

# VAANI

The Voice of IITRAAA

Jan 2017



Happy New Year  
2017



## GLANCE INSIDE

|                        |    |
|------------------------|----|
| IITRAAA NEWS           | 4  |
| IITR AND IITRAA NEWS   | 9  |
| PANIIT NEWS            | 11 |
| THE NEWS THAT ECHOED   | 13 |
| SCIENCE AND TECHNOLOGY | 18 |

## ILLUMINATING THOUGHTS

Life after the Olympics has been a series of felicitations and celebrations. But that is not the real deal. What matters more is that more young kids are picking up the racket after my silver  
P V Sindhu, silver medallist in RIO Olympics

We must always take sides. Neutrality helps oppressor, never the victim. Silence encourages the tormentor, never the tormented.

Elie Wiesel, Noble Prize winner

The real index of civilisation is when people are kinder than they need to be.

Louis De Bernieres, novelist

You can't be a slave to technology- you have to empower it and make it to work your way.

A R Rehman, music composer

The world suffers a lot, not because of violence of bad people, but because of the silence of good people

Napoleon

Life should be great rather than long

B R Ambedkar, Architect of Indian Constitution

Happiness is a mysterious thing, to be found somewhere between too little and too much

Ruskin Bond,

Being understood is better than being praised

Irving Feldman, poet

Time is like river. You can't touch the same water twice, because the flow that has passed will never pass again

Swamy Vivekanand

Offence is no longer defence, it's full time profession

Karan Johar, Film producer

A lot of people are afraid to say what they want. That's why they don't get what they want.

Madonna

Before borrowing money from a friend, decide which you need most

Addison H Hallock, Author

**EDITOR'S DESK**

Dear VAANI Readers,

The 'Jan 2017' issue is two in one release as Oct'2016 issue could not be brought out. It was a foggy period for the last six months. Editor humbly regrets the delay and greets the readers with happy and peaceful new year. You might have celebrated the festivals, which fell during the last six months, with great fervour. I would like to take this opportunity to wish you continued happy festivals belatedly. To be in tune with colourful festival "Uttarayan" of Gujarat, cover page of this issue portrays the spirit of the event.



This issue highlights the achievements of the IITRAA members and alumni from IIT Roorkee and PANIITians. An article on SCRAMJET rocket engine is specifically included on demand from some of the IITRAAA members. The engine was developed by ISRO and flight tested successfully. ISRO engineers deserve a fountain of congratulations for the achievement.

Our Family Park arena is yet to be populated. I appeal to all of you to share your artistic talents and creativity with VAANI. I also appeal the readers to send articles relevant to Finance & Law Column.

Wish you a happy reading of the two in one Jan'2017 issue. With greetings

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**All previous issues of VAANI are available on our website [www.iitraaa.com](http://www.iitraaa.com)**

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**IITRAAA -NEWS**

**PHILANTHROPIST MR VELCHAMY**

A NGO known as "KRITHIN FOUNDATION" is run by our senior IITRAAA member Dr S Velchamy. This is a philanthropic organisation working on no profit principle. The NGO works for the poor and deprived children in society. They educate them and train them with special skills. They also provide them with medical care needed. He is the



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Managing Trustee of this NGO.

A school in a slum area of Motera in Ahmedabad City became a sick school, because the education there, was expensive for the poor children and teaching standard was too poor. Children were dropping out of the school every day. The KRITHIN NGO took over the school and revived it. Today it has about 150 students. The students are, now, interested in studies and learning special skills which could earn them their bread. Teaching special skills for poor children is the need of the day and the need of our Nation. This is in fact a humble contribution by our member in nation building. VAANI congratulates him for this noble task and wish him an unhindered growth in this venture.

**THROUGH THE MIRROR OF PAST**



1961



2016

**Mrs Kumud Mukerjee**

**B.Arch, 1965 batch  
UOR**

**Settled in Ahmedabad (k\_mukerjee@hotmail.com)**

### **DISCOVER OUR VALUES– ‘WHY DO WE PUT TILAK ON FOREHEAD’**

One of the most visible external symbols of Hindu identity is the mark that many of us wear on our forehead. In ancient times, when the Varna system predominated, people used to apply tilak differently that represented their Varna. Brahmins applied a white chandan mark signifying purity. Kshatriyas wore a red tilak that signified their valour. Vaishyas wore a yellow (usually turmeric) tilak which signified prosperity as they were traders. The Shudras applied a black tilak representing their service to all the above three Varnas.

But later, the tilaks were used to denote which Sampradaya one belongs to. The worshippers of Lord Vishnu wore a tilak in the shape of 'U' (also called Naamam). The worshippers of Lord Shiva wore Bhasma/Vibhuthi in three horizontal lines (also called Tripundra). The lines and the color used may vary from region to region and from sect to sect. The area in which the mark is applied is between the eyebrows, called the Ajna Chakra. This is the point that most schools of Hinduism consider the entry and exit point of our jivaatma (soul). Scientifically, this Ajna Chakra area is often cited as the seat of thinking, concentration and memory. It is also the area which gets heated during stress and tension. Applying the tilak (generally using Chandan) has a cooling effect and aids concentration.

Most of the Gurus and saints wear the red tilak right at the middle of the eyebrows. Modern science has found that some of the rays in the sunlight are harmful to the body, especially when directly falling on the forehead. Most rays or radiations have penetrating power too. So there could be harmful rays/radiations to the pituitary gland. According to the color subtraction in the physics the things with red color will reflect the red light and it will not be penetrated further. That's why the red object appears in the red color. So when applying 'red

tilak' at this position harmful radiations close to the wavelength of red lights are reflected back so that the gland remain safe. Some of them prefer to apply black tilaks which will reflect all the colors and prevent all rays/radiations.

