



# P. A. Praveen

Post Doctoral Fellow

Department of Physics, Indian Institute of Science Education and Research,  
Tirupati - 517 507, India

☎ (+91) 96009-73793 | ✉ praveen@iisertirupati.ac.in | 🏠 www.prvn.info

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## Current Position

### ERA CIPHR Chair Postdoctoral Fellow

UNIVERSITY OF TARTU

Mid-IR Holography

*Starting Jun. 2022*

*Tartu, Estonia*

### Post Doctoral Fellow

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH (IISER) TIRUPATI

Device fabrication and analysis of OLETs and Organic x-ray sensors

*Jun. 2019 - Present*

*Tirupati, India*

## Education

### Doctoral Degree

BHARATHIDASAN UNIVERSITY

Metal organic nanostructures for thermo-optical applications

*Jan. 2013 - Jun. 2019*

*Tiruchirappalli, India*

### Project Student

BHARATHIDASAN UNIVERSITY

Improvising organic medium by metal dopants for optical applications

*Jun. 2010 - Jan. 2013*

*Tiruchirappalli, India*

### Post Graduation

BHARATHIDASAN UNIVERSITY

First Class with CGPA 7.5

*Jul. 2009 - Apr. 2011*

*Tiruchirappalli, India*

### Under Graduation

PERIYAR UNIVERSITY

First Class with 80%

*Jun. 2006 - Apr. 2009*

*Salem, India*

## Areas of Expertise

### Incoherent Imaging and Holography - Current

- Design and fabrication of metasurfaces
- Design of indirect imaging systems with deterministic and non-deterministic fields

### Hybrid organic semiconductors

- Crystal growth / thin film deposition of organic and metal-organic systems

## Optoelectronic Devices

- Device fabrication of OFETs, OLETs and Organic x-ray sensors
- Prototypes of optical limiters and switches
- Utilization of the photonic devices towards biological applications

## Computational materials science

- Materials analysis using DFT and semiempirical calculations

## Hands-On Experience

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### Experimental Techniques

- **Crystal growth:** PVT, hydrothermal, low & high temperature solution growth
- **Thin films:** Thermal evaporation, CVD, spin coating & chemical processing
- **Structural:** PXRD, Raman, FTIR, SEM/TEM, AFM
- **Electrical:** Dielectric, Hall, Parametric analysis
- **Optical:** ASE spectrum, Z-Scan, SHG measurements

<b>Molecular Packages</b>	Gaussian, ORCA, MOPAC, Dalton, AutoDock
<b>Imaging</b>	ImageJ, Gwyddion
<b>Programming</b>	Python, Julia, R, C++, FORTRAN

## List of Publications

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14. Daniel Smith et al., (**one of the contributing author**), Non-linear Reconstruction of Information Modulated by Deterministic and Random Optical Fields - Concepts. **Journal of Imaging** (*Invited manuscript - Under preparation*).
13. **P. A. Praveen**, T. Kanagasekaran, Impact of Furan Substitution on the Optoelectronic Properties of Biphenyl/Thiophene for Light Emitting Transistor Applications. **The Journal of Physical Chemistry A** 126 (4) (2022) 600.
12. V. Lakshmi Vennila, **P. A. Praveen**, T. Kanagasekaran, N V L Narasimha Murty, Direct X-ray detection using thermally evaporated Pentacene Schottky diodes. **Journal of Instrumentation** 17 (2022) P02024.
11. **P. A. Praveen**, A. Bhattacharya, T. Kanagasekaran, A DFT Study on the Electronic and Photophysical Properties of Biphenyl/Thiophene Derivatives for Organic Light Emitting Transistors, **Materials Today Communications** 25 (2020) 101509.
10. **P. A. Praveen**, R. Ramesh Babu, Evaluation of nonlinear optical properties from molecular descriptors of benzimidazole metal complexes by principal component analysis, **Journal of Molecular Graphics and Modeling** 93 (2019) 107447.
9. **P. A. Praveen**, R. Ramesh Babu, P. Balaji, A. Murugadas, M.A. Akbarsha, Laser assisted anticancer activity of benzimidazole based metal organic nanoparticles, **Journal of Photochemistry & Photobiology, B: Biology** 180 (2018) 218.
8. **P. A. Praveen**, R. Ramesh Babu, K. Ramamurthi, Role of annealing on the structural and optical properties of nanostructured diaceto bis-benzimidazole Mn(II) complex thin films, **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy** 173 (2017) 800.

7. **P. A. Praveen**, R. Ramesh Babu, Theoretical and experimental evaluation of structural and optical properties of novel zinc-benzimidazole metal complex doped in polystyrene matrices, *AIP Conference Proceedings* 1832 (2017) 140038.
6. **P. A. Praveen**, R. Ramesh Babu, K. Ramamurthi, Theoretical and experimental investigations on linear and non-linear optical response of metal complexes doped PMMA films, **Materials Research Express** 4 (2017) 025024.
5. **P. A. Praveen**, R. Ramesh Babu, Effect of substituents on polarizability and hyperpolarizability values of benzimidazole metal complexes, *AIP Conference Proceedings* 1731 (2016) 090013.
4. **P. A. Praveen**, R. Ramesh Babu, K. Jothivenkatachalam, K. Ramamurthi, Spectral, morphological, linear and non-linear optical properties of nanostructured benzimidazole metal complex thin films, **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy** 150 (2015) 280.
3. **P. A. Praveen**, R. Ramesh Babu, K. Ramamurthi, Validation of PM6 and PM7 semiempirical methods on polarizability calculations, *AIP Conference Proceedings* 1665 (2015) 609.
2. **P. A. Praveen**, S. P. Prabhakaran, R. Ramesh Babu, K. Sethuraman, K. Ramamurthi, Low power optical limiting studies on nanocrystalline benzimidazole thin films prepared by modified liquid phase growth technique, **Bulletin of Materials Science** 38 (3) (2015) 645.
1. **P. A. Praveen**, R. Ramesh Babu, S. P. Prabhakaran, K. Ramamurthi, Linear and nonlinear optical properties of Mn doped benzimidazole thin films, *AIP Conference Proceedings* 1591 (1) (2014) 991.

