Cochin University of Science And Technology

"Tejasvinavadhi thamastu" which conveys, "May learning illuminate us both, the teacher and the taught" is the motto of the university

Originally known as University of Cochin, the University came into being in 1971 through an Act of the State Legislature, that was the result of the concerted campaign for quality postgraduate education in the state of Kerala.

Reorganization of the University into Cochin University of Science and Technology (CUSAT) saw the fulfillment of the aspiration of the pioneers that spearheaded the movement for establishment of a Science and Technology University in the state. The process of reorientation resulted in redefining the objectives as the promotion of graduate and postgraduate studies and advanced research in applied science, technology, industry, commerce, management and Social Science.

Cast in the mould of Federal University, distinctly different from other Universities in the State, today CUSAT is a premier science and technology University of the Country. While striving to live up to the expectations of the society, the University has made quantum leaps in its academic pursuits and has spread its wings far and wide to encompass new and emerging frontiers across the academic horizon.

CUSAT is academically structured in to nine faculties: Engineering, Environmental Studies, Humanities, Law, Marine Sciences, Medical Science & Technology, Science, Social Science and Technology.

It has at present twenty eight Departments of study and research offering Post Graduate programmes across a wide spectrum of disciplines in frontier areas of science and technology. The School of Engineering Studies offers several graduate programmes in engineering and technology.

During the last three decades of its existence, CUSAT has registered steady growth and has earned recognition as one of the highly reputed and internationally acclaimed Indian Universities. The University has academic links and exchange programmes with several institutions across the globe. The emergence of CUSAT as the single Indian University to be chosen for long-term financial assistance by the Government of Netherlands under MHO programme eloquently testifies to its proud record of academic achievements and strengths.

Dear Participants,

Our hearty warm welcome to all participants of OMTAT 2005 to God's Own Country – Kerala. The International Union of Pure and Applied Physics has declared the year 2005 as the "World Year of Physics". The General Assembly of the United Nations has also declared the year 2005 as the International Year of Physics coinciding with the 100th anniversary of Albert Einstein's 'miraculous year". The events of the World Year of Physics 2005 aim to raise a world wide public awareness for Physics and more generally for Physical Science.

October 24th, the inaugural day of OMTAT 2005 is celebrated as the United Nations Day all over the world. The Department of Physics of Cochin University of Science and Technology is very happy to organise the International Conference on Optoelectronic Materials and Thin films for Advanced Technology (OMTAT 2005) as part of the yearlong celebrations commemorating the World Year of Physics 2005.

We have an overwhelming response to our call for papers. We have 35 invited speakers covering the areas of Nanotechnology, Spintronix, Transparent Conductors, Thin films, Optoelectronic materials, Magnetic materials covering wide spectrum of Material Science and their applications. There are about 160 contributed papers. The presentations are made under two categories: oral and poster. Due to limitations of the time available, more papers are placed under poster presentation category. The SPIE CUSAT CHAPTER is happy to announce best poster awards and best presentation awards to young researchers.

On this occasion on behalf of the Physics Community of CUSAT, we would like to thank the hard work put in and support extended by large number of people at different stages of the organisation of OMTAT 2005. The advisory committee members have helped us in giving wide publicity of the conference overseas and in India and finding various funding agencies for the conference. They have also extended helping hand to the technical committee who have taken up the toughest job of reviewing the papers to be presented in the conference.

We are able to successfully organise OMTAT 2005 in this dimension because of the immense help and generosity of our sponsors by supporting with funds. The local organising committee members, especially the students of Physics Department have worked hard to bring OMTAT 2005 to this stage. We wish to make a special mention of the research students of Optoelectronics Device Laboratory of Physics Department for their dedicated service from the very beginning. We would also like to thank G.Santhosh Kumar, Senior Lecturer, Department of Computer Science, CUSAT for help rendered in the design of website for OMTAT

We place on record our sincere thanks to Prof. Abdul Azis, Vice Chancellor for all the help and encouragement received from time to time for the successful conduct of this conference.

We have put all our best effort to make the programme very interesting and the stay of our esteemed guests a comfortable one. We look forward to serve you the best and you may contact us at any time for any sort of help during the conference.

We are very glad that we have participants from all over India and a good percentage of participants from overseas.

We thank you for your participation in OMTAT 2005 and your scientific contribution, which really make the conference a success. We wish you all a very pleasant stay and you may carry sweet memories of OMTAT 2005 as well as of Kerala - the God's Own Country. The overwhelming response from all of you and the supports from well wishers of the conference encourage us to continue OMTAT series in future and invite you all again to Kochi.

On behalf of Local Organising Committee

Prof.V.C.Kuriakose

Head of the Department

Dr. M.K.Jayaraj

Convener OMTAT 2005

DEPARTMENT OF PHYSICS

The Department of Physics, established in 1963 as a research and postgraduate teaching center of University of Kerala, is one of the oldest departments of the University. The department has served as the mother department to large number of departments of CUSAT. Electronics, Instrumentation, International School of Photonics are in fact a spin off from the Department of Physics. The department has maintained a credible record of postgraduate teaching and research. It has produced over 135 PhDs and has more than 1000 research publications in leading international/national journals and conference proceedings and 7 books to its credit. This bears the testimony to the teaching and research activities of the department.

Teachers of the department have been selected for the UGC Career Award, BOYSCAST Fellowship, Alexander von Humboldt Fellowship, Robert A Welch Fellowship, European Commission Fellowship, and ENEA-ICTP Fellowship. Two faculty members are Visiting Associates of IUCAA, Pune. Contributions from the Department have obtained in the past Best-paper awards at Seminars/Symposia presentations. One contribution appeared in the journal "Superconductor Science and Technology' (SUST) published by Institute of Physics Publishing (IOPP) has been one of the most popular papers in the previous years.