In modern time, red tilak (Kumkum) is widely used by women. Considered a symbol of Goddess Parvati, it signifies female energy and is believed to protect women and their husbands.

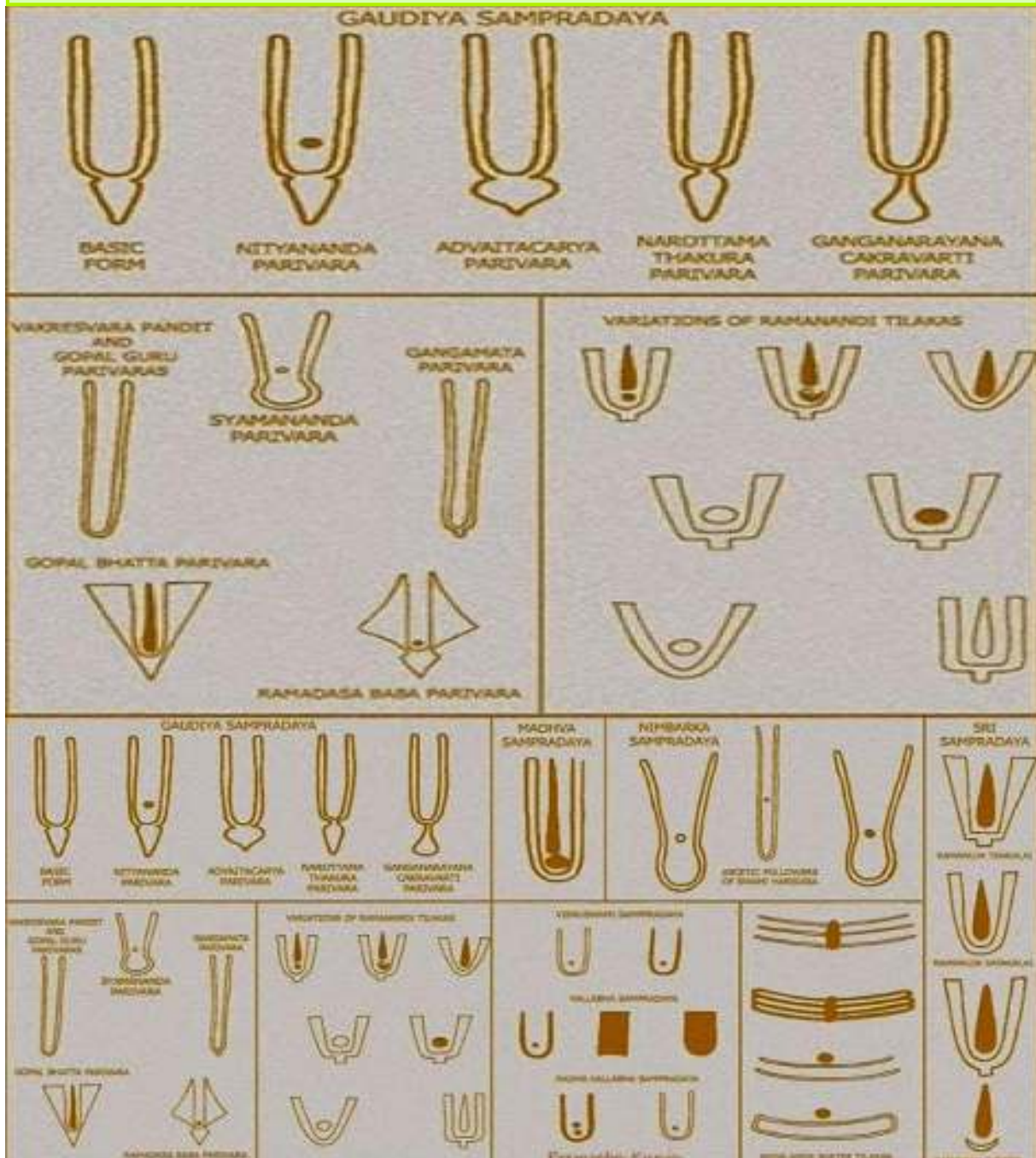
There is an interesting incident in the Ramayana regarding the significance of Kumkum. One day as Sita was adorning her forehead with Sindur, Hanuman asked her, "Mata, why do you put this red thing on your forehead?" Ma Janki replied, "By applying this, my swami (husband) will live long." Since Hanuman is a Parama-bhakta of Sri Rama, he thought that if a pinch of Sindur could make his master's life long, a whole lot of this would make him live much longer. So he rubbed it all over his gigantic body! Well, even if the origin of the practice is unclear, the above incident in Ramayana makes it clear that the practice existed even during (or may be, well before) the Treta-Yuga, in which lord Rama lived.

There is a scientific reason as well. There are many chakras in human body which are energy points. They are located at the physical counterparts of the major plexuses of arteries, veins and nerves. Chakras are part of the subtle body, not the physical body, and as such are the meeting points of the subtle (non-physical) energy channels, called nadiis. Nadiis are channels in the subtle body through which the life force (prana), or vital energy moves. 7 (Seven) chakras are considered to be the most important ones. Within these chakras, Ajna chakra has major significance. The Ajna chakra is positioned in the stomata, directly behind the center of the forehead. Its kshetram, or superficial activation site, is in the eyebrow region at the position of the "third eye". The region has its own importance. The major pituitary gland in the human body is situated behind this position.

