

भारत सरकार
अंतरिक्ष विभाग



Government of India
Department of Space

Indian Institute of Space Science and Technology



annual report
2008 - 2009



Present campus at ATF, VSSC, Thiruvananthapuram.

Government of India
Department of Space

Indian Institute of Space Science and Technology (IIST)

Thiruvananthapuram – 695 022, India

Annual Report

2008-2009

Vision and Mission of the Institute

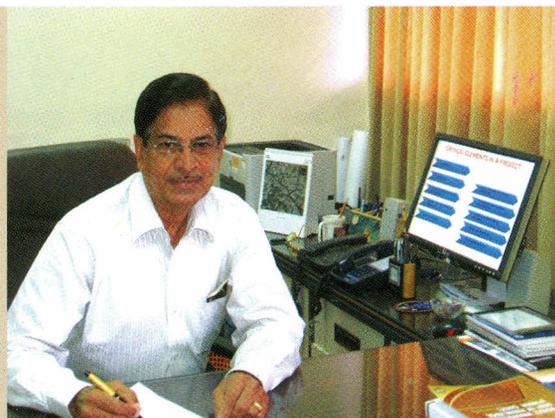
Vision

To be a world class educational and research institution contributing significantly to the space endeavours.

Mission

- *Create a unique learning environment enriched by the challenges of the Space Programme.*
- *Nurture the spirit of innovation and creativity.*
- *Establish Centres of Excellence in niche areas.*
- *Provide ethical and value based education.*
- *Promote activities to address societal needs.*
- *Network with national and international institutions of repute.*

Foreword



It gives me great pleasure to bring out the Second Annual Report of the Indian Institute of Space Science and Technology (IIST), which in fact is the first Report to cover the activities spread over a full year. 2008-09 has been an eventful year when we crossed many a milestone and marched forward with great enthusiasm and clear sense of purpose.

The appointment of Dr. A.P.J. Abdul Kalam as our Chancellor was received by the Institute with immense joy and pride. During his first visit as Chancellor, Dr. Kalam enthralled the IIST community with a brilliant exposition of his vision about the future of the fledgling institute.

The soul of an academic institution perhaps lies in its campus, which should embody its distinct identity and character. 2008-09 was in many ways a landmark year in the realization of our own dream campus. The construction work was awarded to a reputed company and the work progressed at brisk pace, while we engaged ourselves in the finer nuances of architectural choices. It is an exhilarating experience to see a top-notch campus originating first in ideas and designs and then taking shape in brick and mortar.

The second batch of students joined us in August 2008, making the campus much more exuberant. Around this time, the University Grants Commission conferred the status of Deemed University on IIST. The fact that this milestone was achieved even before the Institute completed the first year of inception, reflects the faith reposed by the nation in this pioneering academic institution in the field of Space Science and Technology.

True, it has been a year of enormous challenges. The curriculum and syllabus for all undergraduate courses have been firmed up after completion of all reviews. The post graduate programme in select areas has been fully defined. Similarly, major thrust has been given to research by setting up the R & D Board. The infrastructure facilities at the alternative campus were improved substantially to accommodate the new batch of students; new class rooms and hostel rooms were created and the sports, library and seminar facilities were given a facelift. We had to work relentlessly to recruit new faculty and administrative staff. It was literally a race against time, but at the end of the year we can certainly look back with satisfaction. In IIST, we firmly believe in the Shakespearean dictum, "an enterprise, when fairly once begun, should not be left till all that ought is won."

Indeed we have miles to go, but we are confident that we would meet the demands of the Department of Space and expectations of the Nation in the coming years.

Dr. B.N. Suresh
Director

IIST Board of Management

1. Secretary, Department of Space, Antariksh Bhavan, Bangalore-Chairman
2. Secretary, Department of Atomic Energy, Anushakti Bhavan, Mumbai
3. Secretary, Higher Education, Ministry of HRD, Shastri Bhavan, New Delhi
4. Chief Secretary, Government of Kerala, Thiruvananthapuram
5. Prof Roddam Narasimha, Chairman, Engineering Mechanics Unit, Jawaharlal Nehru Centre for Advanced Research, Jakkur, Bangalore
6. Director, Indian Institute of Technology, Madras
7. Director, Indian Institute of Technology, Bombay
8. Director, Indian Institute of Science, Bangalore
9. Director, Vikram Sarabhai Space Centre, Thiruvananthapuram
10. Director, Space Applications Centre, Ahmedabad
11. Additional Secretary, Department of Space, Antariksh Bhavan, Bangalore
12. Scientific Secretary, ISRO, Antariksh Bhavan, Bangalore
13. Nominee of UGC Chairman
14. Director, IIST, Thiruvananthapuram-Member Secretary

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Introduction

The Indian Institute of Space Science and Technology, Asia's first Space University and only the third in the world to offer academic programmes in Space Science and Technology, entered its second year of existence in 2008-09. The Institute has the unique mandate of encouraging and equipping brilliant youngsters from all parts of the country to take up a career as Scientist/Engineer in the Indian Space Research Organisation. Registered as a Society under the "Travancore-Cochin Literary, Scientific and Charitable Societies Registration Act", IIST functions as an autonomous body under the Department of Space, Government of India. The Union Cabinet gave its approval for establishing the Institute on 26th April 2007 and this was followed by hectic preparations to launch undergraduate programmes in the ensuing academic year itself. Admission formalities for the undergraduate programmes were completed by August 2007 and the Institute was inaugurated on September 14th, 2007 by Dr. G. Madhavan Nair, Secretary, Department of Space and Chairman, ISRO. In less than a year of its establishment, IIST has earned the status of a Deemed to be University and has made significant all-round progress in academics, research and infrastructure build-up.

The three B. Tech. programmes in Technology that IIST offers in the streams of Aerospace Engineering, Avionics and Physical Sciences attract bright students from all parts of the country. UGC's sanction has also been received for starting M Tech programmes in three streams, viz. Adaptive and Applied Optics, Soft Computing and Machine Learning and Microwave Systems. The M Tech Programmes are slated to commence from the academic year 2009-2010. Various doctoral programmes in IIST have commenced from the academic year 2008-09.

Admissions 2008-09

As in the previous year, the second batch of students for the academic year 2008-09 was also admitted on the basis of the ranks obtained in the IIT Joint Entrance Examination. The students who secured IIT-JEE ranks were asked to register online at the IIST website. Subsequently, category-wise rank lists were drawn out and the candidates were invited for Counselling held at Bangalore on 17th-18th, July 2008. The Counselling was carried out with the help of a tailor-made software, which made the whole process both transparent and hassle-free.



Counselling in progress

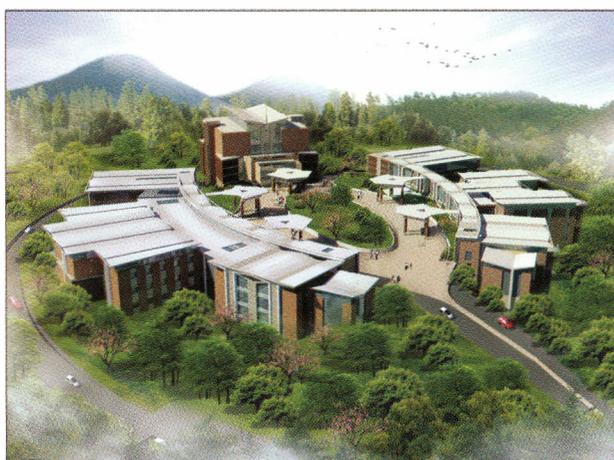
Admission to IIST in the Academic Year 2008-09 : Categories of Students

Branch	Proposed intake in different categories					Actual Admission in different categories				
	SC	ST	OBC	General	Total	SC	ST	OBC	General	Total
B. Tech Avionics	10	5	17	33	65	10	5	17	33	65
B. Tech Aerospace Engineering	8	4	14	26	52	8	4	10	26	48
Integrated Masters in Applied Sciences	6	3	10	20	39	5	3	7	20	35
TOTAL	24	12	41	79	156	23	12	34	79	148

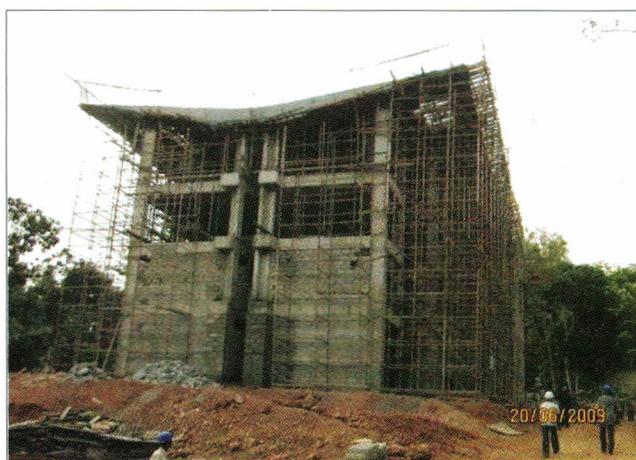
Infrastructure

Progress of work in the new campus at Valiamala

The construction of a permanent campus for IIST was accorded the highest priority from the very inception of the Institute. The work was awarded to M/s Shapoorjee-Pallonjee Company Ltd., Mumbai, a reputed construction company, in July 2008, after a thorough scrutiny of the various proposals. The construction work started in December 2008 at ISRO's own land adjacent to the Liquid Propulsion Systems Centre, Valiamala in Thiruvananthapuram District. Meanwhile, the Govt. of Kerala announced its commitment to acquire 54 acres of land close to the site of construction to meet the requirements of setting up a campus of international standards. In addition to this, the Govt. of Kerala has also transferred 20 acres of land to IIST at Ponmudi to set up a Space Science Complex. The first phase of construction in Valiamala is expected to be completed by the end of 2009, which will enable the Institute to shift its academic activities to the new campus by early 2010.



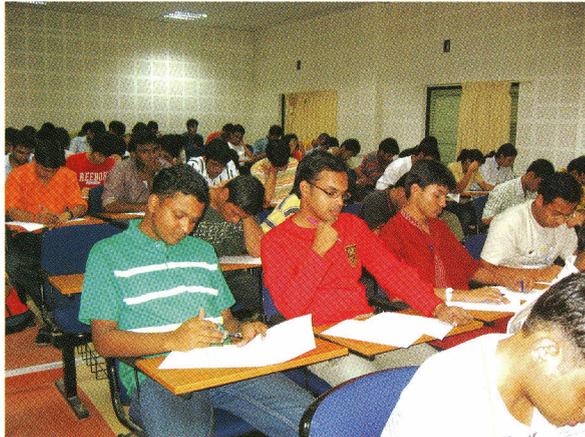
Concept picture: Library, Convocation Hall and Administrative Block



A Hostel Block nearing completion

Alternative campus at VSSC

The Institute now functions from the picturesque alternative campus closed to the Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram. But as the facilities in this campus were not adequate to accommodate the second batch of students, three additional Classrooms, a Multi-purpose hall and the space to accommodate the Library were added to the existing facility.



