



ACADEMICS  
RESEARCH  
QUALITY

**PHYSICS**



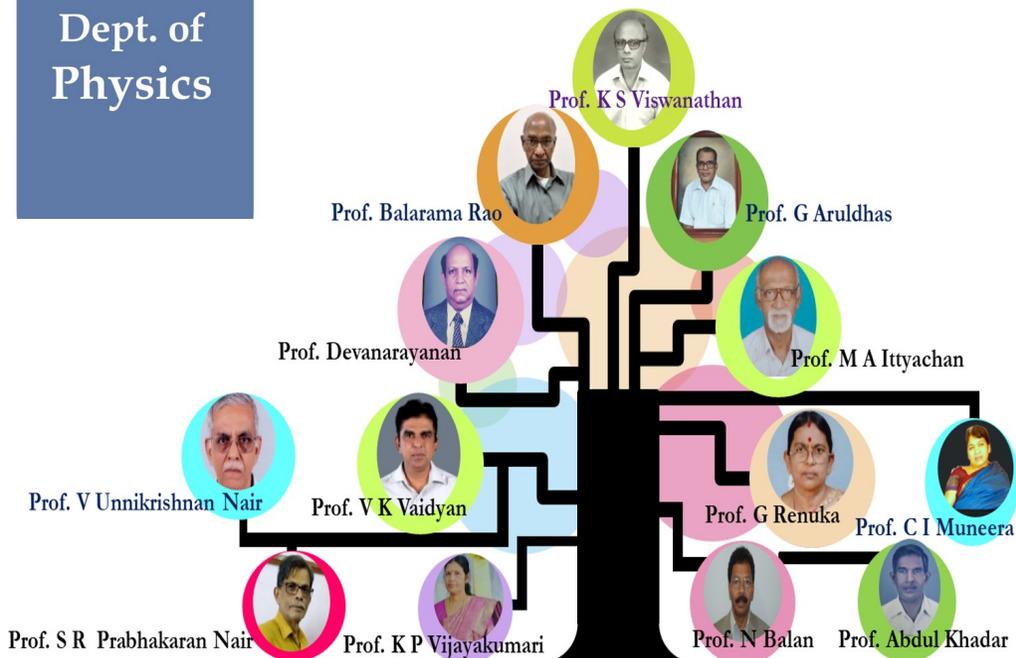
**Department of Physics**  
Established in 1970  
**(Faculty of Science)**  
**University of Kerala**



Dept. of  
Physics

## Prof. K S Viswanathan Founder Head

Renowned theoretical physicist and student of  
Nobel Laureate Sir C. V. Raman



### LEGACY

Dr. K S Viswanathan, an eminent theoretical physicist, and student of the Nobel laureate Sir C.V. Raman, was the founder Head of the Department of Physics.

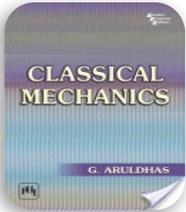
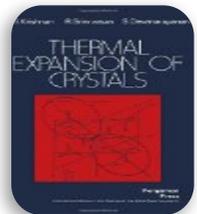
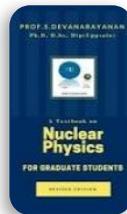
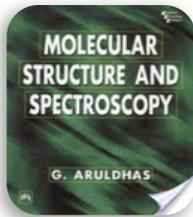
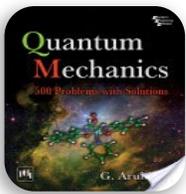
Initially, we had a modest start with 7 students for (M.Sc Diploma in Space Physics). Prof. Balarama Rao, Prof. G. Aruldas, Prof. Devanarayanan, Prof. M. A. Ittyachen, Prof. N. V. Unnikrishnan Nair, Prof. V.K. Vaidyan, Prof. G. Renuka, Prof. C. I. Muneera, Prof. K. P. Vijayakumari, Prof. N. Balan and Prof Abdul Khader joined in the following years. They are the strong foundation of the Department