The third eye is present there (referring to the center associated with alertness or awareness). So there is a custom of applying sandal paste or other things at the location of pineal and pituitary glands which have a great effect on our body and mind. One reason for applying the paste is to give respect to that portion of the forehead. It stimulates our attention.

Whenever you think, what do you do? Your hand automatically goes at this place. When you make a mistake, your hand goes at the head. When you think or deeply ponder over something or some problem comes then too you keep your hand like this. If you go to any country or any corner of the world, you find that everywhere people think like this. This is

**SOME OF THE MOST PREVALENT FORMS OF TILAK**



**QUESTION FOR NEXT ISSUE OF VAANI  
WHY DO WE GO FOR JANEU**

the seat of wisdom. It is the *peetha* (seat) of knowledge. That is why *chandan* (sandal paste), *kumkum* or *sindoor* (vermillion powder) is applied there.

There are number of documents available on the subject mostly based on mythology and

seemingly scientific analysis through one's own perception. This could be a great platform to infuse scientific research on the topic to establish the effects claimed in various literature.

## OBITUARY

VAANI expresses great grief on the sad demise of our beloved eldest life member of IITRAAA Sri Dhanesh Chand Goel fondly known as DC Goel. . He left for heavenly abode on Sep 19'2016 at his residence in Ahmedabad. He nearly clicked 96.

Late Sri Goel was the member of IITRAAA right from its inception. He was one of the very regular attendee of all the IITRAAA get-togethers. He was a living legend of healthy and happy living. Though he had his knee surgery done at the age of 90, his spirits of young hood never dampened. He kept attending the get-togethers even afterwards with full vigour. He was felicitated by the then Director IIT Roorkee Dr Pradipta Banerjee as the Eldest member of IITRAAA and honored him as the member of excellence. One day in June 2014, he handed over a closed envelop to our veteran member Sri A C Mathur and told him to open it only after going home, When he opened the envelop at home, he found a cheque as of Rs 11000 as his token of love to IITRAAA and a write up as follows



*“Growing old is inevitable, feeling old is optional. My parting salute to IITRAAA.”*

It was an emotional moment to feel his pulse of love for IITRAAA and his perception of life.

Born on Jan 4' 1921 at Aligarh in UP, Sri Goel joined the Thomson College of Engineering in 1939 in Diploma-Civil Engineering Course. In that period the college had its first Indian Principal Mr Sadana. Mr Goel was one of the few, getting handsome scholarship during his studies. He passed the Diploma in 1941 and was offered a job in CPWD immediately for a handsome salary of Rs 96 per month (in 1941).

He left indelible impression on IITRAAA. VAANI expresses its deep condolence to the bereaved family and pray God for his soul to rest in peace.

**YET ANOTHER STEP FORWARD BY AOW**

Ability on Wheels (AOW) is a NGO run by our alumnus and IITRAAA member Mr Harish Kumar. The NGO runs a driving school for specially able persons with different degree of disabilities of limbs. Earlier issue of VAANI has already highlighted about this.



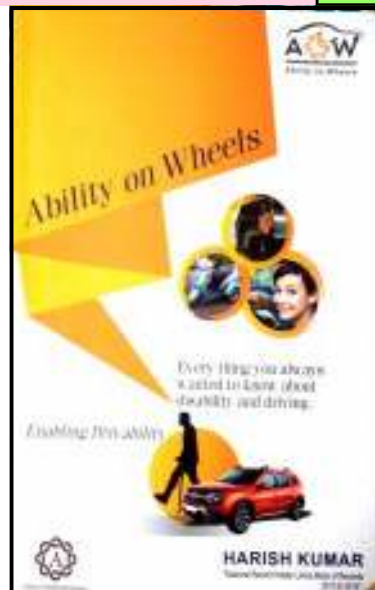
**HARISH KUMAR**  
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The AOW has taken a step further to bring out a book on 'Enabling Drivability'. It is a compendium of all in one, connected with every thing relevant to driving. There are stories of various persons with various handicaps and their struggle to get the driving license. The struggle starts with RTO to convince him that handicaps were allowed to drive as per law. However RTO's set of one track mind hindered the process of normalising and simplifying the rules for the persons defined as per them handicaps. They (RTOs) made them (handicaps) run pillar to post to get their rights recognised. The book portrays an

unrelenting war between RTO and the persons known for their special abilities. Ultimately they won over the battle.

The book also describes about the licensing procedure for handicaps, the changes to be made in the controls of the vehicle to be driven by them, traffic rules in the city and highways, description of disabilities, lessons on salient features of vehicles etc.

It is a 'must read book' by all and not only the handicaps. VAANI congratulates him on this brave effort and wish him to achieve greater heights in his endeavours future.



**YOU HAVE NEVER REALLY LIVED UNTIL YOU HAVE DONE SOMETHING FOR SOMEONE WHO CAN NEVER REPAY YOU**

**QUDOS TO OUR PARALYMPIC HEROES**

Prime Minister Narendra Modi met the Indian athletes who took part in the recent Rio Paralympic Games, including the four medallists, and applauded them for making the country proud with their achievements. The 19-member Indian contingent had returned home from the Paralympics with two golds, one silver and one bronze.

Mariyappan Thangavelu (men's T42 high jump) and Devendra Jhajharia (men's F46 javelin throw) had won gold in their respective events while Deepa Malik (women's F53 shot put) and Varun Singh Bhati (men's T42 high jump) had bagged a silver and a bronze respectively.





