P. A. **Praveen**

JSPS Post Doctoral Fellow

Tohoku University, Sendai, Japan

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Updated on *February 14, 2024*

Positions

Postdoctoral Fellow *May. 2023 - Present*

Tohoku University *Sendai, Japan*

Electrically driven organic lasers

Research Associate *Jan. 2023 - May. 2023*

Indian Institute of Science Education and Research (IISER) Tirupati *Tirupati, India*

Organic optoelectronic materials and devices

Postdoctoral Fellow *Jun. 2022 - Jan. 2023*

University of Tartu *Tartu, Estonia*

Computational imaging using diffractive optical elements

Postdoctoral Fellow *Jun. 2019 - May. 2022*

Indian Institute of Science Education and Research (IISER) Tirupati *Tirupati, India*

OLETs for lasing: DFT and Experimental studies

Education

Doctoral Degree *Jan. 2013 - Jun. 2019*

Bharathidasan University *Tiruchirappalli, India*

Quantum chemical and experimental analysis of metal organic nanostructures for NLO applications

Project Student *Jun. 2011 - Jan. 2013*

Bharathidasan University *Tiruchirappalli, India*

Improvising organic medium by metal dopants for nonlinear optical applications

Post Graduation *Jul. 2009 - Apr. 2011*

Bharathidasan University *Tiruchirappalli, India*

First Class with CGPA 7.5

Under Graduation *Jun. 2006 - Apr. 2009*

Periyar University *Salem, India*

First Class with 80%

Areas of Expertise

Optoelectronic devices

- Crystal growth and thin film deposition of organic & hybrid perovskite semiconductors
- OFET and organic diodes fabrication and electrical characterization

Metal-organic NLO systems

- Crystal growth / thin film deposition of metal-organic systems
- Nonlinear optical studies - SHG and Z-Scan studies

Computational materials science

- Materials analysis using DFT and semiemiprical calcualtions
- DFT simulation of optoelectroni properties of organic semiconductors

Hands-On Experience

Experimental Techniques

- **Crystal growth:** PVT, hydrothermal, low & high temperature solution growth
- **Thin films:** Thermal evaporation, photolithography, CVD, spin coating
- **Structural:** PXRD, FTIR, AFM, SEM/EDX
- **Electrical:** Parametric, Dielectric, Hall analyses
- **Optical:** Optical pumping, PL, PYS, PLQY, Z-Scan, SHG measurements

Molecular Packages Gaussian, ORCA, MOPAC, Dalton, AutoDock

Programming Python, FORTRAN, R, MATLAB

Selected Publications

12. **P. A. Praveen**, S. Dhanapal, S. V. Bhat, A. Kandhasamy, T. Kanagasekaran, *Comprehensive analysis of DFT-3C methods with B3LYP and experimental data to model optoelectronic properties of tetracene*. **Materials Science in Semiconductor Processing** 173 (2024) 2200263.

11. A. Bhattacharya, **P. A. Praveen**, Yashwanth R, T. Kanagasekaran, *A Combined Theoretical and Experimental Approach to Deduce the Role of Dielectric Layer on Interface Trap Density in Single Crystal Organic Field-Effect Transistors*. **Crystal Research & Technology** 58 (2023) 2200263.

10. A. Bhattacharya, **P. A. Praveen**, S. V. Bhat, S. Dhanapal, A. Kandhasamy, T. Kanagasekaran, *Theoretical insights on pyrene end-capped thiophenes/furans and their suitability towards optoelectronic applications*. **Computational and Theoretical Chemistry** 1225 (2023) 114135.

9. 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.

8. **P. A. Praveen**, P. Muthuraja, P. Gopinath, T. Kanagasekaran, *Impact of Furan Substitution on the Optoelectronic Properties of Biphenylyl/Thiophene for Light Emitting Transistor Applications*. **The Journal of Physical Chemistry A** 126 (4) (2022) 600.

7. **P. A. Praveen**, A. Bhattacharya, T. Kanagasekaran, *A DFT Study on the Electronic and Photophysical Properties of Biphenylyl/Thiophene Derivatives for Organic Light Emitting Transistors*. **Materials Today Communications** 25 (2020) 101509.

6. **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.

5. **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.

4. **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.

3. **P. A. Praveen**, R. Ramesh Babu, K. Ramamurthi, *Theoretical and experimental investigations on linear and nonlinear optical response of metal complexes doped PMMA films*. **Materials Research Express** 4 (2017) 025024.

2. **P. A. Praveen**, R. Ramesh Babu, K. Jothivenkatachalam, K. Ramamurthi, *Spectral, morphological, linear and nonlinear optical properties of nanostructured benzimidazole metal complex thin films*. **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy** 150 (2015) 280.

1. **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.

Awards

2023 **IOP Trusted Reviewer**, For exceptionally high level peer review competency

2023 **JSPS Postdoctoral Fellowship**, Post Doctoral Research, Tohoku University, Japan

2022 **ERA Chair Postdoctoral Fellowship**, Post Doctoral Research, University of Tartu, Estonia

2019 **Research Fellowship Award**, Post Doctoral Research, IISER Tirupati, India

2017 **Best Paper Award**, 21^{st} 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

Supervision of Graduate Students

2021 **BSMS V$^{\text{th}}$ year Project**, Fabrication of organic photodetectors for broadband detection

2019 **BSMS V$^{\text{th}}$ year Project**, Effect of different dielectric layers on the mobility of OSCs

2018 **M. Sc., Project**, NLO properties of transistion 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 optical properties of cadmium based ZIF structures

2016 **M. Sc., Project**, ZIF-8 thin films for nonlinear optical applications

2015 **M. Sc., Project**, Pd doped ZnO nanoparticels for nonlinear optical applications

2014 **M. Sc., Project**, Synthesis of new quinoline derivative for nonlinear optical applications

Teaching

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

Invited Talks

Jul, 2022 — *Photonics Summer School, University of Tartu, Estonia*

Organic lasers: concepts, challenges and the story so far

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 School for Online Training on 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 LaTeX

Academic Activities

Reviewer — *Springer Nature*

Journal of Materials Science: Materials in Electronics — *Sep. 2023 - Present*

Organizing Team Member — *University of Tartu*

CIPHR Hackathon — *Nov. 2022*

Reviewer — *Elsevier Publications*

Spectrochimica Acta Part A — *Nov. 2018 - Present*

Reviewer — *IOP Publications*

Physica Scripta — *Oct. 2021 - Present*

Joint Secretary & Joint Treasurer — *Bharathidasan University*

University Physics Forum — *Jun. 2018 - Apr. 2019*

Personal Details

Gender : Male
Marital status : Married
Nationality : Indian

Reference

Details will be provided on request.