



## Contents

- Current Affairs
- Technology
- Business
- Awards
- Events
- Advertisement-Avenues
- Lighter Vein

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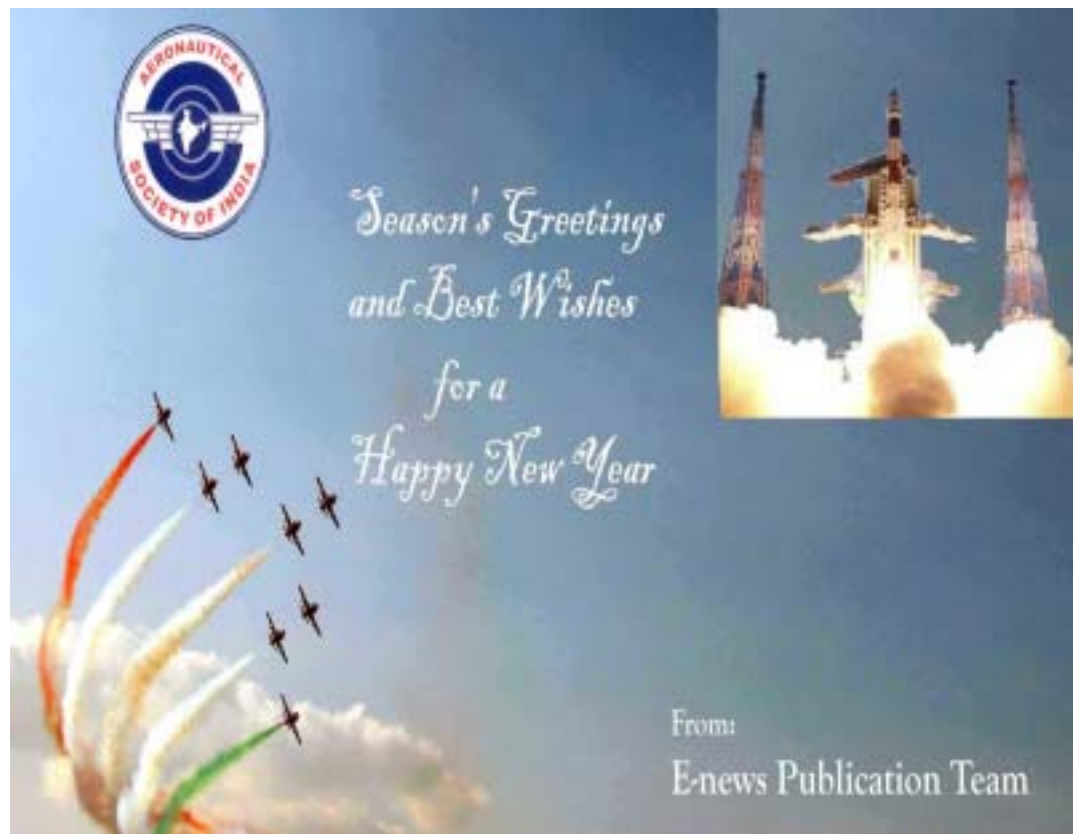
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**" The Publishing Team endeavours to bring to the attention of the Members of the Society through the monthly "E-news" the current developments and happenings in Aeronautics and Aerospace in the Country besides providing an opportunity for its Members, Industries, Professionals in the field, Institutions and Students to showcase their views, products, advertisements etc. While we thank you for your support and encouragement we appeal for your active participation "**

## READER'S RESPONSE

**The editorial team invites your views, suggestions, to the News about Members Column and contributions to the e-news.**

### China-Pak defence nexus worries india

India expressed grave concern at China's continuing help to Pakistan to build its military capabilities, which for long has even covertly stretched to the missile and nuclear weapons arenas. "The increasing nexus between China and Pakistan in the military sphere remains an area of concern," said Defence Minister Mr A K Antony, speaking at the 44th Foundation Day anniversary of the Institute for Defence Studies and Analysis here. This comes just a few days after the first JF-17 'Thunder' fighter jet, primarily designed and developed by China, rolled out of the Pakistan Aeronautical Complex at Kamra. Pakistan is going to induct well over 100 of these light-weight multi-role fighters.

