

Curriculum Vitae of K. JAYAKUMAR
(as on April 2011)
(Since appointment –Nov. 1990)



1. Present Position : Professor of Physics
2. Educational Qualification : M.Sc., Ph.D. Dip.in Ger
3. Special Training undergone :
 - (i) Characterization of Semiconductor Materials @ IIT, Madras
 - (ii) Preparation and Characterization of Glassy Materials @ IUC, Indore
 - (iii) Theory and Experiment of Condensed Matter Physics
 - (iv) Training in Low Dimensional Semiconducting Systems
 - (v) Opportunities and National facilities in Condensed Matter Physics
 - (vi) Anisotropic Nanostructures: Synthesis to functionalization @ T.I.F.R
 - (vii) International Winter School on Nano scale Materials and Devices (IWNMD-2010) I.I.T-Bombay, Dec13-17,2010
4. Teaching and Research Experience :
Teaching : ~ 23 Years
Research : ~ 31 Years
5. New Courses/Programmes Evolved : **NIL**
6. Laboratories / Department established: Assisted in framing the syllabus and lab experiments for establishing the Department of Energy at Amaravati University, Maharashtra (Apr 1994)
7. Involvement in Institute Development:
 - (i) Involved actively in compiling the Research activity in the Dept during the NACC visit 2002.
 - (ii) Acted as Chief Superintendent for Semester Examinations of GRU during 2005
 - (iii) Organized and Coordinated events during National Science Day Celebrations

- (iv) Restructured and Catalogued the Books of Dept . library.
8. Research guidance : (i) Photovoltaics
(ii) Conducting Polymers
(iii) Semiconductor Nanostructures
9. Research Projects Completed : UGC-MRP: “Investigations on the electronic and impurity states in Semimagnetic Nanostructures” (2010)
10. **Extension Activities** :
- (i) Smokeless Chulas users training programme at various villages during the year 1996- 1997.
- (ii) Coaching classes for high school children in the evenings, in the village of Chettiapatti and Alamarathupatti during the academic year 1997 – 1998.
- (iii) Participated in the study of present status of smokeless chulas installed in few villages during they year 1998 – 1999.

Coordinated to conduct Main Extension Programme of the Department.

1. Science Teaching Progrmme in Pithalaipatti Middle School for the classes VI, VII and VIII during the year **1998 – 1999 for two semesters.**
 2. Participated in the Installation of Smokeless chulas in various villages.
- i. Participated in the village camp at Vannampatti during the year 1997 – 98
 - ii. Participated in the village camp at Anumantharayan Kottai during the year 1998-99.
 - iii. Participated in the village camp at Muthalapuram during the year 1988-99.
 - iv Participated in the Village Camp at Thavasimadai during the year 1999-2000.
 - v Participated in the village camp at. Michealpalayam (2001), Reddiyarchatram (2002), Kondamanayakkanpatti (2003), Vadipatti (2004) and Kambaliampatti (2005).
 - vi Coordinated and actively participated in the **weekly extension** programme of School Teaching in Pithalaipatti and Anumandharayankottai for **One Semester during July 2006 to Dec 06**

- vii Participated in the village camp at Dharumathupatti during Aug, 2007
- viii Participated in the village camp at Silukkuvarpatti during Aug,2008
- ix Participated in the village camp at Silukkuvarpatti during Sep,2009
- x Participated in the village camp at Silukkuvarpatti during Sep,2010

11. Short term Courses/Symposium/
Conferences Attended : Short term courses - 4
International Conferences - 7
National Conferences - 20

12. Short term Courses/Seminar/
Conferences organized : **NIL**

13. Membership in Scientific
Bodies : (i) Life Member of Indian
Chapter of International
Centre for Theoretical
Physics(Italy) #338

(ii) Life Member of IAPT # L1844

(iii) Member of Institute of Physics
(UK) # 1084753

(iv) Life Member of Semiconductor
Society of India #2009 08 596

(v) Member, American Nano
Society

14. Resource person : (i) ` Science Communication' in
the Dept.of English,GRU
(2006)

(ii) Refresher Course organized by
Bharathidasan University for
the newly recruited College
teachers throTRB 19th Jan
2008

(iii) Refresher course organized by
the Academic Staff college,
Bharathidasan Univ,8th
Mar08,2008

