



# DEPARTMENT OF PHYSICS

## Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya

(Deemed to be university u/s 3 of UGC Act 1956 | Accredited with "A" Grade by NAAC)  
Enathur, Kanchipuram-631561. Tamil Nadu, India

**Spectra**  
Newsletter

Volume 6

### About the department

Department of physics serves with the dynamic mission to achieve excellence in both academic and research perspectives. Physics acts as the core of science, as most of the invention are brought forth by it. The department has awarded 26 Ph.D. and more than 200 M.Phil. degrees. The teachers and scholars of the department have published around 200 research articles so far. The research activities of the department include synthesis of nano particles and characterization, molecular interaction studies through ultrasonic investigation, synthesis and characterization of thin films by physical vapour deposition, crystal growth techniques, mineralogical and heavy metals analyses, etc. Thin film coating unit (PVD). Gaussian 09 software, Brookfield viscometer, Sieve shaker and Ultrasonic interferometer for solids and liquids are the available research equipments. The department of Physics extends its instrumentation facilities to other departments and institutions.

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**Vijayendra Saraswati**

**Swamigal**

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**Sastry**

Chancellor, SCSVMV

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Vice-Chancellor, SCSVMV

**Prof.Dr.R. Vasanth Kumar**

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#### Chief Editor

**Dr.M.Sundarrajan**

HoD - Physics

#### Issue Editor

**Mr.V. Akshaya Shiva**

Asst. Professor of Physics



## NATIONAL SEMINAR ON HUMAN SPACE MISSION 14.12.2023

A one day National Seminar on Human Space Mission was organized by the department of Physics on 14.12.2023 at library seminar hall. Dr.T.K.Sundaramurthy, Scientist and Mission Director of ISRO (retd), Govt. of India was the chief guest. Prof. Dr.K.Venkatramanan, HoD (Physics) and Dean (Science), the Convener of the seminar welcomed the gathering. He listed the significant contributions of Dr.T.K.Sundaramurthy in ISRO. Dr. M.Sundarrajan, Asst. Prof. of Physics, Organizing Secretary introduced the Chief Guest. The Chief Guest was honoured with shawl and garland by the Convener and Secretary. The Chief Guest Dr.T.K.Sundaramurthy delivered a talk on Human Space Mission. He explained the step by step developments in the Indian Space Mission along with various challenges faced and the preparation activities of ongoing Human Space Mission Project of ISRO (Gaganyaan Mission). Around 150 Students and faculty members from various engineering and science disciplines attended the seminar and interacted with the resource person. Dr.J.Suganthi, Assistant Professor of Physics, delivered the vote of thanks.

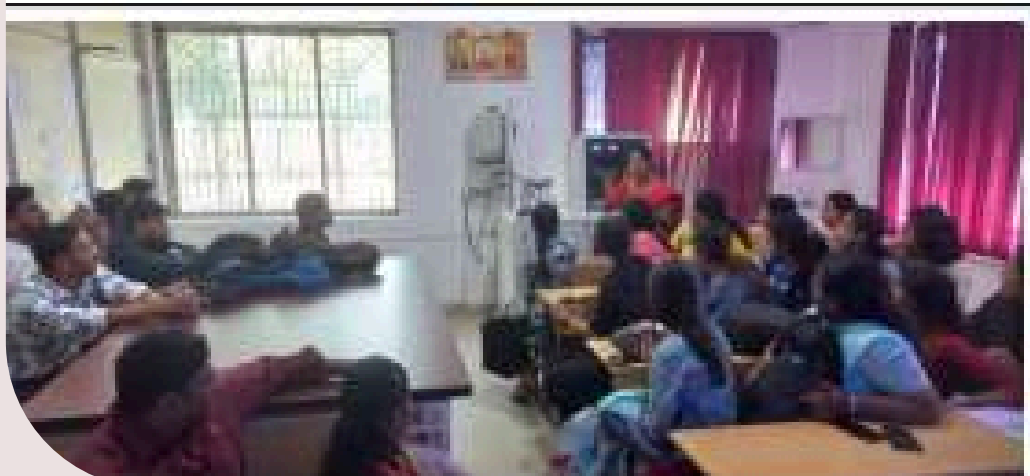




## NATIONAL WORKSHOP ON INSTRUMENTATION TECHNIQUES IN PHYSICS (PINTECH 2023)

19.12.2023

One day National Workshop on Instrumentation Techniques in Physics (PINTECH 2023) was organized by the department of Physics on 19.12.2023, by 11 am at the Department of Physics. Dr.K.Venkatramanan, Head of the Department (Physics) and Dean (Science), the Convener of the seminar welcomed the gathering. Dr. V.Ragavendran, Asst. Prof. of Physics, Organizing Secretary, briefed about the workshop. Various instrumentation techniques in the research field of Ultrasonics, Nano Physics, Crystal growth, Thinfilms and Molecular modelling using DFT studies were explained to the participants by the department faculty members. Around 50 Students and faculty members participated in the workshop. The staff members of the department made all the arrangements for this workshop.