**IITR AND IITR AA NEWS** (from the IITR website)**MOON EXPRESS**

A US company 'Moon Express' co-founded by an Indian American, has succeeded to secure the license to launch a spacecraft and land on moon in 2017. The license was granted by The Federal Aviation Administration of USA. The US policy (The US bill made it legal for Moon Express to mine the moon and keep what they extracted) decision authorises the Moon Express to launch its robotic spacecraft onto the Moon's surface. This is the first private space mission to moon. Till now there have been no private space missions beyond earth's orbit. The co-founder of the mission Mr Naveen Jain said "Sky is not the limit for Moon Express, it is the launch pad. Space travel is our only path forward to ensure our survival and create a limitless future for our children."



Naveen Jain

Sri Naveen Jain is an IIT Roorkee Alumnus from batch 1979 -B Tech -Industrial Engg. He is also an MBA from XLRI Jamshedpur batch 1982.

**PRESIDENT'S MEDAL FOR ROHIT CHAUDHARY AN IITRian**

An Indian Police Service (IPS) officer Mr Rohit Chaudhary, presently working as Additional Director General of Police-Punjab, has been decorated with Presidents Police Medal for Gallantry shown in anti terrorist operations, Special Duty Medal, Police Medal For Meritorious Service and U.N. Peace Medal.

ADGP  
Rohit Chaudhary

He is a graduate in Electrical Engineering from University of Roorkee (IIT Roorkee) batch 1982 and a Post Graduate in Management and Public Policy from IIM Bangalore & Syracuse University, New York, U.S.A. He evolved and practiced people oriented policing, besides conducting several successful anti terrorist operations, leading to significant reduction in crime and improvement in law and order situation in the sensitive districts. He is responsible for introducing many innovative practices such as 'Performance Work Charts for Policemen' in 1994, 'Mobile Police Station' and 'Job card System for Police Officers' in 1997 and 'Good Policing Competition' based on Balanced Scorecard, in 2003. He has to his credit many papers which he presented in several International and National Conferences. As Executive Member of National Police Mission of Government of India, he proposed and established an 'Indian Police Technology Development Centre in India.' Based on his experience he has brought out a book 'Policing-Reinvention Strategies in a Marketing Framework'.

**A ROORKEE PhD STUDENT DEVELOPS LESS HARMFUL CIGARETTE FILTER**

A PhD student from IIT Roorkee has developed an affordable 'safe-smoke' cigarette filter using the wonder material graphene. The student, claims that by using the filter, smokers can reduce their toxic chemical intake by as much as 80% without affecting their user experience in any way. He plans to launch the product commercially through a startup called Log9materials. IIT Roorkee has provided Rs 15 lakh as seed money for the venture. The filter uses graphene, an allotrope of carbon, dubbed as the wonder material for its various properties.

Mr Singhal, who developed the product, did his BTech-Metallurgy from IIT Roorkee in 2015.

**KUCHUPUDI DANCERS IN GUINNESS BOOK OF WORLD RECORDS**

Kuchipudy dancers from Andhra Pradesh' made their place in the Guinness World Records 2016 in the field of performing arts. The Andhra's own classical dance was performed by 6117 dancers together at the IGMC Stadium in Vijaywada. Guinness adjudicator Rishinath declared that "Jayamu Jayamu" item presented in unison by the participants created a new record and handed over a certificate to this effect to Andhra Pradesh Chief Minister N Chandrababu Naidu.

In 2012, a similar feat was achieved when 5,900 dancers performed 'Kuchipudi' in Hyderabad. The "Maha Brunda Natyam" (grand group dance) was organised as part of the '5th International Kuchipudi Dance Convention' organised by the state Department of Language and Culture. "Jayamu Jayamu" is one of the glorious items of 'Kuchipudi' dance choreographed by the legend Vempati China Satyam.

Being an international event Dancers from across the country as also from countries like US, UAE, UK, Russia, Hong Kong and Mauritius took part in it. Union Information and Broadcasting Minister M Venkaiah Naidu, eminent 'Kuchipudi' gurus of yesteryears Raja-Radha Reddy, Yamini Krishna Murthy and many others elites attended the closing ceremony. Ananda Tandavam, another hallmark 'Kuchipudi' composition by Vempati China Satyam, presented by Madhavapeddi Murthy at the event stood as another highlight.

Andhra CM Mr Chandrababu Naidu spoke on the occasion and wished their would be at-least one computer literate and one 'Kuchipudi' dancer in each family in the state. "We will hire gurus by paying an honorarium of Rs 12,000 a month to train students in 'Kuchipudi' in the state,"said the Chief Minister.

**PAN-IIT NEWS** (from the websites and news items)

**IITs TO HOLD IIT-JEE (ADVANCED) ABROAD**

As per the declaration made by IIT Joint Admission Board (JAB), IIT-JEE (advanced) will be held in 2017 in six foreign countries including three SAARC Nations (Addis Ababa-Ethiopia, Colombo-Sri Lanka, Dhaka-Bangladesh, Dubai-UAE, Kathmandu-Nepal and Singapore.

**IITs BELOW 150 IN WORLD RANKING OF UNIVERSITIES**

As per TNN Sept 6'2016, the IITs have lost ground in the QS World University Rankings 2016-17. Massachusetts Institute of Technology (MIT) in US remains as the world's best for the fifth consecutive year.

Though IISc-Bengaluru, stands as the India's highest-ranked institution, it dropped out of the top 150 in world ranking.

**AN IIT PROFESSOR CHOSE TO SERVE TRIBALS AND LEFT TEACHING**

A degree in engineering from IIT Delhi, a Masters degree, and a PhD from Houston were just stepping stones for Alok Sagar, an ex-IIT professor. Alok has been living for 32 years in the remote tribal villages of Madhya Pradesh, and serving the people living there .