- (iv) Inaugurated National Conference on Micro/Nano Devieces, Structures and Systems-MiNDSS 2009 organised by IETE at Muthaiyammal College of Engg (Mar 2009)
 - (v) Invited Talk at MiNDSS 2009
 - (vi) Resource person at Academic Staff College, Madurai Kamaraj University(6th Nov 2009)
 - (vii) Science Association Meeting at Lakshmi College of Education, Gandhigram, Feb 4th 2010
 - (viii) Invited Talk in the National Seminar on the Perspectives in Laser, Optics, Spectroscopy and Nanoscience at Bishop Heber College, Trichy on 14th Feb2011
15. Reviewer for Journals : (i) Superlattices and Microstructures (ELSEVIER)
(ii) Current Applied Physics(ELSEVIER)
(iii) Journal of Alloys and Compounds(ELSEVIER)
(iv) Journal of Physics and Chemistry of Solids(ELSEVIER)
(v) European Physical Journal B (SPRINGER)
16. Recognition - Local : **NIL**
- National : (i) National advisory committee member for some National Conferences

- (ii) Invited to participate in the Young Indian Scientist Colloquium 2009 by T.I.F.R Mumbai
 - (iii) Research consultancy/ collaboration with Dept. of Physics, D.A.Univ. Indore
- International :
- Research Consultancy with Dept. of Physics, Yasouj University, Iran and Dept. of Electrical Engg., I-Shou Univ, Taiwan
17. Committee Member :
- (i) Manonmaniam Sundaranar University Nominee for the Board of Studies in Physics at Scott Christian College Nagercoil (2005)
 - (ii) Madurai Kamaraj University Nominee for the Board of Studies in Physics at V.V.V.College, Virudunagar (2009)
 - (iii) Board of Study Member in the Dept. of Physics, GRU
 - ? Research Advisory Committee Member at GRU
 - (iv) Chairperson of the Expert Committee of Periyar University to upgrade Dept.of Physics of Sri Sarada college for Women, Salem as a Research Centre
18. Fellowship Received (Since90): **NIL**
19. Foreign Countries visited : **NIL**
20. Administrative Experience : As a Principal Investigator of Major Research Project since 2007 till 2010

21. Others : (i) Conducted /Conducting coaching/Interaction classes for M.Sc students for the preparation of JRF/Competitive Examinations
- (ii) Board of Study Member in some of the Colleges in TN
- (iii) To create interest and motivate students in higher education /Research most of the B.Sc/M.Sc projects are published in National/ International Conferences

21 a). List of Publications :

(Since appointment in Gandhigram Rural University, Nov.1990)

International Refereed Journals:

- Effect of film thickness and counter ions on the double layer Redox capacitance of polyaniline thin film electrode
S. Leonard Gnana Lissy , S. Pitchumani and K. Jayakumar
Mat. Chem. and Phys. 76 143 (2002) (**16 Citations**)
- Effect of temperature on the binding energy of low lying excited states in Quantum Well
P. Nithiananthi and K. Jayakumar
Int. J. Mod. Phys. B 17 , 5811 (2003) (**4 Citations**)
- Effect of Γ - X cross-over on the binding energy of donor in a Quantum Well
P. Nithiananthi and K. Jayakumar
Int. J. Mod. Phys. B 19 , 3861 (2005) (**2 Citations**)

- Ultrasonic studies on the blend of styrene butadiene rubber with PMMA and PVAC
V. Arumugam , N. D. Naresh, R. Balakrishnan , R. Sanjeevi, K. Pradeepa and K. Jayakumar
J. Pure Appl. Ultrason. 27 ,1 (2005)

- Diamagnetic susceptibility of hydrogenic donor in Low Dimensional Semiconducting systems
P. Nithiananthi and K. Jayakumar
Solid State Commun. 137 427 (2006) **(19 Citations)**

- Effect of Γ - X cross-over and impurity location on the diamagnetic susceptibility of a donor in a Quantum Well
P. Nithiananthi and K. Jayakumar
Solid State Commun. 138, 305 (2006) **(7 Citations)**

