

ABSTRACT

Name	: Prof. V. Krishnakumar
Designation	: Professor and Head
Educational Qualification	: M.Sc., M.Phil., Ph.D
Post Doctoral Studies	: One year, IIT, Kanpur
Experience	: Teaching 30 years ; Research 25 years
Areas of Research	: Vibrational spectroscopy & Materials Science (Bulk, Films, Nano)
Research Guidance	: Ph.D - 18 M.Phil- 53
Countries Visited	: Italy, Hungary, Finland, Poland, Germany, Switzerland & Japan
Fellowships Awarded	: International and National fellowships Awarded by DST, UGC & INSA
Major Research Projects	: 06 completed; 02 ongoing; 1 Sanctioned (Total cost Rs. 2.5 Crores)
Papers Published	: International: 128; National: 23
Collaboration	: International: 09; National: 07
Seminars/Conferences	: Organized: 21 Attended: 48
Journals Review	: International: 15; National 01
Books Published	: 03
Membership in Professional Bodies	: Scientific and Universities bodies
Administrative Experience	: Vice-Chancellor in-charge, Registrar in- charge, Head of the Department, Member of Syndicate, Member of Senate, Member of Standing Committee on Academic Affairs, Coordinator Planning & Development, Chairman-Board of Research Studies, Member Secretary, Internal Quality Assurance Cell & NAAC coordinator

BIODATA



Name : **Prof. V. KRISHNAKUMAR**

Date of Birth : 27.07.1960

Contact Address :

Residence

S/O M. Varadharajan Iyengar
G5. Padmanaba Residency
Renga Nagar, EVS Street
Srirangam
Tiruchirappalli – 620 006

Institute

Professor and Head
Department of Physics
Periyar University
Salem - 636 011

☎ : +91 9486749855

✉ : vkrishna_kumar@yahoo.com

🌐 : <http://vkrish.page.tl/>

Academic details

University Academic Record:

Ph.D. – Physics	Bharathidasan University, Tiruchirappalli, Tamil Nadu	Commended
M.Phil. - (Applied Physics)	Regional Engineering College, Tiruchirappalli, Tamil Nadu	First class
M.Sc. - (Physics)	University of Madras	First class

Post Doctoral Experience:

Worked as a Post Doctoral Research Associate in the CSIR sponsored project on 'Spectra Structure Correlation Characterization and Applications of Diamond and DLC films' under the supervision of Prof.H.D. Bist, Emeritus Scientist (CSIR) - Department of Physics and Centre for Laser Technology, I.I.T, Kanpur.

Teaching Experience: 30 Years

Research Experience: 25 Years

Areas of Research:

Vibrational Spectroscopy

Materials Science

Research Guidance :

Ph.D

Awarded: 18

Ongoing: 08

Submitted: 03

M.Phil

Awarded: 53

M.Sc projects 92 Students

Countries Visited:

Italy, Hungary, Finland, Poland

Germany, Switzerland and Japan

Fellowships Awarded:

INSA International Bilateral Exchange Programme, University of Electro Communications, Tokyo, Japan 2012

DST Indo-Swiss Joint Research Program, University of Geneva, Switzerland-2010

INSA Visiting Fellow-2007-08, Bilateral Exchange Programme, Solid State Physics Department, Jan Dlugosz University, Al.Armi Krajowej, Czestochowa, Poland

INSA Visiting Fellow-2003-04, Bilateral Exchange Programme, Chemical Research Center, Hungarian Academy of Sciences, Budapest, Hungary

UGC Visiting Associateship, Nuclear Science Center, New Delhi-2002

DST-SERC Visiting Fellowship, National facility for single crystal XRD, University of Mysore-1999

CSIR-Post Doctoral Research Associateship IIT, Kanpur-1997

Teacher Research Fellowship, UGC-1994

Visiting Professor:

Jan Dlugosz University, Czestochowa, Poland, April-June 2011 & May-June 2012

Awards:

Best Department Head - 2013

Best Academic Researcher Award-ASDF-ICCA-2012, Pondicherry

Best Teacher Award – 2010 from among the University Departments- Periyar University, Salem

Professional Training:

Year	Nature of Training	Duration	Organization where training was provided
2012	Electro optical studies on NLO materials	02 Months	The University of Electro Communication, Tokyo, Japan
2010	LT and RT Raman and EPR Experiments	01 Month	University of Geneva Switzerland
2007	Techniques of Measurements: Photoinduced optical absorption of NLO Crystals, Electro & Piezo optical studies, Temperature dependent SHG studies	03 Months	Institute of Physics Jan Dlugosz University, Poland
2003	Quantum Chemical calculations of Complex Molecules	03 Months	Chemical Research Center, Hungarian Academy of Sciences Budapest
2003	Refresher course on Analytical Instrumentation	02 Weeks	RSIC, IIT Madras
1997	Workshop on X- ray Crystallography	01 Month	University of Mysore
1995	Refresher Course in Physics	01 Month	University of Madras
1989	Orientation Course for Physics Teachers	01 Month	Bharathidasn University, Trichy
1984	Summer Institute for Physics Teachers Teaching Electronics at Graduate and Post Graduate Levels	01 Month	University of Cochin

Major Research Projects (Total grant received: More than Rs 2.5 Crores)

Agency	Title of The Project	Period of Support	Remarks
UGC	Raman and photoluminescence spectroscopic studies of ion irradiation effects on good crystal of semi and super conducting crystals	1998-2001 3 Years	Completed
CSIR	Spectroscopic study on the effect of ion implantation in semi conducting films	1999 – 2002 3 Years	Completed
DRDO	Growth and characterization of NLO crystals.	2003- 2006 3 Years	Completed
UGC	Growth and spectroscopic investigations of swift heavy ion irradiated single crystals for photonic applications	2006-2009 3 years	Completed
DST	Influence of swift heavy ion irradiation on the dielectric and optical properties of non linear optical crystals.	2007-2010 3 years	Completed
DRDO	Nonlinear optical crystals for Terahertz generations	2009-2012 3 years	Completed
UGC	Nanocomposites materials for optical applications	2011-2014 3 Years	On going
CSIR	Synthesis, growth and optical characterization of pure and rare earth doped (Re: Ce and Er) MgWO ₄ crystals for scintillating applications	2012-2015 3 Years	On going
DST	Synthesis of polymeric organic materials for electro-optics materials	3 Years	Sanctioned

Projects with International Agencies

- Indo-Vietnamese Programme of Cooperation in Science & Technology
- Austrian Science Fund
- DFG (German Research Foundation) & DST Programme

International Collaborations:

Prof. Gabor Keresztury, Head, Optical spectroscopy Lab, Hungarian Academy of Sciences, Budapest, Hungary
Prof. Tom Sundius, Department of Physics, University of Helsinki, Helsinki, Finland
Prof. Ivan V.Kityk, Solid State Physics Department, Jan Dlugosz University, Al.Armi Krajowej Czestochowa, Poland
Prof. Hans Hangemann, Department of Chemistry University of Geneva, Switzerland
Prof. Belsley Michael Scott, Centre of Physics, University of Minho, Portugal
Prof. James R. Durig, Department of Chemistry, University of Missouri-Kansas City, USA
Prof. Rui Fausto, Department of Chemistry, Faculty of Sciences and Technology, University of Coimbra, Portugal
Prof. Yuri S. Kivshar, Nonlinear Physics Centre, Research School of Physics and Engineering, The Australian National University, Australia.
Prof. Marjatta Loui Kaltanen, Lappeenranta University of Technology, Finland.