Ben Sowter, head of research at QS Intelligence Unit, attributes the falls to several factors. One is India's relatively low number of PhD qualified researchers. Also, India hires and attracts fewer PhD qualified researchers from abroad. QS intelligence unit noted that considerable investment -- human and capital -- is needed if Indian institutions are to remain competitive and upwardly mobile.

It is the food for thought and soul searching as to how relevant are the factors considered by the 'QS Intelligence' to decide the international ranking. We (VAANI editor) believe that the apex body of IIT mangement is cognizant of the fact and must be in the process of taking necessary steps to improve the rating.



### 1.5 CRORE OFFER TO AN IIT KANPUR PASS OUT

The IIT Kanpur Pass out, hailing from Delhi, bagged an offer of Rs 1.5 crore per annum from Microsoft. This is the highest ever salary offer to a student of IIT-K. The assignment he is supposed to do is for software development. He will get \$136000 (Rs 94 lakh) as base pay and \$70,000 for relocation, medical and visa charges and stock ownership options. The total package, taking into account annual bonus and joining bonus, works out to nearly Rs1.5 crore.

### AN IITIAN NOMINATED AS THE MAYOR OF SAN FRANCISCO

An IIT Madras alumnus Mr Pradeep Gupta, has been raised to the level of Mayor of South San Francisco, Calif. He rose to this level from the position of vice mayor. "It is my honour to step up and continue the work that former Mayor Mark Addiego has started," said Gupta in a statement.



Gupta was originally appointed to the city council for a one-year term on Dec. 31, 2012 and was elected to a full four-year term in November 2013. Prior to his time with the city council, Gupta was on the city's Planning Commission for three years, including serving as its chair person in 2011.

He took the bachelors degree in electrical engineering from IIT Madras and did the Master's and Doctorate in electrical engineering from Purdu University.

### INDIAN ARMY SETS UP R&D CELL AT IIT GANDHINAGAR

Indian Army has set up a R&D cell at IIT Gandhinagar, Ahmedabad, to use the Institute's Infrastructure and Expertise for initiating

'Make in India' project to cater to its indigenization need. The project will help in two ways. It will help saving foreign exchange as well as minimizing dependency on imports. Indian Army has signed a MoU with IITGN on December 27, 2016, for long-term collaboration with the Institute, in this regard.

The research cell will work with the faculty and research students to identify problems and possible solutions for the Indian Army. The agreement will also enable IITGN and Indian Army to collaborate in various other areas including better understanding of critical technology requirements of Indian Army, sharing of professional and technical knowledge, and other similar activities of mutual interest.

Indian Army will also share their experiences with IITGN students and faculty and find possibilities of conducting short term courses and lectures at the institute.

IITGN Director Prof Sudhir Jain said, "The Indian Army, particularly those posted in the harsh weather conditions, face diverse problems and we want to understand and address these problems".

### TECHNICAL OSCAR FOR AN IIT ALUMNUS

Parag Havaldar, an IIT-Kharagpur alumnus has won the prestigious Technical Achievement Award. The award is popularly known as 'Technical Oscar', and is awarded by the Academy of Motion Pictures and Sciences. Havaldar's popular works include Watchmen, Green Lantern, The Amazing Spider-Man and Beowulf.

Rural Voters are guided by only two factors-Yeh mera admi hai (this candidate is my man) and yeh mera kaam karega (he will do my job)

Mark Tully, Veteran Journalist, on lessons from covering elections in India since 1967

**THE NEWS THAT ECHOED** (from various websites)**1.4 MILLION LIVES LOST IN INDIA DUE TO AIR POLLUTION IN 2013 (TOI)**

According to the report of the World Bank and the Institute for Health Metrics and Evaluation, air pollution took 1.4 million lives in India and 1.6 million in China in the year 2013. The report states that, more than five million deaths worldwide were attributed to health conditions caused by air pollution. About 60% of them were in the world's two most populous countries. The air pollution caused ailments such as lung cancer, stroke, heart disease and chronic bronchitis. China and India ranked 4th and 6th worst in the world respectively. Bangladesh, Sri Lanka and Pakistan were ranked 11th, 12th and 15th on this count. The observation in the report reveals that 'Georgia saw the highest rate of air pollution deaths per million of its population at 2,117. It was followed by Cambodia with a death rate of 1,300 per million.'

**A VERTIGO CREATING WALKWAY IN CHINA (yahoo website)**

One needs a strong and courageous heart to dare to walk on the recently opened 5 ft narrow transparent bottom pathway on 'Tianmen Mountain' in China. It is 323 ft long winding pathway around the cliff of the mountain and is several hundred feet above the ground. Walking on the pathway makes your heart throb & shiver. However the panoramic view of the lush green China's National park overcomes the fears instantly. You get thrilled and filled with joy. The pathway has been dubbed as the "Coiling Dragon Cliff" because of the way it twists and turns together with the uneven surface of the cliff it is attached to. It consists of



99 turnings. The pathway has been made in Zhangjiajie, a city famous for its beautiful and natural landscapes in Central China's Henan Province.

**I don't believe in apocalyptic until the  
apocalypse comes. I think nothing is the end of  
the world until the end of the world.**

**Barack Obama, President US**

## INDIAN GIRL IN UAE, BAGS INTERNATIONAL CHILDREN'S PEACE PRIZE

A 16-year-old Indian environmental activist, based in UAE, has won year 2016 prestigious International Children's Peace Prize for her fight for climate justice and combating environmental degradation. The award was given by Bangladesh's Nobel peace laureate Mohammad Yunus at a glittering ceremony in Hague. Yunus, himself being a Nobel Peace Prize winner in 2006 for his efforts for economic and social development, underlined the urgency and importance of Kehkashan Basu's work, as more than three million children under the age of five die every year from environment-related diseases and many more suffer deeply from environmental related disorders.