## Dept. of Physics

The Department took on diverse fields of research such as plasma physics, atmospheric science, optical limiting materials, Nonlinear optical materials, etc. In fact the Department of Opto-electronics and the Department of Nano-Science and Nano Technology of the University of Kerala are the product of the diverse research interests of the faculty. Prof. Unnikrishnan Nair is the founder Head of the Department of Opto-electronics, and Dr. Abdul Khader is the founder Head of Department of Nano-Science and Nano technology. We have produced around 135 PhDs, 250 MPhils, 21 Post Diplomas and 466 MScs till date.



Prof. G Aruldas has published five essential text books and Prof. Devanarayan has published four essential text books. Prof S Devanarayan, along with Prof. R. S. Krishnan and R. Srinivasan, has written a book on Classical Mechanics. Prof S. Devanarayan has published a book on Thermal expansion of crystals and another book on the Principles and Applications of Quantum Mechanics with SCITECH. Recently he has published a book for competitive Physics named Physics in a nutshell and a textbook on Nuclear physics. All the former faculties in our department were ideal role models, and we are proud to follow their legacies.



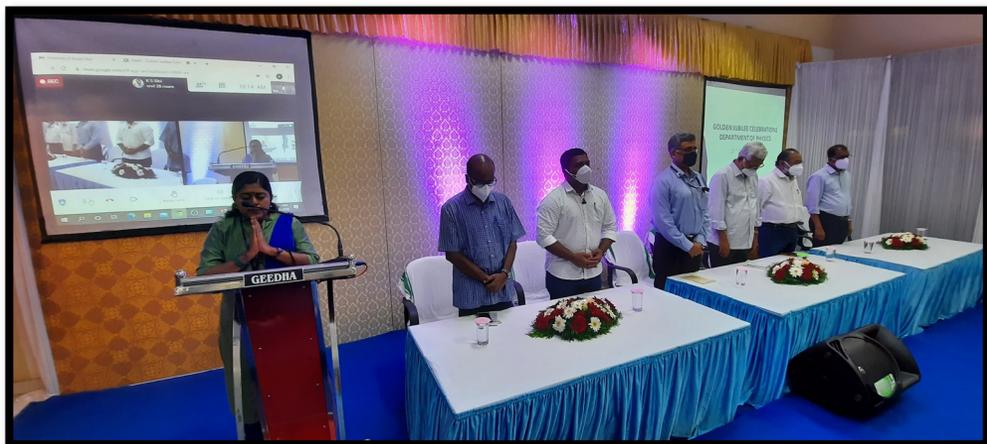


Dept. of  
Physics



## Golden Jubilee Celebrated in 2020

The Golden Jubilee of the department was celebrated on 15.12.2020. Our Alumnus and the Hon. Vice-Chancellor, University of Kerala, Dr. V. P. Mahadevan Pillai, delivered the inaugural address and released the logo. Hon. Pro-VC Dr. Ajayakumar P. P., Prof. Chandrabhas Narayana, Prof. P. B. Rao, were present. We had a technical talk by Padma Sri Kasturi Lal Chopra on the same day.





## Dept. of Physics

## Program Details



The Department had introduced three new Masters Programmes in the recent years. They are M.Sc. Physics (Space Physics, 2020), M.Sc. Physics (Renewable Energy, 2021) and M.Sc. Physics (Nano-science, 2021). M.Sc. Physics (Renewable Energy) is offered conjointly with the Centre for Renewable Energy and Materials, while M.Sc. Physics (Nano-science) is offered jointly with the Department of Nano-science and Nano Technology. All the three new generation courses are equivalent to M. Sc. Physics and hence the career opportunities of the conventional PG programme is also applicable to the new programme. The uniqueness of the new programmes is that it aims to provide specialized courses on emerging fields of material science. The recent MoU signed with VSSC, Thiruvananthapuram gives immense support to students in M. Sc. Physics (Space Physics) to pursue challenging projects and internships in the field of Space Physics, while the newly formed Centre for Renewable Energy and Materials helps to support projects and labs for students of M. Sc. Physics (Renewable Energy). Collaborations with other Departments is helping the PG programs to develop the potential to formalize new research initiatives and innovations.