- Diamagnetic susceptibility of a hydrogenic donor in a Quantum Dot
A. Merwyn Jasper D Reuben and K. Jayakumar
Phys. Stat. Sol. (b) 243 , 4020 (2006) **(2 Citations)**

- Diamagnetic susceptibility of a hydrogenic donor in low lying excited states in a Quantum Well
P. Nithiananthi and K. Jayakumar
Superlatt. And Microstruc 40, 174 (2006) **(2 Citations)**

- Semiconductor – Metal transition in a Quantum Well
P. Nithiananthi and K. Jayakumar
Physica B 391, 119 (2007) **(8 Citations)**

- Influence of pressure on the diamagnetic susceptibility of hydrogenic donor in some low lying excited states in a Quantum Well
P. Nithiananthi and K. Jayakumar
Int. J. Nanosci. 6, 1 (2007)

- Shape effect of diamagnetic susceptibility of a hydrogenic donor in a nanostructured semiconducting systems
C. Rajamohan, A. Merwyn Jasper D Reuben, P. Nithiananthi and K. Jayakumar
J. Math.Chem. 44 , 743 (2008) **(IJSC / Gold Dust Rating :3 in 10 Pt Scale)**

- Laser induced Semiconductor –Metal transition in a Quantum Well
P. Nithiananthi, C. Rajamohan, and K. Jayakumar
J. Nanosci. Nanotechnol. **9** 5669, (2009)

- Pressure study on the Semiconductor –Metal transition in a Quantum Well
P. Nithiananthi, and K. Jayakumar
Phys. Stat. Sol (b) **246** , 1238 (2009)
(One of the top 10: Most accessed paper during 2009)

- Effect of Laser intensity on the semiconductor –Metal transition in a doped Quantum Well
A. Merwyn Jasper D Reuben, P.Nithiananthi and K.Jayakumar
Supperlatt. and Microsturc. **46** , 710 (2009)
- Effect of dielectric screening on the diamagnetic susceptibility of a donor in a Semiconducting Nanostructured systems
P.Nithiananthi, P.Vickraman and K.Jayakumar
Int. J. Mod. Phys. B **23** , 2069 (2009)
- Effect of embedding nanoparticles on thermal conductivity of crystalline semiconductors: Phonon scattering mechanism
K.K.Chaudhary, D.Prasad, K.Jayakumar and Dinesh Varshney
Int.J.Nanosci.,**8** , 551 (2009)
- Optical and electrical properties of Chitosan /CdS Nanocomposites
C.Raja Mohan, A.Amali Infanta, K.Mahendran and K.Jayakumar
Asian Chitosan Journal, **6** ,14 (2010)
- Phonon drag, carrier diffusive thermoelectric power and semiconducting resistivity behavior of Zn Nanowire
K.K.Chaudhary, D.Prasad, K.Jayakumar and Dinesh Varshney
Int.J.Nanosci.,**9** , 453 (2010)

International Conference/Symposia:

- Effect of impurity concentration on the graded bandgap GaAs - Al_x Ga_{1-x} As solar cell
K. Jayakumar, K. Ravikumar and S. Ramamurthy
Conference on Solar Energy Conversion
University of Tanta, Tanta (Egypt) (1992) **(accepted but Not Presented)**
- Effect of impurity grading on the graded bandgap Solar Cell
K. Jayakumar, K. Sundararaman, G. Gopakumar and S. Ramamurthy
International Solar Energy Society – University of South Wales, Sydney Australia
(1994) **(accepted but Not presented)**
- Diamagnetic susceptibility of hydrogenic donor in low lying excited states in a Quantum Well
P. Nithiananthi and K. Jayakumar
International Conference on Nano Science Technology- ICONSAT 2006
India Habitat Centre, DST-Nano initiative, New Delhi, India (2006)

- Diamagnetic susceptibility of hydrogenic donor in a Quantum Dot
P. Nithiananthi, A. Merwyn Jasper D Reuben, C. Rajamohan, S. Saravanakumar and K. Jayakumar
Eighth International Conference on Nanostructured Materials – NANO 2006,
I.I.Sc., Bangalore, India (2006)

- Diamagnetic susceptibility of a hydrogenic donor in a Quantum Well Wire
P. Nithiananthi, M. Parameswari, K. Anjana, T. Premkumar and K. Jayakumar
Eighth International Conference on Nanostructured Materials – NANO 2006,
I.I.Sc., Bangalore, India (2006)