## Supervision of Graduate Students

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- 2021 **BSMS V<sup>th</sup> year Project**, Fabrication of organic photodetectors for broadband detection
- 2019 **BSMS V<sup>th</sup> year Project**, Effect of different dielectric layers on the mobility of OSCs
- 2018 **M. Sc., Project**, Theoretical analysis of transition metal substituted ZIF structures
- 2017 **M. Phil., Project**, Copper based metal organic frameworks for nonlinear optical applications
- 2017 **M. Sc., Project**, Theoretical & experimental analysis of cadmium based ZIF structures
- 2016 **M. Sc., Project**, ZIF-8 thin films for nonlinear optical applications
- 2015 **M. Sc., Project**, Pd doped ZnO nanoparticles for nonlinear optical applications
- 2014 **M. Sc., Project**, Synthesis of new quinoline derivative for nonlinear optical applications

## Teaching

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- 2021 **Tutor**, BSMS - Physics UG Lab: Mechanics & Optics
- 2020 **Tutor**, BSMS - Physics UG Lab: Mechanics & Optics
- 2019 **Tutor**, BSMS - Advanced Physics Lab: Optics
- 2019 **Tutor**, BSMS - Physics UG Lab: Mechanics & Optics
- 2018 **Tutor**, M. Sc., (II Year) - Materials Science
- 2017 **Tutor**, M. Sc., (II Year) - Materials Science

## Awards

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- 2019 **Research Fellowship Award**, Post Doctoral Research, IISER Tirupati, India
- 2017 **Best Paper Award**, 21<sup>st</sup> National Seminar on Crystal Growth and Applications, National College, Tiruchirapalli
- 2016 **Research Fellowship for Meritorious Students in Science**, SRF, UGC, India
- 2016 **Best Paper Award**, National Conference on Computational and Experimental Physics of Functional Materials, K.S.R College, Tiruchengode
- 2014 **Third Prize**, DST SERB School on DFT and Beyond, M. S. University, Vadodara
- 2014 **Research Fellowship for Meritorious Students in Science**, JRF, UGC, India

## Invited Talks

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JUN, 2021	Sri Krishna College of Technology, Coimbatore
Roadmap for Research Writing	
JUL, 2020	Jamal Mohamed College (Autonomous), Tiruchirappalli
Skill Development using Learning Assistance Tools	
JUN, 2020	Jamal Mohamed College (Autonomous), Tiruchirappalli
Summer Online Training on $\text{\LaTeX}$	
JUN, 2020	Hindustan College of Engineering & Technology, Coimbatore
Unveiling Molecules: A Computational Materials Science Perspective	
MAY, 2020	Karpagam College of Engineering, Coimbatore
Methods and Tools for Qualitative Research Writing	
FEB, 2018	Dr. SNSR College of Arts & Science, Coimbatore
One Day Workshop on $\text{\LaTeX}$	

## Academic Activities

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<b>Reviewer</b>	Elsevier Publications
SPECTROCHIMICA ACTA PART A	Nov. 2018 - Present
<b>Reviewer</b>	IOP Publications
PHYSICA SCRIPTA	Oct. 2021 - Present
<b>Joint Secretary &amp; Joint Treasurer</b>	Bharathidasan University
UNIVERSITY PHYSICS FORUM	Jun. 2018 - Apr. 2019
<b>Organizing Committee Member</b>	Bharathidasan University
INTERNATIONAL CONFERENCE ON SUSTAINABLE ENERGY TECHNOLOGIES	Jun. 2018

## Organizing Secretary

NATIONAL SCIENCE DAY CELEBRATIONS

Bharathidasan University

Feb. 2018

## Organizing Committee Member

NATIONAL SCIENCE DAY CELEBRATIONS

Bharathidasan University

Feb. 2017

## Secretary

COLLEGE PHYSICS ASSOCIATION

Kandasami Kandars College

Jul. 2008 - Mar. 2009

## Personal Details

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Gender : Male

D.O.B : June 11, 1989

Marital status : Married

Nationality : Indian

Permanent Address : 42/59 Kolandanur, Karur - 639 004, India

## Reference

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### Dr. R. Ramesh Babu

*Ph.D. Supervisor*

*rampap2k@yahoo.co.in*

Associate Professor  
School of Physics  
Bharathidasan University  
Tiruchirappalli, India

### Dr. T. Kanagasekaran

*PostDoc PI*

*kanagasekaran@iisertirupati.ac.in*

Assistant Professor  
Department of Physics  
Indian Institute of Science Education & Research  
Tirupati, India

## Collaborations

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### Prof. Vijayakumar Anand

*Coordinator*

*vijayakumar.anand@ut.ee*

ERA CIPHR Chair and Associate Professor  
Institute of Physics  
University of Tartu  
Tartu, Estonia

## Declaration

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I hereby declare that all the details furnished above are true to the best of my knowledge and belief.

**P. A. Praveen**