CURRICULUM VITAE

Dr STEEPHENRAJ A

***** +91-9585823055

steephycrystaldft18@gmail.com

https://www.researchgate.net/profile/Steephenraj-Arokiyasamy

ABOUT ME

I am a Ph.D Physics from SSN Research Centre, SSN College of Engineering, affiliated to Anna University, Center for Research, Chennai, India. My main area of research works are Experimental and Computational studies of imidazolium based dicarboxylic acid derivative single crystals for third harmonic generation applications.

CAREER OBJECTIVE

- To join any leading institution as a Post-Doctoral Fellow/Research Professor (with any suitable grade) and execute the duties of teaching and carry out academic / industrial collaborative research activities.
- To understand science in depth and to meet the needs of society.
- To uphold enthusiasm, dedication and ethics in research practices throughout the career.

THESIS

- PhD Thesis: "Experimental and Computational studies of imidazolium based dicarboxylic acid derivative single crystals for third harmonic generation applications" Under the Guidance of: Dr. P. Rajesh, Assistant Professor, Department of Physics, SSN Research Centre, SSN college of Engineering, Affiliated to Anna University, Center for Research, Chennai.
- Summary of the PhD Work: The significant outcome of my Ph.D. thesis is that both experimental • and computational approaches the crystal structure, optical properties and nonlinear optical behavior of single crystals. In present thesis, slow evaporation solution development of NLO single crystals of 2-methylimidazolium hydrogen D-tartrate (2MIMDT), imidazolium hydrogen succinate (IMSU) and 2-methylimidazolium hydrogen oxalate dihydrate (2MIO) has been described. Several characterization experiments on 2MIMDT, IMSU and 2MIO crystals were conducted in the current work. The structural, spectral, optical, mechanical, and thermal properties of the high-quality NLO active grown crystals were investigated. The focus of the investigation is on their potential application for third harmonic application (THG). Additionally, Density Functional Theory (DFT) has been utilized to examine the nonlinear optical behavior of the 2MIMDT, IMSU and 2MIO molecules, analyses structural and electronic effects, and optimize the molecular geometry using the B3LYP/6-311G (d,p) level. Third harmonic application refers to a nonlinear optical process where light at a specific frequency is generated, which is three timesthe frequency of the incident light. This process is of interest for various applications, such as laser frequency conversion, optical imaging, and telecommunications.



WORK EXPERIENCE

S.No	Designation	College/ University	Department	Duration
01	Assistant Professor	Mohamed Sathak A.J. College of Engineering, Chennai.	Physics	Nov 2022- till date

EDUCATION

S.No	Degree	Year	Subject	College/ University	Class
01	Ph.D	2023	Physics	SSN Research Centre, SSN Institutions, Anna University,Chennai	Highly Commended
02	M. Phil	2016	Physics	St. Joseph's College (Autonomous), Bharathidasan University, Trichy,	First Class
03	M.Sc	2011	Physics	Poombuhar College (Autonomous), Bharathidasan University, Melaiyur	First Class
04	B.Sc	2009	Physics	A.V.C College (Autonomous), Bharathidasan University, Mayiladuthurai	First Class

AWARDS AND PRIZES

- Best Teacher Award for the academic year [2022-2023] at Mohamed Sathak AJ College of Engineering, affiliated to Anna University, Chennai.
- Best poster award for the paper titled "Synthesis and characterization of tin oxide thin films nano particles by co-precipitation method" Jeppiaar Engineering College, Chennai, [2018].

PUBLICATIONS

- Steephenraj, A, Chinnasami, S & Rajesh, P, 'Investigation on the Growth, Structural, Vibrational, SHG Behaviour and DFT Studies of Imidazolium Hydrogen Succinate Single Crystal', Chemical Papers. Vol.76, pp. 5429–5446, (2022), (Impact Factor- 2.097).
- A. Steephenraj, S. Chinnasami, Rajesh Paulraj, Studies on the Growth, Structural, Optical and Quantum chemical investigations of 2-Methylimidazolium D-Tartrate Single Crystal for SHG applications, J. Mat. Sci: Mater. Electron, Vol.33, pp. 22999–23015, (2022) (Impact Factor-2.779).
- Steephenraj, A, Chinnasami, S, Rajesh, P & Dhas, S.S.J, 'Growth, structural, vibrational, characterization and DFT investigations of 2-methylimidazolium hydrogen oxalate dihydrate (2MIO) single crystal-towards third order NLO applications', J. Mol. Struc, vol.1275, pp.134665, (2023) Impact Factor: 3.841.

4. Steephenraj A, Rajendhiran P "Synthesis and optical Properties of Tin oxide thin films nano particles" Journal for Advanced Research in Applied Science, ISSN No: 2394-8442.