Demand  
Ratio  
177:1





# Dept. of Physics

## Learning Resources

The library has been automated from 2013 onwards, has a strength of 8700 books. Recently 1358 books been added to the collection. An amount of Rs. 7 Lakhs was spent for library support. We ensure that all the choices for books are made as per the needs of a new course, faculty members, and students.

## Major Facilities

### Grants from University of Kerala

Magnetic Materials Laboratory

(2017-19): **180 Lakhs**

2D Materials Laboratory

(2018-19)- **190 Lakhs**

Microwave Materials Laboratory

(2019-20): **132 Lakhs**

Microwave Materials Laboratory

(2020-21): **200 Lakhs**



### On going

Thin Film Fab lab. (2021-22): **80 Lakhs**

Virtual computing Lab.: **75 Lakhs**

**(Total= 857 Lakhs)**



The research funding from external agencies in the last five years. Our department receives around three crore rupees. The main funding agencies are University Grants Commission, Science and Engineering Research Board, Kerala State Council for Science and Technology, Department of Science and Technology, Department of Electronics and accreditation of Computer Courses, and International center for Diffraction Data.





## Research and Development

### Dept. of Physics

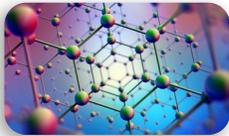
The major foci of research of the department are in the following areas. Nanomaterials, Thin Film Solar Cells, Non-Linear Optical Materials, Magnetism, Non-Equilibrium Statistical Physics, Biophysics, Microwave Materials and Devices Inorganic Phosphors for Light Emitting Diode Applications.

Our faculty members are having research collaboration with

- University of Lisbon, Portugal (MoU)
- Korean Institute of Ceramic Engineering and Technology, Korea (MoU)
- Indian Institute of Science, Bangalore (MoU)
- Boise State University, USA
- N. S. Kurnakov Institute of General and Inorganic Chemistry, Russia
- University of Kyoto, Japan
- CSIR-NIIST, Thiruvananthapuram
- Cochin University of Science and Technology, Kochi
- IISER Thiruvananthapuram
- VSSC Thiruvananthapuram (MoU)



### Research Collaborations



Signing of the MoU  
between Kerala University & VSSC  
30 March 2022



## Dept. of Physics

With the joining of new faculty members, we have now collaborations with the following agencies.

- ❖ V- Measures Private Limited
- ❖ Pelican Thermogenics
- ❖ Bralco Advanced Materials, Singapore

### Research Output

Highlights of our research output are:

No. of Publications: 108; They have a Cumulative Impact factor: 312.5; No of articles with  $IF > 5$ : 17; The average Impact factor: 3.6; Highest-Impact Factor: 10.3; The highest number of citations for a Research Paper: 76; Book chapters: 4; No. of Conference Publications (with ISBN): 8; As mentioned earlier, our collaboration between industry and academia has generated revenue from consultancy services for about Rs. 1.084 lakhs; During the assessment period, we have produced: 11 PhDs, 42 MPhils, 6 PDFs; Our research scholars have shown their excellence with eleven Best Oral Presentation awards, four Best Poster Presentation awards



Contents lists available at ScienceDirect

Physica E: Low-dimensional Systems and Nanostructures

journal homepage: <http://www.elsevier.com/locate/physce>

## Inorganic Chemistry

Cite This: *Inorg. Chem.* 2018, 57, 6226–6236

Journal of  
Materials Chemistry C



One of our faculty member, Dr.R Jayakrishnan has made a technology transfer for an amount of two Lakhs with V measures Private Limited.