Source: *Times of India*

### ISRO to launch 8 foreign satellites; also eyes acquisitions

India's space agency has in its pipeline eight foreign satellites for launch and is scouting to acquire such spacecraft from abroad to expand capacity in the field of communication transponder back home. "Today, we have eight (foreign) satellites to be launched. These will be launched over the next two-three years", Managing Director of Antrix Corporation, marketing arm of Bangalore headquartered Indian Space Research Organisation (ISRO), Mr KR Sridhara Murthi, said. These are a mix of small and bigger satellites, he said but declined to elaborate, noting that the space agency is yet to formally ink some of these contracts.

Source: *Economic Times*

### Fourth of India turning into desert: ISRO

No less than a fourth of India's geographical area, or 81 million hectares, is undergoing a process of desertification, reveals a first-of-its-kind 'desertification status map' of the country created by the Indian Space Research Organisation (ISRO) in collaboration with several scientific institutions across the country. A host of reasons are responsible for this phenomenon, including changes in rainfall pattern and over-exploitation of natural resources, says a research paper based on this data and published in the latest issue of Current Science. The spatial inventory, which uses satellite imagery from an Indian Remote Sensing Satellite, Resourcesat, also reveals that a third of the country's area (or 105.48 million hectares) is degraded. At least eight processes were at work, of which water erosion is the most pronounced (affecting 10.21 per cent of the total geographical area), followed by reducing vegetation cover (9.63 per cent) and wind erosion (5.34 per cent). Together 32.07 per cent of the total geographic area is being transformed by land degradation.

Source: *The Hindu*

### ANTONY: Agni II glitches will be rectified

Defence Minister Mr A.K. Antony downplayed the recent failure of the nuclear-capable intermediate range Agni-II missile's test firing, saying scientists would soon rectify the glitches. 'It is not absolutely correct. Sometimes tests do fail,' Antony said in reply to a query if the test was a setback for India's Integrated Guided Missile Development Programme. 'I am absolutely confident that DRDO (Defence Research and Development Organisation) scientists will look into the problem and do away with it,' Antony added. The first night test of the

Agni-II missile Nov 23 turned out to be a failure. The surface-to-surface missile with a range of 2,000-plus km was tested from Wheeler's Island - a launch site in Orissa's Bhadrak district, about 200 km from state capital Bhubaneswar.

Source: *Indian Express*

### Mahindra-NAL's private aircraft to be launched soon

Mahindra Aerospace, the aerospace arm of Mahindra & Mahindra (M&M), is readying the prototype of a small private aircraft built in collaboration with state-owned National Aerospace Laboratories (NAL). The five-seater, turbo-prop aircraft, NM5-100, will be flown by March. Its first flight was earlier scheduled in mid-2009. This is the first time Bangalore-based NAL has ventured into developing small-sized private aircraft with private participation. The institution, responsible for the design of the NM5-100, had earlier worked on designs for the Hansa trainer and Saras, a light transport aircraft. M&M has earlier manufactured and delivered 24 five-seater aircraft for Jordan-based Seabird Aviation Jordan. The planes were manufactured by M&M at the rate of 3-4 units per month. Each plane cost \$400,000. According to the previous agreement, a substantial part of the design and development of the NM5 will be done by NAL, while marketing and serial production of the plane will be done by M&M. The central government had released Rs 6.5 crore for the project last year. M&M is looking to secure aviation component supply contracts from major aircraft manufacturers around the world for military and civilian use. A senior executive from Mahindra Systech, the umbrella unit of the aerospace arm, said the component industry was worth more than \$1 billion annually.