- Diamagnetic susceptibility of a hydrogenic donor in low lying excited states in a Spherical Quantum Dot
A. Merwyn Jasper D Reuben and K. Jayakumar
International Conference on Nanoscience and Nanotechnology – ICNSNT-2006
University of Madras, Chennai, India (2006)

- Laser – induced Semiconductor –Metal transition in a Quantum Well
C. Rajamohan, P. Nithiananthi and K. Jayakumar
International Conference on Nano Science Technology- ICONSAT 2008
World Trade Center, Chennai, India (2008)

- Laser - dressed hydrogenic impurity states in a Semiconductor Quantum Well
A. Merwyn Jasper D Reuben, P. Nithiananthi, C. Rajamohan and K. Jayakumar
International Conference on Nano Science Technology- ICONSAT 2008
World Trade Center, Chennai, India (2008)

- Effect of magnetic field on the laser – dressed donor in a Semimagnetic Quantum Well
P. Nithiananthi and K. Jayakumar
International Conference on Advances in Nanotechnology – ICANAT 2008
MATs University , Raipur (CG) India (2008)

- Donor states in a Semimagnetic Quantum Well
P. Nithiananthi and K. Jayakumar
International Conference on Active / Smart Materials
Thiagarajar College of Engineering, Madurai , India (2009)

- Effect of laser on the diamagnetic susceptibility of a donor in a Quantum Well
C. Rajamohan, P. Nithiananthi and K. Jayakumar
International Conference on Active / Smart Materials
Thiagarajar College of Engineering, Madurai , India (2009)

- Shape effect of Semimagnetic Quantum Dot on the bound magnetic polaron
A. Merwyn Jasper D Reuben and K. Jayakumar
International Conference on Nano Science and Technology- ICONSAT2010
Indian Institute of Technology, Bombay, Mumbai, India Feb 17-20, (2010)

- Laser induced Semiconductor –Metal transition in a Semimagnetic Quantum Well
P.Nithiananthi and K.Jayakumar
International Conference on Nano Science and Technolgy- ICONSAT2010
Indian Institute of Technology- Bombay, Mumbai, India, Feb 17-20, (2010)
- Laser-dressed spin polaron in CdTe – Cd_{1-x}Mn_xTe Quantum Well
P.Nithiananthi, Dinesh Varshney and K.Jayakumar
International Conference on Nanoscience and Nanotechnology –ICONN2010
SRM University, Chennai, India, Feb 24-26 (2010)
**Proc. of the International Conference on Nanoscience and Nanotechnology(ICONN 2010) pp 291 (2010) Allied Publishers
ISBN :978-81-8424-578-3**
- Spin-polaron in a Diluted Magnetic Semiconductor Quantum Wire
C.Raja Mohan and K.Jayakumar
International Conference on Nanoscience and Nanotechnology –ICONN2010
SRM University, Chennai, India, Feb 24-26 (2010)
**Proc. of the International Conference on Nanoscience and Nanotechnology(ICONN 2010) pp 311 (2010) Allied Publishers
ISBN :978-81-8424-578-3**
- Double acceptor interaction in Semimagnetic Quantum Dot
A.Merwyn Jasper D Reuben and K.Jayakumar
International Symposium on Semiconductor Materials and Devices-(ISSMD-2011), M.S.University of Baroda, Vadodara , Jan. 28-30, (2011)
- Effect of Laser on the bound magnetic polaron in a Semimagnetic Quantum Wire
C.Raja Mohan and K.Jayakumar
International Symposium on Semiconductor Materials and Devices-(ISSMD-2011), M.S.University of Baroda, Vadodara , Jan. 28-30, (2011)
- Excited states of Magnetic polaron in a Quantum Well
K.Jayakumar and P.Nithiananthi
International Symposium on Semiconductor Materials and Devices-(ISSMD-2011), M.S.University of Baroda, Vadodara , Jan. 28-30, (2011)

National Conferences :(DAE- Solid State Physics Symposia – Proceedings with ISBN)

- Effect of pressure on the impurity states in Low Dimensional Semiconducting Systems
S. Janaki Devi, P. Nithiananthi and K. Jayakumar
Solid State Physics (India), 45 , 463 (2002) **ISBN : 81-7764-484-X**