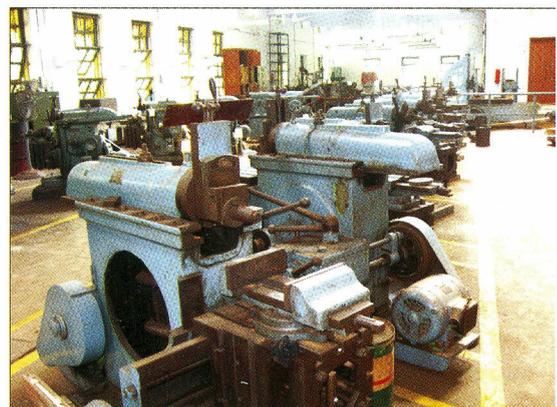
Hostel Accomodation

Boarding facilities for the new batch of students were provided mainly in the newly constructed hostels of VSSC at Aakkulam, Thiruvananthapuram exclusively designed for the young scientists inducted every year into ISRO.



A new hostel at Aakkulam

Laboratory Facilities



College of Engineering, Thiruvananthapuram

Laboratory sessions are conducted in reputed institutions like the College of Engineering and Mar Ivanios College, Thiruvananthapuram. IIST signed its Memorandum of Understanding with these two institutions to facilitate the conduct of practical experiments. The laboratories in VSSC are also selectively utilised for conducting specified practical sessions with the help of VSSC personnel.



Mar Ivanios College, Thiruvananthapuram

Library

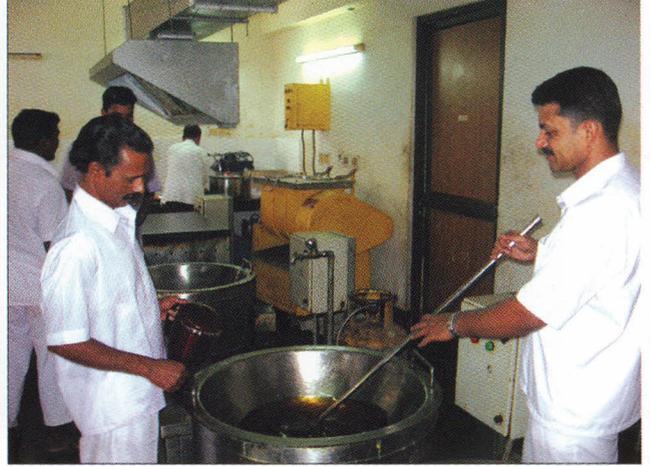
The IIST library, which has a collection of more than 3500 books, was shifted to a more spacious area close to the Multipurpose Hall. An Integrated Library Management Software was introduced in the IIST Library with the help of which the IIST Library has been practically delinked from the VSSC Library. Many journals in print and electronic media have been added to the impressive collection of the IIST Library.



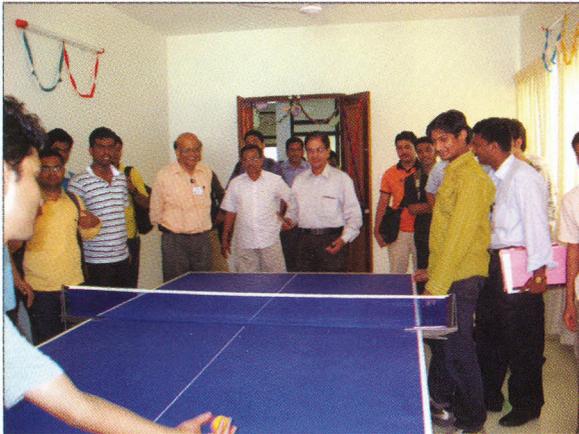
Around 285 students and 32 faculty members have membership in the library and the library timings have been extended beyond normal office hours to accommodate the increased demand. The fascinating feature of IIST Library is that the Student Peer Groups play an active role in the management of the Library, especially after office hours. The faculty members and students continue to have access to the VSSC library, the largest and the oldest of ISRO libraries.

Canteen

With the introduction of new hostels at Aakkulam, it became necessary to start a new canteen *insitu* to cater to the students living there. Now, IIST has three canteens equipped with modern infrastructure and the excellent service of expert staff. Here also, the Students' Peer Group plays an active role in their management.



Sports facility

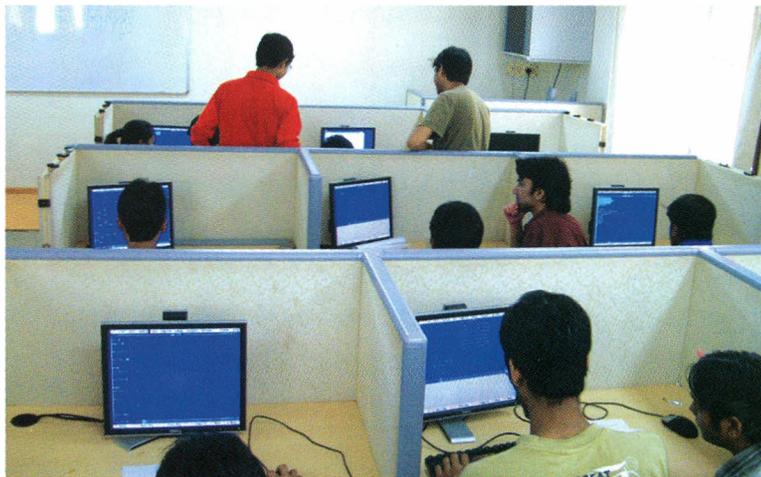


A full-fledged Basketball court with modern facilities and an exclusive indoor recreation room for playing Table Tennis, Caroms and Chess were inaugurated on 21st January 2009 by the Director, IIST. The Multipurpose Hall also doubles as Badminton Court, when it is not in use for conducting seminars and student gatherings. These facilities, combined with the Volley Ball and Cricket grounds, just about meet the Sports infrastructure required by the Institute at this stage.



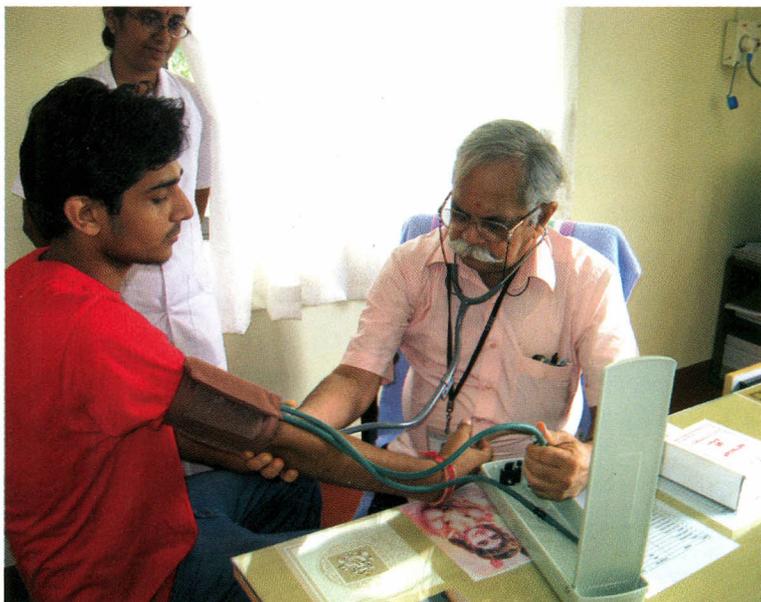
Internet facility

The computer and internet facilities in the alternative campus were updated substantially during the year. Apart from the two internet labs at ATF and TERLS area, Wi Fi connections were provided in the main campus and the hostel rooms.



Medical Facility

IIST has a well experienced medical team with a Chief Medical Consultant, a Medical Officer and paramedical staff. Their service is available to students and staff throughout the working hours on all days. A clinic has been established in the campus with sufficient medicines and equipment to take care of the day to day medical needs.



Dr. TVG Nair, Chief Medical Consultant, examining a student

IIST has ensured emergency medical care and hospitalization facilities for all its students by entering into a Memorandum of Understanding with M/s Ananthapuri Health Services, one of the leading hospitals of Thiruvananthapuram city. Every student of IIST also gets a medical insurance coverage upto Rs One Lakh, which is funded from the Assistanceship Fee granted by the Department of Space.

Academics

Faculty Strength

The faculty strength of IIST rose to thirty five during the year. Two Emeritus Professors, Dr.V. Radhakrishnan and Dr K. N. Ninan also joined the Institute.

Syllabus and Curriculum

The syllabi and curricula of IIST have been formulated after considerable debate, with valuable contributions from some of the best academicians and space scientists of the country. In doing so, the Institute has striven to maintain a healthy balance between the generic requirements of engineering and science and the specific demands of a specialised field like Space Science and Technology. The syllabus has been reviewed in detail by the Board of Studies constituted for this purpose with members drawn from Academia and Research institutions. Subsequent to this, the Academic Council has reviewed and approved the syllabus. The designs of the practical experiments were framed on basis of feedbacks received from ISRO Centres.

Research

Research in IIST is built on the foundations of various academic programmes run by the Departments of Aerospace, Avionics, Chemistry, Physics, Mathematics and Humanities. The style of research in IIST is both theoretical as well as experimental, and the Institute is setting up state-of-the-art facilities in all Departments to support its research ambience. The Institute is focused on strong interdisciplinary and collaborative work both within the various departments of IIST and across the various Centres of ISRO, which will help to generate excellent technologies responding to the needs of local, national and global interests.

Research in Departments

Every Department has initiated project and research works of national and international importance which include funded project works as well as doctoral research works undertaken by the Faculty. IIST has already created a Research Board with eminent members from major ISRO Centres and other premier educational and research institutes of the country, entrusting the responsibility of defining the broad framework, structure and roadmap for reaching the research goals and periodically reviewing and guiding the progress. An IIST Research Committee has also been formed with the task of addressing regular and day-to-day aspects of enabling and monitoring research activity and to ensure that the established procedures are readily implemented.

Reviewing the faculty research proposals, monitoring their progress and ensuring their successful completion are the most important elements in this process. Based on the discussions, the IIST Research Board and the Research Committee strive to keep in place an efficient and dynamic system to ensure such review mechanism. Four Peer Review Committees (PRCs) have been formed in the broad disciplines of Chemical and Material Sciences, Physical and Mathematical Sciences, Avionics Engineering and Aerospace Engineering.