Dept. of  
Physics

Rankings for Scientist  
University, Subject,  
Country, Region, World

AD  
Scientific Index



## Significant Achievements/Awards

### Congratulations !!!

**Dr. RAKHI R B**  
UGC Assistant Professor and Ramanujan Research Fellow  
Department of Physics  
University of Kerala, Karyavattom

For the outstanding achievement in **Stanford's List of top scientists in the world across all scientific disciplines in 2019**

Data for "Updated science-wide author databases of standardized citation indicators"

Published: 06-10-2019 | Version: 2 | DOI: 10.1371/journal.pone.0219624  
Contributors: Jyoti Das, Anu Biswas, Jyoti Das




Few significant achievements of our faculty members in research are as follows. Dr. Rakhi Raghavan Baby has been listed in the top 2% Scientists in India in the world ranking on the field of Applied Physics- Nanotechnology by Stanford University, USA 2020. Her World ranking is 118 while India's ranking is 10 Dr. I. Hubert Joe (Rank 1 in KU), Dr Subodh G (8), Dr. Biju V (10), Dr. Jayakrishnan R(19), Dr. Savitha Pillai S (27) Dr. Deepa K G (29) rank top in World Scientist and University Rankings 2021 at our university-level and Dr. Subodh G. contributed 14 new compounds to the ICDD database. Dr. Subodh also received the KSCSTE Young Scientist award in 2017; he was also listed among 40 inspiring teachers from South India by The New Indian Express Group, while Dr. Rakhi got the DST Ramanujan Fellowship in 2019, Dr. Mamata Sahoo got DST Inspire Fellowship and Dr. I Hubert Joe got UGC BSR Mid-career award in 2021.

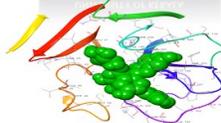
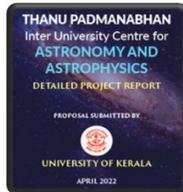


# Dept. of Physics

Some recent advances in research are Department of Physics have made Phosphors that could find applications in LEDs. The possibility is demonstrated in the photo. Department of Physics could present before the Government of Kerala a detailed project report on Thanu Padmanabhan Interuniversity Centre for Astronomy and Astrophysics with a proposed budget of 88 crores.

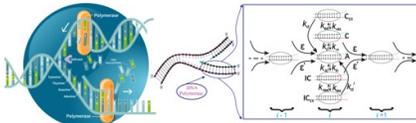


Phosphor converted LEDs

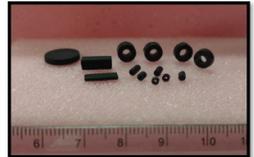


Fukugiside inside the active sites of the target protein of COVID-19

Model for DNA Replication



Electride based microwave absorbers for 5G systems



3D Printer developed under KUBIC

Dr. Akshay, PDF signed MoU with KUBIC for developing a 3D printer. This technology is shared with the industry, and the start-up is now functional as a company to develop materials for construction. The modeling of DNA replications as well as Fukugiside inside active sites of the target protein of COVID-19 and electride materials based microwave absorber for 5G applications have got attention of scientific community.





## Dept. of Physics



Our Alumni have supported the students by being mentors as well as supporting some financially. We have registered the alumni association as KU Physics Society. Around 100 Alumni have been actively involved with us during the last five years. The Alumni has contributed a sum of of Rupees one lakh for the development of the department. The prominent alumni are