"It is a great achievement for such a young person to already have such reach and impact with her important message," Yunus said. After receiving the prize, Basu said "she would keep campaigning to encourage children and adults to create a more sustainable future". I call upon everyone to think of how they can contribute to the preservation of environment. Time is not on our side -- "we have to act now, or we will have polar bears under palm trees,"

When Kehkashan was eight, she started educating neighbours on the importance of saving the environment. She planted her first tree and brought together children to collect and recycle waste, according to **Kids Rights Foundation** that has instituted the award. She founded her organisation **Green Hope** at the age of twelve, through which she initiated countless cleanup operations and awareness campaigns.

Kehkashan has become the youngest ever Global Coordinator for the Major Group for Children and Youth of the **United Nations Environmental Programme**.

## A TECHIE IN JAIL DEVELOP SOFTWARE (indiatoday website)

Amit Kumar Mishra, a software engineer by profession, developed a software Pheonix while he was serving sentence in jail. The software is meant to provide better jail records management for the prisoners. He spent 13 months in jail during which period he developed the software. The 31-year-old, Gurgaon-based Mishra was sent to prison in a false dowry death case in 2013 when he was in his late 20s. In a letter dated September 17, 2015, addressed to all states and union territories, the Ministry of Home Affairs had recommended incorporation of prison management software and Pheonix was mentioned in a list of suitable options along with three other software.



His wife had committed suicide by taking poison within two years of marriage. Even before he could recover from the tragedy of losing someone he doted on, his in-laws slapped sections 304 B (dowry death), 498 A (dowry) and 34 of the Indian Penal Code (IPC) on him. He and his family were implicated in a false dowry death case for which he spent 13 months in judicial custody. His ailing parents too spent three months in prison.

## **BOEING MAKES WORLD RECORD IN USING 3-D PRINTING FOR AIRCRAFTS** (yahoo website)

Boeing and the Oak Ridge National Laboratory have made a world record for creating the largest solid object 3D-printed in a single piece. The special tool will help make the wings of Boeing's next-generation 777X jet. The printed product is known as "trim-and-drill" tool measuring 17.5 feet in length, 5.5 feet in width, 1.5 feet in thickness. It is made of ABS thermoplastic composite materials and weighs around 1,650 pounds. The tool will save energy, time, labour and production cost



Guinness World Records judge Michael Empric confirmed the record measurement of 82.4 cubic feet at a special ceremony at the Oak Ridge facility on Monday where he also presented certificates to representatives from both ORNL and Boeing.

## **INDIA'S NUCLEAR POWER PRODUCTION TOUCHES 6,000MW** (TOI)

With synchronization of the second unit of the Kudankulam power plant, India crossed the 6,000MW mark in producing nuclear power. On further up-gradation of the second unit, the nuclear power production will reach 6700MW.

Kudankulam I and II are also the last nuclear units in India built with foreign collaboration that will not attract the liability clause legislated after the India-US nuclear deal.



## **OBAMA CELEBRATES DIWALI , LIGHTS FIRST EVER DIYA IN OVAL OFFICE** (TOI)

The US President Barack Obama celebrated Diwali in 2016, by lighting the first-ever diya in the Oval Office of the White House and hoped that his successors would continue the tradition. Obama, who was the first president to celebrate Diwali personally at the White House in 2009.

"I was proud to be the first President to host a Diwali celebration at the White House in 2009, and Michelle and I will never forget how the people of India welcomed us with open arms and hearts and danced with us in Mumbai on Diwali," Obama said. "This



year (2016), I was honoured to kindle the first-ever diya in the Oval Office -- a lamp that symbolises how darkness will always be overcome by light. It is a tradition that I hope future Presidents will continue," Obama said on the White House Face Book page. .

"On behalf of the entire Obama family, I wish you and your loved ones peace and happiness on this Diwali," Obama said. As Hindus, Jains, Sikhs, and Buddhists light the diya, share in prayers, decorate their homes, and open their doors to host and feast with loved ones, we recognise that this holiday rejoices in the triumph of good over evil and knowledge over ignorance," said the US President.

### **HERE PAY RS 500 AND GO TO JAIL (TOI)**

Have you heard of Jail Tourism? Yes! There is a jail in India which provides this opportunity. The colonial-era jail in Medak district of Telangana has become the popular tourist destination wherein one can get first hand experience of life in jail just by paying Rs500 for a day.

The 220-year-old district central jail at Sangareddy, which has now been converted into a museum, offers a 24-hour confinement under an innovative initiative called "Feel the Jail" launched by the prisons department for people who want to spend time behind the bars and experience the feeling of being under detention. During the stay, the inmates will be provided with a prison uniform made of khadi, a steel plate and glass, a mug, washing and bathing soaps, bedding and other facilities as per state prison manual, in addition to a fan.



### **AS SOLDIERS WATCH, HOMEMAKER SAVES INJURED JAWAN'S LIFE (TOI)**

Quick thinking by a homemaker from Kotkhai area of Simla saved the life of a jawan who had lost his footing and plunged into a 50-foot-deep roadside ditch while trying to escape a pack of stray dogs.