Source: *Business Standards*

### Grounded Sukhois to fly again

After being grounded for almost a week, India's frontline Sukhoi fighters were cleared for flying when a check on the 100-odd jets by the IAF found all of them air-worthy. One of the aircraft crashed in Jaisalmer which led the IAF to ground the entire fleet for a thorough check. This was the second crash of the Sukhois. The previous aircraft had crashed in April. "The Sukhoi aircraft has started flying again and the first flight, after being grounded for a week, took place at Lohegaon airbase near Pune," an IAF officer told reporters here. "Now, one by one, all the Sukhois in the five operational squadrons will start flying," the officer added. Since its induction in 1996, Sukhois were involved in accidents for the first time this year. The IAF plans to have a total of 280 Sukhois in its fleet in the next few years. Meanwhile, defence minister Mr A K Antony informed Parliament that the entire fleet of HPT-32 initial trainer aircraft has been grounded after a fatal crash in July. In the July HPT trainer crash, two instructor pilots were killed near Hyderabad. In a written response to a question, Antony said the force has lost 17 HPT-32s and 19 pilots till now in different accidents. "The total loss suffered as a result of these accidents amounts to Rs 16.21 crore," Mr Antony said. He said HAL has already commenced preliminary design work on the turbo-prop trainer aircraft.

Source: *Times of India*

## Tejas clocks top speed

Light Combat Aircraft Tejas notched a speed of over 1,350 kvmph- the fastest by an indigenously made fighter aircraft during its sea-level flight trials off Goa on 'hesday, reports HVS from HJIT . Tejas, which is undergoing rigorous testing in saline, humid marine conditions in and off the coast of Goa, had performed admirably in the two-week-long trials in Goa, Air Commodore Rohit Varma said.

Source: Deccan Herald

## Navy's MiG-29k fighters arrive in knocked down condition

The first four Russian-made MiG-29k fighters to be deployed on the aircraft carrier INS Vikramaditya, formerly Admiral Gorshkov, have been received in a knocked-down condition and will now be assembled. It will be a while before the jets are assembled and start flying," an Indian Navy official said but refused to divulge the present location of the aircraft. The jets were purchased by Indian Navy as part of a \$1.5 billion deal signed with Russia in January 2004 for the Admiral Gorshkov. Of this \$740 million was meant for the aircraft and the balance for the refitting of the carrier. The Russians have now increased the price to between \$2.2 billion and \$2.9 billion and negotiations on this are currently underway. The navy will eventually be getting 12 MiG-29k single-seater aircraft and four MiG-29kUB twin-seat trainer aircraft, some in flyaway condition. The trainer version is similar to the single seater but with a slightly reduced operational range. The navy has named its MiG29k squadron the "Black Panthers". As the 45,000 tonne Kiev class aircraft carrier, is scheduled to be delivered the jets will undertake shore-based sorties from Goa.

Source: Deccan Herald

## 'More research needed in combustion technology'

More research activity in combustion technology and IC engines is needed to make the country a global leader in the science and technology sector, said Dr R Chidambaram, Principal Scientific Advisor to the Prime Minister. He was the chief guest at the 21 national conference on IC engines and Combustion arranged jointly by Bapuji Institute of Engineering and Technology, the combustion Institute Indian section, at Bapuji auditorium. Dr Chidambaram said the combustion studies in other countries were very expensive and therefore not suited for the technological development processes here. Vicel Chancellor of Visveswaraya Technological Institute Prof. HP Khincha, MLA Dr Shamanur Sivashankarappa, Mr AC Jayanna, treasurer Bapuji Educational Association and others were present.

Source: Indian Express

## Pilot error let to Dhruv crash : Probe

Almost a month after the Advanced Light Helicopter (ALH) Dhruv belonging to the Ecuador Air Force crashed, investigators probing the mishap concluded that pilot error led to the incident which occurred at an airbase in the Latin American country. Members of an independent agency and Ecuador Air Force officials who were here recently to meet the officials of Hindustan Aeronautics Ltd (HAL), the manufacturers of the chopper, and analyse the flight data

recorder (FDR), concluded that the crash occurred due to pilot error. The conclusion that the 5.5-tonne chopper which was completely destroyed following the crash concurs with HAL'S stand, which it has been maintaining since, the mishap occurred in October, that "an abrupt manoeuvre by the pilot led to the crash".