Research Projects

IIST has initiated interdisciplinary research projects under the front line areas of Nanoscience and Technology, Biomedical polymers for tissue engineering etc. The Institute has also initiated projects in the areas of simulation studies in Semi-cryogenic and Tri-propellant engines, Astrophysics etc.

Details of ongoing /completed research project

1. Title: Development of high performance impermeable membranes from halobutyl rubber nanocomposites for critical space applications.

Principal Investigator: Dr. Kuruvilla Joseph

Funding Agency: IIST

2. Title: Development and feasibility study of polymeric scaffold for tissue culture under microgravity (From March, 2009).

Collaborating Institute: Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum.

Principal Investigators: Dr Nirmala Rachel James, Dr Anil Kumar

Funding Agency: IIST

3. Title: Polymer-Nano Composites for Electronic and Photonic Applications

Principal Investigators: Dr. Honey John, Dr. Bindu Krishnan, Dr. Pramod Gopinath

Funding Agency: IIST

4. Title: Synthesis of Polymers from Renewable Resources and Development of Green Composites Based on Cellulose Microfibrils and Nanoparticles

Principal Investigator: Dr. Kuruvilla Joseph

Funding Agency: UGC

5. Title: 'Synthesis and Characterization of Radiopaque Polyurethanes for Medical Applications' (From March 2006 - March 2009).

Principal Investigators: Dr. Nirmala Rachel James, Dr Roy Joseph

Funding Agency: Kerala State Council for Science, Technology and Environment

6. Title: Development of transducer from conducting composites

Principal Investigators: Dr. Honey John, Dr. Rani Joseph, Dr K T Mathew

Funding Agency: ISRO (RESPOND)

7. Title: Low Temperature Vulcanization system for NR latex prevulcanization and production of antistatic sheet.

Principal Investigators: Dr .Honey John, Dr. Rani Koseph and Dr Shainy Palaty

Funding Agency: Kerala State Council for Science, Technology and Environment

8. Title: Pre Vulcanization of Natural Rubber latex at Room Temperature and Industrial Production of Low Cost Gloves and Balloons

Principal Investigators: Dr. Honey John, Dr Shainy Palaty

Funding Agency: UGC

9. Title: Development of Polymer composites having EMI shielding property
Principal Investigators: Dr. K T Mathew, Dr. Anandan C. K. and Dr. Honey John
Funding Agency: DRDO
10. Title: Numerical simulation of turbulent reacting flows in semi- cryogenic and tri-propellant engines
Principal Investigators: Dr M Deepu, Dr Abdusamad Salih
Funding Agency: IIST
11. Title: Multi wavelength study of massive star forming regions
Principal Investigator: Dr Anandmayee Tej
Funding Agency: IIST
12. Title: Control Systems of Partial Differential Equations
Principal Investigators: Dr Mythily Ramaswamy, Dr J P Raymond and Dr Raju K George
Funding Agency: IFCPAR [Indo – French]

Other Academic Activities

Faculty members of IIST actively participated in National and International Conferences, Seminars etc to keep abreast of latest developments in their respective fields. The research papers published by IIST faculty members during 2008-09 are listed below:

Research Publications, Seminars/Conferences/Symposia of/by faculty members

Peer-reviewed Journals

1. Salih, A. and Ghosh Moulic, S., "*Some numerical studies of interface advection properties of level set method*", *Sadhana, Indian Academy of Sciences*, 34, Part 2, pp 271-298 ,2009.
2. Praveen Nair, M Deepu,, and Jayachandran, T, "*Numerical Simulation of Film Cooling in a Hypersonic Re-Entry Module Using Ausrm+-Up Based Finite Volume Flow Solver*" *International Journal of Dynamics of Fluids*, Vol.4, No.2, 2008.
3. G. Rajesh, H. D. Kim, and T. Setoguchi, , "*The Projectile Aerodynamics Overtaking a Shock Wave*", *J. Spacecraft and Rockets, AIAA*, 45(6) pp.1251-1261, 2008.
4. N.Selvaganesan, R.Sundaramurthy, G.Divya Charline, S.Paramasivam, "*Design and Implementation of Fuzzy Logic Controller for High Performance Coupled Inductor DC-DC Converter*", *International Journal of Power Electronics*, Vol.1, No.1, pp 87-100, 2008.
5. Sheeba Rani.J, Devaraj, D. Sukanesh, R., "*Robust face recognition using wavelet transform and auto associative neural network*", *International Journal of Biometrics*, Inderscience publishers - Vol 1, No.2, pp. 231-252, 2008.
6. Dyana Merline, C.P.R .Nair, C. Gouri and K N Ninan , "*Synthesis, Characterization, Curing and Shape Memory Properties of Epoxy-Polyether System*", *Journal of Macromolecular Science, Part A Pure and Applied Chemistry*, 45, 312, 2008.

7. R Devasia, C.P.R. Nair and K N Ninan, "*Temperature and Shear Dependencies of Rheology of Poly (Acrylonitrile-co-Itaconic Acid) Dope in DMF*", *Polymers for Advanced technologies*, 19 , 1771, 2008.
8. Bibin John, C.P.R.Nair and K N Ninan , "*Tensile and Flexural properties of Glass – Fibre Reinforced Cyanite Ester Syntactic Foams*", *Polymer and Polymer Composites*, 16 (7), 431, 2008.
9. Bibin John, C.P.R.Nair, Dona Mathew and K N Ninan , "*Foam sandwich composites with cyanate ester based syntactic foam as core and carbon-cyanate ester as skin: processing and properties*", *Journal of Applied Polymer Science*, 110, 1366, 2008.
10. S.K.Manu, T.L. Varghese, S. Mathew and K N Ninan , "*Compatibility of Glycidyl Azide Polymer with Hydroxyl Terminated Polybutadiene and Plasticizers*", *J. Propulsion and Power*, 25 (2), 533, 2009.
11. K.Ambika Devi, C.P.R.Nair and K N Ninan, "*Bismaleimide Modified Epoxy-Diallylbisphenol System - Effect of Bismaleimide Nature on Properties*", *Polymers & Polymer Composites*, 17 (2), 141 2009.
12. Bipin John, C.P.R.Nair and K N Ninan, "*On the processing and Compressive Properties of Cellular Foams of Cyanate Ester*", *Cellular Polymers*, 28 (3) 193, 2009.
13. K. Jayanarayan and Kuruvilla Joseph, "*Static and dynamic mechanical properties of in-situ microfibrillar composites based on polypropylene/ poly(ethylene terephthalate) blends*", *Composites Part A*, 39, pp. 164-175,2008.
14. K. Jayanarayan and Kuruvilla Joseph, "*Mechanical and thermal properties of microfibrillar polymer polymer composites*", *Journal of Polymeric Materials*, Vol 25, No.3, 2008, 381-386.2008.
15. K. Jayanarayan and Kuruvilla Joseph, "*Morphology development and non isothermal crystallization behaviour of drawn blends and microfibrillar composites from PP and PET*", *Polymer Bulletin*, 60, pp. 525-532, 2008.
16. Sherly Annie Paul, Kuruvilla Joseph and Sabu Thomas, "*Effect of fiber loading and chemical treatments on thermophysical properties of banana fiber/polypropylene commingled composite materials*", *Composites: Part A* 39, pp. 1582–1588,2008.
17. Sherly Annie Paul, Kuruvilla Joseph and Sabu Thomas, "*Mechanical and water sorption studies of ecofriendly banana fiber reinforced, Polyester composites fabricated by RTM*", *Journal of applied Polymer Science*, Vol 109, issue 3, pp. 1547-1555, 2008.
18. Jesmy Jose, Kuruvilla Joseph and Sabu Thomas, "*PVT behavior of Thermoplastic Modified Epoxy-Diamine blends: Relating Viscoelastic phase separation and Double phase Morphologies with the Cure Shrinkage Performance*", *Journal of Physical Chemistry B*, 112, (47), pp. 14793-14803, 2008.
19. M. Kannan and Kuruvilla Joseph, "*Thermomechanical behavior of nanoclay filled TPU/PP blends*", *e- Polymers*, pp. 133, 2008.
20. Maries Idicula and Kuruvilla Joseph, "*Thermal behavior of chemically treated and untreated sisal fiber reinforced composites fabricated by resin transfer molding*", *Composite interfaces*, 15, pp. 629-650, 2008.

21. K. Jayanarayan and Kuruvilla Joseph, Dynamic Mechanical Analysis of in situ Microfibrillar Composites Based on PP and PET, *Polymer-Plastics Technology and Engineering*, 48: pp. 455-463, 2009
22. K. Jayanarayan and Kuruvila Joseph, “*Effect of draw ratio on the microstructure, thermal, tensile and dynamic rheological properties of insitu microfibrillar composites*”, *European Polymer Journal* 45, pp. 1738–1747 ,2009.
23. M. Kannan and Kuruvilla Joseph, “*Mechanical Properties and Morphology of Nanoclay Filled Different TPU/PP Blend Nanocomposites: Structure - Property Relations*”, *Journal of Composite Materials*, Vol. 43, No. 18, pp. 1915-1925 , 2009.
24. Maries Idicula and Kuruvilla Joseph, “*Dynamic mechanical properties of sisal fiber reinforced polyester composites fabricated by resin transfer molding*”, *Polymer composites*, 30, 10, 2009.
25. Sherly Annie Paul, Kuruvilla Joseph and Sabu Thomas, “*Preparation of polypropylene fiber / bananan fibber composites by novel commingling method*”, *Composites Science and Technology*, 69,11-12, 2009.
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27. Venugopal T Bhat, Nirmala R James, A Jayakrishnan, “*A photochemical method for immobilization of azidated dextran onto aminated poly (ethylene terephthalate) surfaces*”, *Polymer International* 57:124, 2008.
28. S. Kiran, Nirmala R. James , Roy Joseph, A. Jayakrishnan “*Synthesis and characterization of iodinated polyurethane with inherent radiopacity*”, *Biomaterials* (Article in Press, 2009).
29. Rajesh Menon, Rinku M Thomas, Honey John, Rani Joseph, K. T. Mathew “*Polyaniline as an automatic beam steering material*” *Microwave and Optical Technology Letters*, Volume 50, Issue 2, pp 422-425,2008.
30. K. Lakshmi, Honey John, Rani Joseph, K.E. George, K.T. Mathew “*Comparison of microwave and electrical properties of selected conducting polymers*” *Microwave and Optical Technology Letters*, Volume 50, Issue 2, pp 504-508, 2008.
31. Zachariah, Thomas; Honey John; Kurien, Mary; Rasheed, T. M A., “*Study of Heat Diffusion in Polyaniline by Open Photoacoustic Cell Technique*”, Volume 57, Number 9, pp. 852-859(8), 2008.
32. K. Lakshmi, Honey John, Rani Joseph, K.E. George, K.T. Mathew “*Microwave absorption, reflection and EMI shielding of PU–PANI composite*” *Acta Materialia* ,57,pp 371–375, 2009.
33. Honey John et al, “*Optimization of preparation conditions on the dielectric properties of polyaniline*”, *Journal of Applied Polymer Science*, Volume 112, pp. 2676-2682,2009.
34. K. Prabhakaran, E.M.Jayasingh, R.Sooraj, C.Durgaprasad and S.C.Sharma, “*Aqueous dispersion characteristics of PMN-PT powder prepared by the partial oxalate method*”, *Adv. Appl. Ceram.*108, pp. 145-148, 2009.