National Collaborations:

Dr. D.K. Avasthi and Dr. D. Kanjilal, Inter-University Accelerator Centre (IUAC) formerly called Nuclear Science Centre, New Delhi
Dr. G. Bhagavannarayana, National Physical Laboratory (NPL), New Delhi
Prof. P.K. Das, Indian Institute of Science (IISc), Bangalore
Dr. A.K. Arora, Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam, Tamilnadu
Dr. R. Nagalakshmi, National Institute of Technology (NIT), Tiruchirappalli, Tamilnadu
Prof.Shiva Umapathy, Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore, Karnataka.
Prof. V.P.Mahadevan Pillai, Department of Optoelectronics University of Kerala, Kerala

Seminars/Conferences Organized:

Workshop on Recent Advances in Physics Experiments, Mar 28, 2012
Seminar on Recent Trends in Superconductivity, Mar 22, 2012
Workshop on Functional Materials (WFM-2012), Mar 14, 2012
Special Lectures on Materials Science Programme, Feb 10, 2012
Energy Conservation Awareness Programme, Dec 20, 2010
Special Lectures on 50years of Laser, Dec 15, 2010
Workshop on Physics Experiments Through Computer Interfacing (WPECI-2010) Oct 9-10, 2010
Workshop on Recent Developments in Photonic Materials Research (RDPMR-2009) Mar 12, 2009
One day workshop on Recent Development in Nanomaterials Mar 31, 2008
Workshop on Electronics in Daily Life (WEDL-2008) Feb 27-28, 2008
National Conference on Recent Advances in Vibrational Spectroscopy (NCVS-2007) Jan 29-30, 2007
National Conference on Recent Advances in Material Science (NCMS-2006) Feb 16-17, 2006
Workshops on Recent Trends in Physical Sciences Research, Sponsored by Tamil Nadu State Council for Higher Education (TANSCHÉ). Chennai, Aug 29-30, 2005
Symposium on Centenary of Einstein's Discoveries-Mar 28, 2005
National Conference on Recent Advances in Materials Science - NCMS 2002 - Sponsored by DRDO, UGC and CSIR December 11-12, 2002
National Conference on Recent Advances in Materials Science - NCMS 2000 - Sponsored by BRNS, DRDO, INSA, UGC and TNSCST, Sep. 29-30, 2000
National Seminar on Recent Trends in Vibrational Spectroscopy - Sponsored by UGC, CSIR, DST, DRDO and TNSCST, July 23-24, 1999
Several One Day workshops/Spl. Lectures on Various Topics of Physical Sciences were Organized for the Benefit of Research Scholars and Faculties
Science Exhibitions for School and College Students were Organized
Organized Science Quiz Programs in Tamil for School and College Students in All India Radio, Tiruchirappalli Station
Organized Science Jatha programs – Scientific Awareness for Village Peoples Through Cycle Rally by Ariviyal Eyakkam Programme

Reviewer to International Journals:

Name of the Journals	Publisher
Crystal Growth and Design	American Chemical Society
Journal of Raman Spectroscopy	Wiley Inter-Science
Chemical Physics	Elsevier
Materials Chemistry and Physics	Elsevier
Journal of Physics and Chemistry of Solids	Elsevier
Journal of Molecular Structure	Elsevier
Spectrochimica Acta Part A	Elsevier
Materials Letters	Elsevier
Physica B	Elsevier
Ionics	Springer
European Journal of Appl. Phys	Springer
Indian Journal of Pure and Applied Physics	NISCOM-CSIR

Project Review :

Reviewed 08 Major Research Project Proposals Submitted to DST & CSIR

Membership of Professional Bodies :

- Member – Indian Spectro Physics Association
- Member – Indian Physics Teachers Association
- Chairman – PG Board of Studies, Periyar University
- Chairman-Board of Research Studies, Periyar University
- Member – PG Board of studies- Annamalai University, Gandhigram Rural Institute (Deemed University) and in few Autonomous Colleges.
- Member – UG Board of studies (Electronics) – Bharathidasan University, Tirchirappalli
- Member – PG Board of studies (Physics) – Bharathidasan University, Tirchirappalli
- Academic Council Member in Periyar University, Sarada College for Women (Autonomous) and in few other Autonomous Colleges.

- Selection Committee Member – Faculty Recruitment in Various Universities and Colleges
- Subject Expert in UGC – CAS Committees
- Member in UGC and NACC Committees (University level)
- Board of Examiner – Ph.D Thesis/Viva (Other Universities inside/outside the Tamilnadu)

Placement of Ph.D Scholars

Eighteen scholars obtained Ph.D under my supervision and they are employed in National Institutes, Government and Aided Colleges.

- # One of my scholar Dr. R. Nagalakshmi carried out PostDoc in Osaka University, Osaka, Japan under Prof. Sasaki and worked as Research Scientist in Tata Institute of Fundamental Research (TIFR), Mumbai under Prof. S.K. Dhar
- # Dr. S. Muthnatesan and Dr. S. Seshadhri had been to University of Missouri-Kansas City, U.S.A and worked under Prof. James R. Durig in a short term project.
- # Dr. John Xavier visited Hungarian Academy of Sciences, Budapest, Hungary under bilateral programmes
- # Dr. S. Manohar attended a short term programme in International Centre for Theoretical Physics (ICTP).
- # Dr. L. Guru Prasad has carried out Post Doctoral research under Prof. Martti Kauranen in Tampere University of Technology, Tampere, Finland through Indo-Finnish Cultural Exchange Programme.
- # Mr. M. Rajaboopathi is currently working in Lappeenranta University of Technology, Finland under Indo-Finnish Cultural Exchange Programme for eight months from Sep 05, 2012 to carry out advanced research under Prof. Marjatta Loui Kaltanen.
- # Mr.G.Shanmugam working in the UGC project is selected for Post doc studies in US University under Indo –US programme

