

FACULTY PROFILE

Name : **Dr. P. RICHARD RAJKUMAR**
Date of Joining : **21-02-2000**
Designation : **Associate Professor**
Department : **Physics**
Phone with Ext. No : **0452 2530070**
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Email : **richy2k8@gmail.com**



Educational Qualifications:

Degree	Subject	College / University & Place	Year Completed
B.Sc	Physics	Govt Arts College Ooty, Bharathiar University	April-1989
M.Sc	Physics	Govt Arts College ,Ooty Bharathiar University	April-1991
M.Phil	Physics	Madras Christian College Madras University	March-1993
Ph.D	Physics	Madurai Kamaraj University, Madurai	Dec-2011

Specialization in Research:

- M.Phil: (Ultrasonics)
- Ph.D: (Thin films.)

Research Interests:

- Thin films, Instrumentation, Electronics
- Experimental Physics.

Years of Experience: From June 1993 to Feb 2000 - 7 years
From Feb 2000 to till date - 22 years

Any Other Work Experience:

Designation	Institution / Company	Year – From (month/year) To (month/year)
Lecturer	Jerusalem college of Engineering, Pallikaranai. Chennai	June 1993 to Feb 2000

Administrative / Academic Position/s (held / currently holding):

Positions held / currently holding	Year – From (month/year) To (month/year)
Director- Instrumentation Center	2011
Warden, Dudley Hall	October 2011 – May 2013
Director of Applied Sciences & Jeevana Jothi	August 2020

Membership in Professional Bodies:

(Include Board of Studies/ journal/ article)

Positions held / currently holding in Professional Body	Year – From (month/year) To (month/year)
Member of the Board of Studies of UG and PG Electronics & communication Department of Sourastra College.	2014 - 2017

Publications:

Articles Published in International Journals:

1. Analysis of oxygen bonding with metals of different oxidation states from experimental charge density distribution.
K. Sujatha, S. Israel, C. Anzline, K.S. Syed Ali, R.A.J.R. Sheeba, **P. Richard Rajkumar**
Physica B: Condensed Matter 555 (2019) 21–31.

2. High Resolution Synchrotron Diffraction Study on Charge Density Distribution of Ampicillin Trihydrate: A Correlation between DFT and Multipole Models. **C. Anzline, S. Israel, R. Niranjana Devi, R.A.J.R. Sheeba and P. Richard Rajkumar** **Chinese Journal of Chemical Physics VOLUME 30, NUMBER 1,2017.**
3. Characteristics of pulse deposited cdx Zn_{1-x} Te thin film-K.R.Murali & **P.Richard Rajkumar**. **ECS 801 850-2008**
4. Pulse plated cadmium and their characteristics. **P.Richard Rajkumar** & K.R Murali. **ECS 801,845-2008.**
5. Characteristics of pulse deposited Cd Te films - **P. Richard Rajkumar**, K.R.Murali. **Material science 396 2007.**

Papers presented:

1. Investigation on reactivity descriptors of 2,5-Lutidinium Bromanilate using DFT approach R. Niranjana Devi , S. Israel, C. Anzline, 2016. **P. Richard Rajkumar**
2. National Conference on Advanced Materials Science – 2015, Jerusalem College of Engineering, Chennai(ISBN 978-81-89843-73-1) C. Anzline ,S. Israel, 2016. **P. Richard Rajkumar**
3. Molecular Structure, Population Analysis, Vibrational Spectroscopic and Chemical Reactivity studies of Nicotinohydrazide using DFT approach C. Anzline, S. Israel, R. Niranjana Devi, **P.Richard Rajkumar**, K.Sujatha. National Conference on Advanced Materials Science – 2015, Jerusalem College of Engineering, Chennai (ISBN 978-81-89843-73-1)
4. Topological and electron density analysis and electrostatic properties of N-(Phenylsulfonyl) acetamide: An experimental and theoretical study R. Niranjana Devi , S. Israel, C. Anzline, **P. Richard Rajkumar**. National symposium on X-ray diffraction and recent advances in crystallography-2015, A-19, 2015, Periyar University, Salem
5. Molecular structure, vibrational spectroscopic and site selectivity studies in 5-amino-3-methyl-1,2-oxazole-4-carbonitrile using DFT technique. C. Anzline, S. Israel, R. Niranjana Devi , **P. Richard Rajkumar** and W. Hannah Blessy. Journal of Research in Science, Vol.2, December 2014, page. 35-39. Recent Trends in Quantum Chemistry-2014, Nesamony memorial Christian college, Marthandam
6. Elucidation of reactivity descriptors for 2-mercaptobenzoic acid using Density functional Theory approach R. Niranjana Devi, S. Israel, C. Anzline , **P. Richard Rajkumar** and W. Hannah Blessy Journal of Research in Science, Vol.2, December 2014, page. 25-30. Recent Trends in Quantum Chemistry-2014, Nesamony memorial Christian college, Marthandam

