

Faculty Profile



Dr. M. SILAMBARASAN, M.Sc., M.Phil., Ph.D., B.Ed., PGDCA

Associate Professor of Physics

Head: Centre of Excellence in Photonics and Nanotechnology

HIGHLIGHTS:

- Number of Journal Publications : 21
- H-Index : 07
- Project Funding Received : 02
- Patents Published : 03
- Patents Granted : Under Process

PROFESSIONAL LINKS:

- Scopus ID : 57195067546
- Scopus Link :
- <https://www.scopus.com/authid/detail.uri?authorId=57195067546>
- Google Scholar ID :
- <http://scholar.google.com/citations?user=HS-OhGsAAAAJ&hl=en>
- Web of Science Researcher ID : ABD-7604-2022
- (<https://www.webofscience.com/wos/author/record/ABD-7604-2022>)
- ORCID ID : orcid.org/0000-0002-8181-5855
- Anna University Faculty ID : 282173
- AICTE Faculty ID : 1-7478631276
- Anna University Supervisor ID : 4170043
- LinkedIn :
- <https://www.linkedin.com/in/dr-murugesan-silambarasan-2a5503aa/>

PROFESSIONAL BACKGROUND:

- Teaching Experience till date : 9 Years
- Research Experience : 17 Years

INTERNATIONAL EXPOSURE:

- Collaborative Research Work with **Prof. Tetsuo Soga**, Nagoya Institute of Technology, **JAPAN**.
- Collaborative Research Work with **Prof. Sejoon Lee**, Dongguk University, **Republic of Korea**.

AREA OF SPECIALIZATION:

- Nano-Photonics
- Physics and Materials Sciences
- Nano/Micro Electro Mechanical System (NEMS and MEMS)
- Semiconductor Nanomaterials, Nanostructures and Nano-Fabrications
- Organic, Perovskite Solar Cells, Optoelectronics, Semiconductor Diode Lasers and LED

Ph.D. GUIDING:

- Anna University Recognized Supervisor for Ph.D. Scholars – Faculty of Science and Humanities (**Physics**) – Ref. No: **4170043**
- Details of Full Time Ph.D. Scholars:

S. No.	Name of the Scholar	Year of Registration	Area of Research
1	Mr. S. AKASH KUMAR (Reg. No: 24177991159)	JAN 2024	Lead-free Perovskite Solar Cells

SPONSORED RESEARCH / FUNDING APPLIED / CONSULTANCY:

Se. No.	Title of the Projects	Funding Agency & Scheme	Duration & Budget (Rs.)
1.	Synthesis and Characterizations of High Crystalline Semiconducting Metal Oxide Nanostructures for Perovskite Solar Cell Applications.	SAVEETHA – Intramural Research Funding	24 Months (Feb 2023 – February 2025) & Rs. 500,000
2.	Synthesis, Fabrication and Characterization of Cesium Tin Halide Perovskite Quantum Dots Based Solar Cells.	INUP i2i Indian Institute of Technology Madras	From 28 th DEC 2023 - Medium Term (3 To 12 Months)

PATENTS PUBLISHED/GRANTED:

- **M. Silambarasan**, National Patent Application. No: 202341073111, **Patent Journal No. 05/2024 Dated 02/02/2024 10664.**
- **M. Silambarasan**, National Patent Application. No: 202341073114, **Patent Journal No. 05/2024 Dated 02/02/2024 10667.**
- **M. Silambarasan** and P. Baraneedharan, National Patent Application. No: 202341073115, **Patent Journal No. 05/2024 Dated 02/02/2024 10668.**

RECENT PUBLICATIONS IN INTERNATIONAL JOURNALS (Scopus and SCI indexed):