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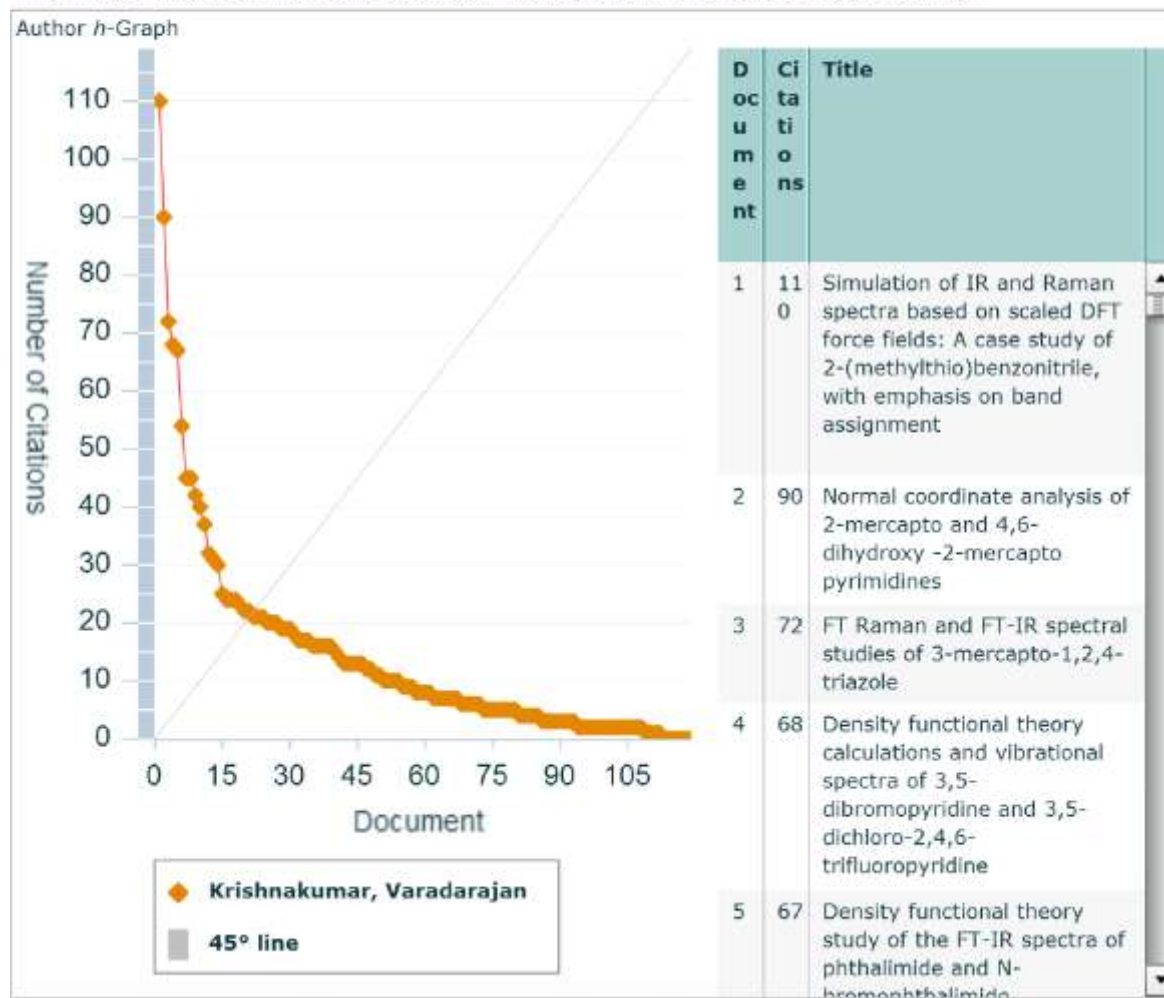
Author: Krishnakumar, Varadarajan

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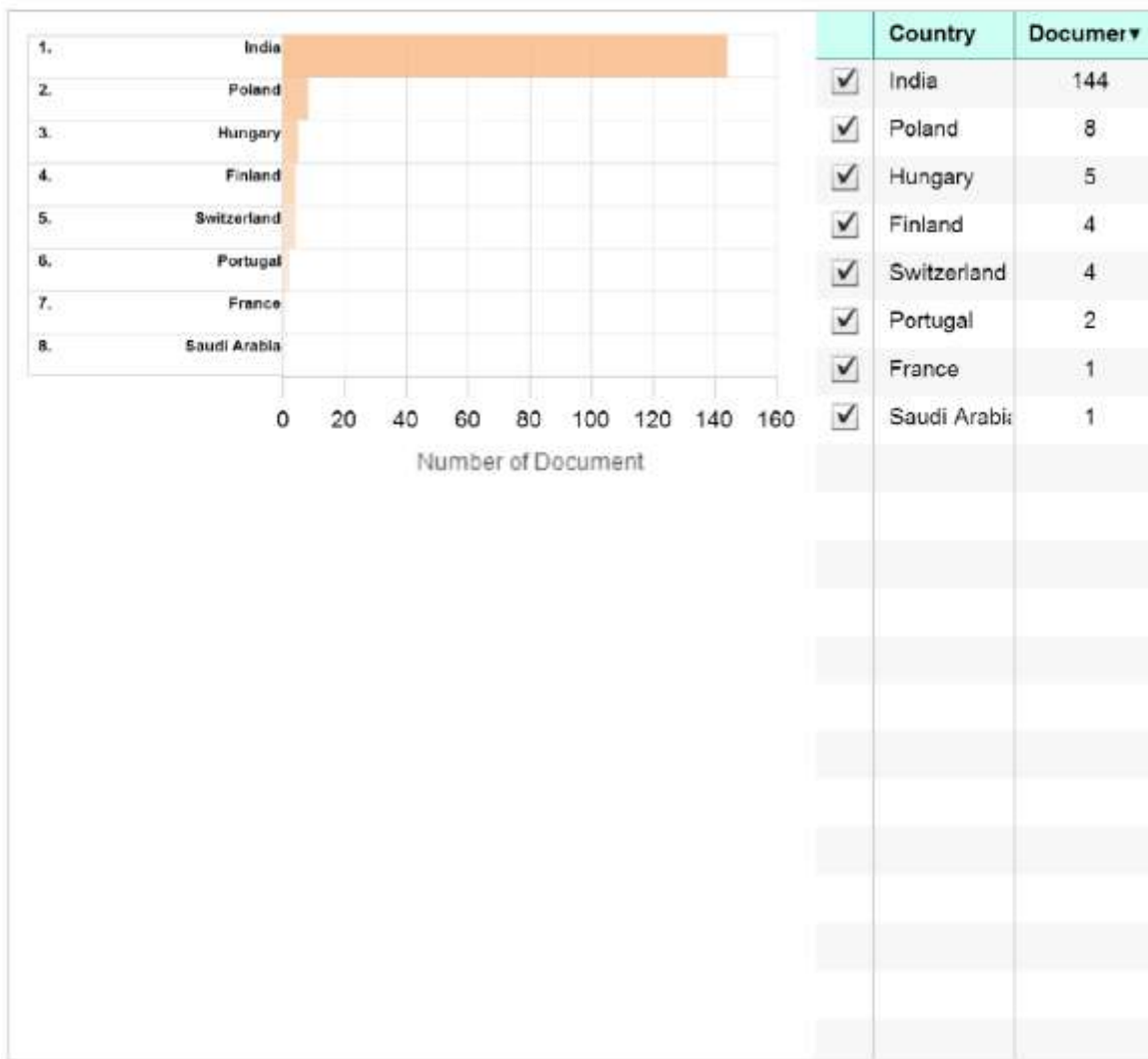
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List of Papers Published (Journals)