7. Charge derived properties and site selectivity studies in 5-Amino-2-methyl benzene sulfonamide using XRD and DFT techniques. C. Anzline, S. Israel, R. Niranjana Devi and **P. Richard Rajkumar**. Theoretical chemistry Symposium- 2014, National chemical Laboratory, Pune
8. Structural and electronic properties of Phenyl acetic acid using Density functional Theory C. Anzline, S. Israel, R. Niranjana Devi and **P. Richard Rajkumar** National seminar on technologically important crystalline and amorphous solids, Kalasalingam University, Krishnan Koil, February - 2014, page – 43 (ISBN 978-81-921319-4-8)
9. Multipole analysis of charge density in Ampicilin trihydrate C. Anzline, S. Israel and **P. Richard Rajkumar** National seminar on technologically important crystalline and amorphous solids, Kalasalingam University, Krishnan Koil, February - 2013, page-109 (ISBN 978-81-921319-0-0)
10. Analysis of charge density distribution in a pharmaceutical drug: Dapsone R. Niranjana Devi, S. Israel and **P. Richard Rajkumar** III National conference on Advanced Materials, PSN college of Engineering and Technology, Tirunelveli, January, 2013.
11. Pulse plated CdTe films and their characteristics- **P. Richard Rajkumar**, K.R.Murali - National conference on Advanced materials – PRIST university Tanjavur. Feb-15-16 2008.
12. Properties of Pulse plated Cd_xZn_{1-x}Te thin films - **P. Richard Rajkumar**, K.R.Murali- International conference on material science and research and technology (ICMSRN), Feb 27-29, 2008 Mother Teresa Women's university. Kodaikanal.
13. Pulse electro deposition of Zinc Telluride films - **P. Richard Rajkumar**, K.R.Murali- National workshop on thinfilm techniques and applications NAWOTTA-04. September 10-11 2004.

Articles published in National Journals:

1. Pulse electro deposition of CdTe film - **P. Richard Rajkumar** & S.Edwin Jeyaraj
Bulletic of Electrochemistry – 21 (3) 133-137 – 2005.

Without ISBN No.

- **eZee series Physics assistant** for X standard matriculation. Tata Mc graw hill publications.

Chapters in Edited Books:

- Edited Physics books from 6th standard to 9th standard for the books printed by Jessie printers Madurai.

Conference / workshop/ Seminar Presentations:

Name of the Seminar/Conference/Symposia Workshop etc.,	Name of the Sponsoring Agency	Title of paper	Institution, Place and Date
National level Workshop On Thin film Techniques and Applications. (NAWOTTA)	UGC	Pulse Electrode deposition of ZnTe thin films.	PSG Arts and Science, College. Coimbatore. Sep 10-11 th 2004
International Conference on materials science, research and technology. (ICMSRN)	UGC	Properties of pulse plated Cd _x Zn _{1-x} Te.	Department of Physics, Mother Teresa Women's University, Kodaikanal Feb 27-29 th 2008
National conference on Advanced Materials	UGC	Pulse plated CdTe Films and Their Characteristics.	PRIST University, Thanjavur. 15-16 th Feb-2008

