

Dr. A. SENTHIL

Dr.A.Senthil, M.Sc., M.Phil, Ph.D., PGDCA
ASSOCIATE PROFESSOR
Department of Physics
SRMIST, RAMAPURAM
CHENNAI-89



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EDUCATIONAL QUALIFICATIONS:

- Ph.D – Full time – Crystal Growth – July 2006 to December 2010 - Anna University, Chennai, Tamil Nadu , India.
- M.Phil., - Full time – Physics- December-2003- Bharathidasan University, Trichy – TBML College, Porayar, Tamil Nadu, India.
- PGDCA- Full time – Computer Applications- July 2001 to April 2001- Bharathidasan University, Trichy –UDC, Trichy
- M.Sc- Full time- Physics- August 1998 – April 2000- Bharathidasan University, Trichy - National College, Trichy, Tamil Nadu, India
- B.Sc- Full time – Physics- July 1995 – April 1998- Bharathidasan University, Trichy - National College, Trichy, Tamil Nadu, India

Academic Experience :

- Associate Professor: Department of Physics, **SRM University-Ramapuram**, Chennai-600089, India (15-11-2023 to till date)
- Assistant Professor: Department of Physics, **SRM University-Ramapuram**, Chennai-600089, India (21-07-2011 to till date)
- Lecturer: Department of Physics, **SHREE SASTA COLLEGE OF ENGINEERING**, Chennai, (2010-2011).
- Lecturer: Department of Physics, **SMK FOMRA INTITUTE OF TECHNOLOGY**, Chennai, (2005-2006)
- Lecturer: Department of Physics, **JJ COLLEGE OF ARTS AND SCIENCE**, pudukottai, (2004-2005)

Total Academic Experience : 15.6 Years.

Total Research Experience : 16 years.

RESEARCH EXPERIENCE:

Areas of Research:

- Crystal Growth and Characterization.
- Nonlinear optical materials, Optoelectronic materials and devices.
- Optical characterization of materials, Bio-composites and material synthesis processes.
- Molecular structures and Defect analysis.

Funded Projects :

Principle Investigator of DST-SERB Funded project entitled ‘Unidirectional Growth and Characterization of High Quality, Nonlinear Optical (NLO) Hydrazone Derivative Single Crystals for Second Harmonic Generation (SHG) Device Applications’ - RS. 25,88,931/- (2017-2019)

Research Guidance / Supervision :

1. Ph.D- 2- Completed;
1- submitted thesis
2. M.sc - (Physics)- 6 .

Publication Details:

Publications in the reputed International Journals	:	34
Citation	:	232
H-index	:	9
Cumulative Impact factor	:	84.276
Conference/Seminar/Workshop presentations	:	60
Conference/Seminar/Workshop/Coursework participation:		80

List Of Publications In Refereed Journals (33 Papers):

1. T. Bharanidharan; **A. Senthil**(2023), “ Crystal growth, structural, Hirshfeld surface analysis, optical and laser damage threshold analysis of 2-Methylimidazolium glutarate single crystal: third-order nonlinear optical applications” Journal of Materials Science: Materials in Electronics, 2023-11(**Impact Factor 2.8**),
2. Vennila, M., Muthu, S., **A. Senthil**, Bharanidharan, T., Malar Vezhli, M., Khaled, J. M., Abbas, G., & Kadaikunnan, S.(2023), “Molecular structure, electronic, structural, topological analyses with solvents (water, chloroform, acetone and benzene) based on IEFPCM investigation and Hirshfeld