1. Pari Baraneedharan, Sankar Sekar, **Silambarasan Murugesan**, Djaloud Ahamada, Syed Ali Beer Mohamed, Youngmin Lee, Sejoon Lee, “Recent Advances and Remaining Challenges in Perovskite Solar Cell Components for Innovative Photovoltaics”, **Nanomaterials**, Vol. 14(23) (**2024**) 1867.
DOI: <https://doi.org/10.3390/nano14231867>
2. D. Anand, K. Ramachandran, P. Sakthivel and **M. Silambarasan**, “Investigations of crystallographic, magnetic, optical and photoluminescence nature of Sm₂O₃ doped SrTiO₃ nanomaterials for LED”, **Ceramics International**, Vol. 50 (**2024**) 33590-33598.
DOI: <https://doi.org/10.1016/j.ceramint.2024.06.175>
3. B. Renganathan, M.S. Kamath, **M. Silambarasan**, V.K. Gobinath, A.R. Ganesan, A. Deepak, N. Kannapiran, K. Guhan, N. Chandrasekar, S.K. Rao, “Annealing-induced Enhancement of TiO₂-ZnO Nanocomposites for High-performance Room-temperature Air Pollutant Detection in Fiber Optic Sensors”, **Microchemical Journal**, Vol. 200 (**2024**) 110329.
DOI: <https://doi.org/10.1016/j.microc.2024.110329>
4. D. Anand, K. Ramachandran, **M. Silambarasan**, J. Gajendiran and S. Gnanam, “Various Concentrations of Y₂O₃ Doping Induce Changes in Structural, Magnetic, Optical, and Photoluminescence Properties of Solid-State Synthesized SrTiO₃ Compounds for Optoelectronic Device Applications”, **Optical Materials**, Vol. 147 (**2024**) 114706.
DOI: <https://doi.org/10.1016/j.optmat.2023.114706>
5. B. Renganathan, C.K. Gopakumar, A. Kalai Priya, Subha Krishna Rao, D. Sastikumar, **M. Silambarasan** and N. Kannapiran, “Optimizing Gas Sensing Performance of CuO Nanoparticles via Sol-Gel Synthesis Approach for Efficient Detection of Ammonia Gas”, **Materials Research Bulletin**, Vol. 170 (**2024**) 112556.
DOI: <https://doi.org/10.1016/j.materresbull.2023.112556>
6. V. Ratchagar, M. Muralidharan, **M. Silambarasan**, K. Jagannathan, P. Kamaraj, S.K. Subbiah, P.A. Vivekanand, G. Periyasami, M. Rahaman, P. Karthikeyan and G. Gonfa, “Coprecipitation Methodology Synthesis of Cobalt-Oxide Nanomaterials Influenced by

pH Conditions: Opportunities in Optoelectronic Applications”, **International Journal of Photoenergy**, Vol. 2023 (2023) 2493231.

DOI: <https://doi.org/10.1155/2023/2493231>

7. M. Balamurugan, **M. Silambarasan**, S. Saravanan and T. Soga, “Synthesis of Anatase and Rutile Mixed Phase Titanium Dioxide Nanoparticles using Simple Solution Combustion Method”, **Physica B: Condensed Matter**, Vol. 638 (2022) 413843.

DOI: <https://doi.org/10.1016/j.physb.2022.413843>

COURSES CERTIFIED:

Se. No.	Name of the Courses	Name of the Organizer	Duration	Year	Status
1	Introduction to Quantum Computing: Quantum Algorithms and Qiskit	SWAYAM – NPTEL, IIT Madras, IBM Research, IBM Systems	4 Weeks	Aug – Sep 2024	Successfully completed under Elite
2	Sensor Technologies: Physics, Fabrication, and Circuits	SWAYAM – NPTEL, Indian Institute of Science Education and Research, Bhopal	8 Weeks	Aug – Sep 2023	Successfully completed under Elite
3	Solar Photovoltaics: Fundamentals, Technology and Applications	SWAYAM – NPTEL, Indian Institute of Technology Roorkee (IITR), India.	8 Weeks	Aug – Sep 2022	Successfully completed under Elite + Silver + Topper in 1 %
4	Fundamental of Electronic Device Fabrication	SWAYAM – NPTEL, Indian Institute of Technology Madras (IITM), India.	4 Weeks	July – Aug, 2019	Successfully completed under Elite + Silver + Topper in 5 %

ACHIEVEMENTS AND AWARDS:

- **TOPPER (Top 1%)** Award in the SWAYAM – NPTEL Online Certification Course of **Solar Photovoltaics Fundamentals, Technology and Applications** during July – August 2022 organized by Indian Institute of Technology Roorkee (IITR).
- **TOP PERFORMING MENTOR** Award in the SWAYAM – NPTEL Online Certification Course of **Fundamentals of Electronic Device Fabrication** during July – December 2019 organized by Indian Institute of Technology Madras (IITM).
- **TOPPER (Top 5%)** Award in the SWAYAM – NPTEL Online Certification Course of **Fundamentals of Electronic Device Fabrication** during July – August 2019 organized by Indian Institute of Technology Madras (IITM).
- **First Prize for BEST PAPER Award** in the BRNS Sponsored National Conference on

Nanomaterials – 2017 (NCN 2017), Arignar Anna Government Arts College, Namakkal, Tamil Nadu, India. From 20 to 21 July 2017.