I. International Journals (Publishers: Elsevier, Springer, John Wiley, American Chemical Society, Institute of Physics, American Scientific Publishers, World Scientific Publishers, Taylor and Francis)

1. Fluorescent Properties Reinforced by Proton Transfer in the salt 2,6 Diaminopyridinium Dihydrogen Phosphate, V. Krishnakumar et al, The Journal of Physical Chemistry A (Article in Press) Impact Factor: 2.771
2. Growth and characterization of 6-chloro-2, 4-dinitroaniline crystals in anti-solvent precipitation and reprecipitation method, V. Krishnakumar et al, Cryst. Eng. Comm 16(2014) 4183-4193 Impact Factor: 3.879
3. Synthesis, experimental and theoretical Studies of 8-hydroxyquinolinium 3,5-dinitrobenzoate single crystal, V. Krishnakumar et al, Journal of Crystal Growth 398(2014)45-57 Impact Factor: 1.552
4. Molecular structure, vibrational spectra, HOMO, LUMO and NMR studies of 2,3,4,5,6 -Penta Bromo Toluene and Bromo Durene based on Density functional calculations, V. Krishnakumar et al, Spectrochim Acta -Part A 125 (2014) 201-210 Impact factor: 1.977
5. Experimental and theoretical studies of 2,5-dichloroanilinium picrate, V. Krishnakumar et al, Spectrochim Acta -Part A 121 (2014) 53-62, Impact factor: 1.977
6. FT-IR, FT-Raman and DFT quantum chemical study on the molecular conformation, vibrational and electronic transitions of 1-(m-(trifluoromethyl) phenyl)piperazine, V. Krishnakumar et al, Spectrochim Acta -Part A 121 (2014) 483-493, Impact factor: 1.977
7. Spectroscopic properties, NLO, HOMO-LUMO and NBO of maltol, V. Krishnakumar et al, Spectrochim Acta -Part A 121 (2014) 245-253, Impact factor: 1.977
8. Spectroscopic (FT-IR, FT-Raman, UV and NMR) investigation, conformational stability, NLO properties, HOMO-LUMO and NBO analysis of hydroxyquinoline derivatives by density functional theory calculations, V. Krishnakumar et al, Spectrochim Acta -Part A 114 (2013) 449-474, Impact factor: 1.977

9. Vibrational assignment of the spectral data, molecular dipole moment, polarizability, first hyperpolarizability, HOMO-LUMO and thermodynamic properties of 5-nitroindan using DFT quantum chemical calculations, V.Krishnakumar et al, Spectrochim Acta -Part A (Article in Press) (2013) Impact factor: 1.977
10. Molecular structure, Intramolecular hydrogen bonding and Vibrational spectral investigation of 2-fluoro benzamide - DFT approach, V.Krishnakumar et al, Spectrochim Acta -Part A (Article in Press) (2013) Impact factor: 1.977
11. Vibrational spectroscopic (FT-IR and FT-Raman) studies, natural bond orbital analysis and molecular electrostatic potential surface of Isoxanthopterin, V.Krishnakumar et al, Spectrochim Acta -Part A 114 (2013) 101-113, Impact factor: 1.977
12. FTIR, FT-Raman and NMR studies on 2,6-dichlorotoluene and 2-chloro-6-fluorotoluene based on density functional theory, V.Krishnakumar et al, Spectrochim Acta -Part A 112 (2013) 429-439, Impact factor: 1.977
13. Growth and characterization of semi-organic nonlinear optical crystal: Sodium 2,4-dinitrophenolate monohydrate, V.Krishnakumar et al, Spectrochim Acta -Part A 110 (2013) 377-382, Impact factor: 1.977
14. Desired form of polymorphism of 6-chloro-2,4-dinitroaniline crystals grown by controlled growth temperature in melt growth, V.Krishnakumar et al, J. Therm. Anal. Calorim, (Article in press) (2013) 1-8, Impact factor: 1.982
15. Nonlinear optical analyses of organic N-(9-Anthrylmethylidene) methylamine Schiff base, Spectrochim Acta -Part A 109 (2013) 253-258, Impact factor: 1.977
16. Quantum mechanical study of the structure and spectroscopic (FT-IR, FT-Raman, ^{13}C , and ^1H) and HOMO-LUMO analysis of 2,4-dimethoxy benzaldehyde (DMBA) and 4-methoxy-3-methyl benzaldehyde (MMBA), V.Krishnakumar et al., J.Mol.Struct 1035 (2013) 145-146, Impact factor: 1.634

17. Oxygen and Gold ion irradiation effects on hydroxyethylammonium (L) tartrate monohydrate single crystals, V.Krishnakumar et al., Radiat.Meas 49 (2013) 88-94, Impact factor: 1.177
 18. Density functional theory, comparative vibrational spectroscopic studies, HOMO- LUMO, first hyperpolarizability analyses of 2-fluoro 5-nitrotoluene and 2-bromo 5-nitrotoluene, V.Krishnakumar et al., Spectrochim Acta -Part A 104 (2013) 77-86 Impact factor: 2.098
 19. Structural, optical and dielectric properties of PbS-PVA-PEG nanocomposite film, V. Krishnakumar et al., Sci. Adv. Mater. 4 (2012)1-7, Impact factor: 3.308.
 20. Growth and characterization of anilinium hydrogen sulfate (AHS) single crystals: An organic nonlinear optical material, V.Krishnakumar et al., Spectrochim Acta -Part A. 97 (2012) 798-805. Impact factor: 2.098
 21. Spectroscopic, electronic structure and natural bond analysis of 2-aminopyrimidine and 4-aminopyrazole [3,4-d] pyrimidine: A comparative study, V.Krishnakumar et al., Spectrochim Acta -Part A. 96 (2012) 226-241. Impact factor: 2.098
 22. Quantum mechanical study of the structure and spectroscopic (FT-IR, FT-Raman, ¹³C, ¹H and UV), NBO and HOMO-LUMO analysis of 2-quinoxaline carboxylic acid, V. Krishnakumar et al, Spectrochim Acta -Part A: 92 (2012) 325-335, Impact factor: 2.098.
 23. Growth and characterization of hydroxyethylammonium picrate single crystals for third-order nonlinear optical applications, V. Krishnakumar et al., Mater. Chem. Phys. 134 (2012) 736-746. Impact factor: 2.234,
- Citation: 1**
24. Large third-order optical nonlinearity of Mg-doped PbS/PVA free standing nanocomposite films, V. Krishnakumar et al., J. Phys. D: Appl. Phys. 45 (2012) 165102-165108. Impact factor: 2.544
 25. Molecular structure, vibrational spectra, HOMO,LUMO and NMR studies of 2-chloro-4-nitrotoluene and 4-chloro-2-nitrotoluene, V.Krishnakumar et al., Spectrochim Acta.91 (2012) 1-10. Impact factor: 2.098