- analysis on 2-Acetyl Pyridine". *Journal of Molecular Liquids*, 122851. **(Impact Factor 6)**
<https://doi.org/10.1016/j.molliq.2023.122851>.
3. T. Bharanidharan; **A. Senthil**(2023) , "Crystal growth, spectroscopic, hirshfeld surface analysis, optical, and non-linear aspects of 2-methylimidazolium nitrate organic single crystal" *Journal of Molecular Structure*, 1284, 135344 ,(Impact Factor 3.8)
<https://doi.org/10.1016/j.molstruc.2023.135344>
4. T Bharanidharan, **A Senthil**, S Ranjith (2023), 'Synthesis, crystal growth, structural and physicochemical properties of N-methylurea benzoic acid single crystal for non-linear optical applications' *Journal of Molecular Structure*, (2023). 1281, 135136,(Impact Factor 3.8)
<https://doi.org/10.1016/j.molstruc.2023.135136>.
5. Rajasekaran, R., **A. Senthil**, V. Parthasarathy, and T. Bharanidharan(2023) "Investigation on the crystal growth, optical, mechanical, and third harmonic generation properties of 2-aminopyridinium adipate monoadipic acid dihydrate single crystal." *Journal of Materials Science: Materials in Electronics* 34, no. 7 : 593, **(Impact Factor 2.8)**, <https://doi.org/10.1007/s10854-023-09989-1>.
6. Vennila, M., R. Rathikha, S. Muthu, **A. Senthil** (2023), A. Jeelani, and Ahmad Irfan. "Structural vibrational analysis (FT-IR, FT-Raman), electronic studies based on solvents (UV-Vis, non-linear optics, frontier molecular orbitals, molecular electrostatic potential, natural bond orbital and Fukui evaluation) and Hirshfeld surface analysis on 4-chloroacetophenone." *Journal of the Indian Chemical Society* 100, no. 2 (2023): 100871, **(Impact Factor 0.2)**,
<https://doi.org/10.1016/j.jics.2022.100871>.
7. Bharanidharan, T., and **A. Senthil**. (2023),"Crystal growth, spectral, Hirshfeld surface analysis, and physicochemical properties of third-order non-linear optical single crystal: 2-methylimidazolium hydrogen adipate." *Journal of Molecular Structure* 1272 (2023): 134145,(Impact Factor 3.8),
<https://doi.org/10.1016/j.molstruc.2022.134145>
8. Senthil, K., K. Elangovan, **A. Senthil**, and G. Vinitha (2021), "Synthesis, growth, optical, mechanical, thermal, dielectric and third order nonlinear optical properties of cyclohexylamine derivative single crystals." *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 247 119063,(Impact Factor 4.4), <https://doi.org/10.1016/j.saa.2020.119063>.

9. Loganayaki, K Senthil, S Nandhini, **A Senthil**, P Murugakoothan, G Vinitha (2021) 'Discussion on spectral, electrical and third-order nonlinear optical susceptibility of semi-organic tris (cyclohexylammonium) tris (o- chlorobenzoate) dihydrate single crystal' Journal of Materials Science: Materials in Electronics,32(1) 141-150, (**Impact Factor 2.8**), <https://doi.org/10.1007/s10854-020-04729-1>.
10. Senthil, K; Elangovan, K; **Senthil, A**; Vinitha, G (2021), 'Synthesis, growth, optical, mechanical, thermal, dielectric and third order nonlinear optical properties of Cyclohexylamine derivative single crystals' Spectrochimica Acta Part A:Molecular and Biomolecular Spectroscopy, 119063. (**Impact Factor 4.4**), <https://doi.org/10.1016/j.saa.2020.119063>.
11. Senthil, K; **Senthil, A**; Elangovan, K (2020), 'Crystal structure, growth and physiochemical properties of nonlinear optical single crystal: Bis cyclohexylammonium) dioxalate hydrate', Journal of Molecular Structure, 127926, (**Impact Factor 3.8**), <https://doi.org/10.1016/j.molstruc.2020.127926>.
12. K Senthil, K Elangovan, **A Senthil**, G Vinitha (2019) 'Growth and characterization of n-methylurea oxalic (nmuo) acid single crystal', Rasayan Journal of Chemistry V-12, 1262-1268. (**Impact Factor 1.3**), <http://dx.doi.org/10.31788/RJC.2019.1235174>.
13. Senthil, K; Gnanadeepam, R; Elangovan, K; **Senthil, A** (2019), Effect of cyclohexylamine on growth, structural, spectral, optical and mechanical properties of potassium acid phthalate (KAP) single crystal, AIP Conference Proceedings, 2117, 20027. (**Impact Factor 0.4**), [10.1063/1.5114607](https://doi.org/10.1063/1.5114607).
14. Elangovan, K; Boobalan, Maria Susai; **Senthil, A**; Vinitha, G (2019), Investigation on growth, structural, characterization and DFT computing of imidazolium 3-nitrobenzoate (**I3NB**) single crystal, "Towards third order nonlinear optical applications, Journal of Molecular Structure, 1196, 720-733. (**Impact Factor 3.8**), <https://doi.org/10.1016/j.molstruc.2019.07.011>.
15. Elangovan, K; **Senthil, A** (2019), 'Growth, structural, optical, thermal, Dielectric and second harmonic generation properties of 2-methylimidazolium Malonate (2MIM) nonlinear optical single crystals, Journal of Materials Science: Materials in Electronics, 30,14143-14150. (**Impact Factor 2.8**), <https://doi.org/10.1007/s10854-019-01781-4>.