- **First Prize for BEST PAPER Award** (Best Paper in the area of Advanced Nanomaterials : Synthesis & Applications) in the International Conference on Nanomaterials and Nanotechnology (NANO – 2015), organized by Centre For Nanoscience and Technology, K. S. R College of Technology, Tiruchengode, Tamil Nadu, INDIA, in association with World Class University (WCU), GIST, SOUTH KOREA on 7th – 10th December 2015. This Prize was given by Prof. Dr. Robert Huber, Nobel Laureate, Max Planck Institute of Biochemistry, GERMANY.
- Staff Award's (2017, 2014, 2011 and 2009) for Research Publications and Research Lab (Semi-clean rooms for nanotechnology) establishment in SONA College of Technology.
- Fellowship received from UGC, Government of India for studied the M.Phil. Degree in Pondicherry University (2008-2009).

SPECIAL SESSIONS DELIVERED:

- Title of the talk: “ - (Nano-Photonics): , , **Guest Lecture** Organized by PhyFron – X Spaces - Season 2, Spaces 8 (PhyFron) on 8th September 2024, 5:30 P.M.
- **Chief Guest:** Flag hoisting ceremony on August 15, 2024 Independence Day at Maharishi Vidya Mandir Senior Secondary School, Irungattukottai, Chennai – 602 117.
- Title of the talk: “**Beyond the Visible: A Journey into Nanotechnology and Photonics**” on 8th April 2024, Guest Lecture Organized by Institution of Engineers (India) Tamil Nadu State Centre, (IEI – Tamil Nadu).
- Title of the talk: "A Journey of Civilization from Classical Optics to Nano Photonics" One-day FDP organized by Department of Condensed Matter Physics, Saveetha School of Engineering, SIMATS, Chennai. Dated on 29th March 2024 (Friday).
- Title of the talk: **Smart material-based radiation sources**, presented on 20th January 2018 in the BRNS Sponsored “National Seminar on Radiation Exposure - Effects and Protection for Comprehensive Health Promotion” organized by the department of Electronics and Communication Engineering, Kongu Engineering College, Perundurai, Tamil Nadu, INDIA from 19th January 2018 to 20th January 2018.

CONFERENCES/SEMINARS/WORKSHOPS ATTENDED:

- Two Days DST-SERB sponsored **FDP workshop** on "Solar Energy Technologies: Fundamentals to Device Fabrication", organized by CSIR - CECRI, Karaikudi, Tamil Nadu, India, held on 16th and 17th DECEMBER 2024.

- **NPTEL–AICTE Faculty Development Programme (1/2 FDP of one week) on Introduction to Quantum Computing: Quantum Algorithms and Qiskit** organized by Indian Institute of Technology (IIT- Madras) and IBM during from JULY to SEP 2024.
- **INUP User Meet – 2024**, organized by **IIT Bombay**, Mumbai on 10th August 2024.
- “12th User Awareness Workshop on **Fabrication & Characterization Facility for Nanotechnology**”, held at **IIT DELHI** during 22 – 23 February, 2024 (**Virtual**).
- Two days National Level **Hands on Training on “Structural and Microstructural Analysis”** organized by Department of Condensed Matter Physics, Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences (SIMATS), Chennai-602105, Tamil Nadu, India, held on 2nd and 3rd February 2024.
- **INUP i2i 2023 Online Familiarization Workshop on Quantum Materials and Nano Devices** organized by Centre for Nanotechnology, Indian Institute of Technology Guwahati (**IIT – Guwahati**), Guwahati, India during 06th – 8th December 2023.
- **NPTEL–AICTE Faculty Development Programme (1 week of FDP) on "Sensor Technologies: Physics, Fabrication, and Circuits"** by Indian Institute of Science Education and Research, Bhopal during from August to September 2023.
- **INUP i2i Hands-on Training Workshop on Solar Cells** organized by Centre for NEMS and Nanophotonics, Indian Institute of Technology Madras (**IIT – Madras**), Chennai, India from 10th to 19th April 2023.
- **INUP i2i 2022 Online Familiarization Workshop on 2D Semiconductor Nanodevices and Simulations** organized by Centre for Nanotechnology, Indian Institute of Technology Guwahati (**IIT – Guwahati**), Guwahati, India during 08th – 10th December 2022.
- **NPTEL–AICTE Faculty Development Programme (1 week of FDP) on "Solar Photovoltaics: Fundamentals, Technology and Applications"** by Indian Institute of Technology Roorkee (IITR) during from August to September 2022.
- **INUP i2i Familiarization Workshop on Nanofabrication Technologies** organized by Centre for NEMS and Nanophotonics, IIT – Madras, Chennai, India during 20 – 21st June 2022.
- **International Webinar on Recent Advances in Perovskite Solar Cell Devices**, organized by Dept. of Physics, School of Science and Humanities, Bharath Institute of Higher Education and Research, Chennai, India, held on 22nd December 2021.
- **NPTEL–AICTE Faculty Development Programme (1 and 1/2 week of FDP) on Nuclear and Particle Physics** by Indian Institute of Technology Guwahati (IITG) during from September to December 2020.
- **Novel Electrochemical Energy Devices for Storage (NEEDS-2020) an International Webinar Series** held from 17th August 2020 to 19th August 2020 organized by Dept. of Analytical Chemistry & Dept. of Energy, University of Madras, Guindy Campus, Chennai, Dept. of Chemistry, Indian Institute of Technology-Madras and AbinNovus Consulting Private Limited, India.