35. E.M.Jayasingsh, R.Sooraj, K. Prabhakaran, C.Durgaprasad and S.C.Sharma “*Characteristics of PMN-PT powder prepared by partial oxalate process route*”, *Ferroelectric Lett.* 36 pp. 45-55 2009.
36. T F A F Reji, S K C Devi, K K Thomas, K G Sreejalekshmi, S L Manju, M Francis, S K Philip, A Bharathan & K N Rajasekharan, “*Synthesis and cytotoxicity studies of thiazole analogs of the anticancer marine alkaloid dendrodoine*”. *Indian Journal of Chemistry section B*, 47, 1145, 2008
37. K. G. Sreejalekshmi, KA Krishnan and TS Anirudhan. “*Adsorption of Pb(II) and Pb(II)-citric acid on sawdust activated carbon: Kinetic and equilibrium isotherm studies*”. *Journal of Hazardous Materials*, 161, pp 1506–1513, 2009.
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39. Shaijumon C S and Dr Micheal Raj, “*Fading Glory of Coconut: Analysis of Coconut Sector In Kerala*” with Dr. M. Michael Raj in *ISDA Journal*. (ISSN 0971-2550), Institute for the study of developing areas, pp. 17-35, April-June 2008.
40. T. P.Shah and Raju K. George, “*Accurate solution estimate and asymptotic behavior of Nonlinear Discrete system*”, *Sutra: International Journal of Mathematical Science Education*, Vol. 1, No. 1, pp. 9-15, 2008.
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42. M.Kulshreshtha, Raju K. George and A.M. Shekh, “*Application of Artificial Neural Networks to Predict the Probability of Extreme Rainfall and Comparison with the Probability by Fisher Tippett Type-II Distributions*”, *International Journal of Applied Mathematics and Computations*, Vol 1(3), pp.118-131,2009.
43. T G Deepak , A.Krishnamoorthy, V.C.Narayanan and K. Vineetha, “*Inventory with service time and transfer of customers and/ inventory*”, *Annals of Operations Research*, vol.160, pp.191-213, 2008.
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46. Bindu Krishnan, Litty Irimpan, V. P. N. Nampoore, V. Kumar “*Synthesis and nonlinear optical studies of nano ZnO colloids*”, *Physica E*, Volume 40, Issue 8, pp.2787-2790, 2008.
47. Litty Irimpan, Bindu Krishnan, A Deepthy, V P N Nampoore and P Radhakrishnan; “*Size dependent enhancement of nonlinear optical properties in nano colloids of ZnO*” *Journal of Applied Physics*,103, pp 3105,2008.
48. Litty Irimpan, Bindu Krishnan, V P N Nampoore and P.Radhakrishnan, “*Linear and nonlinear optical characteristics of ZnO-SiO₂ nanocomposites*”, Vol 47,*Applied Optics* 2008.

49. Litty Irimpan, Bindu Krishnan, V P N Nampoore and P.Radhakrishnan, "*Luminescence tuning and enhanced nonlinear optical properties of nanocomposites of ZnO-TiO₂*", J.Colloid and interface Science 324, pp 99-104, 2008.
50. Litty Irimpan, A Deepthy, Bindu Krishnan, L M Kukreja, V P N Nampoore and P Radhakrishnan; "*Effect of self assembly on the nonlinear optical characteristics of ZnO thin films*" Optics Communications, 281, pp 2938-43,2008.
51. Litty Irimpan, A Deepthy, Bindu Krishnan, V P N Nampoore and P Radhakrishnan; "*Nonlinear optical characteristics of self assembled films of ZnO*" Appl. Phys. B ,90, pp 547-56,2008.
52. Litty Irimpan, VJ Dann, Bindu Krishnan, A Deepthy, V P N Nampoore and P.Radhakrishnan, "*Back scattering of laser light from colloidal silica*", Laser Physics, vol 18, No.7, pp 882-85, 2008.
53. P.Prasanth, Justin.M.Varghese, Bindu Krishnan, K. Prasad, A.Seema, K.R.Dayas "*Tape casting of Nickel manganite NTC ceramics for chip Thermistors*", Journal of Material Science, Materials for electronics, 19, pp 1100-04, 2008.

Book Chapters

1. Dr Kuruvilla Joseph : Design, development and testing of rubber nanocomposites in "*Trends in composite materials and their design*", Publisher: Trans Tech Publications, Switzerland, (Published online)
2. Dr Kuruvilla Joseph :Recent advances in green composites in "*Trends in composite materials and their design*" Publisher: Trans Tech Publications, Switzerland, (Published online)
3. Dr Babitha Justin : "*Arms and the Women: A Case Study of Some Women Entrepreneurs in the Garo Hills*" in the book "Armed Conflict and Women: Consequences and Coping Mechanisms". Edited by Sukhvinder Kaur Multani, The ICFAI University press, Hyderabad, 2009
4. Dr Babitha Justin "*Under Surveying Eyes: Ethnographical Profiling and the Construction of 'Identities' in the Colonial Writings in the Garo Hills*" in the book "Theory and Practice of Ethnography: Reading from the Peripheries". Edited by Eswarappa Kasi and Ramesh C. Malik . IGRMS, New Delhi, 2009.

International Conferences

1. Dr M Deepu, Dept of Aerospace Engineering, (with G. Rajesh, H. D. Kim,) presented a paper on , "*A Numerical Study of Supersonic Hydrogen Combustion Upstream of a Backward-Facing Step*", 12th Asian Congress on Fluid Mechanics, Daejon, Korea ,August 2008.
2. Dr M Deepu, Dept of Aerospace Engineering, (with G. Rajesh, H. D. Kim, S. Matsuo, T. Setoguchi), presented a paper on "*Computational Analysis of the Transient Flows in an Ejector-Diffuser System*", 12th Asian Congress on Fluid Mechanics, Daejon, Korea, August 2008.
3. Dr G. Rajesh, Dept of Aerospace Engineering, (with H. D. Kim, S. Matsuo, T. Setoguchi, and M. Deepu), presented a paper on "*Computational Analysis of the Transient Flows in an Ejector-Diffuser System*", 12th Asian Congress on Fluid Mechanics, August, Daejon, Korea,2008.

4. Dr G. Rajesh, Dept of Aerospace Engineering, (with Lijo Vincent, John M. George), presented a paper on "*Exergetic Analysis of Vapour Absorption Refrigeration System*", 12th Asian Congress on Fluid Mechanics, August 2008, Daejon, Korea, 2008.
5. Dr G. Rajesh, Dept of Aerospace Engineering (with M. Deepu and H. D. Kim) presented a paper on "*A Numerical Study of Supersonic Hydrogen Combustion Upstream of a Backward-Facing Step*", 12th Asian Congress on Fluid Mechanics, August 2008, Daejon, Korea, 2008.
6. Dr G. Rajesh, Dept of Aerospace Engineering (with H. D. Kim, and Y. K. Lee), presented a paper on "*Computational Study of the Operating Processes of a Ballistic Range*", 12th Asian Congress on Fluid Mechanics, August 2008, Daejon, Korea, 2008.
7. Dr G. Rajesh, Dept of Aerospace Engineering (with H. D. Kim) presented a paper on, "*A Study on the Interior Ballistics of a Two-Stage Light-Gas Gun*", 2nd Asian Joint Workshop on Thermophysics and Fluid Science, May 2008, Luoyang, China
8. Dr. Kuruvila Joseph, Dept of Chemistry, gave a **Plenary talk** on "*Effect of draw ratio on the morphology and dynamic rheology of microfibrillar composites based on PP and PET*" at the International conference on blends and composites, ICBC 2008, Kottayam , Kerala, September 22-24, 2008.
9. Dr.Honey John, Dept of Chemistry , presented a paper on "*Effect of low temperature pre vulcanization on the colloidal and mechanical properties of natural rubber latex*" International conference on Advances in Polymer Technology, Kochi, September 25-27, 2008.
10. Dr.Honey John, Dept of Chemistry, presented a paper on "*Studies on the conductivity and tensile properties of polyaniline blended natural rubber latex films*" International conference on Advances in Polymer Technology, Kochi, September 25-27, 2008.
11. Dr.Honey John, Dept of Chemistry, presented a paper on "*Synthesis and Characterization of an X-Ray Shielding Polymer*", S. Kiran, R. Nirmala, R. Joseph and A. Jayakrishnan, in International conference on Functional materials (Controlled synthesis, Discrete molecular process and engineering) November 27-29, 2008.
12. Dr. Babitha Justin, Dept of Humanities, presented the paper "*Narrating Li(v)es: The Meeting of the Delusive "Self" and the "Other" in Contemporary British Women Travellers*" at the Life Writing Seminar in the European Society of Studies in English' at the University of Aarhus, Denmark, August 25th, 2008.
13. Dr. Babitha Justin, Dept of Humanities ,presented a paper on "*Tourism Imagined and Re-imagined: A Case Study of the Travel Writings in Contemporary India*" at International Conference on Managing Diversity in the Era of Globalization: Culture, Environment & Tourism in Canada and India organized by UGC Area Study Centre for Canadian Studies University of Kerala and Canadian High Commission , 5-7 November, 2008
14. Gigy Alex, Dept of Humanities, presented a paper on "*Nature in The Hungry Tide and Life of Pi*", Seminar on Managing Diversity in the Era of Globalization Echoing: Culture, Environment and Tourism in Canada and India organized by UGC Area Study Centre for Canadian Studies University of Kerala and Canadian High Commission from 5-7th November 2008 .