- Prof. K G Suresh (IIT Bombay)
- Prof. P N Santhosh (IIT Madras)
- Prof. S K Satheesh (IISc Bangalore)
- Prof. K J Thomas (CU, Kerala)
- Prof. V P Mahadevan Pillai (VC, KU)
- Dr. R S Jayasree (SCTIMST, Trivandrum)
- Dr. Ramdas Pillai (Vinvisk Technologies)
- Dr. K Rajeev, Director of SPL
- Prof. V Ramakrishnan, Former Director of IISER, Trivandrum
- Prof. Mahadeva Iyer (University of Dallas, USA)
- Prof. Xavier Mathew (National Autonomous University of Mexico)
- Dr. R Ratheesh (Director, CMET)





# Dept. of Physics

Some of our prominent achievers in student progression are: Midhun, who was our M Phil student, got Ph.D. Position in Poland, Dr. Sibi cleared Kerala Administrative Service 2021 exam, while Hera, Merita, and Arya qualified for highly competitive fellowships offered by DST and KSCSTE. Krishna Prakash and Pavitha have qualified for the Global Foundries internship.

### Student Progression

10<sup>th</sup> Rank in KAS 2021



**Dr. Sibi N.**  
Research Scholar  
(2015-20)

Ph.D. position in Poland

Year	Number of Students qualifying in State/ National/ International level examinations (GATE/NET etc)	Number of Students enrolled in to Higher Education/Placement
2015-16	8	1
2016-17	4	6
2017-18	7	6
2018-19	6	18
2019-20	13	5
2020-21	5	6



**Midhun Mohan A**  
M.Phil. (2020-21)

### Internship for M.Sc. S3 students @Global foundries



**Krishnaprakash K R**



**Pavithra P**

### DST Inspire



**Heera S**

### KSCSTE Fellowship



**Meritta James**



**Arya Mohan**



We feel that the environment that we provide for both enhancing Institutional values and social responsibility are the real reasons for their success. Few events are highlighted to showcase the best practices in gender equity, equal opportunity and wellbeing of students.



## Dept. of Physics



Programs related to equality in Gender, 'One Tree-One Student campaign' as a part of Swatch Bharath Mission, monthly program called "Enik Parayan ullath", Delibrations and discussion published as department level magazine while celebrating Independence day, Mental wellbeing programs with help of Shri Jobi, Child Right activist, Miss Deena, Consultant psychologist, and Dr. Sujith, Assistant Professor, Department of Psychology to super 30 as a best practise while celebrating National Science day with the support of the alumni association. Again, at the Travancore Observatory the faculty and the Alumni, join hands to organise various events related to Skywatch and a yearly event named "Nobelias," as best practise where talks are hosted on that year's Nobel prize to the general public. When science is freely shared, we feel that we will have a generation who are made capable of being independent, critical, innovative, and inclusive so that they will contribute immensely to man and society.

The first semester examination 2021-23 batch and third semester examination 2020-22 batch is now scheduled to commence on 16 May 2022



## ACADEMIC STAFF

Dr. V. Biju (Professor)

Dr. I. Hurbert Joe (Associate Professor)

Dr. R. Jayakrishnan (Associate Professor)

Dr. I. N. Jawahar (Assistant Professor)

Dr. Subodh G (Assistant Professor)

Dr. Sibi K S (Assistant Professor and Head)

Dr. Deepa. K. G. (Assistant Professor)

Dr. Savitha S Pillai (UGC Assistant Professor)

Dr. Mamata Sahoo (UGC Assistant Professor)

Smt Divyakrishnan C K (Assistant Professor-Contract)

Dr. Ajesh A (Assistant Professor-Contract)

Dr. Aswathy R P (Assistant Professor-Contract)

## ADMINISTRATIVE STAFF

Sri. L P Rajeev(Administrative Officer)

Sri . Praveen S(Reference Assistant)

Sri . Adarsh S P(Senior Grade Assistant)

Smt. Mini A K(Computer Assistant)

## TECHNICAL STAFFS

Dr. Beenakumari (Scientific Officer)

Smt. Dhanya T Dharan(Technical Assistant-Contract)

Smt. Aswathy V(Technical Assistant-Contract)

**Department of Physics**  
**Since 1970**

