SAVEETHA ENGINEERING COLLEGE
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Department of Electronics and Communication Engineering

Centre for Micro Nano Design and Fabrication (CMNDF)

MEMS DESIGN LAB

PUBLICATIONS

JOURNALS

1. Ramya, S., Aravind, T., Kumar, S.P., Ram, G.D., "Design of Chevron Electrothermal Micrograpper and its Prototyping UsingSLM Based Additive Manufacturing", Transactions on Electrical and Electronic Materials (2024).

2. S Ramya, S Praveen Kumar, G Dinesh Ram, D Lingaraja, " Numerical Simulation of Inertial Based PDMS Microchannel for Blood Cell Sorting", Transactions on Electrical and Electronic Materials (2023).

3. G Dinesh Ram, S Praveen Kumar, T Yuvaraj, Sudhakar Babu Thanikanti, Karthik Balasubramanian,"Simulation and investigation of MEMS bilayer solar energy harvester for smart wireless sensor applications", Sustainable energy technologies and assessment(2022).

CONFERENCE PUBLICATIONS

1. D Lingaraja, S Praveen Kumar, J Raguraman, S Ramya, G Dinesh Ram,"Electrophoretic separation of platelets using cross flow microfluidic channel for clinical assays", AIP Conference Proceedings (2024).

2. S Ramya, S Praveen Kumar, M Abinaya, D Lingaraja, G Dinesh Ram,"Computational model of an inertially governed PDMS microchannel for blood cell sorting", AIP Conference Proceedings(2024).

3. S Ramya, S Praveen Kumar, S PadhmaVinodhini, D Lingaraja, G Dinesh Ram, "Design of MEMS based Micro-Pumps Transdermal Insulin Administration", International Conference on Electronics and Renewable systems (ICEARS), IEEE (2023).

4. G Dinesh Ram, T Aravind, S Praveen Kumar, U Hariharan, G Jeyachandran, G Goutham, "Simple Piezoelectric based MEMS Energy Harvester Design and Simulation", International Conference on Automation, Computing and Renewable Systems (ICACRS), IEEE (2023).

5. S Ramya, S Praveen Kumar, T Aravind, U Rasan, G Dinesh Ram, D Lingaraja, "Design of Chevron Electrothermal Actuator for High Force Defense Applications", International Conference on Computing Methodologies and Communication (ICCMC), IEEE (2023).

6. D Lingaraja, S Praveen Kumar, T Aravind, TK Srinivasan, G Dinesh Ram, S Ramya, "Design of Solar Energy Harvester for Smart Home Application", International Conference on Smart Systems and Inventive Technology IEEE. (2023)

7. S Ramya, S Praveen Kumar, K Kalaivani, G Dinesh Ram, D Lingaraja, "Eigen Frequency Analysis of Single Axis 3D Comb Drive Accelerometer", International Conference on Smart Systems and Inventive Technology, IEEE(2023).

8. K Anitha, T Aravind, S Praveen Kumar, "Generation of electric energy by utilizing piezoelectric effect", Materials Today Proceeding (2023).

9. S Ramya, S Praveen Kumar, T Aravind, T K Srinivasan, G Dinesh Ram, D Lingaraja, " Design of electrothermally actuated micromirror for low power switching applications", IEEE Xplore, International Conference on Electronics, Communication and Aerospace Technology (2022).

10. D Lingaraja, S Praveen Kumar, T Aravind, TK Srinivasan, S Ramya, G Dinesh Ram, " Design and analysis of MEMS based actuator using Shape Memory Alloy", IEEE Xplore, International Conference on Smart Electronics and Communication (2022).

11. G Dinesh Ram, S Praveen Kumar, TK Srinivasan, T Aravind, S Ramya, D Lingaraja, " Analysis of Piezoelectric Based MEMS Micromirror for Optical Communication", IEEE Xplore, International Conference on Smart Electronics and Communication (2022).

12. D Lingaraja, S Praveen Kumar, T Aravind, TK Srinivasan, S Ramya, G Dinesh Ram, " Design and Analysis of MEMS Bimaterial Cantilever using Piezoelectric Layer for Solar Energy Conversion", IEEE International Conference on Electronics and Sustainable Communication Systems (2022).