15. Dr. T G Deepak, Dept of Mathematics, participated and presented the paper entitled "*Inventory with service time and transfer of customers/inventory*" in the 6th International conference on Matrix Analytic Methods (MAM6) in Stochastic Models, held at Beijing, China during June 11-14, 2008.
16. Dr. T G Deepak, Dept of Mathematics, participated and presented the paper entitled on "*A two priority inventory system with positive service time and lead time*" in the International symposium on Probability Theory and Stochastic Processes In honor of Prof.S.R.S.Varadhan FRS, organized by Dept. of Mathematics, Cochin University of Science & Technology, Kochi during 6-9 February, 2009.
17. Dr C S Narayanamurthy, Dept of Physics: **Chaired a session** at PHOTONICS-2008 in the International Conference on Fiber Optics and Photonics, a biennial conference held at World Habitat Center, New Delhi, organized by IIT, Delhi during 2008.

National conferences

1. Dr N.Selvaganesan, Dept of Avionics, delivered a invited talk on "*Intelligent controller and fault simulation for high pressure heater in thermal power plant*" at the National Seminar on Automation System Technology" conducted by CDAC, Trivandrum on 5th May 2008.
2. Dr N.Selvaganesan, Dept of Avionics, Inaugurated and delivered a key note address in the National Conference on Emerging Investigations in Electrical Engineering titled "*Fault diagnosis in electrical and process systems*" held at Dhanalakshmi Srinivasan Engineering College, Perambalur on March 3,2009.
3. Dr.Kuruvila Joseph, Dept of Chemistry, keynote lecture on the occasion of the inauguration of the Science Aptitude Developer Programme (SADP) at St Berchmans College, Changanacherry on 16thAugust, 2008.
4. Dr.Kuruvila Joseph, Dept of Chemistry, invited lecture on "*Nanocomposites in space technology*" at IHRD, September 2008, Mallapally.
5. Dr.Kuruvila Joseph, Dept of Chemistry, invited lecture on "*Nanofabrication techniques*" at the NANO-09 national seminar organized by S.N College, Chengannur on 17-18 March 2009.
6. Dr.Kuruvila Joseph, Dept of Chemistry, invited lecture on the "*Recent Trends in Material Science*", organized by the Department of Physics, University of Calicut on 27th March, 2009.
7. Dr Babitha Justin, Dept of Humanities presented a paper on "*Making of the Feminine: Looking at Two Popular Magazines inside out*" National Seminar on Culture Studies, organized by Samyukta and Women's Studies Centre, University of Kerala, March 19th, 2009.
8. Dr Babitha Justin, Dept of Humanities presented a paper on "*Resistance and Conformity in the Project 'Colonial': A Look at Shakuntala paintings of Raja Ravi Varma*" at the National seminar on Dominance and Resistance in Colonial and Post Colonial Era. Department of History School of Social Sciences and International Studies, Pondicherry University, 24-26 March, 2009

9. Gigy Alex, Dept of Humanities presented a paper on "*English and Communication Skills for Employability*", at the National Seminar on English and Employability conducted by the Anna University on 25-26 March 2009.
10. Shaijumon C S, Dept of Humanities, presented a paper on "*Neo-Liberal Reforms, Global Financial Crisis and the Economy of Kerala*", with Dr. M Michael Raj, in the National Seminar on "Globalization and Agrarian Crisis in South India", Department of Political Science, University of Kerala, Thiruvananthapuram, March 11-12, 2009
11. Dr C S Narayanamurthy, Dept of Physics, **chaired a session** at National Seminar on Photonic materials (NSPM) at University of Kerala, Trivandrum, February 26-28, 2009.

Invited talks

1. Dr R Krishnan, Dean (Academics) on "*High resolution Image analysis*" at the Amrita Viswa Vidyalaya, Coimbatore, at International workshop in geo space image analysis at ISI Bangalore and on Indian Remote sensing programme at College of Engineering, Calcutta.
2. Dr N.Selvaganesan, Dept of Avionics , on "*Neural fault parameter identification in process engineering*" in the UGC Sponsored short term course on "*Goal Oriented System Modeling and Identification*" held at Annamalai University, Chidambaram, January 7th , 2009.
3. Dr N.Selvaganesan, Dept of Avionics, on Emerging Investigations in Electrical Engineering titled "*Fault diagnosis in electrical and process systems*" held at Dhanalakshmi Srinivasan Engineering College, Perambalur on March 3rd ,2009.
4. J.Sheeba Rani, Dept of Avionics, on "*Neural Networks and its application to classification problem*" in the National Level Technical symposium Organized by Department of Electronics and Communication, St.Xaviers College of Engineering, Chunkankadai, Kanyakumari , on 11th September 2008.
5. J. Sheeba Rani, Dept of Avionics, on "*Feature Extraction Algorithms for Biometric-based Security System*", in the two days National workshop on Neural Networks and Image Processing, organized by Dept of Information Technology, Anna University Coimbatore, on 30th January 2009.
6. Dr.Honey John, Dept of Chemistry on "*Electrically Conductive Polymers*" at the National Seminar on 'Emerging Trends and Vistas in Polymer Science', conducted by Govt. Attingal College, 2008.
7. Dr.Honey John, Dept of Chemistry on "*Conducting Polymers*" in a Refresher course for college teachers organized by Maharajas Govt. College, Ernakulam, 2008.
8. Dr Raju K George, Dept of Mathematics, on "*Theory of Control - A functional Analytic Approach*", in the National seminar on Functional Analysis held at the D.B.Pampa College, Parumala , Thiruvalla, from 25th to 27th September 2008,
9. Dr Raju K George, Dept of Mathematics, on "*Solvability of System of Equations $Ax=b$ by using Generalized Inverse*" in the annual meeting and memorial talk to commemorate the late Prof. K. N. G. Unnithan, D.B.college, Sasthamcotta, 6th November 2008.

10. Dr Raju K George, Dept of Mathematics, on Matlab in the AICTE sponsored Staff Development Programme on “*Applications of Mathematical Sciences and Soft Computing*” held at Mathematics Section of AS&H Department, SVNIT, Surat during 8th December-12th December 2008.
11. Dr K. S. Subrahmanian Moosath, Dept of Mathematics on “*Limits*” as part of a national seminar conducted at St. Teresa’s college, Ernakulam in association with Kerala Mathematical Association on Sept 31, 2008.
12. Dr K. S. Subrahmanian Moosath, Dept of Mathematics, on “*Unit Spheres*” at Devaswom Board College, Thalayolaparambu as part of a national seminar, on February 2, 2009.
13. Dr Anil Kumar CV, Dept of Mathematics on “*Mathematics as a tool to Life Sciences*” sponsored by UGC on 5-6 August 2009.
14. Dr N Sabu , Dept. of Mathematics, on Advanced instructional school at PDE at TIFR Bangalore centre, on 5th and 6th Jan 2009.
15. Dr N Sabu, Dept. of Mathematics Delivered an invited talk in the international conference on PDE at TIFR on 8thJan 2009
16. Dr T G Deepak , Dept of Mathematics, on “*Introduction to stochastic modeling*” in the one day regional seminar organised by Dept. of Mathematics, St. Aloysius College, Edathua, Aleppey, on Nov 1, 2008.
17. Dr C S Narayanamurthy, Dept of Physics, on “*Photorefractive Applied Optics*” at National Seminar on Photonic materials (NSPM) at University of Kerala, Trivandrum, February 26-28, 2009.
18. Dr Anandmayee Tej, Dept of Physics, delivered an Invited talk on “*Multiwavelength Studies of Star Forming Regions*” at the Workshop on Advances in Observational Astronomy , M. G. University , Kottayam, Dec: 1-3, 2008.

Creative Writing

Dr Babitha Justin, Dept of Humanities

Ten Poems on travel in the International anthology of poems called “*Journeys*” edited by Graham Vivian Lancaster FPMI and Dr. Shaleen Kumar Singh published by Trayberry Press / Alexander House, Johannesburg, South Africa.

The Poem “*Shadow Harvest*” published in Taj Mahal Review: An International Journal devoted to Arts, Literature, Poetry and Culture.

The short story, “*A Yuppie Diary: One Night at Godavari Hostel*”, Selected Short Stories in Contemporary Indo-Anglian Literature published by Sarup and sons, New Delhi

Dr Bindu Krishnan, Dept of Physics

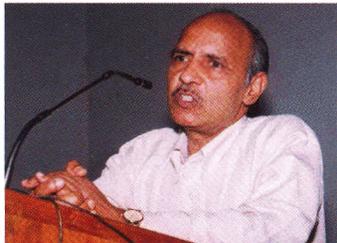
Published an anthology of poems in Malayalam, titled “*Thottal vaadaruthu*”, published by Trichur Current books, which got selected as one among the best 50 books published in the year 2008 , by a survey by India Today

Awards and Achievements

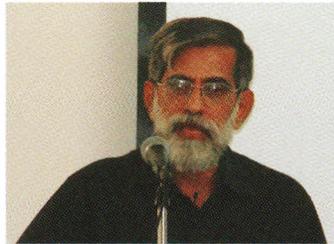
1. Dr. R Krishnan, Dean (Academics), received ISRO award for outstanding contribution to ISRO's programs
2. Dr N.Selvaganesan, Department of Avionics, received the best paper award (Gold Medal with Citation) from Journal of Education, IETE, NewDelhi for the paper titled "*PC based Position-Control of Multiple Robot Arms*", September 2008.

Institute Seminars

Many dignitaries visited IIST during 2008-09 and shared their knowledge and wisdom with students and faculty. Prominent among them are:



Dr P S Goel



Prof Sudhakar



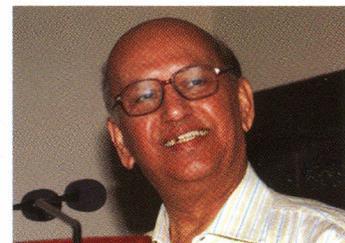
Prof R Natarajan



Prof Yashpal



Prof Romildo Dias



Dr U R Rao

1. Dr U R Rao, Former Chairman, ISRO
Visited IIST on 4th June 2008 and gave an inspiring lecture on exciting challenges in Space.
2. Prof Yashpal, Former, UGC Chairman and renowned Astrophysicist
Visited IIST on 11th June 2008 and interacted with students and faculty
3. Prof R Natarajan, Former Director, IIT Madras
Visited IIST on 11th June 2008 and gave illuminating lecture to Staff and students
4. Dr P.S. Goel, Distinguished Professor ISRO & President, Indian National Academy of Engineering gave a lecture on "*Excitement in Oceans*" on 3rd September 2008.
5. Prof. Titus Mathews, Emeritus Professor, Dept. of Physics and Astronomy, University of Calgary, Canada, gave illuminating lecture on "*Evolution of Universe*" on 15th October 2008.
6. Prof. Romildo Dias Toledo Filho, Associate Professor, Civil Engineering Dept., COPPE/UFRJ, Brazil visited the Institute on 18th October 2008 and gave a lecture on "*Recent advances in cement and concrete composites*".

