysics, University of Madras, Chennai during 11th to 13th February 2020.

Certificate Of Appreciation

1. Received Certificate of Appreciation for contributing as resource person in "*Two Day Refresher Programme in Physics Practicals for PG Teachers of Chennai Corporation & Govt. Aided Schools*", organized by Department of Physics, DG Vaishnav College in association with FSCT on 18th & 19th November 2013 under the support of DBT star college Scheme, Department of Biotechnology, Government of India.

Participation in national /International WEBINAR during lockdown

1. Participated in the International webinar on "*Nonlinear Waves In Physics From Solitary Waves And Solitons To Rogue Waves*" Organized by Department of Physics, SRM Institute of Science and Technology, Ramapuram Campus on 13th May 2020.
2. Participated in the webinar on "*Thin Films And Its Applications*" Conducted by School Of Science And Humanities, Department Of Physics, Sathyabama Institute Of Science And Technology, Chennai on 17th May 2020.
3. Participated in the webinar on "*Recent Advances In Crystal Technology*" Conducted by Department of Physics, Prathyusha Engineering College, Chennai on 28th May 2020.

4. Participated in the webinar on "*A Stroll Through The Mystical Quantum Mechanics*" Conducted by PG Department of Physics, Bhaktavatsalam Memorial College for Women, Chennai on 29th May 2020
5. Participated in the webinar on "*Advances In Material Science*" Conducted by PG Department of Physics, Ethiraj College for Women, Chennai on 29th May 2020.
6. Participated in the webinar on "*Applications Of Superconductors*" Conducted by Department Of Physics With Computer Applications, Soka Ikeda College Of Arts And Science, Chennai on 10th June 2020.
7. Participated in the International webinar on "*DFT, Molecular Dynamics Simulation And Molecular Docking Approach On Potential Pharmaceutical Compounds*" conducted by Department of Physics, Puratchi Thalaivar Dr. M.G.R Government Arts and Science College, Uthiramerur. on 29th June 2020.
8. Participated in the webinar on "*Incorporating Science & Technology Innovations In Our Everyday Teaching Through Curriculum*" conducted by Department of Physics, S I V E T College, Chennai on 27th July 2020.
9. Participated in the webinar on "*Studies On Phase-Matchable Nonlinear Optical Materials*" organized by Department of Science and Humanities (Physics), Nehru Institute of Technology, Coimbatore on 8th August 2020.
10. Participated in an International Webinar on "*Solar To Hydrogen Fuel Generation*" organized by Department of Science, St. Joseph's College of Engineering, Chennai, on 14th August 2020
11. Participated in the "*National Seminar On Applications Of Vibrational Spectroscopy*" organized by Department of Physics, SRM Institute of Science and Technology, Ramapuram Campus, Chennai on 29th August 2020.

12. Participated in the National Webinar on "*Liquid Crystals - Technology And Current Trends*" organized by Department of Physics (Shift II), D G Vaishnav College, Chennai on 9th September 2020.
13. Participated in the Webinar on "*127 Years Of Saha'ism*" organized by Department of Physics (Shift II), D G Vaishnav College, Chennai on 6th October 2020.
14. Participated in the Webinar on "*Twentieth Century Physics*" organized by Department of Physics (Shift II), D G Vaishnav College, Chennai on 7th October 2020.
15. Participated in the Webinar on "*Physics Lab a Click Away*" organized by Department of Physics, Bishop Abraham Memorial College, Thuruthicad on 6th November 2020.
16. Participated in the Webinar on "*Science for and with Society in Dealing with the Global Pandemic*" organized by Department of Physics C.T.T.E College for Women, Chennai on 13th November 2020.
17. Participated in the Webinar on "*Lunar Eclipse - The Myths and Science*" organized by Department of Physics (Shift II), D G Vaishnav College, Chennai on 30th November 2020.
18. Participated in the Webinar on "*Window to the Microworld -Microscopes Overview*" organized by Department of Physics (Shift II), D G Vaishnav College, Chennai on 10th December 2020.
19. Participated in the Webinar on "*Recent Views on Laws of Thermodynamics*" organized by Department of Physics (Shift II), D G Vaishnav College, Chennai on 6th January 2021.