Conference / workshop/ Seminar Organised:

Name of the Seminar/Conference/Symposia Workshop etc.,	Name of the Sponsoring Agency	Place and Date
Quantum computing	UGC	The American College. Madurai
One-two-three dimensional solid state physics	UGC	The American College, Madurai.
Introductory seminar on observational astronomy	IUCAA, Bangalore	The American College, Madurai. 2006
Path way to Higgs Boson	IASc, Bangalore	The American College, Madurai. 2013

Conference / workshop/ Seminar Attended:

Name of the Seminar/Conference/Symposia Workshop etc.,	Name of the Sponsoring Agency	Place and Date
15 days, National level refresher course on experimental Physics which was sponsored by Indian Academy of Sciences, Bangalore	IASc	Mysore University, Karnataka. 1-15 th November 2004.
Attended a National Conference on thin film techniques and Applications (NAWOTTA).	UGC	PSG college of Arts and Science. February 2004.
Attended a National Conference on thin film techniques and application	UGC	PSG college of Arts and Science. February 2002.
Attended a workshop on new trends thin films at Trichy,	UGC	St. Josephs College. July 2001.
Was Selected and Attended science Academy meeting at Bangalore	IASc	Indian Academy of Sciences.

Was Selected & Attended science Academy meeting at Goa	IASc	University of GOA.
Was selected and attended 5 days training course for using exp EYES -17 gadget	ICAR, New Delhi	ICAR, New Delhi.
Advanced coating technologies and their applications	TEQIP community services of the institute	National Institute of Technology. Trichi. 24 th Jan 2008.

Lectures / Talks given:

(List the title of the lecture / talk, date, institution and place)

Name	Name of the Sponsoring Agency	Title of paper	Institution, Place and Date
National Science day	College Association	Basic Experiments using –exp-EYES kit	Madurai Sivakasi Nadars Pioneer Meenakshi Women’s College. Sivagangai. 27-02-2020
National Science day	College Association	Experiments using –exp-EYES kit and sensors	SVN College, Madurai . 28-02-2020
Physics association	College Association	“Thin film & vacuum techniques” Lecture delivered at Mannar College	Mannar college, Madurai
On line lecture	--	Using simulation softwares for on line lab courses	PSG college of arts and science, Coimbatore

Served as experts, chairpersons or resource persons

Name of the Seminar/Conference/Symposia Workshop etc.,	Name of the Sponsoring Agency	Institution, Place and Date
Motivational Lecture “Research and Thinfilms”	St. Joseph’s College	St. Joseph’s College for women. Alappuzha. Kerala. June 2022
External expert to evaluate the performance of Physics Department- Academic Audit.	IQAC Of the College	Bishop Heber College, Trichirappalli. 2019-2020
External expert to evaluate the performance of Physics Department- Academic Audit.	IQAC Of the College.	Bishop Heber College, Trichirappalli. 2018-2019
Moderator for paper presentation in State level seminar on thin films and their applications.	Lady Doak College.	Lady Doak college. Madurai, 20 th February 2009

Resource person. INSPIRE program for school students.	DST - INSPIRE	VICKRAM College of Engineering, Madurai.
Resource person for Higher secondary Syllabus Revision.	Government of Tamilnadu.	Department of Education. Chennai. 2004
Resource person for Higher Secondary Physics teachers.	Department of School Education.	Sethupathi School, Madurai. 2004
Mentor for INSPIRE Programs	DST	

Ph. D Guideship status:

Ph.D/ M.Phil	Reg.No	Date of Registration	University
Ph.D / M.Phil	1678	07-11-2017	Madurai Kamaraj University. Madurai