Source: Indian Express

## 'Reporting of bird hits inadequate'

Many airport operators are not reporting instances of bird strikes regularly to the authorities concerned even as the airlines have suffered losses of at least Rs. 7 crore so far this year, said Mr Shanmugam, Joint Director, Directorate General of Civil Aviation. At a seminar on "Bird strike on aircraft: challenges and the road ahead" in Bangalore, Mr. Shanmugam said the DGCA had from time to time issued instructions in the form of reporting standards to the airport operators for maintaining data of bird hit instances in a particular format. However, he said, many airports were not sending detailed reports on bird-hit incidents to the DGCA, which has now taken up the bird strike instance seriously. Mr. Shanmugam said a combined effort by aircraft designers, manufacturers, operators and regulators was essential to overcome this worrying menace for the aviation sector. As many as 241 bird-hit cases were reported till October. Kingfisher Airlines suffered the most, with 60 such incidents, followed by Jet Airways (49), Spice Jet (30), Indigo (27), Air India (24) Go Air (7) and Paramount (1), according to the recent data released by the Ministry of Civil Aviation.

Source: Hindu

## DRDO aims for 6th sense

If the Defence Research and Development Organisation (DRDO) succeeds in developing this gen-next technology, then not only will we have efficient network centric infantrymen guarding our borders but also well informed secret agents who will be masters in espionage and intelligence gathering. The technology, at a nascent stage of development, is the Cognitive Technology Threat Warning System — an artificial cognitive science programme designed to analyse sensory data and alert foot soldiers against any possible threat, passive or direct, says scientific advisor to Defence Minister Dr VK Saraswat.

Source: *Indian Express*

## Special areas scientific research: advancing the cause in India

With fresh wind blowing in bringing global competitiveness and collaboration, attitudes to scientific research will change from that of a routine job to an adventure in creativity. On April 20, 2005, a 26.7-million cubic foot balloon carrying a 459-kg scientific payload with 38 kg of liquid neon was flown from the National Balloon Facility in Hyderabad operated by the Tata Institute of Fundamental Research (TIFR). The payload collected air samples from different heights ranging from 20 to 41 km and it was parachuted down safely. The samples were independently analysed at the Centre for Cellular and Molecular Biology (CCMB), Hyderabad, and the National Centre for Cell Science (NCCS), Pune, and live micro-organisms were found. Such findings have enormous implications for astrobiology, besides providing important inputs to go into the question of how life started on our planet. Astrobiology deals with life outside the Earth, a question that is increasingly gaining scientists' attention. For India, it was part of a pioneering series of experiments. Being interdisciplinary in character, astrobiology it had the participation of scientists from institutions specialising in different fields. As the subject grows in scope and interest, more scientists will come forward to participate with a distinct need for an Indian institution devoted to astrobiology.

Source: *The Hindu*

## India a space power: NASA officer

India is now looked up as one of the most important space powers, especially after the successful finding of water and ice on the surface of the moon by the Chandrayaan- 1 project said Dr Edward Rogers, chief knowledge officer, NASA Goddard Space Flight Centre. He was speaking to reporters after delivering a lecture on 'How NASA Learns and Reapplies Knowledge'. He said that there was a variety of opportunities in the field of space before India, similar to the kind of opportunities that were before the US in the 1960s and 1970s.