- **NPTEL–AICTE Faculty Development Programme** (1/2 FDP of one week) on Fundamentals of Electronic Device Fabrication organized by Indian Institute of Technology Madras (IITM) during from July to August 2019.
- **NPTEL–AICTE Faculty Development Programme** (1/2 FDP of one week) on **Structural Analysis of Nanomaterials**, organized by Indian Institute of Technology Roorkee (IITR), India during from August to September 2018.
- **National Symposium on Nano Science and Technology – 2018 (NSNST-2018)** from 20 to 22 June 2018 organized by Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc), Bangalore, India.
- **World Space Week 2017 (WSW-2017) - Exploring New Worlds in Space:** From 8 to 9th October 2017, jointly organised by Satish Dhawan Space Centre (SHAR), Indian Space Research Organisation (ISRO) in association with Sona College of Technology, Salem, Tamil Nadu, India.
- **BRNS Sponsored National Conference on Nanomaterials – 2017 (NCN 2017)**, Arignar Anna Government Arts College, Namakkal, Tamil Nadu, India. From 20 to 21 July 2017.
- **61st DAE – Solid State Physics Symposium 2016 (61st DAE-SSPS-2016)** from 26 to 30 December 2016, KIIT University, Bhubaneswar, Odisha, India.
- **The Pedagogy Training Programme** from 25th to 27th July 2016, organized by Dept. of Human Resources, Sona College of Technology, Salem, Tamil Nadu, India.
- **Workshop on Crystal and Molecular Structure Determination from X-ray Diffraction Measurements (CMSDX 2016)** on from 28th to 29th March 2016, organized by Centre for Instrumentation and Maintenance Facility (CIMF), Periyar University, Salem-11, Tamil Nadu, India.
- **International Workshop on Theoretical and Experimental PHYSICS: Commemoration of 100 years of Einstein’s General Theory of Relativity** on 30th December 2015 held at Department of Physics, PSG College of Technology, Coimbatore, India.
- **International Conference on Nanomaterials and Nanotechnology (NANO – 2015)**, from 7th to 10th December 2015, organized by Centre For Nanoscience and Technology, K. S. Rangasamy College of Technology, Tiruchengode, Tamil Nadu, India, in Association with World Class University (WCU), GIST, South Korea.
- **3rd International Conference on Nanoscience and Nanotechnology (ICONN-2015)**, from 4th to 6th February 2015, Organized by Department of Physics and Nanotechnology, SRM University, Chennai, Tamil Nadu, India.
- **National Workshop on “Advanced Characterization Technique (ACT-2015)”**, from 29th- 30th January 2015, organized by Department of Chemistry, Periyar University, Salem – 11, Tamil Nadu, India.
- **International Conference on Materials and Characterization Techniques (ICMCT-2014)**, from 10-12th March 2014 at VIT University, Vellore, Tamil Nadu, India.
- **Workshop on “Scientific Usage of Electron Microscopes: SEM and TEM” (SUEM 2014)**, 6th January 2014, organized by Centre for Instrumentation and Maintenance Facility (CIMF), Periyar University, Salem-11, Tamil Nadu, India.