## CAREER GUIDANCE PROGRAMME 02.02.2024

A career guidance programme for B.Sc. and M.Sc. students was organized by the department of Physics at Physics Lab on 02.02.2024, 10.00 am. Dr.M.Sundarrajan, Assistant Professor & Head, Department of Physics welcomed the gathering and addressed the students. He motivated the students to acquire knowledge in various skillsets to get jobs through various competitive exams and interviews in different sectors. The Resource person of the programme Dr.S.Kannan, Head, Department of CSA, Placement officer, SCSVMV delivered a talk on "how to choose a career path and face campus interviews ". He also explained and various processes of campus interview selection along with preparation techniques. Dr.J. Suganthi, Assistant Professor of Physics, Department Placement Coordinator insisted the students to improve their knowledge and qualification for various sector jobs and finally delivered vote of thanks.





## **NATIONAL SCIENCE DAY (NSD-2024)**

**28.02.2024**

The department of Physics, Mathematics and Chemistry jointly organized and conducted the National Science Day Programme on 28.02.2024, 11.00 am at the Seminar Hall, Mechanical Engineering Block. The Convener of the programme Dr.M.Sundarrajan, Asst. Professor and Head, Department of Physics, welcomed the gathering. He explained the significance of the celebration and pointed out the steps to students to develop interest to learn science by seeing nature and its existence. Dr.T.N. Kavitha, Asst. Professor of Mathematics and the Organizing Secretary of NSD-2024, delivered the NSD report. The Hon'ble Vice-Chancellor Prof. Dr. G. Srinivasu delivered the presidential address. He insisted the students to learn the science linked with Vedas and all spiritual activities. Also he motivated the students to learn about themselves so that they can perform better in their education and profession. Dr. M. Rathinakumar, Prof. & Dean, Faculty of Engineering and Technology delivered the felicitation address. He talked about the Nobel Laureate Sir C V Raman and his early life. He also insisted students to excel in their scientific knowledge so that they can create lots of future technologies. Dr.B.Muthukumaran, Asst. Professor of Chemistry and Organizing Secretary of NSD-2024, introduced the chief guest of NSD-24, Dr.N. Kanagathara, Professor of Physics, Saveetha School of Engineering, Chennai. Dr.N.Kanagathara delivered the NSD address and motivated the students to develop advanced technologies so that India will get all advanced technologies as indigenious. Also madam encouraged the students to establish small scale startups for future development of the Country. The Chief Guest gave the prizes for the winners of various NSD competitions. Dr.J.Suganthi, Asst. Prof. of Physics, the Organizing Secretary of NSD-2024, delivered the vote of thanks.