13. S Ramya, S Praveen Kumar, T Aravind, TK Srinivasan, D Lingaraja, G Dinesh Ram, " Air Damping Effects on Perforated RF MEMS Switches", IEEE International Conference on Electronics and Sustainable Communication Systems (2022).

14. G Dinesh Ram, S Praveen Kumar, TK Srinivasan, T Aravind, S Ramya, D Lingaraja, "Simulation and investigation of dual axis MEMS scanning mirror for LiDAR applications", IEEE International Conference on Electronics and Sustainable Communication Systems (2022).

15. S Ramya, S Praveen Kumar, T Aravind, TK Srinivasan, G Dinesh Ram, D Lingaraja, " Thermal InplaneMicrogripper for Handling Micro-Objects", IEEE International Conference on Communication and Electronics Systems (2022).

16. G Dinesh Ram, S Praveen Kumar, T Aravind, S Ramya, D Lingaraja, T K Srinivasan, “Design and analysis of stress distribution in V-beam electrothermal actuator”, IEEE International conference on smart structures and systems (2022).

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Department of Electronics and Communication Engineering

Centre for Micro Nano Design and Fabrication (CMNDF)

MICROFLUIDICS LAB

PUBLICATIONS

JOURNALS

1. Anitha, K., Aravind, T., Kumar, S.P., "Utilization of functionalized paper-based microfluidic devices for thedetection and characterization of starch in milk", Digest Journal of Nanomaterials and Biostructures (2024)

2. Ramya, S., Kumar, S.P., Caffiyar, M.Y., Hemamalini, N.V., "Microfluidic separation device for blood components with lipids and cancer cells", Microsystem Technologies 2024.

3. S Ramya, S Praveen Kumar, G Dinesh Ram, D Lingaraja, "A short review of spiral microfluidic devices with distinct cross-sectional geometries", Microfluidics and Nanofluidics (2022).

CONFERENCE PUBLICATIONS

1. S Ramya, D Lingaraja, G Dinesh Ram, S Praveen Kumar, T Aravind, “Microfluidic circulating tumor cell sorter using deterministic lateral displacement”, IEEE international conference on distributed computing (2021).

2. D Lingaraja, S Praveen Kumar, J Raguraman, S Ramya, G Dinesh Ram,”Electrophoretic separation of platelets using cross flow microfluidic channel for clinical assays”, AIP Conference Proceedings(2024).

3. S Ramya, S Praveen Kumar, M Abinaya, D Lingaraja, G Dinesh Ram,”Computational model of an inertially governed PDMS microchannel for blood cell sorting”, AIP Conference Proceedings (2024).

4. S Ramya, S Praveen Kumar, S PadhmaVinodhini, D Lingaraja, G Dinesh Ram, "Design of MEMS based Micro-Pumps Transdermal Insulin Administration", International Conference on Electronics and Renewable systems (ICEARS), IEEE (2023).

5. S Ramya, S Praveen Kumar, TK Srinivasan, T Aravind, G Dinesh Ram, D Lingaraja, "MEMS based chip for blood cell sorting using microfluidic channel", IEEE xplore, International Conference on Smart Electronics and Communication (2022).

6. D Lingaraja, S Praveen Kumar, T Aravind, TK Srinivasan, S Ramya, G Dinesh Ram, " Microfluidic analysis of micro needle array for drug delivery applications", IEEE International Conference on Distributed Computing, VLSI, Electrical Circuits and Robotics (2022).

7. D Lingaraja, S Praveen Kumar, G Dinesh Ram, S Ramya, “Design and analysis of microneedle array for transdermal drug delivery”, IEEE International conference on smart structures and systems (2022).

8. S Ramya, S Praveen Kumar, D Lingaraja, G Dinesh Ram, “Design and simulation of microfilter for separation of plasma”, IEEE International conference on smart structures and systems (2022).