- On the impurity states of a Quantum Dot
P. Nithiananthi, A. Siji and K. Jayakumar
Solid State Physics (India), 46 , 753 (2003) **ISBN : 81-7764-652-4**

- Effect of location of donor impurity on diamagnetic susceptibility in a Quantum Well
P. Nithiananthi and K. Jayakumar
Solid State Physics (India), 50 , 773 (2005) **ISBN : 81-8362-019-6**

- Ionization energy of a donor in a Spherical Quantum Dot with a parabolic confinement
A. Merwyn Jasper D Reuben and K. Jayakumar
Solid State Physics (India), 50 , 663 (2005) **ISBN : 81-8362-019-6**

- Effect of Γ - X cross – over on Semiconductor –Metal transition in a Quantum Well
P. Nithiananthi and K. Jayakumar
Solid State Physics (India), 51 , 769 (2006) **ISBN : 81-8372-030-7**

- Effect of confining potential on the diamagnetic susceptibility of a low lying donor in a Spherical Quantum Dot
A. Merwyn Jasper D Reuben and K. Jayakumar
Solid State Physics (India), 51 , 807 (2006) **ISBN : 81-8372-030-7**

- Laser-induced Mott transition in a Quantum Dot
P. Nithiananthi and K. Jayakumar
Solid State Physics (India), 52 , 947 (2007) **ISBN : 81-8372035-8**

- Diamagnetic susceptibility of a laser-dressed donor in a Quantum Dot
A. Merwyn Jasper D Reuben and K. Jayakumar
Solid State Physics (India), 52 , 929 (2007) **ISBN : 81-8372035-8**

- Laser-induced Mott transition in a Quantum Dot
A. Merwyn Jasper D Reuben and K. Jayakumar
Solid State Physics (India), 53 , 1057 (2008) **ISBN : 978- 81-8372-044-1**

- Effect of magnetic field on the donor binding energy for various geometries of a Quantum Dot
C. Raja Mohan and K. Jayakumar
Solid State Physics (India) , 54 , 925 (2009) **ISBN: 978-81-8372-054-0**

National Conferences :(Proceedings without ISBN)

- Mott transition in a Semiconductor Quantum Well under Laser field
A. Merwyn Jasper D Reuben, P. Nithiananthi C. Rajamohan and K. Jayakumar
Proceedings of the National Conference on Current Topics in Theoretical Physics, NCTP 2009 , University of Madras, page 11 (2009) **(oral)**

National Conferences :(abstract alone- Presentation by ORAL / POSTER)

- Effect of bandgap shrinkage on the graded bandgap solar cell
K. M. Ajith, K. Marimuthu and K. Jayakumar
National Renewable Energy Convention -99
Devi Ahilya University, Indore (1999) **(Oral)**

- Effect of impurity location on the low lying excited states in a Quantum Well
P. Nithiananthi and K. Jayakumar
II National Conference on Spectrophysics- NCONS 2000, Pachaiappa College,
Madras (2000) **(Oral)**

- Donor binding energy of an excited states in a Quantum Well
E. Radha, P. Nithiananthi and K. Jayakumar
National Conference on recent advances in Material Science, Nehru Memorial
College, Trichirapalli , Tamilnadu (2000) **(Oral)**

- Binding energy of some low lying excited states in a Quantum Well
P. Nithiananthi, E. Radha and K. Jayakumar
National Seminar on Current Trends in Material Science –CTIMS 2001
Mahatma Gandhi University, Kottaiyam, Kerala (2001)

- Effect of Gamma- X cross-over on the ground state donor binding energy in a
Quantum Well
P. Nithiananthi and K. Jayakumar
National Symposium on Advanced Electronic Materials and Information
Technology, Guru Ghasidas University, Bilaspur (CG) (2003) **(Oral)**

- Modeling of donor binding in GaAs / Al_x Ga_{1-x} As Quantum Dot
P. Nithiananthi and K. Jayakumar
National Seminar on Novel Trends in Synthesis, Structure, Reaction dynamical
studies of coordination compound, Department of Chemistry, Gandhigram Rural
University, Gandhigram , Tamilnadu (2005) **(Oral)**