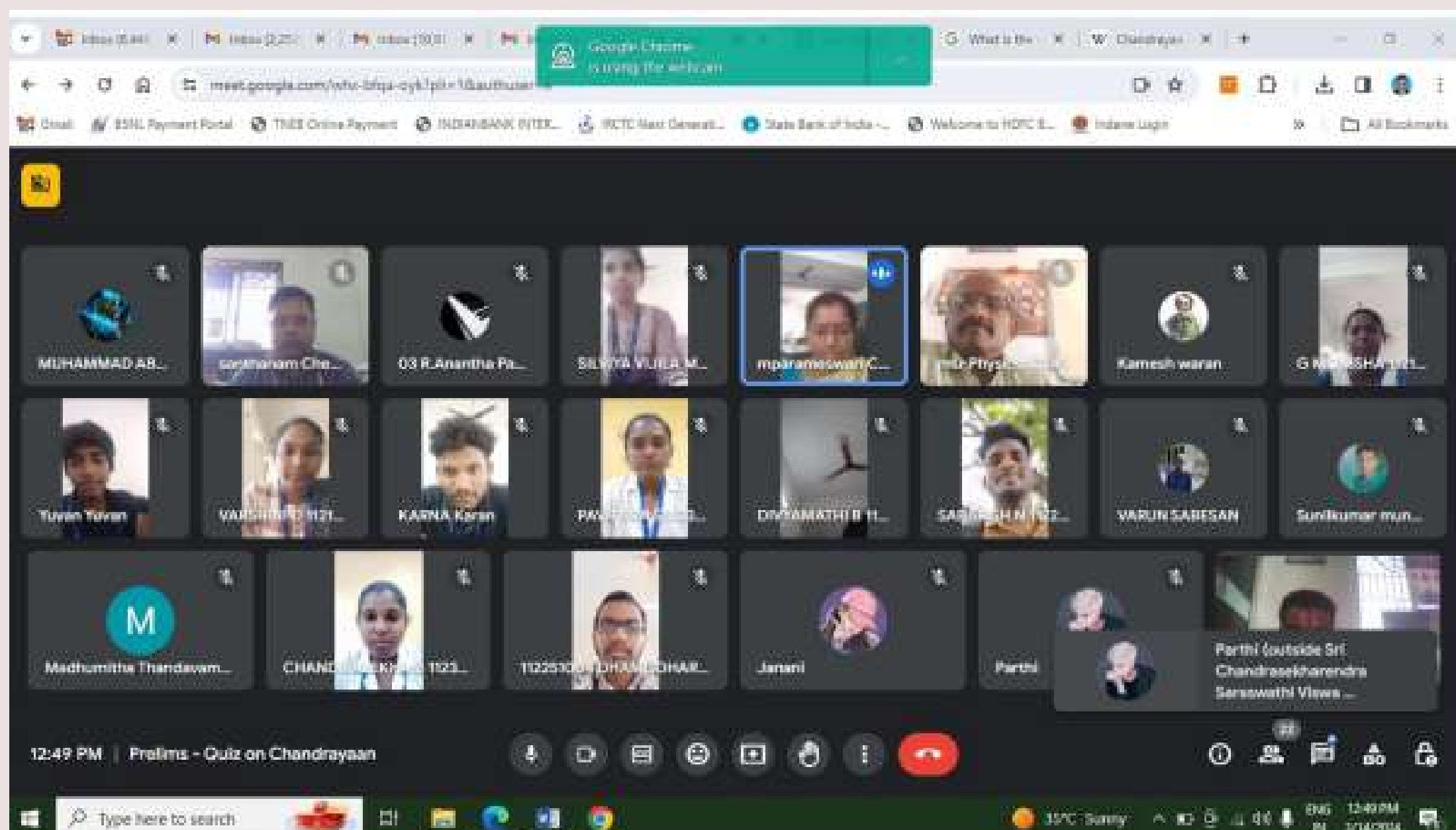






## Maha Quiz on Chandrayaan 14.03.2024

The Departments of Physics and Chemistry of our Mahavidyalaya jointly organized a Maha Quiz program on Chandrayaan during 14.03.2024. The program was conducted through online mode. Dr.M.Sundarrajan and Mr.V.Santhanam, Convenors of the program, welcomed the gathering. Dr.V.Ragavendran and Mrs.M.Parameswari, Coordinators of the program, explained the rules and regulations of the Quiz. The quiz competition began at 12.45 pm via google meet (whx-bfqa-oyk) and ended up by 1.00 pm. Google forms were developed for this purpose with 30 questions and a duration of 15 minutes were given to the participants. Around 30 students participated in the Quiz program and the top 3 scorers were selected and awarded with a certificate. Dr.V.Ragavendran and Mrs.M.Parameswari, Coordinators of the program made arrangements for this program.





## Guest Lecture on Basics of Spectroscopic Investigations of Materials By Prof. Dr. S. Muthu 29.03.2024

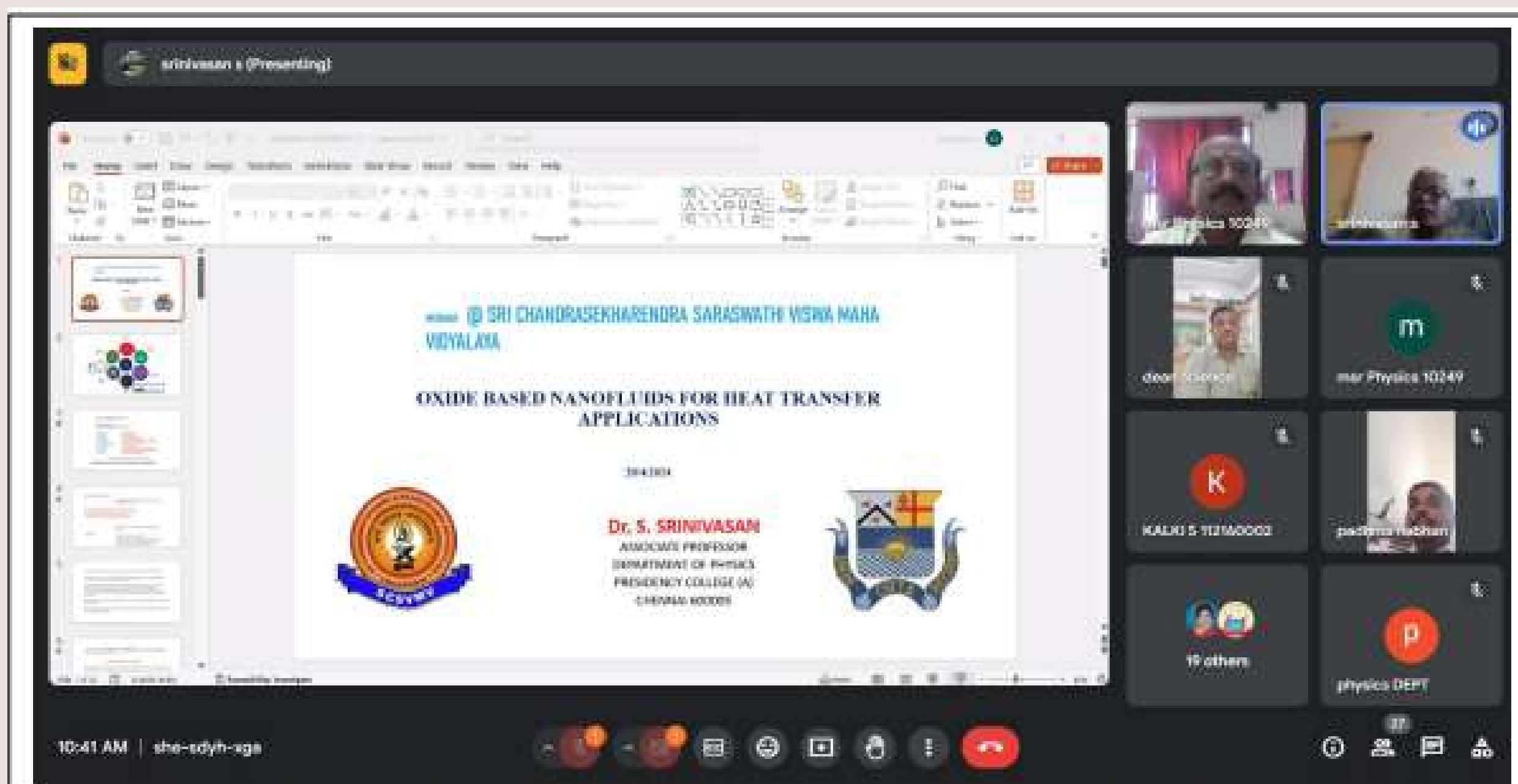
A Guest lecture on “Basics of Spectroscopic Investigations of Materials” was organized by Department of Physics, SCSVMV on 29.03.2024, 11:00 am at Seminar hall, Mechanical block. The guest lecture was delivered by Dr.S.Muthu, top 2% Scientists Worldwide, Ranked by Stanford University, California, USA. The Convener Dr. M. Sundarrajan, Assistant Professor & Head, Dept. of Physics welcomed the gathering. Dr. V. Ragavendran, Asst. Professor of Physics introduced the chief guest. The Chief Guest was honoured with shawl by the Convener. The Chief Guest Prof. Dr. S. Muthu, Professor & Head, Dept. of Physics, Puratchi Thalaivar Dr.M.G.R. Government Arts and Science College Uthiramerur, delivered a talk on “Basics of Spectroscopic Investigations of Materials”. He explained different types of spectroscopy to the students. Also he explained the basics of Computational Spectroscopy. Dr. R. Raja, Assistant Professor of Physics proposed the vote of thanks. UG and PG Students of Physics and chemistry participated in the event along with staff members. The program ended up with the national anthem.