It was Aug 20'2016, Assam Rifle men were under training at Jutogh Cantt in Simla. Suddenly they encountered a herd of dogs turned hostile to the group. Panicked by the sight of the swiftly approaching dogs, one of the soldiers, Mukesh Kumar, fell into a pit while fleeing from them. He hit a stone injuring his head. And becoming unconscious. A local resident Ms Veena Sharma, 42, rushed to the site on hearing their cries for help. Even as the soldier's mates stood by helplessly thinking him to be dead, she lost no time in trying to revive him by performing mouth-to-mouth resuscitation. There were no public means to shift him to hospital. Her father Mr Ramesh Sharma joined his daughter to carry the injured soldier to Jutogh military hospital in his own car. He was then referred to Indira Gandhi Medical College and Hospital in Shimla, where timely specialized treatment saved his life

It was a very brave and bold gesture on part of the lady angel.





## FABRIC OF SECULAR INDIA

Secular India is a land of multiplicity in terms of religion, casts, regional languages with varying sub-regional dialects, culture and cultural heritage. Virtually one can have world Darshan in India. Here are the important religions, India harness with equal respect freedom to each other.

### Hinduism

Hinduism is one of the oldest religion of the world. In India 79.8% of the population is Hindu. It is the world's third largest religion. Hinduism is also known as "Sanatan Dharma" or the everlasting religion.

### Islam

The second largest population in India is Muslim, the followers of Islam. They make 14.3 per cent of India's population. Islam entered in India sometimes in 8th century.

### Christians

Christianity is the third largest religion followed in India. It constitutes 2.3 % of the total population. It is said that the Christian population in India is more than the entire population of Australia and New Zealand or total population of a number of countries in Europe

### Sikhism

Sikhs form about 1.7 per cent of Indian population. In comparison to other religions, Sikhism is a younger religion. The word 'Sikh' means a disciple and thus Sikhism is essentially the path of discipleship. The true Sikh remains unattached to worldly

### Buddhism

Budhism is followed by 0.7% of Indian population. It is spread mostly in countries like Central Asia, Sri Lanka, South East Asia, as well as the East Asian countries of China, Mongolia, Korea, Japan and Vietnam. Originated in India, the philosophy of Buddhism is based on the teachings of Lord Buddha, Siddhartha Gautama (563 and 483 BC), a royal prince of Kapilvastu. .

### Jainism

0.4%

Jains form 0.4% of the Indian population. For centuries, Jains are famous as community of traders and merchants. The states of Gujarat and Rajasthan have the highest concentration of Jain population in India. The Jain religion is traced to Vardhamana Mahavira (The Great Hero 599-527 B.C.).

### Zoroastrian

This is the religion followed by Parsis. Though it makes a very small percentage of the Indian population, their presence is significant specially in the field of Industrial houses. Most of them live in Maharashtra (mainly in Mumbai) and the rest in Gujarat.

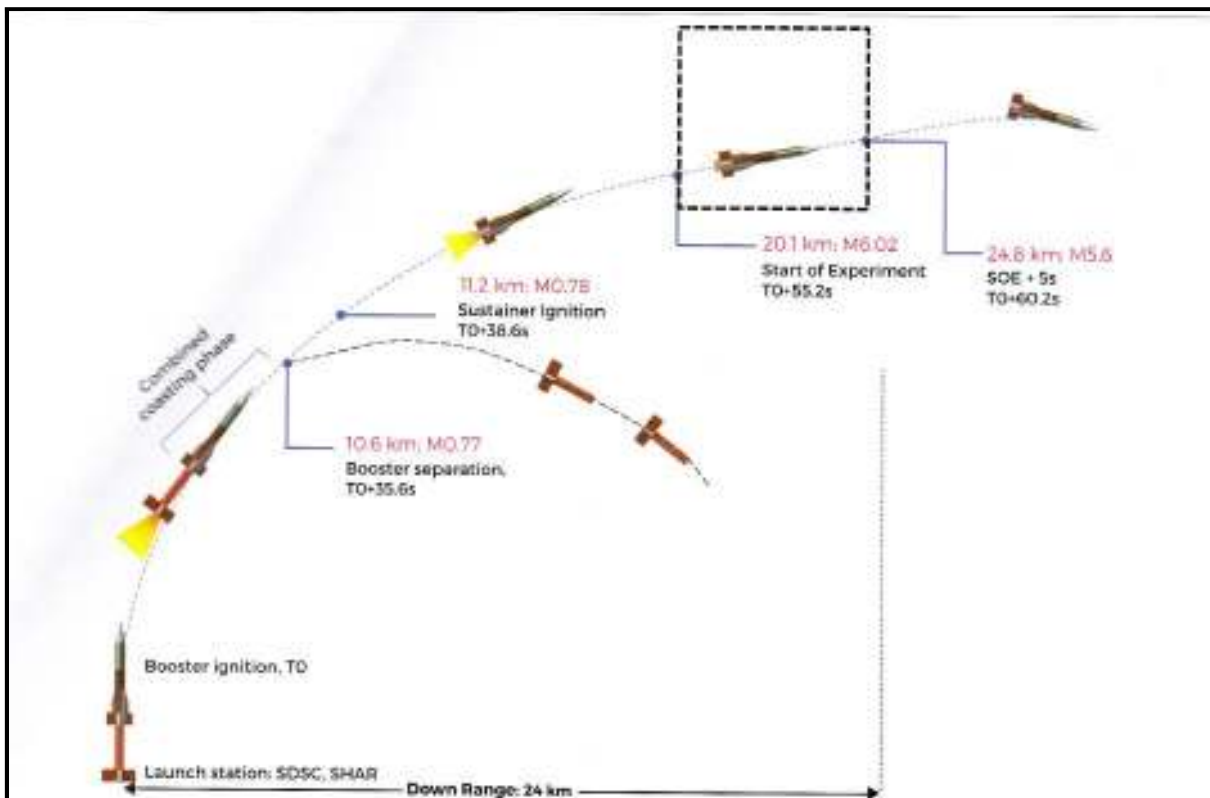
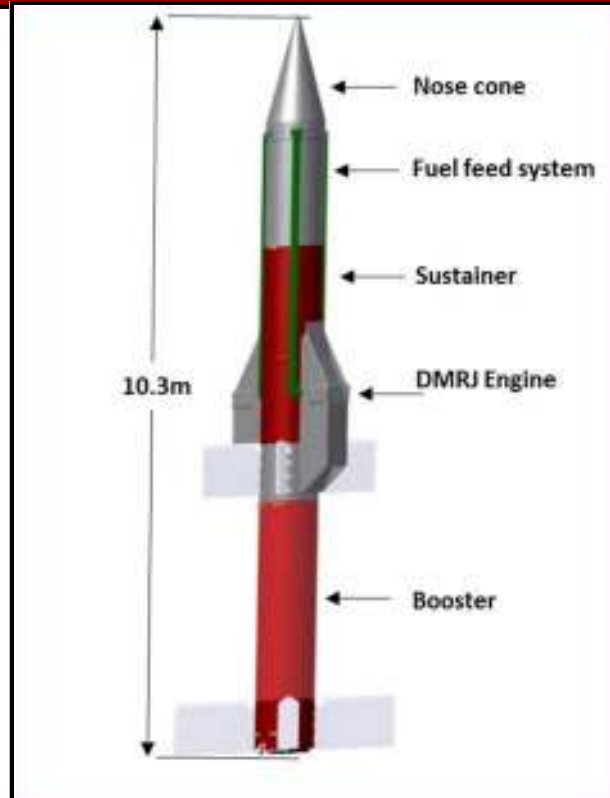