- Study on the effective mass and subband energy in semiconductor nanostructures.
C. Rajamohan, A. Merwyn Jasper D Reuben, P. Nithiananthi and K. Jayakumar
National Conference on SMART Materials and Recent Technologies, SMART
2007, Sri Venkateswara University, Tirupati, Andra Pradesh (2007)

- Synthesis and characterization of CdS Quantum Dot
G. Ramadevi, P. Nithiananthi and K. Jayakumar
National Conference on Advanced Materials , Devices and Technologies, Sri
Venkateswara University, Tirupathi , Andra Pradesh (2008)

- Effect of Anderson localization on the Semiconductor-Metal Transition in a
Quantum Well
S. Prahasini , P. Nithiananthi and K. Jayakumar
National Conference on Advanced Materials and Characterization, NCAMC 2008
Vellore Institute of Technology ,Vellore, Tamilnadu (2008)

- Effect of Laser Intensity on the Semiconductor-Metal Transition in a doped Quantum Well
A. Merwyn Jasper D Reuben, P.Nithiananthi and K.Jayakumar
National Conference on Semiconductor Materials and Technology, NC-SMT 2008 , Haridhwar , Uttranchal (2008) (**Oral**)
- Spin polaron in a semimagnetic Quantum Wire
C.Raja Mohan and K.Jayakumar
National Conference on Materials for Energy Storage and Conversion –NCMESC 2010, Dept. of Physics, Sri Venkateswara University, Tirupati, A.P, 23-24(2010) (**Oral**)
- Possibility of Semiconductor – Metal transition in doped Quantum Well Wire
A.Merwyn Jasper D Reuben and K.Jayakumar
National Conference on Materials for Energy Storage and Conversion –NCMESC 2010, Dept. of Physics, Sri Venkateswara University, Tirupati, A.P, 23-24(2010) (**Oral**)
- Optical and electrical properties of Chitosan /CdS Nanocomposites
C.Raja Mohan, A.Amali Infanta, K.Mahendran and K.Jayakumar
1st Indian Chitin and Chitosan Symposium (ICCS-2010)
CAG Pride Hotel, Coimbatore , 24th April,(2010) – (**Oral**)

National Conferences (Pedagogical Interest – Presentation by ORAL)

- A simple method for determining Planck constant
V. Ramalakshmi and K. Jayakumar
National Convention of IAPT, Dr Balasaheb Ambhetkar Marathwada University, Aurangabad, Maharashtra (1996)
- Experimental determination of velocity of light
V. Ramalakshmi , K. Jayakumar and K. Ramachandran
XI National Convention of IAPT, Dr Balasaheb Ambhetkar Marathwada University, Aurangabad, Maharashtra (1996)
- Effect of Chromium on the growth kinetics of Plants
R. Pandiselvan, P. Manikandan and K. Jayakumar
XVI I.A.P.T Convention , Amalokchand Mahavidhyalaya, Yavatmal, Maharashtra (2001)
- Emission profiles of various lamps
E. Natesan and K. Jayakumar
XVIII IAPT Annual Convention , Hans Raj Mahila Mahavidhyalaya, Jullandhar . Punjab (2003)

Research Articles in Monographs: (with ISBN)

- A Model for Open-Circuit Voltage Enhancement in the Graded Bandgap $\text{Al}_x\text{Ga}_{1-x}\text{As} - \text{GaAs}$ Solar Cell
G .Chandramathi, K . Jayakumar and S. Ramamurthy
New Dimensions in RENEWABLE ENERGY, Tata McGraw Hill Publishing Company Ltd, New Delhi , ISBN 0-07-462030-4 , p 173 (1992)

- A Design on the Graded Bandgap Solar Cell
K. Jayakumar, G. Gopakumar, K. Sundararaman and S. Ramamurthy
Role of Renewable Energy in Energy Policy, Published by Gujarat Energy Development Agency, Vadodara , ISBN 81-900282-0-2, p 160 (1993)

- Effect of Impurity Position on the Binding Energy of Donor in a Quantum Well
V. Anitha, B. Sasi and K. Jayakumar
Semiconductor Materials and Devices, Narosa Publishing House, New Delhi ISBN 81-7319-187-5, p 89 (1998)