Source: *Indian Express*

## IT'S ALL ROCKET SCIENCE

IT was that Space Ship One flight 11P, piloted by Mr Brian Binnie, made its first supersonic flight. Terms like Space Ship One, supersonic, 11P sound alien, yet fascinating, to most of us. Aircraft are common elements in our lives now, but we do not really understand their workings, even lesser of rocket-powered ones like Space Ship One. Here, we try to understand the intricacies of such airplanes. A rocket-powered aircraft or rocket plane is an aircraft that uses a

rocket for propulsion, sometimes in addition to airbreathing jet engines, as defined in simple terms by Wikipedia. In a rocket engine, fuel and a source of oxygen, called an oxidizer, are mixed and exploded in a combustion chamber, which produces hot exhaust that is passed through a nozzle to accelerate the flow and produce thrust. Thus, the working fluid in a rocket, or an engine modeled on those used in rockets, is the hot exhaust produced during combustion. The difference from a turbine engine or a propeller- powered aircraft is that while turbine engines and propellers use air from the atmosphere as the working fluid, rockets use the combustion exhaust gases. That is logical, since in outer space there is no atmosphere.

Source: *Indian Express*

## Invaluable lessons from Chandrayaan-I

Insisting that many lessons learnt from Chandrayaan-I would prove invaluable during subsequent missions, Mr Mylswamy Annadurai, Project Director of the ISRO Satellite Centre, said Chandrayaan-II would land two rovers on the Moon's surface by 2013. "Chandrayaan-I demonstrates a quantum jump in systems engineering practices in the country. There have been 17 previous moon missions and thanks to Chandrayaan, we have conclusive proof for the presence of water on the surface of the Moon," Dr. Annadurai said. "We not only know that there is water, we now know the process through which it is formed." He was speaking at the inaugural session of a three-day international conference on Advances in Mechanical and Building Sciences in the 3rd Millennium organised at the Vellore Institute of Technology (VIT) here. While the Moon impact probe landing an Indian flag on the lunar surface was a matter of pride, it was not just about the abstract concepts of space exploration. "Spinoff technologies which will help us identify the precise location of water in places like Rajasthan are a direct result of the Moon mission," Dr. Annadurai said.

Source: *Hindu*

## Dhanush missile test fired successfully

Dhanush, the ship-based anti-surface missile, was successfully launched from INS Subhadra, in the Bay of Bengal, off Orissa. It was fired by Navy personnel as part of a user-training exercise. The nuclear-capable Dhanush, a naval version of Prithvi, was test fired at 11.35 hrs. It flew over 350 km and splashed down at the target point in the Bay with "pinpoint accuracy," according to official sources in the Defence Research & Development Organisation. The missile followed the pre-designated trajectory with text-book precision and two naval ships anchored near the target tracked the splash. The sources said the 350-km-range missile met all the velocity, height and guidance parameters. The radar systems of the Integrated Test Range (ITR), located along the coast, monitored the entire trajectory of the vehicle, which flew for 520 seconds before zeroing in on the target with a circular error probability (CEP) of below 10 metres. The single-stage missile is powered by liquid propellants; it is 10 metres long and weighs six tonnes. It has one-metre diameter and can carry a 500-kg warhead. Dr V.K. Saraswat, Scientific Adviser

to the Defence Minister who is also the Director-General of the DRDO; Major General (retd.) P.C. Karbanda, who is Deputy National Security Adviser; and Rear Admiral C.S. Patham, who is Deputy Commander-in-Chief of the Strategic Forces Command, were aboard INS Subhadra to witness the launch.

Source: *Hindu*

### DRDO GEARS UP FOR AGNI TESTS IN JAN

The successful trial of nuke capable surface to surface Dhanush missile came as a face saver for the Defence Research and Development Organisation (DRDO) after the twin failures of India's first long range missile Agni-II. Now the organization is eyeing the success of the two proposed tests of Agni-II and Agni-III missiles in January. Dhanush, Naval version of Prithvi ballistic missile was flight tested by the Indian Navy from the warship INS Subhadra, 35 km away from Balasore coast. With the test, India has joined the elite club of US and China which have the similar kind of missiles in their arsenal. Defence sources said: "The missile travelled almost 350 km within nearly 500 seconds before zeroing in on the target with a circular error probability of less than ten metres." "It met the velocity, height and guidance parameters. The flight path was very smooth without any variation deviation. The pre-decided coordinates – elevation, trajectory and azimuth were also well as expected and the missile splashed down at the target point with pinpoint accuracy," said Integrated Test Range Director Dr S P Dash.