7. Dr. Jyotiranjana S Ray, Reader, Planetary and Geosciences Division, PRL, Ahmedabad talked about “*Understanding the Earth’s mantle using isotopes*” on 29th October 2008.
8. Prof Sudhakar, IIT Bombay gave an interesting talk on “*4 years and 160 credits = An Engineer?*” on 28th January 2009.
9. Dr. M Y S Prasad, Associate Director, SDSC SHAR gave a lecture on “*Reaching out to MARS*” on 11th February 2009.

There were special Lectures by Dr. B. N. Suresh, Director, IIST on “*PSLV-A Workhorse*”, Dr. Adimurthy, Dean (R&D), IIST on “*Chandrayaan-I*”, Dr. Thomas Kurian Head of Department, Avionics on “*Pictures from Moon Impact Probe*” and Prof. K N Ninan, Emeritus Professor, IIST, on “*Chemicals and Materials for Indian Space Program: Current Trends and future directions*”, all of which gave the students and faculty, an opportunity to listen to people who have first-hand knowledge of these interesting topics.

Student Seminars

The Wednesday Seminars conducted by students stand out as a unique feature of IIST. Students are thereby given the opportunity to make presentations on any topic of their choice (whether related to the curriculum or not) to the fellow students and faculty of the Institute. Seminars were also conducted on internship topics. Some of the Seminars presented are:

1. Dinesh Dhankar : The different postulates of Einstein’s relativity from the paper entitled “*On the electrodynamics of moving bodies*”.
2. Ankush Kumar : Super Heavy Elements
3. Abhinav Goel, Tanmay Jayant Marathe, Ritwick Saahil Pratap Rane : Experiments in flow and thermal labs (at LPSC, Valiamala)
4. Bhavesh Jaiswal, Ankur Kushwaha, Prince Agarwal: Solar cells and radiation detector
5. Prashant Kumar, Srikar Pavan: Chasing of meteors through VHF radar
6. Yashwant Kumar, Prateep Basu, Rahul Anand: Study conducted in PSV and MDCF labs
7. Brajpal Singh, Rahul Kapoor, Tushar Golani : On-board Playback logic
8. Gyanesh Kumar: Manufacturing process
9. Umang Kumar Rathi & G. Rohit: Hypersonic wind tunnel facility and instrumentation
10. Mayur Bhilawe, M, Pavan Kumar, Shailendra : Implementation of serial sequence of data and detecting valid sequence
11. Shomil Saxena, Sneha: Gyogenic stage preparation
12. Vinti Pandey: Fabrication processes of a hybrid micro circuit(HMC)
13. Gaurav bholotia, Vasu Dubey: VHDL implementation of a 16 bit processor
14. Arpit Saraswat: Techniques in digital image processing
15. Pradyumna Sharma: GIS GNSS
16. Sameer, Suraj Reddy, Mahesh: Comparative study of spectral signature

17. Sudha, Amit Sumar : Automation of propellant filling
18. Supratim Naskar, Bharat Agarwal: Fluid control components
19. Gaurav Bholotia, Vasu Dubey: Role of RADAR in rocket launch complex
20. Ramdas: Micro pulse LIDAR
21. Shashank Adimulam, Ramkiran, Varun Kartik: 8051 microcontroller
22. Neelima V, Mohak Varshenay: Cordil algorithm and its source code generation used in onboard computers

Other Activities and Events

Cultural Activities



IIST students' Cultural Competitions were held in April 2008, with several competitions in literature, arts, music and dance. A Quiz Competition was conducted on May 19, 2008 by Dr Abraham Joseph, a well known name in the field of Quiz. The event evoked enthusiastic participation from students, both as quiz team members and as spectators.

IIST Day

The first IIST Day was celebrated on 5th June 2008 at Kottakattu convention Centre, Nalanchira, Thiruvananthapuram. Dr G Madhavan Nair Chairman, ISRO graced the occasion along with other





Dr. G Madhavan Nair, Chairman, ISRO with the winning house.

dignitaries such as Shri S.V. Ranganath, Additional Secretary, DOS and Dr. K. Radhakrishnan, Director, VSSC. The Students' in-house Magazine 'Drishtikon' was released by the Chairman on the occasion.

Official Language Implementation Committee

An Official Language Implementation Committee (OLIC) was constituted by the Director with the Registrar, IIST as Chairman. The Committee meets at regular intervals and reviews the implementation of Hindi in the Institute. Several measures were taken to encourage and popularise the use of Hindi in the Institute.

IIST Women's Cell

As per the Supreme Court directives, IIST has constituted a Women's Cell in September 2008 to deal with gender and related issues on campus. This Cell discusses and suggests methods to promote gender amity among the IIST community, to address the gender discrimination issues and sexual harassment cases, if any, and recommend necessary action to prevent possible disharmony. The Women's Cell would also organize lectures/workshops for IIST members on different aspects of women welfare and consider any other matter on women's issues referred to it.

Freshers' Welcome Party



Dr. G Madhavan Nair, Chairman, ISRO, Dr K Radhakrishnan, Director, VSSC and others at the freshers' party.

The students of second batch were given a spectacular welcome to IIST by their predecessors, soon after the former joined the Institute. Dr. G Madhavan Nair, Chairman ISRO and Chief Guest of the



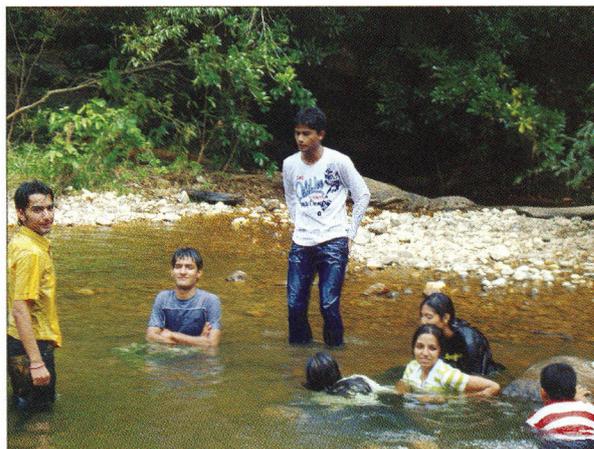
evening, other dignitaries and the IIST community were treated to a spirited performance by students from both the batches.

Nature club



Students in Neyyar Wildlife Sanctuary

The Nature Club of IIST organized a trekking programme to Neyyar Wildlife Sanctuary on 5th October 2008 under the guidance of the Registrar, Sri. N Vasudevan I.F.S and Dr. Babitha Justin, Lecturer.



The trip was organized in connection with the Wildlife Week celebrations and was attended by top Forest Officials. Shri K.J. Varghese, I.F.S., Conservator, Agasthyavanam Biological Park addressed the students at Neyyar and stressed the importance of conservation of nature and wildlife.

Republic Day Celebrations



Director IIST inspecting Guard of Honour

Republic Day was celebrated at IIST with ceremonial grandeur. The day began with an impressive parade by the CISF personnel and inspection of Guard of Honour by the Director. The National Flag was hoisted by the Director and this was followed by a brief address by him. Quiz and debate competitions were conducted for the students by Mr. Vijaya Kumar, Head, Department of English, Maharajas College for Women, Trivandrum.



Sports Activities

The IIST Annual Sports Day was conducted on 14th February 2009 at Chandrasekharan Nair Stadium, Thiruvananthapuram. The meet was declared open by Prof. Sunny Thomas, the Dronacharya Award Winner and National Shooting Coach in a function presided over by Dr. B. N. Suresh, Director, IIST. Eighteen different events were conducted for boys, girls and faculty members with the help and support of Kerala Sports Council.



Prof. Sunny Thomas receiving the torch

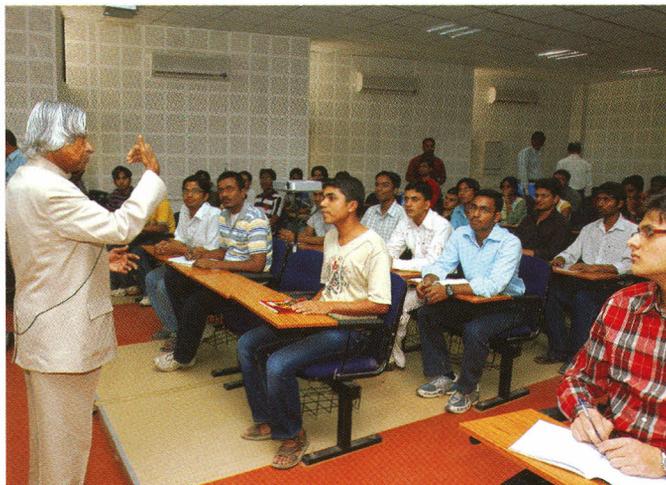
The events were kicked off with the Lighting of Torch by Chief Guest and march past by the students. The concluding event was an Inter-House Tug of War competition. Kritika House retained its title as the “Most Luminous House”, 2008-09. Apoorv Mehta and Sneha Kishore Patkotwar were selected as outstanding sportspersons of IIST. Surabhi Baghotia and Mohak Varshneya were selected as Women’s and Men’s Athletic champions, respectively.



Other major Sports events organized in IIST during the year include the Inter-House Cricket, Football and Badminton Tournaments in which students participated with great enthusiasm. The IIST Basketball team participated in the Inter-Collegiate Basketball Tournaments conducted by Mar Ivanios College, Sri Chithira Thirunal College of Engineering and Marian Engineering College and proved that they are a force to be reckoned with.

Chancellor’s visit to IIST on 20th February 2009

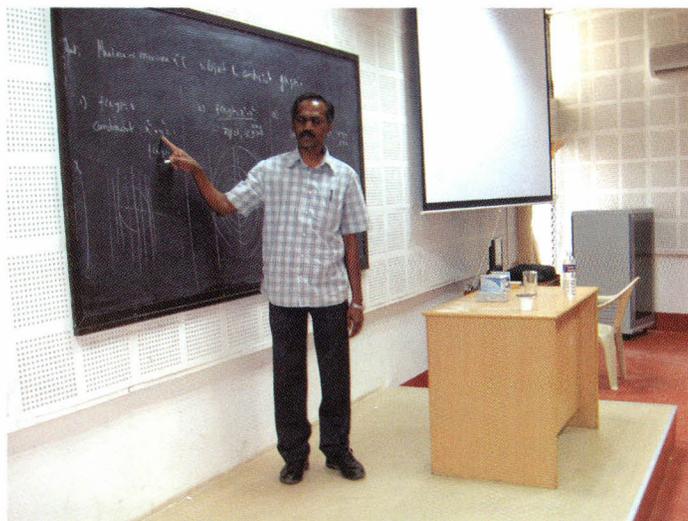
The eagerly awaited visit of Dr. A.P.J. Abdul Kalam to the Institute took place on 20th February 2009. This was his second visit to the Institute, but the first after he took over office as the Chancellor. He addressed a special session of the Board of Management of IIST and urged the members to do everything possible to make IIST a truly world-class institution. He held an interactive session with the faculty members and warmly responded to the flurry of questions. The highlight of the day was the classes he conducted for the students in which he unravelled his vision about the possibilities in Space Science and Technology for the future.