## Webinar on “Oxide Based Nanofluids for Heat Transfer Applications” By Dr.S.Srinivasan, Associate Professor of Physics, Presidency College, Chennai 20.04.2024

A webinar was organized by the department of Physics on 20.04.2024 at 10.30 am. The Convener of the Webinar Dr.M.Sundarrajan, Asst. Professor & HoD of Physics introduced and welcomed the Chief Guest Dr.S.Srinivasan, Associate Professor of Physics, Presidency College, Chennai and all the participants to the webinar. The Chairperson of the webinar Dr.K.Venkatramanan, Professor and Dean, Faculty of Science invited the Chief Guest and delivered his talk on the advancements in nanomaterials and the importance of synthesis of nanofluids for future applications. The speaker Dr.S.Srinivasan delivered the talk on “Oxide Based Nanofluids for Heat Transfer Applications” in a more informative way for one hour. The synthesis of nanofluids and their characterization were clearly explained by the speaker to the participants. This webinar created interest among the participants in such a way that they could set up their research in the nanofluid area. The Convener thanked the speaker and all the participant for their patience and participation. Nearly 50 participants including faculty members from various colleges registered and participated in the webinar.





**Webinar on “Oxide Based Nanofluids for Heat Transfer Applications” By Dr.S.Srinivasan, Associate Professor of Physics, Presidency College, Chennai  
20.04.2024**





## FACULTY ENRICHMENT PROGRAM FOR SCHOOL TEACHERS EMPOWERING EDUCATORS FOR EXCELLENCE

15-18, MAY 2024

A faculty development programme for Sankara School Teachers from all over Tamilnadu was organised by the Faculty of Education and Faculty of Science during 15-18, May 2024. The Dean, Faculty of Science & Education, Professor Dr.K. Venkatramanan convened the event. Heads of the department of Physics, Chemistry, Mathematics, Commerce and Computer Science & Applications arranged various lecture and lab sessions for the school teachers during the programme.

The Inagural function was presided over by hon'ble Vice Chancellor of SCSVMV Prof.Dr.G.Srinivasu. The Chief Guest Prof.Dr.N.Panchanatham, Former Vice Chancellor, Tamilnadu Teachers Education University, delivered the Chief Guest address. Dr.Y.Chandramouli, Visiting Professor of Computer Science, Chennai Mathematical Institute and Secretary, Sankara Educational Trust delivered the felicitation address. The department of Physics in collaboration with Electronics and Instrumentation department arranged various lecture and lab sessions.





## FACULTY ENRICHMENT PROGRAM FOR SCHOOL TEACHERS

### EMPOWERING EDUCATORS FOR EXCELLENCE

15-18, MAY 2024

Prof. Dr. K.Venkatramanan, Dean, Faculty of Science and Education, Professor of Physics gave a talk on Introduction to Nanofluids. He explained the basic concepts on nanofluids, its synthesis and various applications. He explained various investigations on nanofluids using Ultrasonic Techniques. He explained some of the investigations with the instruments.



Dr.M.Sundarrajan, Asst. Professor and HoD of Physics gave a talk on Introduction to Carbon Quantum Dots. He explained the basic concepts on nanomaterial, its evolution from the ancient period, their properties, various synthesis processes and applications. He explained specifically about carbon quantum dots, their properties, synthesis processes and applications.

## FACULTY ENRICHMENT PROGRAM FOR SCHOOL TEACHERS EMPOWERING EDUCATORS FOR EXCELLENCE

15-18, MAY 2024



Dr.R.Raja, Asst. Professor of Physics gave a talk on Crystal Growth and Applications. He described the basic nature of crystals and its existence in nature. He explained various synthesis processes and applications of various crystals. All characterization techniques for the grown crystals were also discussed by him.



Dr.J.Suganthi, Asst. Professor of Physics gave a talk on Thin film growth and Characterizations. She explained the essential concepts in thin film formation and pointed out various properties and applications. She explained various processes for the thin film formation with their merits and demerits.