Source: *Indian Express*

### Sorry Wright brothers, we have forgotten you!

Over a century ago, this day, two bicycle shopkeepers did something different. They took to the skies. It lasted for only 12 seconds, but changed the face of human kind. Today, Bangalore — the much-hyped aviation capital of India, seems to have forgotten the Wright moment, writes Mr Anantha Krishnan M. It lasted for just 12 seconds. Exactly 106 years ago. It changed the face of human life. Two brothers Wilbur Wright and

Orville Wright — flew their dream machine christened Flyer. With Wilbur on ground, Orville at the controls made the historic first powered flight from Kitty Hawk in North Carolina on Dec 17, 1903. The distance covered by the Wrights' first flight then was less than the wingspan of today's 747 Jumbo Jet. The plane flew 120 feet in 12 seconds. Finally, it took two bicycle shopkeepers to prove the world that we can fly!. Today, 106 years later, not many in Bangalore (the much-hyped aviation of capital of India), seems to be in a mood to celebrate the Wright moment. A few hardcore devotees of flying machines, who contributed immensely to the growth of Indian aerospace, however, say that we can never forget the Wright brothers.

Source: *Bangalore Mirror*

### Earth-like waterworld spotted

A giant waterworld that is wet to its core has been spotted in orbit around a dim but not too distant star, improving the odds that habitable planets may exist in our cosmic neighborhood. The planet is nearly three times as large as Earth and made almost entirely of water, forming a global ocean more than 15,000km deep. Astronomers detected the alien world as it passed in front of its sun, a red dwarf star 40 light years away in a constellation called Ophiuchus. The discovery, made with a network of amateur telescopes, is being hailed as a major step forward in the search for planets beyond our solar system that are hospitable to life as we know it. Measurements suggest the planet is shrouded in a thick atmosphere of hydrogen and helium that blocks visible light from its sun, plunging the watery surface into permanent darkness. Writing in the journal *Nature*, David Charbonneau at the Harvard-Smithsonian Centre for Astrophysics describes how his team used a suite of eight amateur-sized telescopes to spot the planet as it moved across the face of its star, which is less than 0.5 per cent as bright as our own sun. The telescopes picked up a slight dimming in light from the star as the water world, named GJ1214b, passed in front of it every 1.6 days. The planet has a radius 2.7 times as large as the Earth's and orbits at a distance of only two million kilometres from its star. Our own planet circles the sun at an average distance of around 150 mn kms.

Source: *Deccan Herald*

### ISRO earns Rs 1 bn by launching foreign satellites

The Indian Space Research Organisation (ISRO) has earned over Rs.1 billion in the last three years by launching foreign satellites. And much of this has come from Israel and Italy. "Twelve satellites were launched for other countries during the last three years including six nano-satellites during the current year," Science and Technology Minister Mr Prithviraj Chavan informed the Lok Sabha. The minister said Indonesia, Argentina, Italy, Israel, Canada and Germany were the key countries taking the help of ISRO in sending their satellites on a commercial basis.

Source: *Economic Times*

### 'Public-private model best for airport development'

Even as airports around the world are beginning to see

air traffic revert to last year's levels, with recessionary pressures easing, in the long term they face the challenge of expanding infrastructure to meet the projected demand. Huge investments are needed in the next 10-15 years, with air traffic estimated to double by 2030. Airports are now looking at increasing their non-aero revenue, as part of measures to raise money for expansion. "We are on track, but the process needs to be speeded up," says Ms Angela Gittens, Director-General of Airports Council International, the voice of global airports. In an interview with *Business Line*, she spoke on trends in the airport industry. Excerpts from the interview: How has the traffic growth in airports been internationally this year? The steady decline in traffic the world over at the beginning of the year finally eased in the second quarter there was no decline in the June to August period. And now, in the fourth quarter, we are beginning to see growth. We expect a growth of 2 per cent in traffic in 2010 and 4 per cent in 2011.