Participation in national /International Workshop during lockdown

1. Participated in online Workshop on *"Nuances In Computational Chemistry"* Organized by PG & Research Department of Chemistry, D G Vaishnav College, Chennai from 2nd to 5th July 2020.
2. Participated in Two days E-Workshop *"Virtual Labs In Physics And Electronics"* Organized by Department of Physics, Aurora's Degree & PG College, Hyderabad, during 3rd & 4th July 2020.
3. Participated in Three Day *"National Level Virtual Training On ICT Competency For Higher Education Teachers"* Organized by IQAC, D G Vaishnav College, Chennai, during 13th to 15th July 2020.
4. Participated in the National online Workshop on *"Computational Chemistry – A Leeway To Theoretical Chemistry"* under DBT Star College Status, organized by the PG & Research Department of Chemistry, PSGR Krishnammal College of Women, Coimbatore in collaboration with D.G. Vaishnav College, Arumbakkam, Chennai from 27th to 29th July 2020.
5. Participated in One day Workshop on *"E-Filing Of Income Tax Return (ITR-1) For Salaried Tax Payers"* held on 29th August 2020

Participation in national /International Faculty Development Program / Series of online lectures attended:

1. Participated in Faculty Development Program on *"Teaching, Learning and Evaluation"* organized by Arulmigu Palaniandavar Arts College For Women, Chennai from 4th to 6th May 2020.
2. Participated in an Online Faculty Development Programme in the *"Data Science using R and Geo Gebra"* organized by PG and Research Department of Mathematics (Under DBT Star College Scheme) Jamal Mohamed College, Thiruchirappalli from 11th to 14th May 2020.

3. Participated in the series of online lectures in Solid State Physics - Series 1: Electrons in Solids Conducted by Department Of Theoretical Physics, University of Madras, Chennai during 1st to 4th June 2020.
4. Participated in the Two Week Faculty Development Programme on “*Advances in Computational and Experimental Research in Physics*” organized by Department of Physics, SRM Institute of Science and Technology, Ramapuram Campus, Chennai from 27th July to 8th August 2020.

State /National /International seminars, Conference, Symposium and Workshop organized

1. Organized a one day science lecture program, “*Quintessence '09*” in commemoration with International Year of Astronomy (IYA 2009) and National Science Day on 25th February 2009 at Department of Physics, D.G Vaishnav College, Chennai.
2. Organized National seminar, “*National Seminar in Physical Science for PG and M.Phil Students*” (NSPS 2010) during 25th and 26th February 2010 at Department of Physics, D.G Vaishnav College, Chennai.
3. Organized State level Seminar, “*Dr.Srinivasan Memorial Science lecture*” on 25th January 2011 at Department of Physics, D.G Vaishnav College, Chennai.
4. Organized State level Seminar “*Dr. S.R.Govindarajan Endowment Seminar in Basic Sciences*” on 28th February 2011 to commemorate National Science Day, Department of Physics, D.G Vaishnav College, Chennai.
5. Organized State level Seminar “*Seminar on Recent Trends in Applied Physics*” (SRTAP 2012) during 20- 22nd February 2012 at Department of Physics, D.G Vaishnav College, Chennai
6. Organized State level Seminar “*UGC Seminar on Science in Ancient India*” on 27th February 2015 at Department of Physics, D.G Vaishnav College, Chennai.