## FACULTY ENRICHMENT PROGRAM FOR SCHOOL TEACHERS

### EMPOWERING EDUCATORS FOR EXCELLENCE

15-18, MAY 2024

A lab session was arranged for all the participants. Practical demonstrations were carried out with thin film coating unit, Ultrasonic Interferometer and Sieveshaker. The participants were interestingly involved in listening about the instrument and on its working. The practical demonstrations were carried out by the senior lab instructors Dr.R.Padmanaban, Mr.S.Girivel and Mrs. J.Sudha along with all the faculty members of the department.



### VALEDICTORY FUNCTION





# FACULTY ENRICHMENT PROGRAM FOR SCHOOL TEACHERS

## EMPOWERING EDUCATORS FOR EXCELLENCE

15-18, MAY 2024





## FRESHERS' DAY CELEBRATION August 12, 2024

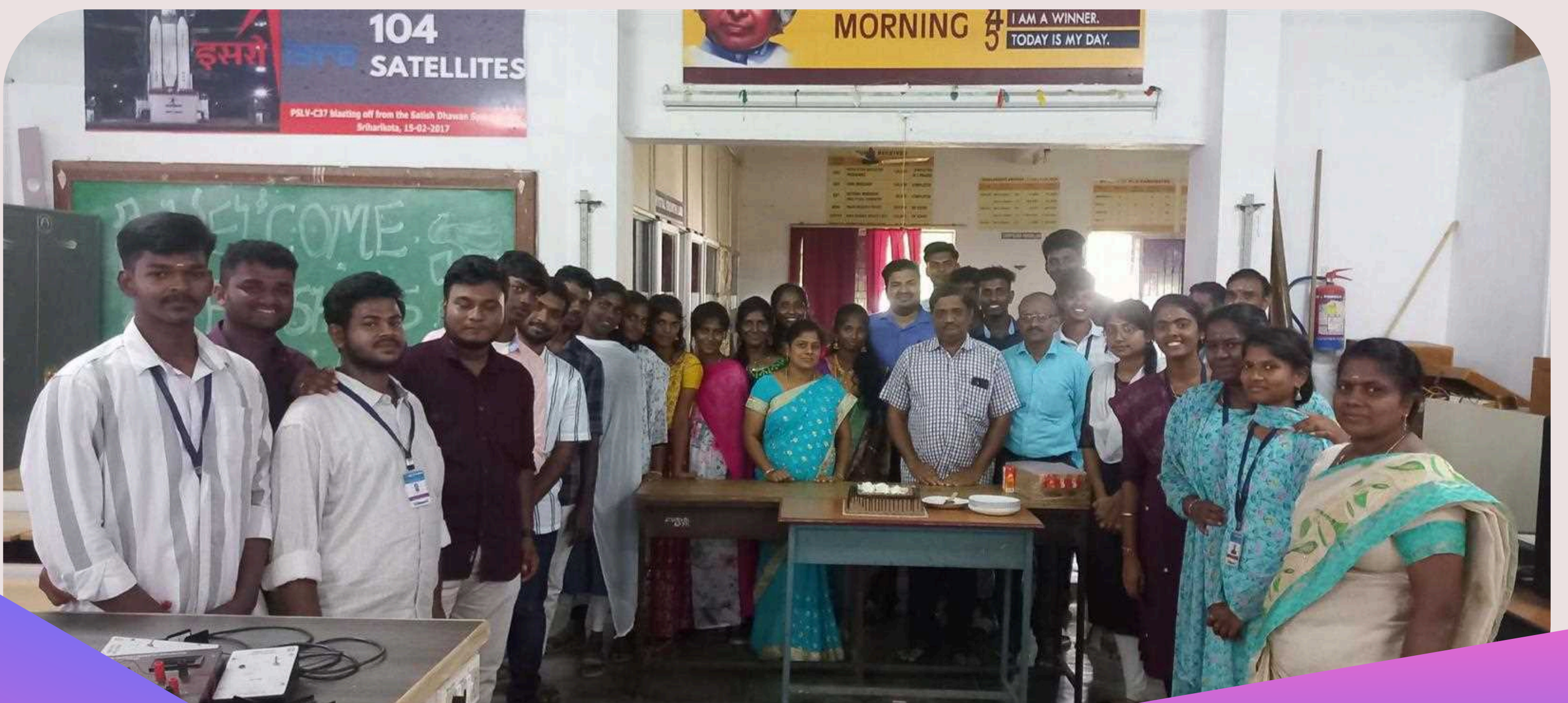
Freshers' day celebration was celebrated at the Physics department on August 12, 2024. Dr.K.Venkatramanan, Prof. & Dean, Faculty of Science inaugurated the function. He advised the freshers to concentrate much on their studies and also to participate in various academic events. Dr.M.Sundarrajan, Head, department of Physics, thanked the organisers and insisted the students to aim for good marks with knowledge gain for getting good placements and also for joining higher level courses. Other faculty members Dr.R.Raja, Dr.J.Suganthi and Mr. Akshaya Shiva advised the students for their wonderful future.

The III B.Sc. Physics students welcomed the I year B.Sc. and I Year M.Sc. students. The newly joined students introduced themselves to the gathering and exhibited their special talents. Competitions were conducted and prizes were given to the new comers by the senior students.