Source: *Hindu Business Line*

### Mahindra buys major stake in Australian firms

Making an entry into the aerospace business, auto major Mahindra & Mahindra (M&M) said it had picked up 75.1 per cent stake each in two Australian aerospace firms for Rs. 175-crore and planned to make aircraft and allied components to service the global market. In a joint acquisition with Kotak Private Equity, Mahindra Aerospace Pvt. Ltd. (a unit of M&M) bought majority stake in component-maker Aerostaff Australia and general aircraft manufacturer Gippsland Aeronautics. "Over five-years, we believe that we could build as many as 475 aircraft in the 2-20-seater range and expect a peak revenue of about Rs. 650-crore," Mahindra Systech Sector and Member of the Group Management Board, M&M, Hemant Luthra told reporters here. The company is setting

up a plant in Bangalore to complement these acquisitions and provide dual sharing and benefits to customers. "We now have an opportunity to play in the defence offsets space. We can provide offset components in the commercial aircraft business and we can provide components for the general aviation business," Mr. Luthra said. The 2-20-seater market (turbo prop market) is among the fastest growing segments in general aviation. Turbo props provide operational adaptability in environments with relatively poor infrastructure and can serve the market at the lowest cost per passenger seat kilometre.

Source: *Hindu*

### Indian 'Nobel Prize' winners

Infosys Science Foundation announced the winners of the 2009 Infosys Prize, which Union Minister, Mr Kapil Sibal, billed as India's 'Nobel Prize.' The winners were announced for only four out of the five categories as the jury could not identify anyone for the award for engineering sciences. The prize money for each of the category is Rs 50 lakh. Mr Thanu Padmanabhan of the Inter-University Centre for Astronomy and Astrophysics, Pune, won the award in the Physical Sciences category. The jury to choose the award was headed by Prof Shrinivas Kulkarni. Mr Ashoke Sen of Harish Chandra Research Institute, Allahabad won the award in the Mathematical Sciences category. The jury for the award was headed by Prof Srinivas Varadhan. Mr K VijayRaghavan of National Centre of Biological Sciences, Bangalore, won the award in the Life Sciences category. The jury for the award was headed by Prof Inder Verma.

Source: *The Hindu Business Line*

the prize at a gala ceremony here along with other recipients. The other Nobel laureates in literature, economics, physics and medicine also received their prizes from Swedish King Carl XVI Gustaf at a formal event in Stockholm's Concert Hall. A record five women were awarded the Nobel this year. Born in 1952 at Chidambaram, Dr. Ramakrishnan, a senior scientist at the MRC Laboratory of Molecular Biology at Cambridge, shared the Nobel with Thomas A Steitz (U.S.) and Ada E. Yonath (Israel) for their "studies of the structure and function of the ribosome." They "showed what the ribosome looks like and how it functions at atomic level," the Nobel committee said in its citation. All the three used a method called X-ray crystallography to map the position for each and every one of the hundreds of thousands of atoms that make up the ribosome. Dr. Ramakrishnan earned his B.Sc. in Physics (1971) from Baroda University and Ph.D. in Physics (1976) from Ohio University, U.S. He moved into biology at the University of California, San Diego, where he took a year of classes, and then conducted research with Dr. Mauricio Montal, a membrane biochemist.

Source: *Hindu*

### Ramakrishnan receives Chemistry Nobel

Tamil Nadu-born Dr Venkataraman Ramakrishnan, one of the three winners of this year's Nobel in Chemistry, received

### Recent Advances in Aerospace Propulsion technology

**Date:** 24<sup>th</sup> February 2010

**Venue:** Sathyabama University

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### Air chief Marshal L. M. Khatre memorial lecture being organized by Air force Association Karnataka and AeSI Bangalore branch along with HAL

**Venue:** Convention center on Air port road near HAL Heritage Center

The Lecture will delivered by Chief of Air Staff Air Chief Marshal P. V. Naik

**Date:** 21<sup>st</sup> Jan 2010

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