CONFERENCE PRESENTATIONS

- National Conference on Gravitate Applications in Nanotechnology (GAIN), Department of Physics, ERK Arts & Science College, Dharmapuri, 21st July 2016.
- 2. 5th National Conference on Hierarchically Structured Materials (NCHSM), Department of Physics, SRM Institute of Science and Technology, 31st March-1st April 2017.
- IEEE Sponsored International Conference on Science, Technology, Engineering and Management (ICONSTEM), Role of Aeronautical, Mechanical & Physics in Digital India and Smart Cities, Jeppiaar Engineering College, Chennai, 23rd – 24th March 2017.
- 4. National Conference on Processing and Fabrication of Advanced materials (NCPFAM), Department of Physics, SSN College Engineering, Chennai, 1st -2nd March 2018.
- 5. 5th National Conference on Hierarchically Structured Materials (NCHSM), Department of Physics, SRM Institute of Science and Technology (SRMIST), 22nd -23rd February 2019.
- 6. 4th International Conference on Science Engineering and Technology Jeppiaar Engineering College, Department of Biotechnology, Chennai, 23rd -24th March 2018.
- International Conference on Sustainable Materials and Technology for Bio and Energy Applications (SMTBEA), Department of Electronics & Communication Engineering, SSN College Engineering, Chennai, 19th -21st May 2021.
- 8. International Conference on Solution Grown Crystals and Their Useful Applications (SGCA), SSN Research Centre, Chennai, 13th -15th September 2021.
- 9. 2nd Virtual International Conference on Hierarchically Structured Materials (ICHSM), Department of Physics, SRM Institute of Science and Technology, 24th 25th March 2022.
- 10. International E-Conference on Advanced Materials in Innovative Technology, Department of Physics, Milliya Arts, Science and Management Science College, Beed (MS), 11th February 2022.

DIGITAL SKILLS

 Microsoft Office / Origin software / Gaussian 09W/Gauss View 5.0 / Crystal Explorer 3.1/Mercury/ VESTA / Bilbao crystallographic server / Full-Proof / Powder-X / Powder Cell / WinMorp

SEMINAR/SCHOOL/CONFERENCE PARTICIPATION

S.No	Name of the Workshop/Seminar/School	Place	Date
01	Workshop on Statistical Physics and Materials Science	National Institute of Technology, Tiruchirappalli.	21 st -23 th July 2016
02	Characterization of Materials	Sri Sairam Institute of Technology, Chennai	20 th & 21 st July 2017
03	Faculty Development Workshop on Concept based Teaching and Learning Physics through Experiments in Undergraduate Education	National Institute of Technology Warangal	$2^{nd} - 4^{th}$ March 2017

04	Two Days Seminar on Emerging Trends in Materials and Technology	Jeppiaar Engineering College, Chennai	27 th -28 th July 2017
05	Workshop on Solar Cell Modelling and Design	Hindustan Institute of Technology, Chennai	27 th Novamber 2017
06	Seven Days of Faculty Development Programme on Instructional Design and Delivery System	National Institute of Technical Teachers Training & Research, Chennai	17 th -22 nd April 2017
07	One Day National Level Workshop on How to Reach the Hard to Teach	Jeppiaar Engineering College, Chennai	9 th January 2018
08	Two Days Seminar on Advanced Materials and Engineering Applications	Jeppiaar Engineering College, Chennai	$5^{\text{th}}_{-4} 4^{\text{th}} \text{March 2018}$
09	Seven Days National Workshop on Refined Versions of Basic Sciences and Their Uplifting Effects on Society	Jeppiaar Engineering College, Chennai	6 th -13 th August 2018
10	National Workshop on Writing and Publishing Paper in High Impact Scientific Journals	Jeppiaar SRR Engineering College, Chennai	24 th August 2018
11	Workshop on Simulation Enhanced Techniques in Physics and Electronics Teaching	Dr. M.G.R Educational and Research Institute, Chennai	7 th February2019
12	International Symposium on Modeling of Crystal Growth Processes and Devices	SSN Research Centre, SSN Institutions, Chennai	26 th -28 th February 2019
13	International Workshop on Thermoelectric Materials and Applications	SSN Research Centre, SSN Institutions, Chennai	24 th - 25 th August 2022
14	Indian Summer School on Crystal Growth	SSN Research Centre, SSN Institutions, Chennai	16 th -21 st May 2022
15	Five Days of Faculty Development on Recent Trends in Science and Technology	Mohamed Sathak A.J. College of Engineering, Chennai.	17 th -21 st July 2023
16	Five Days of Faculty Development on Recent Advances and Applications in Chemical Sciences	Mohamed Sathak A.J. College of Engineering,Chennai	14 th -21 st August 2023

ANALYTICAL SKILLS

• Instrument Operator:

1. Experience in handling Wilson hardness tester (Tukon 1102) Vickers Hardness (handling all crystal samples).

2. Experience in handling Fluorescence Spectrophotometer (F-7000, Hitach). handling all kinds of samples (Powder and biological samples).

• Experience in Sample Characterizations:

- 1. X-ray diffraction method and Rietveld Analysis
- 2. Fourier Transform Infrared (FT-IR) Spectroscopy

- 3. Fourier Transform-Raman spectrometer
- 4. UV-visible NIR spectrometer
- 5. Thermogravimetric and Differential Thermal Analysis (TG/DTA)
- 6. Scanning Electron Microscopy (SEM)
- 7. Z-scan technique Instrument

MANAGEMENT SKILLS

• Trained two M.Sc students and one Ph.D. research scholar for their research project at Department of Physics, A.V.C College (Autonomous), Bharathidasan University, Trichy.

REFERENCES

Dr P. Rajesh

Research Supervisor Assistant Professor Department of Physics SSN College of Engineering Anna University, Kallavakam) +91 9840868323 rajeshp@ssn.edu.in

Dr N. Victor Jaya

Doctoral Committee Member Professor (Retd) Head of Department of Physics Anna University, Chennai.

+91 9444506544
nvj1961@gmail.com

Dr. U. Madhusoodanan

Doctoral Committee Member Senior Scientist (Retd) Department of Radiological Safety Division IGCAR, Kalpakkam

) +91 9444338085

manumenon123@rediffmail.com