## FRESHERS' DAY CELEBRATION August 12, 2024

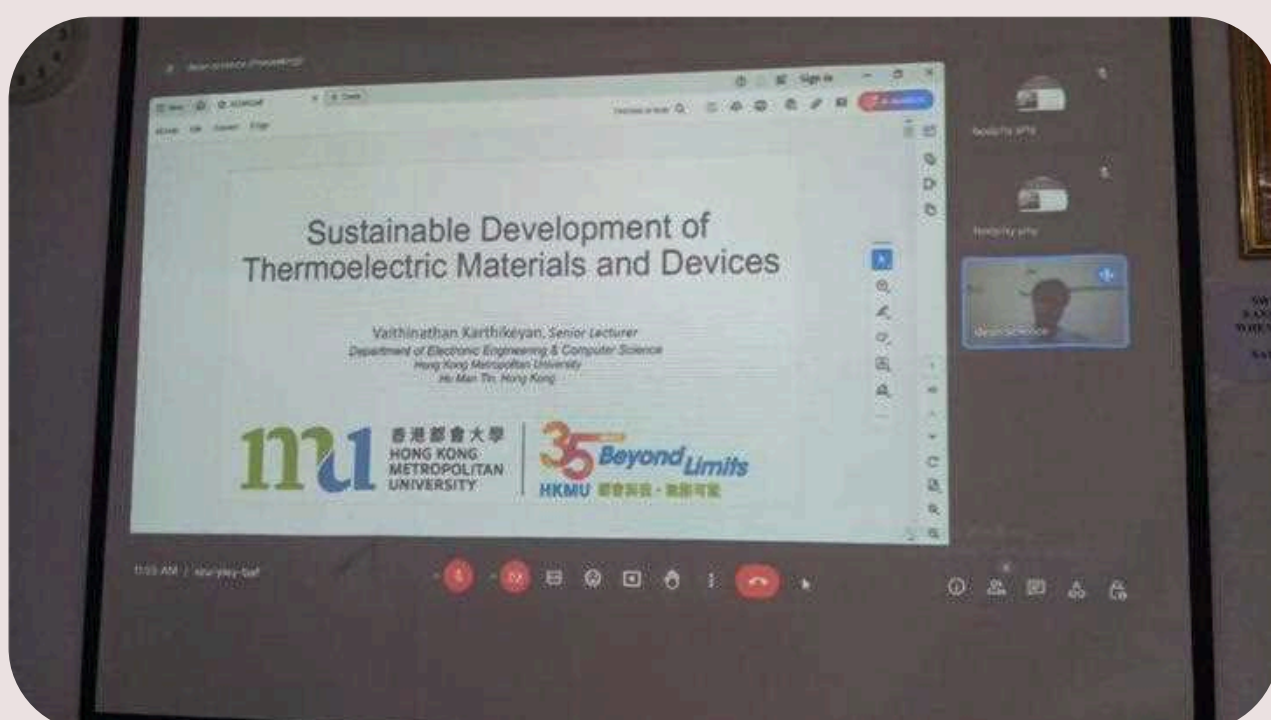




## INTERNATIONAL SEMINAR SUSTAINABLE DEVELOPMENT OF THERMOELECTRIC MATERIALS AND DEVICES 09-09-2024

The department of Physics, SCSVMV, organised an international seminar on "Thermo electric materials and devices" on September 9, 2024. The keynote address was given by Dr. Karthikeyan Vaithinathan, School of Science and Technology, HKMU, Hong Kong. His address highlighted the significance of sustainable development of thermoelectric materials and devices. His insightful presentation delved into the latest advancements and innovations in the field, emphasizing the importance of eco-friendly approaches.

Prof. Dr. K. Venkatramanan, Dean of the Faculty of Science, SCSVMV delivered presidential address. His remarks underscored the relevance of the seminar's theme and encouraged participants to engage in meaningful discussions. Dr. M. Sundarrajan, Head of the Dept. of Physics convened the seminar and welcomed the attendees. He expressed his gratitude to the speaker, participants, and organizers for their contributions to the event's success. Mr.V.Akshaya Shiva, Asst. Professor of Physics delivered the Vote of thanks.





## **STUDENTS' CLUB ACTIVITY**

### **24.10.2024**

A student seminar was conducted by the Students club of postgraduate and undergraduate students at the Department of Physics, Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya on 24-10-2024.

The event began with an introduction to the Club and a summary of planned activities by Faculty In-charge Mr.V.Akshaya Shiva. Dean of Science, Prof. K. Venkataramanan, launched the Students Club with this event. He congratulated the students for the event, sharing the history of past activities conducted by Students Club and gave a glimpse of the vision for the department of Physics.