16. Elangovan, K; **Senthil, A** (2019), 'Growth, structural, spectral, thermal, mechanical, electrical, linear and third order nonlinear optical properties of Imidazolium hydrogen maleate (IM) single crystal for nonlinear optical applications, Materials Research Express, 6, 65101. (**Impact Factor 2.205**), [10.1088/2053-1591/ab0b52](https://doi.org/10.1088/2053-1591/ab0b52).
17. Elangovan, K; **Senthil, A**; Vinitha, G (2019), 'Growth, structure perfection and characterization of 2-methylimidazolium hydrogen oxalate **dehydrate** (2MIO) single crystal for NLO applications, Journal of Materials Science: Materials in Electronics, 30, 13664-13674. (**Impact Factor 2.8**), <https://doi.org/10.1007/s10854-019-01742-x>.
18. Elangovan, K; **Senthil, A**; Vinitha, G (2018), 'Growth and characterization of Imidazolium adipate (IA) single crystal, Molecular Crystals and Liquid Crystals, 668, 118-131. (**Impact Factor 0.62**), <https://doi.org/10.1080/15421406.2018.1549200>.
19. Saravanan, M; **Senthil, A**; Rajasekar, S Abraham (2016), 'Investigations on the Low temperature Solution growth, etching, laser damage threshold, Photoluminescence, electrical characterization and nonlinear optical Properties of organic material: Ammonium hydrogen l-malate', Optik, 127, 1685-1689. (**Impact Factor 3.1**), <https://doi.org/10.1016/j.ijleo.2015.11.033>.
20. Saravanan, M; **Senthil, A**; Rajasekar, S Abraham (2016), 'Crystal growth, solubility, structural, optical, thermal, mechanical and electrical studies of l- arginium adipate: An organic nonlinear optical material', Optik, 127, 1372- 1377. (**Impact Factor 3.1**), <https://doi.org/10.1016/j.ijleo.2015.10.223>.
21. Saravanan, M; **Senthil, A**; Rajasekar, S Abraham (2016), 'Growth and characterization of proficient second order nonlinear optical material: L- asparaginium picrate (LASP)', Optics & Laser Technology, 83, 67-75 (**Impact Factor 5**), <https://doi.org/10.1016/j.optlastec.2016.03.026>.
22. Saravanan, M; **Senthil, A**; Rajasekar, S Abraham (2016), 'Effects of 1, 2-dichloroethane on the optical, thermal, mechanical and NLO behaviors of ADP crystals', Optik, 127, 781-786. (**Impact Factor 3.1**), <https://doi.org/10.1016/j.ijleo.2015.10.164>.
23. Saravanan, M; **Senthil, A**; Rajasekar, S Abraham, Vijayan, N(2016), 'Effects of semi-organic additives on the solubility, growth, optical, thermal, mechanical, dielectric and NLO behaviors of ADP crystals for optoelectronic applications', Optik, 127, 1463-1470. (**Impact Factor 3.1**), <https://doi.org/10.1016/j.ijleo.2015.11.008>.