Research activities of the student under my guide ship

Title	M. Phil / M.Sc/ B.Sc
Structural and optical properties of Annealed SnO ₂ Thin films prepared by Themal Evaporation method. S. Backya Lakshmi. 15MPP02 – 2016.	M. Phil
Thermal dependance of structural and optical properties of Ag ₂ O thin films. R. Aiswarya 15MPP12 – 2016.	M. Phil
Optical characterization of V ₂ O ₅ thin films prepared using thermal evaporation technique. S. John Regan. 12MPP07 – 2013.	M. Phil
Fabrication and characterization of Natural Dye Sensitized solar cells, Thirumani selvi. 12MPP09 – 2013	M. Phil
Optical properties of TiO ₂ thin films deposited by DC Magnetron sputtering method. P. Justin. 11 MPP07 – 2012	M. Phil
Preparation and properties of CuN Thin films formed by DC Magnetron reactive sputtering. M. Silambarasi. 11MPP03 – 2012	M. Phil
Micro hardness study of TiN thin films on stainless steel using sputtering technique S. Vani Priyadharshini. 09MPP09 – 2010	M. Phil
Fabrication of Porous monocrystalline silcon for electroluminescent properties. Anandi Nancy 08MPP01 - 2009	M. Phil
Dielectric study of silicon monoxide thin films. Joe Antony 07MPP05-2008	M. Phil
Preparation and study of electrical and optical wide band energy gap ZnN semiconductor thin films. Anzline 06MPP01-2007.	M. Phil
Investigation of the properties of Ag ₂ S thin films by Planar DC magnetron reactive sputtering. Muthu Krishnaveni. 05MPP02 – 2006.	M. Phil

Projects:

Major Project:

Title	Funding agency	Year of Award/ Period	Amount Awarded Rs.	Status of the project- Completed/ Ongoing/ Submitted	Co- investigator, if any	Interdisciplinary Project or not
“Quantifying electrostatic interaction in Pharmaceutical solid systems using charge density route”	UGC	2012-2017	12 lacs	Submitted	Yes	no

Minor Project:

Title	Funding agency	Year of Award/ Period	Amount Awarded Rs.	Status of the project- Completed/ Ongoing/ Submitted	Amount Recieved Rs.	Interdisciplinary Project or not
Analysis of structural, mechanical and corrosion Properties of Zinc/Zinc oxide thin films, sputter deposited on steel substrates for anti corrosion applications	UGC	2017 (two years)	3.3lacs	Submitted	2,64,000	no

Extension activities:

- Resource person for DST-INSPIRE program for school students, conducted by VICKRAM College of Engineering.
- Conducted special classes to the nearby school students for their career in the topics which they find difficult.
- Set up a physics laboratory and demonstrated of physics lab experiments in Rotary matriculation higher secondary school, and schools in rural areas.
- Served as a Quiz master to conduct an inter school quiz competition for science day celebrations in Mahatma Matriculation Hr, Sec School.
- Department coordinator for organizing YSSP. (Young Students Scientists Programme) program in the department for 4 years.

Any other activities / information / academic credentials you would like to mention:

- Have designed and fabricated more than 60 Printed circuit boards of my own for various application in electronics like stepper motor, serial port interfacing, microchip programming etc.,
- Can work in Microsoft office package, Math CAD, and can use simulation software like circuit maker, digital works and Proteus software for analog and digital simulations.
- Have Basic Programming knowledge in microcontrollers and in PYTHON.
- Have designed innovative experiments for the UG and PG students.
- Used the open source innovative software and gadget **expEYES-17** for UG and PG Physics experiments.
- Hands on experience in operating High Vacuum Systems, thermal evaporation technique and sputtering techniques.

Orientation Program:

1. UGC Sponsored 44th Orientation Programme. Madurai Kamaraj University – Madurai. 18th July 2006 to 14th August 2006.

Refresher Course:

1. UGC sponsored Refresher course in Physics, Gandhigram Rural university, Dindigul. 27th November – 17th December 2003.
2. Refresher course in Physics, Madurai Kamaraj University – Madurai. 16th November 2012 to 6th December 2012.