26. Molecular structure, spectroscopic studies (FTIR, FT-Raman and NMR) and HOMO-LUMO analysis of 6-chloro-0-cresol and 4-chloro-3-methyl phenol by density functional theoretical study, V.Krishnakumar et al., Spectrochim Acta. Part A.97 (2012) 144-154. Impact factor: 2.098
27. Optical and mechanical properties of MgCl₂ added triglycine sulphate single crystals, V. Krishnakumar et al., International Journal of Modern Physics B, 26 (2012) 1250038-50
28. Electrical and optical properties of pure and Pb²⁺ ion doped PVA-PEG polymer composite electrolyte films, V. Krishnakumar et al., Ionics. 18 (2012) 403-411. Impact factor: 1.288
29. Studies on vibrational, dielectric, mechanical and thermal properties of organic nonlinear optical co-crystal: 2,6-diaminopyridinium 4-nitrophenolate 4-nitrophenol, V. Krishnakumar et al., Physica B. 407 (2012) 1119-1123. Impact factor: 1.063
30. Growth and nonlinear optical studies of N-acetyl-l-cysteine crystal, V. Krishnakumar et al., Eur. Phys. J. Appl. Phys. 57 (2012) 10201, Impact factor: 0.958
31. Molecular structure, vibrational spectra, HOMO, LUMO and NMR studies of 1, 2-dichloro-4-nitrobenzene and 2, 3, 5, 6-tetrachloro-1-nitrobenzene based on density functional calculations, V. Krishnakumar et al., Spectrochim Acta. Part A. 86 (2012) 196-204. Impact factor: 1.566
32. Studies on physico - chemical properties of Hydroxyethylammonium (L) tartrate monohydrate single crystals, V. Krishnakumar et al., Physica B 406 (2011) 4019-4026. Impact factor: 1.063, **Citation: 2**
33. Synthesis and characterization of CdS/(PVA-b-PEG) Copolymer nanocomposite films, V. Krishnakumar et al., International Journal of Nanotechnology and Applications, 5 (2011) 175-187.
34. Molecular structure, vibrational spectral studies of pyrazole and 3,5-dimethyl pyrazole based on density functional calculations V. Krishnakumar et al., Spectrochim Acta A 79 (2011) 1959-1968, Impact factor: 1.566, **Citation: 1**

35. Physicochemical properties of highly efficient organic NLO crystal: 4-aminobenzamide, V. Krishnakumar et al., Mater. Chem. Phys 128 (2011) 90-95, Impact factor: 2.015, **Citation: 1**
36. MgCl₂ added Triglycine Sulphate Single Crystals, V. Krishnakumar et al., Advanced Materials Letter 2 (2011) 163-169
37. Polarized Raman and Hyperpolarizability studies of Hydroxyethyl ammonium (L) tartrate monohydrate for quadratic nonlinear optics, V. Krishnakumar et al., J. Mol. Struct. 988 (2011) 17-23, Impact factor: 1.551, **Citation: 2**
38. Single crystal growth and structure determination of Ce₂RhGa₁₂, V. Krishnakumar et al., Chem. Metal. Alloys. 4 (2011) 229-233
39. Structural, spectral, thermal and optical studies on organic nonlinear optical 2-naphthol crystal, V. Krishnakumar et al., Crystal Research Technology, 45 (2010) 1057-1063, Impact factor: 0.896, **Citation: 1**
40. Structure and vibrational frequencies of 6,7-dimethoxy-1,4-dihydro-1,3-quinoxalinedione based on density functional theory calculation: The role of π -electron conjugation and back-donation, V. Krishnakumar et al., Spectrochim Acta A 77 (2010) 238-247, Impact factor: 1.566 **Citation: 4**
41. Spectroscopic and physicochemical studies on organic crystal of brucine hydrogen maleate pentahydrate, V. Krishnakumar et al., Spectrochim Acta A, 77 (2010) 87-91, Impact factor: 1.566
42. Elastooptical spectra of novel L-lysine monohydrochloride dehydrate single crystals, V. Krishnakumar et al., International Journal of Modern Physics B 24 (2010) 629, Impact factor: 0.856, **Citation: 2**
43. Semiorganic nonlinear optical l-lysine sulphate growth and characterization, V. Krishnakumar et al., Spectrochim Acta A 75 (2010) 1394, Impact factor: 1.566, **Citation: 2**
44. Investigation on the physicochemical properties of 2,4-dinitrophenol: Efficient organic nonlinear optical crystal for frequency doubling, V. Krishnakumar et al., Physica B Condensed Matter 405 (2010) 1652, Impact factor: 0.856 **Citation: 2**

45. Analysis of structure and vibrational spectra of 2,5 dihydroxybenzoic acid based on density functional theory calculations V. Krishnakumar et al., J. Raman Spectrosc. 41 (2010) 473, Impact factor: 3.147 **Citation: 2**
46. Parametrical optical effects in the 1:1 complex of resorcinol and urea – a nonlinear optical crystal, V. Krishnakumar et al., Physica B Condensed Matter 405 (2010) 839, Impact factor: 0.856 **Citation: 6**
47. The effect of nitric acid (HNO₃) on growth, spectral, thermal and dielectric properties of triglycine sulphate (TGS) crystal, V. Krishnakumar et al., Spectrochim Acta A 75 (2010) 617, Impact factor: 1.566, **Citation: 3**
48. Density functional theory calculations and vibrational spectra of 2-bromo-4-chloro phenol and 2-chloro-4-nitro phenol, V. Krishnakumar et al., J. Raman Spectrosc, 40 (2009) 1551, Impact factor: 3.147 **Citation: 10**
49. Investigation on 3-aminophenol: A nonlinear optical crystal for frequency doubling, V. Krishnakumar et al., Eur. Phys. J. Appl. Phys, 48 (2009) 20403, Impact factor: 0.756 **Citation: 1**
50. Density functional theory calculations and vibrational spectra of p-bromonitrobenzene, V. Krishnakumar et al., J. Raman Spectrosc. 40 (2009) 936, Impact factor: 3.147 **Citation: 1**
51. Growth, spectral studies, thermal and dielectric aspects of L-lysine doped triglycine sulpho phosphate (TGSP) crystals, V. Krishnakumar et al., Spectrochim. Acta A 74 (2009) 248, Impact factor: 1.566
52. Structure and vibrational analysis of 1-hydroxy naphthalene based on density functional theory calculations, V. Krishnakumar et al., J. Raman Spectrosc, 40 (2009) 1599, Impact factor: 3.147 **Citation: 3**
53. Fourier transform infrared and Raman spectra, vibrational assignment and density functional theory calculations of 1,4,5-triazanaphthalene, V. Krishnakumar et al., J. Raman Spectrosc, 40 (2009) 1183, Impact factor: 3.147 **Citation: 2**