7. Organized State level Seminar "*Introduction to Quantum Mechanics*" on 23rd September 2016 at Department of Physics (Shift II), D.G Vaishnav College, Chennai.
8. Organized State level Seminar "*Introduction to NanoScience*" on 22nd March 2017 at Department of Physics (Shift II), D.G Vaishnav College, Chennai.
9. Organized a program "*Physics by Demonstration*" on 29th January 2019 at Department of Physics (Shift II), D.G Vaishnav College, Chennai.
10. Organized a Seminar "*Visualization of Vector*" on 6th February 2019 at Department of Physics (Shift II), D.G Vaishnav College, Chennai.
11. Organized a seminar and workshop on "*Annular Solar Eclipse, A Celestial Approach*" by The Breakthrough Society along with Department of Physics (Shift II), D.G Vaishnav College, Chennai on 16th December 2019.
12. Organized "*RADIATE 2020*" an intercollegiate event by The Department of Physics (Shift II), D G Vaishnav College, Chennai on 7th March 2020.

Project guidance for M.Sc students

1. Fourier Transform Raman and Infrared Vibrational Study of Lorazepam, March 2016
2. Quantum chemical, UV, NMR and frontier molecular orbital analysis of N¹, N¹-bis((E)-2-(2-hydroxy5-bromobenzylideneamino) ethyl) ethane-1,2-diamine, March 2018.
3. Vibrational (FT-IR, FT-RAMAN) studies of N¹, N¹-bis((E)-2-(2-hydroxy5-bromobenzylideneamino) ethyl) ethane-1,2-diamine, March 2018
4. Structural and Analysis of optical properties of TiO₂/MWCNT Nanopowders, March 2019.
5. Growth and shocking effect on TGS crystals, March 2019.
6. Discrimination of Thyroid disorder hair samples using FTIR_ATR spectroscopic techniques, March 2019.

7. Powder X-Ray diffraction and Spectroscopic studies (UV-Visible& NMR) of 5-(furan-2-yl-methylene)pyrimidine-2,4,6(1H,3H,5H) trione, March 2020.
8. Synthesis, Spectroscopic Vibrational studies (FTIR-ATR, FT-RAMAN) of 5-(furan-2-ylmethylene) pyrimidine-2, 4, 6 (1H, 2H, 5H) trione, March 2020.
9. FTIR and FT RAMAN investigation of 5-(4-dimethylamino) (benzylidene) pyrimidine-2,4,6 (1H,3H,5H) - trione, March 2021
10. Crystal growth , and powder x-ray diffraction analysis of 5-(4-(dimethylamino) benzylidene)pyrimidine 2,4,6 (1H,3H,5H) -trione. March 2021
11. UV-Visible and $^1\text{H} - ^{13}\text{C}$ nmr spectroscopic studies of 5-(4-dimethylamino) benzylidene) pyrimidine- 2, 4, 6 (1h,2h,5h)-trione, March 2021

Extra Curricular Activities / Prizes, Medals and other honors received

1. Received **CERTIFICATE OF MERIT** for securing First position in Allied - Mathematics during the year 1991 -1992
2. Received **CERTIFICATE OF MERIT** for securing First position in General Aptitude Test (Physics) during the year 1993 -1994
3. Received **CERTIFICATE OF MERIT** for securing Third position in Essay Writing (Physics) during the year 1993 -1994
4. Received **NATIONAL SERVICE SCHEME CERTIFICATE** for having won First Prize in Classical Dance (Group) conducted on January 96 by N.S.S. Pachaiyappa's College, Madras - 600 030.
5. Received **NATIONAL SERVICE SCHEME CERTIFICATE** for having won Second Prize in Dance Competition conducted on January 96 by N.S.S. Pachaiyappa's College, Madras - 600 030.
6. Received **NATIONAL SERVICE SCHEME CERTIFICATE** for having won Third Prize in Dance Competition conducted on January 96 by N.S.S. Pachaiyappa's College, Madras - 600 030.

Membership Particulars

1. Member in Indian Association of Physics Teachers

Computer Skills

1. Operating Systems : MS-Dos, Unix, Windows-98
2. Languages : Basic, C, Fortran, Java.
3. Spread Sheet : Lotus 1-2-3, MS Excel
4. DBMS : SQL server, DbaseIV, Oracle 11i.
5. Web Technologies : HTML, DHTML, Java Script