9. D Lingaraja, S Praveen Kumar, G Dinesh Ram, S Ramya, “Optimization of flow rates in MEMS based drug delivery system”, IEEE International conference on smart structures and systems (2022).

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WET LAB

PUBLICATIONS

JOURNALS

1. Ram, G.D., Kumar, S.P., "Bio-carbon-derived porous reduced graphene oxide photo and electrochemical sensor for ultra-sensitive detection of testosterone hormone", Chemical Papers, (2024).

2. Vinothkumar, P., Kumar, S.P., Grace, A.A., Sivakumar, T., Dhinakaran, A.P., "Investigation on dysprosium (Dy) doped lithium boro-phosphate glass forlight-emitting diode (LED) and supercapacitor applications", Journal of Materials Science: Materials in Electronics, (2024).

3. Vinothkumar, P., Sivakumar, T., Praveen Kumar, S., Pradheesha, K., "Investigation of structural, optical characteristics of Gd doped phosphateglass for radiation shielding applications", Inorganic Chemistry Communications, (2024).

4. Keerthiga, G., Kumar, S.P., "Evaluating FPGA-based denoising techniques for improved signal quality in electrocardiograms", Analog Integrated Circuits and Signal Processing, (2024).

5. P Vinothkumar, S Praveenkumar, S Thennarasu, M Harirajan, “Growth, mechanical, thermal, electrical, linear, and nonlinear optical studies of urea resorcinol single crystals for NLO applications”, Chemical Physics Impact (2024).

6. P Vinothkumar, S Praveenkumar, “Synthesis, growth, structural, thermal, electrical and optical properties of organic NLO: N’methyl urea oxalic acid”, Journal of Optics (2024).

7. P Vinothkumar, T Sivakumar, S Praveenkumar, K Pradheesha, “Investigation of structural, optical characteristics of Gd3+ doped phosphate glass for radiation shielding applications”, Inorganic Chemistry Communications, (2024).

8. T Sivakumar, P Vinothkumar, A Paul Dhinakaran, “Predominance of Yb3+ and Ce3+ on the AlTaBaBO: Yb and BaTiSbBPO: ce glasses for effective photoluminescence and radiation shielding properties towards w-LED and γ-ray shielding applications”, Radiation Physics and Chemistry (2024).

9. P Vinothkumar, T Sivakumar, S Praveenkumar, P Ramalingam, F Alharethy, S Suganthi, T H Oh, Anu K John, “Catalyst efficiency through the disorder kinetics to identify its nonlinearity in their properties of Ag3PO4@ TiO2 catalyst using UV–visible spectroscopy”, Zeitschrift für Physikalische Chemie (2024).

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12. A Paul Dhinakaran, P Vinothkumar, T S Senthil, S Kalpana, “Investigation on structural, optical properties of Sm3+ doped antimony boro-phosphate glass for warm white light emitting diode and radiation shielding applications”, Journal of Optics (2024).

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14. P Vinothkumar, A Paul Dhinakaran, S Praveenkumar, “Synthesis, growth, structural, thermal, electrical and optical properties of organic NLO: N’methyl urea oxalic acid”, Journal of Optics (2024).

15. S Kalpana, P Vinothkumar, T S Senthil, “Investigation on single rare earth Dy3+ doped silver boro-phosphate glass for radiation shielding and led application”, Applied Physics A (2024).

16. P Vinothkumar, E Priyadharshini, S Praveenkumar, S Sathiyamurthy, K S Mani, M Ayyar, M Hashem, H Fouad, A Ansari, “Synthesis structural optical and mechanical properties of $Nb3^{+}$ doped Zinc Borophosphate glass for radiation shielding application”, Zeitschrift für Physikalische Chemie (2024).

17. D Lingaraja, S Praveen Kumar, G Dinesh Ram, S Ramya, "Experimental Investigation of influence of electrolytic solution in porous silicon formation for solar energy conversion", Silicon (2023).

18. P Vinothkumar, M Dhavamurthy, M Mohapatra, A A Suresh, P Murugasen, “Influence of Mn2O3 on the physical properties of metallic glass network”, Pramana (2023).