54. Growth and vibrational spectroscopic studies of strontium tartrate ($C_4H_4O_6Sr$) a non linear optical single crystal, V. Krishnakumar et al., J.Raman Spectrosc, 40 (2009) 627, Impact factor: 3.147 **Citation: 2**
55. Density functional theory study and vibrational analysis of FT-IR and FT-Raman spectra of N-hydroxyphthalimide, V.Krishnakumar et al., J. Raman Spectrosc, 40 (2009) 987-991, Impact factor: 3.147 **Citation: 3**
56. Crystal structure, vibrational, and optical investigations of semiorganic nonlinear optical crystal: $Bi_3[CS(NH_2)_2]_9Cl_9.2H_2O$ V.Krishnakumar et al., J. Raman Spectrosc, 40 (2009) 1011, Impact factor: 3.147 **Citation: 1**
57. A joint FTIR, FT-Raman and scaled quantum mechanical study of 1,3-dibromo-2,4,5,6-tetra-fluoro benzene (DTB) and 1,2,3,4,5-pentafluoro benzene (PB). V.Krishnakumar et al., J. Raman Spectrosc, 40 (2009) 1104, Impact factor: 3.147 **Citation: 1**
58. Analysis of vibrational spectra of 2-fluoro-6-nitrotoluene based on density functional theory calculations, V. Krishnakumar et al., J. Raman Spectrosc, 40 (2009) 411, Impact factor: 3.147 **Citation: 3**
59. Density functional and experimental studies on the FT-IR and FT-Raman spectra and structure of Benzoic Acid and 3,5-Dichloro Salicylic Acid, V. Krishnakumar et al., J. Raman Spectrosc, 40 (2009) 264, Impact factor: 3.147 **Citation: 7**
60. Synthesis, crystal growth and characterization of an organic nonlinear optical Donor- π -acceptor single crystal: 2-amino-5-nitropyridinium-Toluenesulfonate, V. Krishnakumar et al., Crystal Growth & Design 9 (2009) 3333-3337, Impact factor: 4.162
61. 3-nitroaniline and 3-nitrophenol – A novel non linear optical material for opto electronic applications, V. Krishnakumar et al., Journal of Optoelectronics and Advanced Materials 11 (2009) 123 -133, Impact factor: 0.433 **Citation: 1**
62. Simulation of IR and Raman spectra of p-hydroxyanisole and p-nitroanisole based on scaled DFT force fields and their vibrational assignments, V. Krishnakumar et al., Spectrochimica Acta A 74 (2009) 154-161, Impact factor: 1.566 Citation: 5

63. Scaled quantum chemical studies on the vibrational spectra of 4-bromobenzonitrile, V. Krishnakumar et al., Spectrochim Acta A 71 (2009) 1810-1813, Impact factor: 1.566 **Citation: 21**
64. FTIR, FT Raman and thermal studies of bithiourea manganese chloride-An organo metallic crystal, V. Krishnakumar et al., Spectrochim Acta A, 71 (2009) 1634-1637, Impact factor: 1.566 **Citation: 2**
65. Zinc potassium phosphate hexahydrate crystals for nonlinear optics, V. Krishnakumar et al., Eur. Phys. J. Appl. Phys 47 (2009) 30701, Impact factor: 0.756 **Citation: 2**
66. FTIR, FT-Raman, Scaled quantum chemical studies of the structure and vibrational spectra of 1,5-dinitronaphthalene, V. Krishnakumar et al., Spectrochim Acta A, 72 (2009) 941-946, Impact factor: 1.566 **Citation: 23**
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1. Vibrational studies of the nonlinear optical crystal – 2,4-dinitrophenol, V. Krishnakumar et al., American Institute of Physics - AIP Con. Proc. 1267 (2010) 1198-1199
2. Polarized Raman and Hyperpolarizability studies of Hydroxyethylammonium (L) tartrate monohydrate for quadratic nonlinear optics, V. Krishnakumar et al., American Institute of Physics - AIP Con. Proc. 1267 (2010) 1200-1201

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List of papers presented in conferences (Last five years)

1. 6-chloro, 2, 4, dinitroaniline crystallized by melt, International Conference on Advanced Materials-2012, held at Singapore.
2. Synthesis and physical properties of CdS:PVA/PEG nanocomposite film, National Seminar on Recent Trends in Material Science-2012, Department of Science and Humanities, Kumarasamy Engineering College, Karur
3. Nonlinear Optical crystal for Terahertz generation, National conference on Emerging Trends in Spectroscopy-Spectrum-2012, Department of Physics, Mar Thoma College, Thiruvalla, Kerala
4. Synthesis and characterization of polyvinyl composite based on polyvinyl alcohol-polyethylene glycol-PbS system. National conference on Advanced Nanomaterial 2012, Centre for Nano science and Nanotechnology, Periyar University, Salem
5. Photoluminescence and ac electrical conductivity studies of PbS nanocomposites films in the composite polymers, International Conference on Nano Science and Nano Technology -2011, Coimbatore Institute of technology, Coimbatore
6. Structural and optical properties of CdS/polymer nano composites films, International Conference on Advanced materials and its Applications-2010, Kalasalingam University, Virudhunagar
7. Synthesis and characterization of CdS/poly(vinyl-alcohol-b-ethylene glycol) copolymer nanocomposites films, National Conference on nanomaterials-2010, Karunya University, Coimbatore
8. Effect of Magnesium chloride on TGS single crystal, National Laser Symposium-19 (NLS-19), 2010, Raja Ramanna Centre for Advanced Technology, Indore

9. Studies on the charge transfer nonlinear optical crystal for optoelectronic applications: 2,4-dinitrophenol, National Laser Symposium-19 (NLS-19), 2010, Raja Ramanna Centre for Advanced Technology, Indore
10. Crystal growth, structural, thermal, optical and electrical studies of nonlinear optical tribismuthnonakisthioureaononochloride dihydrate, Ninth DAE-BRNS National Laser Symposium (NLS-09) 2010, Bhabha Atomic Research Centre & Tata Institute of Fundamental Research, Mumbai
11. Investigation on the physicochemical properties of the nonlinear optical crystal for optoelectronic applications, 53rd DAE Solid State Physics Symposium, 2008, Bhabha Atomic Research Centre & Tata Institute of Fundamental Research, Mumbai
12. Cocrystallization of 3-nitroaniline and 2-nitrophenol – an efficient nonlinear optical crystal, 52nd DAE Solid State Physics Symposium, 2007, University of Mysore, Mysore
13. Investigation on the physicochemical properties of the nonlinear optical crystal for blue green laser generation, 52nd DAE Solid State Physics Symposium, 2007, University of Mysore, Mysore
14. Scaled quantum chemical calculations and vibrational spectra of 2-hydroxy benzimidazole and 2-chloro benzimidazole, NCVS-2007
15. Structure and vibrational frequencies of 1-naphthaldehyde based on density functional theory calculations, NCVS-2007, Periyar University, Salem
16. DFT studies, vibrational spectra and conformational stability of 6-methyl-1,2,3,4-tetrahydroquinoline, NCVS-2007, Periyar University, Salem
17. Density functional theory studies on tautomeric stability and infrared and Raman spectra of purine derivatives, NCVS-2007, Periyar University, Salem
18. Fourier transform IR and Raman spectra and vibrational assignments for (methyl thio) acetonitrile by density functional theory, NCVS-2007, Periyar University, Salem