24. Saravanan, M; **Senthil, A**; Rajasekar, S Abraham (2015), 'Growth and characterization of noncentrosymmetric single crystals of l-Argininium-4-nitro Phenolate Monohydrate (LARP): A potential second order nonlinear optical material' *Optical materials*, 48, 226-232. (**Impact Factor 3.9**), <https://doi.org/10.1016/j.optmat.2015.08.005>.
25. **Senthil, A**; Ramasamy, P (2014); 'Investigation on the SR method growth, etching, birefringence, laser damage threshold and thermal characterization of strontium bis (hydrogen L-malate) hexahydrate single crystal' *Journal of crystal growth*, 401, 200-204. (**Impact Factor 1.9**), <https://doi.org/10.1016/j.jcrysgr.2014.01.022>.
26. Loganayaki, M; **Senthil, A**; Murugakoothan, P (2013), 'Growth, Optical and Electrical Properties of zinc tris (thiourea) sulphate (ZTS) Single Crystals' *International Journal of Computer Applications*, 72, (**Impact Factor 0.381**), [10.5120/12458-8801](https://doi.org/10.5120/12458-8801).
27. Z Delci, D Shyamala, S Karuna, **A Senthil**, A Thayumanavan (2013), 'Optical, microhardness, thermal and NLO behaviour of L-histidine doped ADP crystals', *Journal of Pure and Applied Physics NISCAIR-CSIR, India*. (**Impact Factor 0.6**)
28. **Senthil, A**; Loganayaki, M; Lenin, M; Ramasamy, P (2012), 'Growth and characterization studies of sodium Di (L-Malato) borate bulk single crystal: A promising nonlinear optical material', *AIP Conference Proceedings*, 1447, 1305-1306. (**Impact Factor 0.4**)
29. Z Delci, D Shyamala, S Karuna, **A Senthil**, A Thayumanava (2012), 'Enhancement of optical, thermal and hardness in KDP crystals by boron doping', *Int. J. Chem. Tech. Res* 4 (2), 816- 826. (**Impact Factor 0.71**).
30. **Senthil A.** and Ramasamy P. Verma, Sunil (2011), 'Investigations on the SR method growth, etching, birefringence, laser damage threshold and dielectric characterization of sodium acid phthalate single crystals', *J. Crystal Growth*, 318, 757-761. (**Impact Factor 1.96**), <https://doi.org/10.1016/j.jcrysgr.2010.11.115>.
31. **Senthil A.** and Ramasamy P. (2010), 'Synthesis, growth and characterization of strontium bis (hydrogen L-malate) hexahydrate bulk single crystal: A promising semi-organic nonlinear optical material', *J. Crystal Growth*, Vol. 312, pp. 276- 281. (**Impact Factor 2.0**), <https://doi.org/10.1016/j.jcrysgr.2009.10.021>.

32. **Senthil A.** and Ramasamy P. (2009), 'Unidirectional growth of <001> Sodium Acid phthalate single crystal by Sankaranarayanan-Ramasamy (SR) Method', J. Crystal Growth, Vol. 311, pp. 4720-4724. (**Impact Factor 1.7**), <https://doi.org/10.1016/j.jcrysgr.2009.09.014>.
33. **Senthil A.**, Ramasamy P. and Bhagavannarayana G. (2009), 'Synthesis, growth, optical, dielectric and thermal studies of Lithium hydrogen phthalate dehydrate crystals', J. Crystal Growth, Vol. 311, pp. 2696-2701. (**Impact Factor 1.7**), <https://doi.org/10.1016/j.jcrysgr.2009.02.036>.
34. **Senthil A.**, Ramesh Babu R., Balamurugan N. and Ramasamy P. (2009), 'Unidirectional growth of largest L-LMHC1 dihydrate crystal by SR method', J. Crystal Growth, Vol. 311, pp. 544-547. (**Impact Factor 1.9**), <https://doi.org/10.1016/j.jcrysgr.2008.09.056>.