19. M Mohapatra, A Suresh, P Vinothkumar, G Meena, P Murugasen, “Deciphering the Role of Gamma Ray Induced Radicals in the Thermoluminescence Process of a Neutral to Cool Daylight Emitting Sr1–x B4O7–Dy x Phosphor through Electron Paramagnetic Resonance (EPR) Spectroscopy”, ACS Applied Optical Materials (2023).

20. E Priyadharshini, P Vinothkumar, P Jayaprakash, S Venda, “Crystal growth and physico-chemical characterization of an organic 2-amino-6-methyl pyridinium L-tartrate single crystal for optoelectronic device applications”, Journal of Materials Science: Materials in Electronics (2023).

21. M Dhavamurthy, P Vinothkumar, A A Suresh, M Mohapatra, P Murugasen, “Optical characteristics of Eu3+ doped alumino borophosphate glass containing Al3+, Zn2+, Li2+, Sr2+ and Ba2+ ions”, Results in Optics (2022).

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Oxindolopyrrolidines single crystal for magnetic applications" Journal of Molecular Structure (2022).

25. M Dhavamurthy, P Vinothkumar, M Mohapatra, A Suresh, P Murugasen, "Effects of Ce3+/Dy3+ and Ce3+/Sm3+ co-doping as a luminescent modifier in alumina-borophosphate glasses for w-LED application", Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy (2022).

26. P Vinothkumar, D Shalini, A A Suresh, P Murugasen, "Growth, linear, nonlinear optical, electronic and mechanical studies of urea-phosphoric acid crystals", Materials Today: Proceedings (2022).

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28. P Vinothkumar, M Dhavamurthy, K Sathyamoorthy, M Mohapatra, P Murugasen, "A novel n-methylurea cyanurate single crystal: structural and physical characterizations for magneto-electronics applications", Journal of Molecular Structure (2021).

29. P Vinothkumar, M Dhavamurthy, M Mohapatra, P Murugasen, "Structural, optical and thermo-physical characterizations of co-doped Pr 3+ and Nd 3+ ions on BaCO 3–H 3 BO 3 glasses for microelectronic applications", Bulletin of Materials Science (2021).

30. P Vinothkumar, M Dhavamurthy, M Mohapatra, P Murugasen, "The effects of Ba2+ addition in the LiCO3–Mn2O3–B2O3 glass structure on electro-chemical and physical characterizations", Journal of Materials Science: Materials in Electronics (2021).

31. D Shalini, P Vinothkumar, K Sathyamoorthy, P Muralimanohar, T A Hegde, G Vinitha, M Mohapatra, P Murugasen, "Synthesis, crystal structure and solid-state properties of 4-(3-nitrophenylamino)-4-methylpentan-2-one picrate (3NAP): An efficient cocrystal for χ (3) optics", Journal of Molecular Structure (2021).

32. P Muralimanohar, G Srilatha, K Sathyamoorthy, P Vinothkumar, M Mohapatra, P Murugasen, "Preparation and luminescence properties of Dy3+ doped BaAlBO3F2 glass ceramic phosphor for solid state white LEDs", Optik (2021).

CONFERENCE

1. D Lingaraja, S Praveen Kumar, T Aravind, T K Srinivasan, S Ramya, G Dinesh Ram, "Green synthesis of SnO2 nanoparticles using ChrysopogonZizaniodes root extract to degrade the methylene blue dye", Materials Today Proceeding (2023).

2. G Dinesh Ram, S Praveen Kumar, T K Srinivasan, T Aravind, S Ramya, D Lingaraja, G Bhuvaneshwari, "Green synthesis of silver nanoparticles using Chrysopogonzizanioides root extract and their antibacterial activities", Materials Today Proceeding (2023).

3. S Ramya, S Praveen Kumar, T K Srinivasan, T Aravind, D Lingaraja, G Dinesh Ram, G Bhuvaneshwari, " Green synthesis of Ag-doped ZnO using Nelumbonucifera flower extract for antibacterial activity", Materials Today Proceeding (2023).