19. Studies on the first order hyperpolarizability and terahertz generation in 3-nitroaniline, NCVS-2007, Periyar University, Salem
20. Synthesis, crystal growth and vibrational spectroscopic studies of a novel organic nonlinear optical single crystal 8-hydroxyquinolinium picrate, NCMS-2006, Periyar University, Salem.
21. Crystal growth and vibrational spectroscopic studies of the semiorganic nonlinear optical crystal-Bisthiourea Zinc Chloride, NCMS-2006, Periyar University, Salem.
22. Polarised Raman and Infrared spectral analysis of L-aniline oxalate ($C_5H_9NO_6$)-a nonlinear optical single crystal, NCMS-2006, Periyar University, Salem.
23. Growth and vibrational yttrium calcium oxoborate-a nonlinear optical single crystal, NCMS-2006, Periyar University, Salem.

Books published

1. V. Krishnakumar, Condensed Matter Physics, Tice Education, Salem, ISBN: 978-81-909447-5-5
2. V. Krishnakumar, Mechanics and Sound, Tice Education, Salem, ISBN:978-81-909447-9-3
3. V. Krishnakumar, Thermal Physics and Properties of Matter, Tice Education, Salem, ISBN: 978-81-909447-7-9

Participation in Conferences/workshops/seminars/symposia

1. Participated in the Workshop on Powder X ray diffraction – Analysis and Instrumentation organized by CIMF, PU, Salem, Feb 04, 2013.
2. Participated in National Science Academies Lecture Workshop on ‘Modern Trends in Chemistry’ organized by Center for Nano Science and Nano Technology, PU, Salem, August 13-14, 2012
3. Participated in the Workshop on Convergence – 2012 , (Advanced Materials Research) held at National Institute of Technology, Tiruchirapalli , Dec 21- 22, 2012

4. Participated in the National conference on Advanced Nano Materials ANM 2012 held during Feb 6-7, 2012 organised by Center for Nano Science and Nano Technology, Periyar University, Salem
5. Participated in National Workshop on X-Ray Diffraction Technique and Application, Saurashtra University, Rajkot, Gujarat. On 17-19 March 2010.
6. Participated in National Seminar on Crystal Growth-XIV, VIT University, On 10-12 March 2010.
7. Participated in National Seminar & Exhibition on Non Destructive Evaluation-NDE 2009, BHEL & NIT, Tiruchirapalli, India. On 10-12 Dec 2009.
8. Participated in Workshop on recent developments in photonic materials research (RDPMR), Department of Physics, Periyar University, Salem, 12th Mar, 2009
9. Participated in Accelerator User Workshop, Inter University Accelerator Centre (IUAC), New Delhi, Dec 17-18, 2009
10. Participated in national seminar & exhibition on non destructive evaluation – NDE 2009, National Institute of Technology, Tiruchirappalli, Dec 10-12, 2009
11. Participated in One day workshop on recent developments in nanomaterials research, Department of Physics, Periyar University, Salem, 31st Mar 2008
12. Participated in the workshop on optics and Photonics-WOOP 2005, National Institute of Technology, August 18-19, 2005
13. Participated in Accelerator User Workshop, Inter University Accelerator Centre (IUAC), New Delhi, July 6-7, 2005
14. Participated in the National symposium on chemical structures and Dynamics, Indian Institute of Madras, Chennai, April 23, 2005
15. Participated and delivered invited talk in the National conference on Crystal growth and modelling, Anna University, Chennai Feb 28- March 01, 2005

16. Participated in the International conference on Spectro Physics and presented papers Sponsored by UGC, DST and TNTSCST held in Pachaiyappa's College, Chennai, Feb 09-12, 2005
17. Presented a paper in the National Laser Symposium sponsored by DAE-BRNS, BARC, Mumbai, Jan10-12, 2005
18. Presented a paper in the 49th DAE-Solid State Physics Symposium, Guru Nanak Dev University, Amritsar, Dec 26-30, 2004
19. Participated in the Indo-Japan workshop on crystal growth and applications of advanced materials for Opto-electronics, Anna University, Chennai, Dec 7-10, 2004
20. Participated and Presented a paper in the regional conference on Photo acoustics and Condensed matter Physics, Madurai Kamaraj University, Madurai, March 7- 8, 2004
21. Participated in the UGC sponsored course on Analytical Instrumentation organized by RSIC, IIT Madras, Chennai. Feb 17-28, 2003
22. Participated and delivered an Invited Talk on ion irradiation effects on solids - National Symposium on Photonics, Pondicherry University, Pondicherry, 2001
23. Participated and delivered an Invited Talk in the National conference on crystal growth, Sponsored by UGC, Anna University, Chennai, 2000
24. Participated in the UGC Sponsored National Seminar on Condensed Matter Physics, Kerala, 1999
25. Participated in the XXIX National Seminar on Crystallography, sponsored by INSA, Chennai, 1999
26. Participated in the XII National Conference on Atomic and Molecular Physics, MLS University, Udaipur, 1999
27. Participated in the National Seminar on Materials Science and Indian scene conducted by Department of Physics, BARD and TNSCST, Jan. 1998

28. Participated in the research workshop on Condensed matter Physics held at International Center for Theoretical Physics (ICTP), Italy from June 30-July 11 at ICTP, Trieste, Italy 1997
29. Participated in the Symposium on Laser applications in Material Science and Industry sponsored by the Indira Gandhi Center for Atomic Research, Kalpakkam, Tamil Nadu, February 1997
30. Participated in the National Conference on Spectrophysics, sponsored by the Post Graduate and Research Department of Physics, Pachaiyappa's College, Chennai, February 1997
31. Participated in the seminar on Remote Sensing and its application organized by St.Joseph's College (Autonomous) Tiruchirappalli and Center for Remote sensing Bharathidasan University, Tiruchirappalli, Tamil Nadu, 1996
32. Participated in the National Conference on Science and Technology, sponsored by the Tamil Nadu Science Forum and TNAU, Coimbatore, 1996
33. Participated in the Workshop on Radiation Ecology sponsored by the Department of Atomic Energy, Government of India, and New Delhi, 1996
34. Participated in the National Conference on Recent trends in Vibrational Spectroscopy sponsored by the Department of Science and Technology, Government of India, New Delhi, 1996
35. Participated in the Workshop on Advanced Laser Spectroscopy conducted by the Department of Physics and Center for Laser Technology, Indian Institute of Technology, Kanpur, 1995
36. Participated in the conference on Pollution prevention and the Technology for the future sponsored by the University Grants Commission, New Delhi, 1994