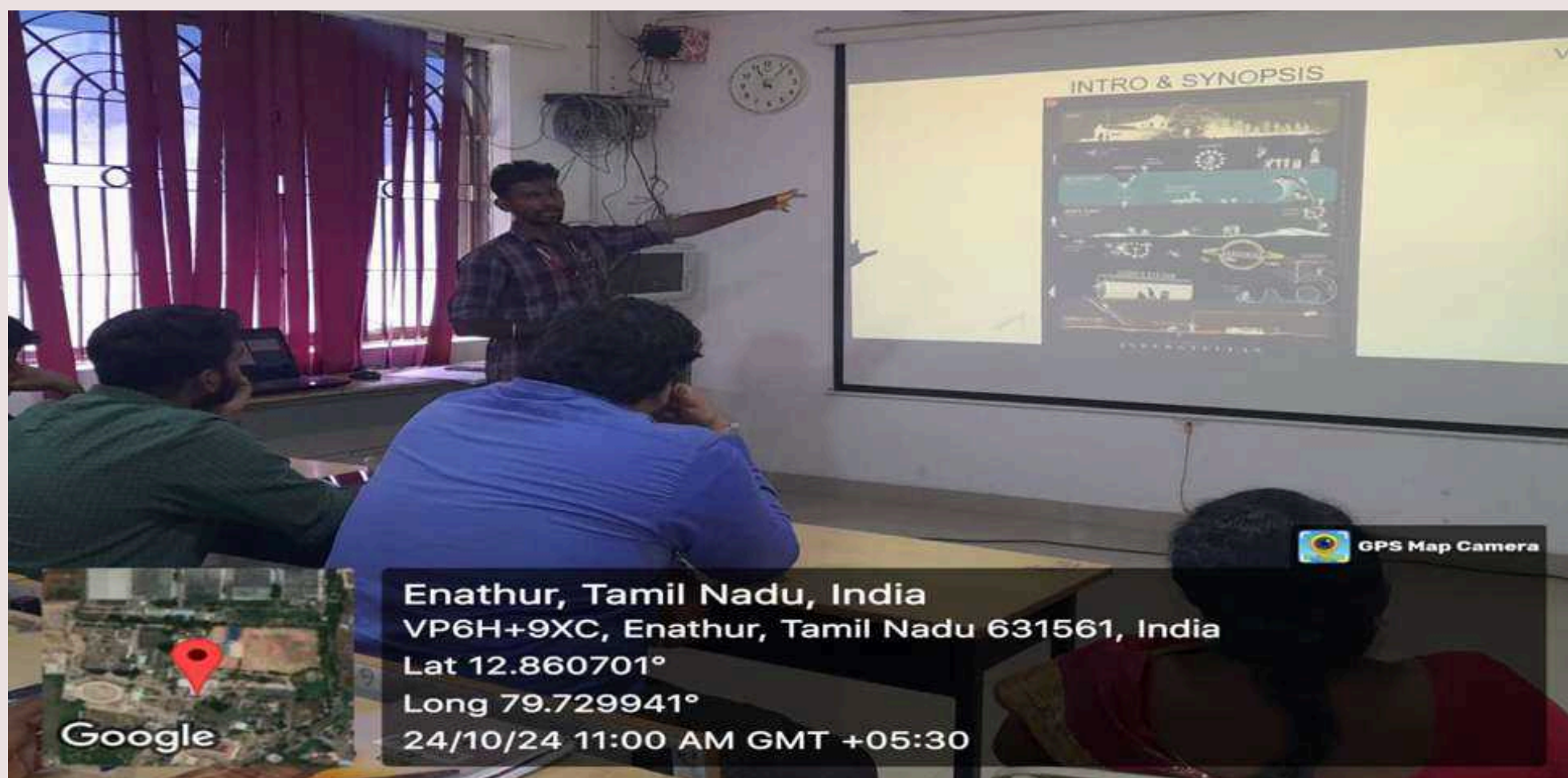
Dr. M. Sudarrajan, Head, Department of Physics, extended gratitude to the Dean of Science for his presence and encouragement towards students. He advised the students to take more initiatives in organizing various student related events, paper presentations in and around the campus and writing research articles.

Mr. Venkateshkumar (M.Sc. 1st sem. Physics) delivered the seminar on the "Science behind the Interstellar movie". He explained the concepts of dimensions, space time, wormhole, black hole and time travel in an interesting and engaging manner to the audience.

To conclude the event, Mr. Manish (M.Sc. 1st sem. Physics), President Students Club expressed thanks to the dean, faculty, staff, and students for their support and active participation. The event marks the beginning of a series of planned activities by the Students Club throughout the academic year.



## STUDENTS' CLUB ACTIVITY 24.10.2024





## INTERACTION WITH PROF.P.V. RAMACHANDRAN PURDUE UNIVERSITY , USA - 09.12.2024

Prof.P.V.Ramachandran, Director of the Hebert C. Brown Center for Borane Research, Purdue University, USA, visited the University campus on 09.12.2024. Dr.K.Venkatramanan, Professor and Dean, Faculty of Science convened an interaction session with Prof. P.V. Ramachandran. HoDs and Faculty members from Chemistry and Physics department participated in the interaction.





## PONGAL CELEBRATION





## TRAIN THE TRAINERS PROGRAM 01&15.02.2025

### TRAIN THE TRAINERS PROGRAM e-Physics department 01 & 15.02.2025





## JOURNAL PUBLICATIONS

Dr. K. Venkatramanan et al, "Facile composite engineering to boost thermoelectric power conversion in ZnSb device", Journal of Physics and Chemistry of Solids, Vol. 178, Mar 2023, pp 111329. (IF : 4.3 / Q1 / SCIE & SCOPUS)

Dr. V. Ragavendran et al, "Quantum computational investigation into structural, spectroscopic, topological and electronic properties of L-histidinium-L-tartrate hemihydrate: Nonlinear optical organic single crystal", Heliyon, Vol. 9(4), Apr 2023. pp e14879. (IF : 3.4 / Q1 / SCIE & SCOPUS)