The major experimental facilities in the department include: X-ray Diffractometer, UV-Visible NIR Spectrometer, Differential Scanning Calorimeter, Hall effect measuring equipment, Nd-Yag Laser, Diode Laser, Electrical and Optical characterization equipment, Optical microscope, Thin film coating units, Crystal growth unit, Plasma polymerization units**,** Furnaces, Impedance analyzer HP 4285, Laser Deposition System, RF Magnetron Sputtering, Electron beam evaporation, Liquid Nitrogen Plant, Workstation(HP), Fluorimeter, Stylus Profiler etc.

The department has a good library having a collection of 12,500 books and back issues of several national/ international journals. The department is now subscribing 6 Indian journals. Facility for online search of journals published by American Physical Society, American Institute of Physics, IOPP, Elsevier publications, IEEE publications, etc is available in the department library.

The department has collaborative research programmes with the following institutions: IIT Madras, Dr. Ambedkar Martha Wada University, University of Madras, Pondichery University, IUCDAEF Bombay, IUCAA, Pune, RRL, Trivandrum, Center for Advanced Technology, Indore, Iwate University, Morioka, Japan, University of Twente, Netherlands, Technical University, Eindhovan, Neteherlands, University of St. Andrews, Scotland. The department has also established collaborative tie-ups with industrial concerns and R&D organizations.

More than 25 externally funded research schemes stand completed and about 25 are in progress. The major funding agencies are AICTE, CSIR, DAE, DRDO, DST, ISRO, KSCSTE and UGC. The department also undertakes consultancy work in response to the needs of the industry.

The department frequently conducts refresher courses in physics for college/university teachers. The department has organized several national and international seminars/conferences in the frontier areas in physics. Reputed scientists often visit the department and give seminars.

About 15 % of the past students are employed in R&D institutions in India and abroad, 60 % as faculty in universities/colleges in India and 25% in other areas.

Academic Programmes: M.Sc. Physics, M.Phil Physics and Ph.D.

Thrust Areas of Research

Material Science: Thin Films, Crystal Growth, Solar Cells, Holography, Magnetic studies, Optelectronic Devices, Conducting polymers, lithium battery materials etc.

Theoretical Physics: High Energy Physics, Nonlinear Dynamics (Integrable and Chaotic systems), Gravitation and Cosmology, Quantum Optics, Quantum Computation etc.

Lasers and spectroscopy: Nonlinear optics, Overtone spectroscopy,

The UGC has chosen the department to receive special assistance thorough its DSA and COSIST programs for strengthening research in the areas of Material Science and Theoretical Physics. The department is a participating Center of the Theoretical Physics Seminar Circuit of DST, Govt. of India. IUCAA, Pune has established a Reference Centre in the department to strengthen the research and teaching activities in Astronomy, Astrophysics and related areas. The department is one of the participating departments in the Center for Excellence in Lasers and Optoelectronic Science established by UGC. The department also receives special assistance from DST, Govt. of India under 'Fund for Improvement of S&T infrastructure (FIST) programme and from KSCSTE under SARD programme.

The Faculty

	Name	*Area of Interest*	*Contact*
1	Dr.M.Sabir Professor	Nonlinear Dynamics Quantum Physics	0484-2576020 msr@cusat.ac.in
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3	Dr.V.C.Kuriakose Professor and Head	Nonlinear Dynamics, Cosmology	0484-2607613 vck@cusat.ac.in
4	Mr.P.K.Sarangadharan Reader	Crystal growth and characterization	0484-2576845 pks@cusat.ac.in
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October 15, 2005

MESSAGE FROM THE VICE CHANCELLOR

Dear delegates, participants and distinguished guests,

I have great pleasure to welcome you to the city of Kochi and to OMTAT 2005.The Department of Physics, Cochin University of Science and Technology is organising an international conference on optoelectronic materials and thin film for advanced technology. OMTAT 2005 is being held as a part of the yearlong celebrations to commemorate the world year of Physics 2005. This celebration coincides with the 100th anniversary of Albert Einstein's "Miraculous Year". The events of the world year of Physics 2005 aim to raise a world wide awareness for Physics and Physical Sciences.

In the present scenario the interest in the pure science is declining especially among young generation. This is not only an Indian, but a worldwide phenomenon. We will be failing in our duty if we do not bring up young generation with an aptitude towards the basic science, which is the building block of technology.

The Physics Department of the Cochin University of Science and Technology is celebrating the 100th anniversary of Albert Einstein's "Miraculous Year" 1905, that saw the publications of three classic papers. The first paper appeared in March on photoelectric effect, the second on Brownian motion and the third on special theory of relativity. Einstein was honoured with Nobel prize for his contributions in the field of photoelectric effect, that laid the foundation for quantum theory. The theme of the conference "Optoelectronics" means the interaction of light with matter and the devices that depends on these interactions is more relevant in the context of world year of physics 2005. The development of new materials and nano materials has opened up infinite possibilities in the field of optoelectronics. I hope that this conference will have deliberations and discussions on transparent conductors, luminescent materials, nano phosphors, magnetic materials, polymers, fuel cells, solar cells and nanotechnology.

I understand that there is overwhelming response for this conference and I am sure there will be decisive deliberations during the days of the conference. The organising committee has strived hard to make the conference a reality. Many agencies and companies had been liberal with funding of the events. I wish to thank them all on behalf of the organisers.

I would also like to take this opportunity to urge the participants not to miss the great scenic beauty and cultural variety of Kerala. I wish all participants, delegates and guests a very pleasant and memorable stay at Kochi during OMTAT 2005.

VICE CHANCELLOR

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