4. P Vinothkumar, A A Suresh, P Murugasen, “Development of novel RE incorporated aluminium barium borophosphate glass for gamma ray shielding application”, In Proceedings of the fifteenth biennial DAE-BRNS symposium on nuclear and radiochemistry: book of abstracts (2021).
5. A A Suresh, P Vinothkumar, P Murugasen, “A brief look at the trap level spectroscopic properties of SrB 4 O 7: Dy system, A TL and PL study”, In Proceedings of the fifteenth biennial DAE-BRNS symposium on nuclear and radiochemistry: book of abstracts (2021).

PATENTS

1. Srinivasan TK, S Praveen Kumar, Vinothkumar Panjanathan, " Green Synthesis of Zinc Oxide Nanoparticles using Pomegranate Leaf Extract for White Light Emitting Applications", Application No: 202541010867 A (2025).

2. Srinivasan TK, S Praveen Kumar, Vinothkumar Panjanathan, " A Novel Approach to Fabricating Graphene Nanostructures for High-Performance Solar Energy Conversion", Application NO: 202541010870 A (2025).

3. M Deepa Lakshmi, S Praveen Kumar, T Aravind, G Dinesh Ram, S Ramya, D Lingaraja, T K Srinivasan, "Paper Microfluidic and Lateral Flow Immunoassay Techniques based Kit for Detection of TSH", Application No: 202341013022A (2023)

4. S Praveen Kumar, T Aravind, S Ramya, G Dinesh Ram, D Lingaraja, “Microfluidic blood cell separation and detection kit for point of care diagnosis”, Application No: 202141056273A (2021).

5. S Praveen Kumar, G Dinesh Ram, S Ramya, D Lingaraja, T Aravind, “A Novel fabrication approach of testosterone meter kit for hormone level detection”, Application No: 202141058885A (2021).

6. S Praveen Kumar, K Anitha, T Aravind, Srigitha S Nath, T Merlin Inbamalar, “Fabrication of Paper Based Microfluidic Device for Lipid Profile analysis”, Application No: 202141058975A (2021).

7. S Praveen Kumar, P Preethi, R Pradeep, Srigitha S Nath, N Raja Rajeswari, “Automated prediction of chronic obstructive pulmonary disease using deep learning based SCANAPI”, Application No: 202141059096A (2021).

8. S Praveen Kumar, T Aravind, S Ramya, G Dinesh Ram, D Lingaraja, “Force controlled electrothermally activated micro-gripper for biomanipulation”, Application No: 202141059793A (2021).

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Centre for Micro Nano Design and Fabrication (CMNDF)

MULTIFUNCTIONAL MATERIALS LAB

PUBLICATIONS

JOURNALS

1. S J Isac, P Vinothkumar, A Paul Dhinakaran, S Praveenkumar, "Physical, optical, and luminescent characteristics of Sm3+ doped tellurite glass suitable for yellow laser, warm white LED, and radiation shielding applications", Optics & Laser Technology (2025).

2. A Paul Dhinakaran, P Vinothkumar, S Praveenkumar, M Mohapatra, "The effect of Ce3+ ions on the optical, and radiation shielding properties in Ba–Sn borophosphate glass", Radiation Physics and Chemistry (2025).

3. P Vinothkumar, Anu K John, S Praveenkumar, "Holmium ions influence in structural and optical properties of Aluminium Strontium-phosphate glasses for radiation shielding applications", Inorganic Chemistry Communications (2024).

4. P Vinothkumar, S Praveenkumar, A A Grace, T Sivakumar, A Paul Dhinakaran, "Investigation on dysprosium (Dy3+) doped lithium boro-phosphate glass for light-emitting diode (LED) and supercapacitor applications", Journal of Materials Science: Materials in Electronics (2024).

PATENTS

1. A Vincelet Jobikha, P Vinothkumar, "Gadolinium-doped zinc tin boro tellurite glass for radiation protection", (2025).
2. A Vincelet Jobikha, P Vinothkumar, "Innovative glass system for advanced radiation shielding: dy3+-doped zinc boro tellurite glass with", (2025)
3. P Vinothkumar, "Barium Boro-tellurite glass co-doped with Tm3+/Dy3+ for enhanced white led efficiency and radiation shielding capability", (2025).