Dr. R. Padmanaban & Dr. K. Venkatramanan et al, "Comparative Evaluation of Viscosity, Density and Ultrasonic Velocity Using Deviation Modelling for Ethyl Alcohol Based Binary Mixtures", Applied Sciences, Vol 13(13), June 2023, pp 7475 (IF : 2.7 / Q2 / SCIE & SCOPUS)

Dr. V. Ragavendran et al, "Phytochemicals as an Active Pharmaceutical Ingredient of Ocimum Sanctum and Azadirachta Indica: A Theoretical Screening Study", SPRINGER : Lecture Notes in Electrical Engineering, Vol. 976, June 2023, pp 535-546 (SCOPUS)

Dr. V. Ragavendran et al, "Synthesis, spectral characterization, SC-XRD, Hirshfeld, DFT and in silico antidiabetic activity of novel imine (E)-N-(2-nitro benzylidene) naphthalene-1-amine, a newly synthesized imine: A theoretical and experimental evaluation", Journal of Molecular Structure, Volume 1292, June 2023, pp 136084 (IF : 4.0 / Q2 / SCIE & SCOPUS)

Dr. V. Ragavendran et al, "A Proof of Concept for the Micellization of Quercetin with Anionic Surfactants: Effect of counter ion", Journal of Molecular Liquids, Vol. 388, July 2023, pp 122671 (IF : 5.3 / Q1 / SCIE & SCOPUS)

Dr. K. Venkatramanan & Dr. R. Padmanaban et al, "Studies on the Functional Properties of Titanium Dioxide Nanoparticles Distributed in Silyl-Alkyl Bridged Polyaniline-Based Nanofluids", Nanomaterials, Vol. 13(16), Aug 2023, pp 2332 (IF : 5.3 / Q1 / SCIE & SCOPUS)



## JOURNAL PUBLICATIONS

Dr. V. Ragavendran et al, "Molecular Docking Assessment of Cathinones as 5-HT<sub>2A</sub>R Ligands: Developing of Predictive Structure- Based Bioactive Conformations and Three Dimensional Structure-Activity Relationships Models for Future Recognition of Abuse Drugs", *Molecules*, Vol. 28(17), Aug 2023, pp 6236 (IF : 4.6 / Q2 / SCIE & SCOPUS)

Dr. M. Sundarrajan & Dr. R. Padmanaban et al, "Carbon dot sensors for heavy metals from Pumpkin and Guava leaves through one step microwave green synthesis", *Journal of Interdisciplinary Cycle Research*, Vol. 15(9), Sep 2023, pp 172-186

Dr. M. Sundarrajan et al, "Green Synthesis and Characterization of Nano Silver Doped Nano Hydroxyapatite (nAg-nHAP) using *Ocimum Tenuiflorum* Leaf Extract and Sea Shell - A New Approach", *International Journal of Science and Research*, Vol. 12(9), Sep 2023, pp 1435- 1441

Dr. K. Venkatramanan & Dr. R. Padmanaban et al, "Investigating the thermo-physical properties of a new kind of graphitic carbon nitride included ternary hybrid nanofluids and the property correlations", *Heliyon*, Vol. 10(4), Feb 2024, pp e26163 (IF : 3.4 / Q1 / SCIE & SCOPUS)

Dr. K. Venkatramanan et al, "2D MXene Interface Engineered Bismuth Telluride Thermoelectric Module with Improved Efficiency for Waste Heat Recovery", *Advanced Materials Technologies*, Vol. 9(21), FEB 2024, pp 2301722 (IF : 6.8 / Q1 / SCIE & SCOPUS)

Dr. K. Venkatramanan et al, "Graphitic carbon nitride sheets sandwiched metal oxides: A novel platform for S-Scheme heterojunction generation for efficient photodegradation of volatile organics", *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, Vol. 698, June 2024, pp 134515 (IF : 4.9 / Q1 / SCIE & SCOPUS)

Dr. J. Suganthi & Dr. R. Padmanaban et al, "Temperature Dependence of TiO<sub>2</sub> Thin Films by Spray Pyrolysis Technique", *AIP Con. Proceedings*, Vol. 3149, Aug 2024, pp 090009 (SCOPUS & WoS)



## JOURNAL PUBLICATIONS

Dr. R. Raja et al, "Synthesis, growth and characterization of nonlinear optical crystal: propylenediamine picrate (PDP) single crystals", Journal of Materials Science: Materials in Electronics, Vol. 35, Sep 2024, pp 1693 (IF : 2.8 / Q2 / SCIE & SCOPUS)

Dr. K. Venkatramanan et al, "Facile modification of TiO<sub>2</sub> as S-Scheme multifunctional materials for environmental protection and energy-storage applications", Surfaces and Interfaces, Vol. 55, Oct 2024, pp 105298 (IF : 5.7 / Q1 / SCIE & SCOPUS)

## STUDENT PUBLICATIONS

B. Sathya Jothi (B.Sc), "Carbon dot sensors for heavy metals from Pumpkin and Guava leaves through one step microwave green synthesis", Journal of Interdisciplinary Cycle Research, Vol. 15(9), Sep 2023, pp 172-186.

S. Durgadevi (M.Phil), "Green Synthesis and Characterization of Nano Silver Doped Nano Hydroxyapatite (nAg-nHAP) using Ocimum Tenuiflorum Leaf Extract and Sea Shell - A New Approach", International Journal of Science and Research, Vol. 12(9), Sep 2023, pp 1435- 1441