Book Chapters

1. Palm Fiber-Based Epoxy Composites

Vellaichamy Parthasarathy ., Arumugam Senthil ., Deivanayagampillai Nagarajan ., Balakrishnan Sundaresan .,

Epoxy-Based Biocomposites, Volume , Year 2023, Pages 151-162

2. Physicochemical and biological properties of the biocomposite in the dental applications

V. Parthasarathy, , A. Senthil, , D. Nagarajan, , and A. Padmanaban

Biocomposites for Industrial Applications

Construction, Biomedical, Transportation, and Food Packaging

Academic Awards/ Fellowship Received:

1. '**Best Paper Presentation**' Awarded by '**Indian Association for Crystal Growth**' at 12th national Seminar on Crystal Growth organized by SSN College of Engineering, Chennai, Tamil nadu during December 21-23,2007.
2. '**Best Paper Presentation**' Awarded in the '6th National Conference on Emerging Trends in Crystal Growth and Nano Materials' organized by Department of physics, Loyola College, Chennai, during February 28th & 29th , 2008.
3. '**Best Paper Presentation**' Awarded in the national conference 'Advanced in Materials science' organized by Department of physics, Cauvery College for Women, Trichy, during February 15th &16th , 2008.
4. **Junior Research Fellowship** by SSN College of Engineering, Chennai, India, during August 2006- January 2010.

Research Facilities Developed :

- Crystal growth lab established at SRM Institute of Science and Technology, Ramapuram campus, Chennai-89.
- Low Temperature Solution Growth
- Unidirectional Solution growth setups.
- Accelerated Seed Rotation Technique (ACRT).
- Colum chromatography for purification.

Experience In Crystal Growth Instrumentation And Handling Equipments:

- [i] Experience in operating and fixing problems with constant temperature baths which can maintain temperature from 4 °C to 100 °C with control accuracy of +/- 0.01 °C.
- [ii] Experience in using optical microscope equipped with Vickers hardness tester & polarizing light microscopy for the stress analysis in the wafers.
- [iii] Work experience with vacuum systems – diffusion pump and Turbo pump.

Spectroscopy :

Involved in the interpretation of data from FTIR, IR, UV visible, Raman Spectroscopy and Photoluminescence for organic and semi-organic crystals

Microscopy:

Experienced in etching crystals using aqueous solution and different chemical etching agents to delineate the defect in the crystals.

Solution Growth Method:

Sankaranarayanan-Ramasamy method (one of the solution growth method) is modified for aqueous solution growth and it is used to grow largest L-LMHCL dehydrate. Effect of gravity driven concentration in SR method was investigated first time in crystal growth literature reported by me (Published in Journal of Crystal Growth). Familiar with different crystal growth techniques like Czochralski, Bridgman, Gel growth, Slow cooling, Slow evaporation, and accelerated crystal rotation technique.

REVIEWER IN REPUTED JOURNALS:

Reviewer in the reputed Journals - Journal of Crystal growth, Journal of Molecular Structure, and Journal of thermal and calorimetric.

Professional Bodies:

- ❖ Annual Member in **Indian Science Congress Association (ISCA)**
- ❖ Life Member in **Indian Association for Crystal Growth (IACG)**

NPTEL Course / Other Online Course Completed:

Dr. A. SENTHIL

- ❖ NPTEL Online Certification 8 weeks Course conducted by IIT Madras, “**Nanotechnology, Science and Applications**” July – Sep 2023.
- ❖ NPTEL Online Certification 12 weeks Course conducted by IIT Madras “**Renewable Energy Engineering: Solar, Wind and Biomass Energy systems**” Jan-April- 2023.
- ❖ NPTEL Online Certification 12 weeks Course conducted by IIT Madras “**Physics of Renewable Energy Systems**” Jul-October- 2022.
- ❖ NPTEL Online Certification 8 week Course conducted by IIT Kanpur “**Nanotechnology in Agriculture**” with 8 weeks, Feb-April, 2022.
- ❖ International Online course on “**Create transparent Power Point Animation for Your Videos**” conducted by Udemy
- ❖ International Online course on “**How to Create Animated Videos with Power Point**” conducted by Udemy.