4. P Vinothkumar, “Melt-quenched sm3+ doped tantalum borophosphate glass with superior ferromagnetic and electrochemical performance”, (2025)
5. T Sivakumar, P Vinothkumar, “Nd3+ -activated Zinc Tantalum Phosphate glass: a multifunctional material for gamma shielding and Wleds”, (2025).
6. T Sivakumar, P Vinothkumar, “Europium ion-doped Tantalum Zinc Barium Borate glass: a novel material for radiation protection applications”, (2025).
7. S Praveen kumar, P Vinothkumar, “A novel approach to fabricating graphene nanostructures for high-performance solar energy conversion”, (2025)
8. T K Srinivasan, S. Praveen kumar, P Vinothkumar, “Green synthesis of Zinc oxide nanoparticles using pomegranate leaf extract for white light emitting applications,” (2025)
9. S Joyal Isac, P Vinothkumar, “Dy3+ doped fluoro-tantalum-barium-boro-phosphate glass: a novel material for gamma radiation shielding applications”, (2025).
10. J Francis, P Vinothkumar, “Innovative Yttrium doped Phosphate glass for multi-functional radiation shielding applications”, (2025).
11. J Francis, P Vinothkumar, “Optical and structural properties of pr3+-doped zinc boro tellurite glass for advanced radiation Protection”, (2025)
12. G Arokia Nerling Rasoni, P Vinothkumar, “high-density Ho3+-doped silver tellurite glass for gamma-ray attenuation and led applications”, (2025).
13. G Arokia Nerling Rasoni, P Vinothkumar, “Innovative composition of erbium-doped tin borophosphate glass for enhanced functional performance”, (2025)
14. P Vinothkumar, “Investigation on Sm3+ doped zinc Bore Tellurite glass for warm white led and radiation shielding applications”, (2024).
15. Anu k John, P Vinothkumar, “Enhanced photocatalytic efficiency of Ag3po4@tio2 composites via disorder kinetics analysis using uv-visible spectroscopy”, (2024).
16. Anu k John, P Vinothkumar, “Mercerization extraction of lignin from sugarcane bagasse and its qualitative analysis of adsorption efficiency for wood preservation”, (2024)
17. A Vincelet Jobikha, P Vinothkumar, “Novel Gd3+ Doped Silver Borophosphate Glass For Radiation Shielding”, (2024)

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NANO-PHOTONICS LAB

PUBLICATIONS

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, (2024).

2. D. Anand, K. Ramachandran, P. Sakthivel and M. Silambarasan, “Investigations of crystallographic, magnetic, optical and photoluminescence nature of Sm_2O_3 doped $SrTiO_3$ nanomaterials for LED”, Ceramics International,(2024).

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 TiO_2-ZnO Nanocomposites for High-performance Room-temperature Air Pollutant Detection in Fiber Optic Sensors”, Microchemical Journal, (2024)

4. D. Anand, K. Ramachandran, M. Silambarasan, J. Gajendiran and S. Gnanam, “Various Concentrations of Y_2O_3 Doping Induce Changes in Structural, Magnetic, Optical, and Photoluminescence Properties of Solid-State Synthesized $SrTiO_3$ Compounds for Optoelectronic Device Applications”, Optical Materials, (2024)

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 (2024)

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 (2023)
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 (2022).

PATENTS

1. M. Silambarasan, "Enabling Monolithic Optoelectronic Integration on GaAs with Self-Assembled Semiconductor Nano Structures for Next-generation Sensors and Systems", Application. No: 202341073111 (2024).
2. M. Silambarasan, "Self-Assembled Semiconductor Quantum Structures on GaAs Substrate for Next-generation Free Space Optical Communication", Application. No: 202341073114 (2024).
3. M. Silambarasan and P. Baraneedharan, "Development of Uniform Size Controlled, Highly Crystalline ZnO Nano-Structures for Photonic and Optoelectronic Applications", Application. No: 202341073115 (2024).