## SCIENCE &amp; TECHNOLOGY

## SCRAMJET ENGINE FLIGHT TESTED ON A ROCKET

(Vijai Kumar, Retired ISRO Engineer, BE-Mech-1967, vijai11946@yahoo.co.uk)

India excelled yet again in developing and successfully testing the advanced rocket propulsion technology "SCRAMJET ENGINE". The jet propelled engine was launched onboard a two stage sounding rocket on Aug 28'2016 from the Indian Space Port 'Satish Dhawan Space Centre (SDSC)', Sriharikota in Nellore District of Andhra Pradesh. The engine was mounted at the aft end of the sustainer (second stage). The first stage took the rocket upto about 10 Km and got separated. Shortly afterwards the sustainer was ignited to boost the remaining rocket further and take it to an altitude of about 19 Km. At this point it acquired the speed of about 2 Km/sec (7410 Km/hr) which means six times the speed of sound. The SCRAMJET engine was ignited at this moment. It may be noted that the SCRAMJET engine can be activated only at MACH no 6 and above. Till then the rocket is pushed up by the sustainer rocket. The engine



behaved well as desired for about 6 seconds, ringing climax of the excitement.

The success in SCRAMJET technology development signifies a big breakthrough for India, since it becomes the fourth country of world to acquire this technology. Other countries are USA, RUSSIA and ESA (European Space Agency) represented by France. The advantage of this technology is that the weight of the rocket can substantially be reduced, as it does not have to carry the oxidiser onboard. With SCRAMJET propulsion, the cost of the rocket will also reduce significantly. Limitation of the technology is that it can operate within the atmosphere (50 Km).

Now the readers must be wondering as to what

So the rocket is so designed as to enable and control this air to enter the combustion chamber. The opening in the rocket looks similar to what one can see in the jet aircraft engines.

The speed of air intake is more than Mach 3 in RAMJET and 6 in SCRAMJET engines. Complexity for a stable combustion in SCRAMJET engine is of one order higher than that of RAMJET. Both of these two engines fall in the category of AIR BREATHING ENGINES since they breath in the atmospheric air. Even the engines of jet aircrafts fall in the same class however the air intake in these engines is much slower (Mach no less than 1). Aircrafts have advantage of having the air available throughout its flight duration since it does not go out of atmosphere. Whereas in case

| Mach no     | Speed Km/sec    | Class of Sonic Speed |
|-------------|-----------------|----------------------|
| Less than 1 | less than 0.343 | sub sonic            |
| Between 1-6 | more than 0.343 | supersonic           |
| More than 6 | more than 2.058 | hypersonic           |

the SCRAMJET technology is all about and what are the complexity and challenges involved in developing it. Have you ever heard of igniting a wick lamp in hurricane and sustain it? Looks like impossible? This is what exactly made possible in a SCRAMJET (supersonic RAMJET) Engine for rockets. The combustion of fuel with air entering at supersonic speed is highly complex phenomena. Fuel to air mixture ration has to be maintained optimally at a fixed value to sustain the combustion throughout. For this to happen the combustion chamber has to be intricately designed. The mixture ratio has to be a realtime controlled feature within fraction of second. The thought is easier than practice. As the rocket moves with supersonic speed, the atmospheric air flows in opposite direction with the same speed, brushing along with the rocket body. If we make an opening in the rocket body, the speeding air will enter into this opening with same speed as that of the rocket.

of rockets (space vehicles), air-breathing is possible for a short duration only as it goes quickly out of atmosphere. A functional schematic diagram can be seen in the picture shown below. In the test flight by ISRO, RAMJET and SCRAMJET engines were used in duel mode.

With the achievement as above, it will open the flood gate for acquiring cost effective and globally competitive rockets for launching satellites and space crafts.