Some Selected Programme Organized:

- ❖ Organizing Secretary: “**8th National Conference on Hierarchically Structured Materials**” SRM Institute of Science and technology during 2020.
- ❖ Organizing Secretary: Collaborated with CSIR- Advanced Materials and Processes Research Institute (AMPRI), Bhopal “**National Level Skill India programme on Advanced Materials for Next Generation Devices for Self Reliant India**” - Under CSIR - Jigyasa & Indian National Young Academy of Science” Programme organized at SRM Institute of Science and technology On July 2021.
- ❖ Organizing Secretary: Collaborated with CSIR- Advanced Materials and Processes Research Institute (AMPRI), Bhopal “**National Level Skill development programme on Material synthesis and Proceesing - Under CSIR-Jigyasa**” Programme organized at SRM Institute of Science and technology On AUG 2020.
- ❖ Organizing Coordinator: “**Materials Characterization Workshop**”. SRM Institute of Science and technology during 2018—2020.
- ❖ Organizing Coordinator : “**Virtual symposium on Multifunctional materials**”, SRM Institute of Science and technology on AUG 2020.
- ❖ Organizing committee member: “**National Conference on Hierarchically Structured Materials**” (till 2013 to 2019) - SRM Institute of Science and technology.
- ❖ Organizing committee member: “**Virtual International Conference on Hierarchically Structured Materials**” (2021 & 2022) - SRM Institute of Science and technology.

OTHER RESPONSIBILITIES FOR INSTITUTION :

Dr. A. SENTHIL

- ❖ Department NAAC file Coordinator (Criteria 6): SRM Institute of Science and technology during 2022-2023.
- ❖ University Exam cell Coordinator: SRM Institute of Science and technology during 2018 to till date.
- ❖ University Examination Squared: SRM Institute of Science and technology during 2018.
- ❖ University Question paper setter: SRM Institute of Science and technology during 2015.
- ❖ University Brand Building activity member: SRM Institute of Science and technology during 2019.
- ❖ University Admission and Certificate Verification Committee member: SRM Institute of Science and technology during 2019.
- ❖ University Discipline duty member: SRM Institute of Science and technology during 2011.
- ❖ Anti ragging squared in Hostels: SRM Institute of Science and technology during 2017.
- ❖ ISO trained Auditor : SRM Institute of Science and technology during 2011.
- ❖ Involving preparation of NAAC files: SRM Institute of Science and technology during 2011.
- ❖ Involving preparation of UGC files: SRM Institute of Science and technology during 2018.
- ❖ Class Adviser: SRM Institute of Science and technology during 2011 for B.Tech students.
- ❖ Department FDP Coordinator: SRM Institute of Science and technology during 2011 .
- ❖ Lab in charge: SRM Institute of Science and technology during 2018 B.Tech Physics lab and B.Sc Physics lab.

Extra Curricular activities :

1. N.S.S Volunteer- Best NSS Volunteer Award 1998.

REFERENCES:

1. Prof. P. Ramasamy

(Formar Vice-Chancellor – Alagappa University & Founder Director ,
Crystal Growth Center – Anna University),

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3. Prof. N. VIJAYAN

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3. Dr.P.C.Jop Prapakar

Head of the Department
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DECLARATION

I hereby declare that all the statements made in this bio-data are true and complete to the best of my knowledge and belief.

DATE :

PLACE :

Yours faithfully,

Dr.A.Senthil