Dr. Kalam delivering a lecture to students

Mathematics Club

The setting up of a Mathematics Club is a move to help create interest and enthusiasm in mathematics among the students. There was a huge response from the students to join and participate in the activities of the club. As an inaugural programme of the club, a one day seminar, on 16th March 2009 comprising four sessions, by Prof. S. Kumaresan, Central University, Hyderabad on Principles of Mathematical Logic, was organized.



Prof. Kumaresan at the seminar

Techfest - Conscientia 2009

IIST organized its first-ever Tech Fest titled “Conscientia 2009” from 22nd March 2009. Students from IIST and IISER, Trivandrum participated and displayed their creative talent and technical skill in designing model rockets, aircrafts and other machines.



Dr. Achuthsankar S Nair, Centre for Bio-informatics as Chief Guest at Conscientia 2009



Flying high

Audited Statements of Accounts for the year 2008-2009

To the members of
Indian Institute of Space Science and Technology (IIST)
Thiruvananthapuram

1. We have audited the attached Balance Sheet of **Indian Institute of Space Science and Technology (IIST)** as at March 31, 2009, the Income and Expenditure Account and the Receipts and Payments Account for the year ended on that date, both annexed thereto. These financial statements are the responsibility of the IIST's management. Our responsibility is to express an opinion on these financial statements based on our audit.

2. We conducted our audit in accordance with the auditing standards generally accepted in India. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and the significant estimates made by the management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

3. We further report that:

- a) we have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit;
- b) in our opinion proper books of accounts have been maintained by IIST, so far as it appears from our examination of those books;
- c) the Balance Sheet, the Income and Expenditure Account and the Receipts and Payments Account dealt with by this report are in agreement with the books of account;
- d) in our opinion and to the best of our information and according to the explanations given to us, the aforesaid financial statements read with the statement on significant accounting policies and notes to accounts show a true and fair view in conformity with the accounting principles generally accepted in India;

I. in the case of Balance Sheet of the state of affairs of IIST as at 31.03.2009.

II. in the case of Income and Expenditure Account of the excess of income over expenditure of IIST for the year ended on that date and

III. in the case of Receipts and Payments Account of the receipts and payments of IIST for the year ended on that date.

For Jose and Hemachandran
Chartered Accountants

Thiruvananthapuram
26th August, 2009

Jose Zachariah.F.C.A
(Partner, Mem.No.80570)

Indian Institute of Space Science & Technology

Government of India, Department of Space (DOS)

ISRO P.O., Thiruvananthapuram 695 022 India.

BALANCE SHEET AS ON 31.03.2009

	Schedule	As at 31.03.2009 Rupees	As at 31.03.2008 Rupees
SOURCES OF FUNDS			
Corpus Fund	1	464,242,233.59	113,357,469.98
Unspent Grant	2	515,068,902.00	599,999,000.00
Current Liabilities	3	7,566,884.00	311,045.00
TOTAL		986,878,019.59	713,667,514.98
APPLICATION OF FUNDS			
Fixed Assets			
Gross Block		107,985,423.00	65,885,105.00
Less: Depreciation		27,192,572.41	5,478,419.02
Net Block	4	80,792,850.59	60,406,685.98
Capital work-in-progress		280,079,780.00	-
		360,872,630.59	60,406,685.98
Deposits	5	284,054,397.00	52,953,829.00
Current Assets and Advances			
Cash and Bank Balances	6	340,963,362.00	600,001,000.00
Advances to Suppliers, Staffs etc.	7	411,878.00	306,000.00
Prepaid Expenses		575,752.00	-
TOTAL		986,878,019.59	713,667,514.98
Significant Accounting Policies and Notes to Accounts	16		

As per our report of even date attached.

For Jose & Hemachandran
Chartered Accountants

For and on behalf of
Indian Institute of Space Science and Technology (IIST)

Jose Zachariah. F.C.A
(Partner, Mem. No. 80570)

Dr. B.N. Suresh
Director

P. Sreenathan
Finance Officer

Trivandrum, August 26, 2009

Indian Institute of Space Science & Technology

Government of India, Department of Space (DOS)

ISRO P.O., Thiruvananthapuram 695 022 India.

Schedules forming part of the Balance Sheet

Schedule	As at 31.03.2009 Rupees	As at 31.03.2008 Rupees
SCHEDULE 1: CORPUS FUND		
Opening Balance	113,357,469.98	-
Add: Excess of Income over Expenditure	28,704,665.61	(2,527,635.02)
Add: Grant Utilized for capital asset	322,180,098.00	65,885,105.00
Add: Grant Utilized for Specific Purpose	-	50,000,000.00
	<u>464,242,233.59</u>	<u>113,357,469.98</u>
SCHEDULE 2 : UNSPENT GRANT		
Opening Balance	599,999,000.00	-
Add: Grant received during the year	326,250,000.00	746,924,987.00
Less: Revenue Grant	89,000,000.00	31,040,882.00
Less: Amount utilized for Capital Expenditure	322,180,098.00	115,885,105.00
	<u>515,068,902.00</u>	<u>599,999,000.00</u>
SCHEDULE 3 : CURRENT LIABILITIES		
Provident Fund		
Employees' Contribution	1,297,963.00	277,337.00
Employer's Contribution	650,449.00	-
Add: Interest payable on Provident Fund	95,568.00	-
	<u>2,043,980.00</u>	<u>277,337.00</u>
Respond Project		
Grant Received	443,000.00	-
Less: Expenses	211,290.00	-
	<u>231,710.00</u>	<u>-</u>
Sundry Creditors		
Bhagya Stores	12,164.00	-
Premeir Office Equipment Co.	7,268.00	-
Sree Bhagavathi Industries	9,321.00	-
Sri Rajalekshmi Commercial Kitchen Equipment	8,679.00	-
Technocraft Appliances Pvt. LTD	66,367.00	-
Voltas LTD.	13,151.00	-
Young India Films	435,510.00	-
	<u>552,460.00</u>	<u>-</u>

Schedule	As at 31.03.2009 Rupees	As at 31.03.2008 Rupees
Others		
Group Insurance Recovery	34,680.00	-
Net Salaray Payable	20,297.00	-
Scholarship Payable	10,000.00	-
Security Deposits	937,367.00	-
Stale Cheque	173.00	-
TDS Payable	3,697,546.00	-
Canteen Recovery	5,581.00	-
Audit fee Payable	33,090.00	33,708.00
	4,738,734.00	33,708.00
	7,566,884.00	311,045.00
SCHEDULE 5 : DEPOSITS		
Fixed Deposit with SBI	56,841,206.00	50,000,000.00
Fixed Deposit with SBT	100,000,000.00	-
Fixed Deposit with UBI	100,000,000.00	-
	256,841,206.00	50,000,000.00
Add: Accured Interest	27,213,191.00	2,953,829.00
	284,054,397.00	52,953,829.00
SCHEDULE 6 :CASH AND BANK BALANCES		
Balance with UBI	287,328,630.00	-
Balance with SBI	53,626,732.00	599,999,000.00
Cash in Hand	8,000.00	2,000.00
	340,963,362.00	600,001,000.00
SCHEDULE 7 :ADVANCE TO SUPPLIERS,STAFFS ETC.		
Century Sports	17,714.00	-
Chandrashekharan Nair Stadium	5,618.00	-
Godrej& Boyce Mfg. Co.LTD	66.00	-
Hazeena Chemi Dies	15,844.00	-
Jos Electricals	9,439.00	-
Nandilath G-Mart	6,400.00	-
Sphere Hobbies	172,912.00	-
Security Deposits	21,000.00	-
Staff Advance	162,885.00	-
Rent Advance	-	306,000.00
	411,878.00	306,000.00

Indian Institute of Space Science & Technology

Government of India, Department of Space (DOS)

ISRO P.O., Thiruvananthapuram 695 022 India.

Income And Expenditure Account for the year ended March 31,2009

	Schedule	2008-09 Rupees	2007-08 Rupees
Income			
Revenue Grant from Government	8	89,000,000.00	31,040,882.00
Bank Interest	9	49,686,950.00	2,953,829.00
Other Income	10	79,492.00	-
TOTAL		138,766,442.00	33,994,711.00
Expenditure			
Salary & Allowances(Admin & Faculty)	11	19,055,618.00	3,308,951.00
Honararium		49,825.00	-
Medical Expenses for Staff		175,178.00	-
Office Expenses		2,580,642.00	956,903.00
Academic Expenses	12	18,421,542.00	9,570,701.00
Telephone and Internet Expenses		801,669.00	16,317.00
Repairs & Maintenance		249,709.00	1,982,702.00
Mess Expenses for Students		10,968,142.00	2,310,977.00
Consultancy and Manpower Hire Charges		508,953.00	-
Counselling Expenses for Admission		1,211,069.00	8,154,385.00
Annual Day & Sports Day Celebration		360,520.00	-
Conveyance		5,968,154.00	-
Travelling Expenses-Domestic		3,759,974.00	1,274,994.00
Travelling Expenses-Foreign		1,110,953.00	-
Legal and Professional Expenses		246,801.00	1,203,628.00
Advertising and Publicity		5,720,856.00	-
Seminars & Sponsorship		166,425.00	-
Newspaper & Periodicals		44,305.00	1,514.00
Retirement Benefits to Employees		3,503,824.00	-
Interest on PF Contribution		108,595.00	-
Bank charges		6,847.00	1,000.00
Meeting Expense		449,455.00	156,964.00
Temporary Construction		12,845,477.00	2,071,183.00
Depreciation		21,714,153.39	5,478,419.02
Audit Fee		33,090.00	33,708.00
TOTAL		110,061,776.39	36,522,346.02
Excess of Income over Expenditure		28,704,665.61	(2,527,635.02)

As per our report of even date attached.

For Jose & Hemachandran
Chartered Accountants

For and on behalf of
Indian Institute of Space Science and Technology (IIST)

Jose Zachariah. F.C.A
(Partner, Mem. No. 80570)

Dr. B.N. Suresh
Director

P. Sreenathan
Finance Officer

Trivandrum, August 26, 2009

Indian Institute of Space Science & Technology

Government of India, Department of Space (DOS)

ISRO P.O., Thiruvananthapuram 695 022 India.