Invited Talks delivered (Recently)

1. Delivered inaugural address in the UGC sponsored National seminar on Environment and Atmospheric Sciences held in S.T. Hindu College, Nagercoil, Feb 07-08, 2013.
2. Recent advancement in nano scale research Anna University of Technology, Madurai, Tamilnadu, Aug 2012
3. NLO materials for electro optic applications, Adhiyamaan College of Engineering, Hosur, Tamilnadu, July 2012
4. Nonlinear optical materials, Czestochowa University of Technology, Poland, June 2011
5. Raman spectroscopy of nano materials, Jan Dlugosz University, Al.Armi Krajowej Czestochowa, Poland, April 2011
6. Swift heavy ions irradiation for materials modifications, University of Geneva, Geneva, Switzerland, Jan 2010
7. Delivered Prof. K. Rangadhama Rao Centenary Celebrations Endowment lectures On seeing at nanoscale with Raman Spectroscopy & Prediction of vibrational and electronic property by computational methods – Andhra University, Visakhapatnam, 2010
8. Delivered lectures in the refresher courses organized by various Academic staff colleges inside and outside TamilNadu for Physical Sciences
9. Talk on Ion irradiation for Materials Modifications- State level seminar on Physical Sciences Research, Sarada College for Women, Salem, 2008
10. Talk on Nonlinear optical Crystals and their applications- National conference on Materials Science, Cauvery College, Tiruchirapalli, 2008
11. Talk on THz Spectroscopy – National conference on opto electronic materials, University of Kerala, Thiruvananthapuram, 2007
12. Ion irradiation a novel tool for Materials Science Research, Anna University, Chennai, 2006

DST INSPIRE Mentor

Many Motivating lectures are delivered in various Institutions in and outside Tamil Nadu to the students to take up scientific research as carrier.

Popular Programmes in Television Channels and Radio

Science Quiz Programmes for College students in All India Radio, Tiruchirapalli

Aritathum Ariyathatum programme in All India Radio, Tiruchirapalli

Kelviyum Pathilum programme on various opportunities of higher studies in Indian Universities - All India Radio, Tiruchirapalli

Valarum Kalvi programme in POTHIGAI TV

Ulagam Aliyuma – Mayan Calendar Myth and Scientific facts – Live programme in POLYMER TV

Awards Applied

Tamil Nadu Scientist Award (TANSA-2012) from Tamil Nadu State Council for Science and Technology.

UGC-Hari Om Ashram Trust Award-2012.

Fulbright-Nehru International Education Administrator Award 2013-2014.

Significant Contribution to Science/Technology development

The research experience gained in the field of Condensed Matter Physics, Materials Science and Vibrational spectroscopy has led to sanction of many projects by the various funding agencies which helped to establish a research laboratory for Materials fabrication and characterization besides computational laboratory for advanced theoretical calculations using sophisticated scientific packages. Using this facility technologically important crystals were grown and characterized. The analytical data of the crystals obtained recommends the materials for opto-electronic devices and applications. More specifically we proposed theoretical calculations of first order hyperpolarizability and orbital calculations for charge transfer mechanism for molecules and thereby designing of molecules to obtain the enhanced optical properties such as second, third and higher order harmonics. These theoretical results favour the synthesis of materials can be undertaken experimentally only when the physical parameters obtained by way of computations are optimum or higher. This could save time, energy and money towards chemicals. This work is being exclusively carried out by our group in Tamil Nadu. This has led to the publication of numerous scientific papers which will be an added literature and database to the scientific community. Besides these, based on the expertise and contacts gained in this area five national conferences (with international participants) have been organized to stimulate the scientific discussions among the young scientists and research scholars.

To our surprise, we observed generation of Terahertz (THz) waves from our NLO crystal 3 - nitroaniline and we report it for the first time in literature. Now the material scientists are looking forward to develop new THz emitters which could serve the purpose of fabricating an imaging device based on THz waves could not only give information about the structure of an object (geometrical properties) but could also help in determining its composition and electromagnetic properties as well in a non invasive way and find its applications in defence, security and for the studies of carrier dynamics and intermolecular dynamics of light. Very recently America banned X rays in scanning the humans for security reasons due to violation of human right commission and WHO norms and they are using THz rays for that purpose.

Most Significant work

The quadratic nonlinear applications such as frequency conversion, electro optic modulation and parametric interactions are exhibited greatly by organic material possessing hyperpolarizable chromophores. Ideally, NLO chromophores should assemble in a noncentrosymmetric structure in such a way that a complete additive contribution of hyperpolarizability tensors values result in high macroscopic components. One needs to improve many physicochemical properties such as mechanical behavior (robustness), optical damage threshold and linear optical properties (refractive indices and birefringence). Hence, we are working towards the crystal engineering strategy essentially based on ionic interactions, cocrystallization, protonation with an aim to get more entities that are favourable for NLO effects. One particularly, valuable aspect of the effort to design more efficient materials is the computational work on the potential molecules. By modeling it is possible to eliminate the high costs associated with the hit and miss synthetic approach. This also offers the materials scientists the added advantage of quick feedback on a compounds potential usefulness. Computational approach based on quantum chemical calculations using Gaussian Package allows the determination of molecular NLO properties as an inexpensive way to design molecules by analyzing their potential. They are providing fresh first hand information about the source of nonlinearity in the molecules and vibrational (IR and Raman activities). In addition to that, the molecular orbital calculations for determining the charge transfer taking place in the molecule and assessment of various thermodynamical parameters suggests the prospective application of materials for NLO devices. Owing to the development of ultra short-pulsed laser techniques, one can readily generate and detect terahertz radiation if good nonlinear optical crystals having enough macroscopic second order nonlinearity are available. In that aspect the terahertz emission from the 3-nitroaniline, a versatile NLO crystal has been reported by our group for the first time in literature.

Administrative Experience:

S No	Designation & Office address	Period	
		From	To
1	Vice-Chancellor In-Charge Periyar University, Salem	09.06.2007 18.07.2010	19.07.2007 07.09.2010
2	Registrar In-Charge Periyar University, Salem	04.03.2008	22.07.2008
3	Head of the Department	01.12.2004	Till date
4	Member of Syndicate	21.07.2007	21.07.2011
5	Member of Senate	2005	Till date
6	Member of Standing Committee on Academic Affairs (SCAA)	2005	Till date
7	Coordinator, Planning & Development cell	01.10.2010	27-06-2012
8	Member Secretary, Internal Quality Assurance Cell- IQAC and NAAC Coordinator	31.05.2010	27.06.2012
9	Chairman, Board of Research Studies	25-07-2012	-----