- **National Symposium on SCience of NanO (SCiNO)-2013**, From 6th to 7th December 2013 organized by Department of Nanoscience and Technology, Bharathiar University, Coimbatore, Tamil Nadu, India.
- **International Conference on Recent Trends in Applied Physics and Material Science (RAM2013)**, 01st and 2nd February 2013, Govt. College of Engineering and Technology, Bikaner, Rajasthan, India.
- **Second International Workshop on Advanced Functional Nanomaterials (SIWAN – 2013)**, from 28th to 30th January 2013 organized by Nanoscience and Technology, Anna University, Chennai, India.
- **7th INUP (Indian Nanoelectronics User Program) Familiarization Workshop on Nanofabrication Technologies**, From 16th to 18th April 2012, Centre for Nano Science and Engineering, Indian Institute of Science (IISc), Bangalore, India.
- **UGC Sponcerd Workshop on Functional Materials (WFM-2012)** on 14th March 2012 organized by the Department of Physics, Periyar University, Salem, Tamil Nadu, India.
- **56th DAE- Solid State Physics Symposium (56th DAE-SSPS-2011)**, From 19th to 23rd December 2011, SRM University, Chennai, Tamil Nadu, India.
- **Asia- Pacific workshop on Characterization of Materials**, From 22nd to 24th September 2011, Crystal Growth Centre, Anna University, Chennai, Tamil Nadu, India.
- **AICET Sponsored Staff Development Programe on Research Methodology**, From 18th to 30th April 2011, Dept. of Science, Sona College of Technology, Salem, Tamil Nadu, India.
- **International Conference on Nanoscience and Nanotechnology (ICONN 2010)**, From 24th to 26th February 2010, Dept of Physics, SRM University, Chennai, Tamil Nadu, India.
- **UGC Sponsored National Conference on Glimpses of Materials Science (GMS 10)**, 1st February 2010, Dept of Physics and Chemistry, Sri Sarada College for Women, Salem, Tamil Nadu, India.
- **World Year of Physics-2005: Celebration of Seminar on Recent Developments in Physics**, From 21st to 22nd November 2005, School of Physics, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India.

PROFESSIONAL MEMBERSHIPS:

- Life Time Member (No: LM05327) of Indian Society of Systems for Science and Engineering (ISSE), ISRO, Coimbatore Chapter, India.

DETAILS OF R&D CENTRE ESTABLISHMENT:

Se. No.	Name of the R&D Centre and Organization	Period	Role & Responsibility
1	Centre of Excellence in Photonics & Nanotechnology,	JAN 2023 – Till Date	Principal Investigator & Establishing R&D centre for solar cells

	Saveetha Engineering College Chennai – 602 105, India		and photonic device fabrication, supervising and mentoring the scholars and students. Connecting the International Researchers through Collaborations and MoU.
2	Centre for Photonics and Nanotechnology, Sona College of Technology, Salem – 636 005, India	July 2009 – May 2019	Co-Principal Investigator & R&D activities for semiconductor nanomaterials and energy applications. Collaborations with IISc, Bangalore/INUP, Nagoya Institute of Technology and Doshisha University, Japan.

DETAILS OF THE PROJECTS ALREADY CARRIED OUT: (Acted as Co-PI)

S. No	Title	Sponsoring Agency	Period	Amount (Rupees in lakhs)	Achievements
1.	Fabrication and characterization of semiconductor micro-tubes and micro-plates on GaAs substrate	INUP at IISc DIT, MCIT, Government of India	30 Months (July 2010 – Jan 2013)	All facilities were used in the Centre for Nano Science And Engineering, Indian Institute of Science, Bangalore	First time in India, GaAs based QW micro-tubes with the diameter of around 8 μ m were fabricated by strain driven self-assembling technique.
2.	Fabrication of Zinc Oxide Nanostructure for Solar Cell Applications	Sona College of Technology, Salem Collaboration with Nagoya Institute of Technology and Dhoshisha University Japan	36 Months (Jan 2013 – Dec 2015)	5 lakhs	ZnO Nanostructures with the diameter of 30 to 60 nm and Fabrication of Organic-Polymer hybrid Solar Cells.

EVENTS ORGANIZED:

Se. No.	Name of the Event	Responsibility	Venue/Organizer	Date
1	Guest Lecture on “A Tale of Two Cities: Machine Learning with Quantum Computing - Trends & Applications”	Convener	Centre of Excellence in Photonics and Nanotechnology & Department of Physics Saveetha Engineering	27 th November 2023

			College, Chennai	
2	National Conference on Recent Developments in Physical Sciences for Multidisciplinary Research (PSMR – 2020)	Convener	PRIST Deemed to be University Puducherry Campus Puducherry – 605 007	14 th March 2020
3	National Science Day 2019	Coordinator	SONA – Science Club, Sona College of Technology, Salem	2 nd April 2019
4	Kalai Vizha 2019	Coordinator	SONA – Tamil Ilakkiya Mandram, Sona College of Technology, Salem	29 th March 2019
5	National Science Day 2018	Coordinator	SONA – Science Club, Sona College of Technology, Salem	8 th March 2018
6	Kalai Vizha 2018	Coordinator	SONA – Tamil Ilakkiya Mandram, Sona College of Technology, Salem	7 th March 2018

CONTACT FOR RESEARCH COLLABORATIONS:

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