Receipts and Payments Account for the year ended March 31, 2009

	Schedule	2008-09 Rupees	2007-08 Rupees
Receipts			
Opening Balances	13	652,954,829.00	-
Grant received towards Respond Project		443,000.00	-
Grant received from Govt. of India		326,250,000.00	746,924,987.00
Amt received from NCERT towards scholarship		42,000.00	-
Security Deposits received from Contractors		1,147,483.00	-
Stale Cheque		173.00	-
TDS Payable		3,697,546.00	-
Bank Interest		22,473,759.00	-
Other Income		79,492.00	-
TOTAL		1,007,088,282.00	746,924,987.00
Payments			
Salary & Allowances(Admin & Faculty)		17,323,985.00	3,031,614.00
Honararium		49,825.00	-
Medical Expenses for Staff		175,178.00	-
Office Expenses		2,564,053.00	956,903.00
Academic Expenses		18,103,378.00	9,570,701.00
Mess Expenses for Students		10,968,142.00	2,310,977.00
Telephone and Internet Expenses		801,669.00	16,317.00
Repairs & Maintenance		249,709.00	1,982,702.00
Consultancy and Manpower Hire Charges		508,953.00	-
Counselling Expenses for Admission		1,211,069.00	8,154,385.00
Annual Day & Sports Day Celebration		360,520.00	-
Travelling		4,870,927.00	1,274,994.00
Conveyance		5,968,154.00	-
Expenses towards Respond Project	14	211,290.00	-
Legal and Professional Expenses		246,801.00	1,203,628.00
Advertising and Publicity		5,720,856.00	-
Seminars & Sponsorship		166,425.00	-
Newspaper & Periodicals		44,305.00	1,514.00
Retirement Benefits to Employees		3,503,824.00	-
Bank charges		6,847.00	1,000.00
Meeting Expense		449,455.00	156,964.00
Interest on PF Contribution		13,027.00	-
Temporary Construction		12,845,477.00	2,071,183.00
Audit Fee Paid		33,708.00	-
Scholarship paid to students		32,000.00	-
Security Deposits repaid		210,116.00	-
Advance to Suppliers,staffs etc.	7	411,878.00	306,000.00
Prepaid Expenses		575,752.00	-
Fixed Assets		41,576,611.00	65,885,105.00
Capital Work in Progress		280,079,780.00	-
Closing Balances	15	597,804,568.00	650,001,000.00
TOTAL		1,007,088,282.00	746,924,987.00

As per our report of even date attached.

For Jose & Hemachandran
Chartered Accountants

Jose Zachariah. F.C.A
(Partner, Mem. No. 80570)
Trivandrum, August 26, 2009

For and on behalf of
Indian Institute of Space Science and Technology (IIST)

Dr. B.N. Suresh
Director

P. Sreenathan
Finance Officer

Indian Institute of Space Science & Technology

Government of India, Department of Space (DOS)

ISRO P.O., Thiruvananthapuram 695 022 India.

Schedules forming part of the Income and Expenditure Account

	2008-09 Rupees	2007-08 Rupees
Schedule 8: Revenue Grant from Government		
Grant from Govt. of India DOS	652,500,000.00	746,924,987.00
Add: Amount transferred from Unspent Grant of previous year	547,500,000.00	-
	1,200,000,000.00	746,924,987.00
Less: Amount attributable to Capital Grant	1,111,000,000.00	715,884,105.00
	89,000,000.00	31,040,882.00
Schedule 9: Bank Interest		
Interest on Deposits received	22,473,759.00	-
Add: Accrued Interest	27,213,191.00	2,953,829.00
	49,686,950.00	2,953,829.00
Schedule 10: Other Income		
Miscellaneous Income	102.00	-
Sale of Tender Document	4,390.00	-
Tuition Fees	75,000.00	-
	79,492.00	-
Schedule 11: Salary & Allowances(Admin & Faculty)		
Children Education Assistance to Staff	89,186.00	-
LTC	197,950.00	-
Salary and Allowances	16,888,677.00	3,308,951.00
Salary for Contract Employee	1,879,805.00	-
	19,055,618.00	3,308,951.00
Schedule 12: Academic Expenses		
Books to Students	259,597.00	327,905.00
Lab Expenses	14,516,675.00	6,728,741.00
Medical Expenses	787,921.00	209,094.00
Rent, Water & Electricity for Hostel	1,981,460.00	1,395,213.00
Other Hostel Expenses	251,344.00	-
Travelling Expenses	53,509.00	658,568.00
Sports Expenses	481,180.00	34,650.00
Instruments for Students	-	52,707.00
Other Expenses	89,856.00	163,823.00
	18,421,542.00	9,570,701.00

Indian Institute of Space Science & Technology

Government of India, Department of Space (DOS)

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Schedules forming part of the Receipts and Payments Account

	2008-09 Rupees	2007-08 Rupees
Schedule 13: Opening Balances		
Cash at Bank	599,999,000.00	
Cash in Hand	2,000.00	
Fixed Deposit with SBI	50,000,000.00	
Add:Accrued Interest	2,953,829.00	
	652,954,829.00	-
Schedule 14: Expenses-Respond Project		
Consumables	22,693.00	
Contingencies	3,000.00	
Equipments	3,877.00	
Fellowship	155,147.00	
Instrumental Analysis	8,882.00	
Travelling	17,691.00	
	211,290.00	-
Schedule 15: Closing Balances		
Fixed Deposit with SBI	56,841,206.00	50,000,000.00
Fixed Deposit with SBT	100,000,000.00	-
Fixed Deposit with UBI	100,000,000.00	-
Balance with UBI	287,328,630.00	600,001,000.00
Balance with SBI	53,626,732.00	
Cash in Hand	8,000.00	
	597,804,568.00	650,001,000.00

Schedule 4 : Fixed Assets

		Gross Block	Additions	Gross Block	Depreciation	Depreciation	Depreciation	Net Block	Net Block
		(at cost) as at 01.04.2008	for the Year	(at cost) as at 31.03.2009	as at 01.04.08	for the Year	as at 31.03.09	as at 31.03.09	as at 01.04.09
Land	33,252,000.00	-	33,252,000.00	-	-	-	33,252,000.00	33,252,000.00	
Plant & Machinery	313,551.00	1,944,034.00	2,257,585.00	21,807.47	241,994.43	263,801.90	1,993,783.10	291,743.53	
Furniture & Fittings	6,544,136.00	20,569,454.00	27,113,590.00	847,138.41	6,800,384.32	7,647,522.73	19,466,067.27	5,696,997.59	
Motor Car	3,615,975.00	2,730,864.00	6,346,839.00	468,087.96	1,522,008.64	1,990,096.60	4,356,742.40	3,147,887.04	
Motor Buses & Trucks	3,464,533.00	-	3,464,533.00	519,679.95	883,455.92	1,403,135.87	2,061,397.13	2,944,853.05	
Canteen Equipments	899,017.00	1,890,678.00	2,789,695.00	62,526.63	379,349.12	441,875.75	2,347,819.25	836,490.37	
Computers	11,412,376.00	7,158,413.00	18,570,789.00	2,282,475.20	6,515,325.52	8,797,800.72	9,772,988.28	9,129,900.80	
Software	4,968,551.00	2,423,802.00	7,392,353.00	993,710.20	2,559,457.12	3,553,167.32	3,839,185.68	3,974,840.80	
Library Books	1,414,966.00	5,039,473.00	6,454,439.00	282,993.20	2,468,578.32	2,751,571.52	3,702,867.48	1,131,972.80	
Soft Furnishings	-	343,600.00	343,600.00	-	343,600.00	343,600.00	-	-	
Total	65,885,105.00	42,100,318.00	107,985,423.00	5,478,419.02	21,714,153.39	27,192,572.41	80,792,850.59	60,406,685.98	
Prev. Year	-	65,885,105.00	65,885,105.00	-	5,478,419.02	5,478,419.02	60,406,685.98	-	

Note: Depreciation is not provided in Plant and Machinery for Rs. 4,96,062.00, the same being not put to use.

SCHEDULE 16

Statement on Significant Accounting Policies and Notes to the Accounts

A. Significant Accounting Policies

1. Basis of Accounting

The financial statements have been prepared under the historical cost convention, on an accrual basis of accounting and in conformity with accounting principles generally accepted in India.

2. Fixed Assets and Depreciation

Land is valued at cost of acquisition. Other Fixed assets are shown at cost of acquisition less depreciation. Cost comprises the purchase price or acquisition cost, installation charges and any attributable cost of bringing the assets to working condition for its intended use.

3. Revenue Recognition

Amount equivalent to funds utilized for administrative expenditure as well as expenditure meant for running the institute have been treated as revenue grant.

4. Taxation

Being an institution existing solely for education purposes and not for the purpose of profit and is wholly financed by Government of India, the income of the institution is exempt under section 10[(23C)](iiiab) of the Income Tax Act 1961.

5. Expenditure

Expenses are accounted for on accrual basis and provision made for all known liabilities.

B. Notes to the Accounts

1. Depreciation

Depreciation on fixed assets has been provided in the accounts on written down value basis at the rates prescribed under the Companies Act 1956. However, soft furnishings in hostels have been fully written off during the year.

2. Retirement Benefits to Employees

Income and Expenditure Account is debited with a sum of Rs.35,03,824.00/-, being the retirement benefits paid to Dr.B.N.Suresh, Director. This is included in the Budget estimate for the year 2009-10.

3. Capital Work-in-Progress

Mobilization advance of amount of Rs.27,86,00,000/- paid to Shapoorji Pallonji & Co. Limited has been included in Capital work-in-progress since the construction of the building has already been started.

4. Land

There is a stay by the Honorable High Court of Kerala on carrying out construction activities on approximately 80 acres of land purchased at Ponmudi in Trivandrum district for setting up the Institute.

5. Temporary Construction

Constructions carried out in the land owned by ISRO at Trivandrum, being a temporary measure for running the Institute, is debited to Income and Expenditure Account.

6. Interest on PF Contribution

This represents the amount calculated @8% per annum on the individual balances of the employees. The funds collected from employees and the employer's contribution are retained with the institute and not invested elsewhere.

7. Figure for the previous year

Figures of the previous years have been regrouped wherever found necessary

For Jose & Hemachandran
Chartered Accountants

For and on behalf of
Indian Institute of Space Science and Technology (IIST)

Jose Zachariah. F.C.A
(Partner, Mem. No. 80570)

Dr. B.N. Suresh
Director

P. Sreenathan
Finance Officer

Trivandrum, August 26, 2009



Master plan of new campus at Valiamala.



Indian Institute of Space Science and Technology

(Deemed to be University u/s 3 of UGC Act, 1956)

Department of Space (DOS), ISRO. P.O, Thiruvananthapuram 695 022, India

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