



HOLISTIC national growth can only come about if all Indians participate, and that includes half our population – that's women!

The National Seminar on Women Leadership in Science and Technology highlighting the contributions of women in science was organised on 8th and 9th March 2017 in New Delhi. The two-day seminar, inaugurated by Hon'ble Minister of Science & Technology and Earth Sciences, Dr. Harsh Vardhan witnessed sessions from eminent women scientists, entrepreneurs, media personalities, and professors from leading Indian universities.

The Seminar was organised by Vigyan Prasar in collaboration with Department of Biotechnology, Government of India on the occasion of the International Women's Day 2017.

Women are still under represented

in advisory for policymaking or as faculty in universities and institutions. Less than ten percent of faculty members in Indian universities are women. Less than 30% of the scientists in government scientific organisations are women. Of the 450 scientists who have won the Shanti Swarup Bhatnagar prize for their contribution to science, only sixteen (less than 3%) are women.

"Good work ethics can make life easy for women and enhance quality of their work," said Dr. Suparna Datta, Professor at BIT Mesra. Increasing the options for re-entry to work after a break in career due to family responsibilities will also promote the entry of women in science, she said.

Women also experience gender-based discrimination at work. We can use technology and internet to change the social constraints that women face, said Dr. Charu Malhotra, Professor at Indian



International Women's Day CELEBRATING CONTRIBUTIONS OF WOMEN IN SCIENCE

Hon'ble Minister Dr. Harsh Vardhan at the inauguration of the Seminar (top) and with a participant (left)

Institute of Public Administration, New Delhi. She emphasised that online hash tag campaigns (like Ring the Bell) and discussions to prevent violence against women have worked in the past. On similar lines, we could start cause-related fund raising to increase awareness about women issues.

There is also a need to increase the visibility of the contribution of women, where media can play a very important role, believes Dr. Gita Bamezai, Professor at the Indian Institute of Mass Communication, New Delhi.

The United Nations sustainable development plan contains 17 goals and 169 targets. The fifth sustainable development goal is a stand-alone gender goal that aims to achieve gender equality and empower all women and girls. "Inclusion of gender equality and empowering women in the UN sustainable development goals is a huge achievement," said Dr. Vinita Sharma, Former Advisor, Department of Science & Technology.

Tribal women of Andhra Pradesh manage most of the activities in the processing of gum karaya, except its sale in the market. Gum karaya is an ingredient in many foods such as sorbets and ketchup, is used in cosmetics, paper and publishing industry, and is even exported to US and Japan. To extract gum karaya, women have to walk 8-10 km



every two days to forests, risking their lives and earning a meager amount of a few hundred rupees per day. S&T can improve the lives of these tribal women who contribute significantly to society, but their efforts often go unnoticed. “The work done by women in society is often invisible,” said Dr. Aasha Kapur Mehta, Professor at Indian Institute of Public Administration, New Delhi.

“We need to understand their lives and invest in them to make them self-sufficient,” said Dr. Rajeshwari Raina, Professor at Shiv Nadar University, Uttar Pradesh.

Women can be empowered by skill building and vocational training programmes, according to Dr. Vijaya Khader, who is the former Dean at the Acharya NG Ranga Agricultural University in Hyderabad. It will improve livelihood, which will further reduce malnutrition and improve the quality of life of both women, and their families, she added.

India has the highest number of women with anemia in South Asia. This is alarming because anaemia causes depression, tiredness, low immunity, high-risk pregnancy, and low birth weight babies – all of which are not healthy for the society, said Padma Shree Dr. Indira Chakravarty. She emphasised that improving the health of women should be the government’s priority.

Dr. Vandana Singh from the Department of Science & Technology elaborated on the scholarships that are available for women to continue their journey with science. DBT’s Biocare scheme also helps women scientists working in universities and institutes to undertake independent R&D projects.

Some of the recommendations coming out from the Seminar included: Flexible working hours at work; Day-care facilities in office; On-campus housing; Ending gender-based discrimination at work; and Increasing funding to enable more women to avail schemes by UGC, DST, and DBT.

Contributed by Bhavya Khullar, *India Science Wire*

Solar-powered Skin Opens NEW POSSIBILITIES for PROSTHETICS

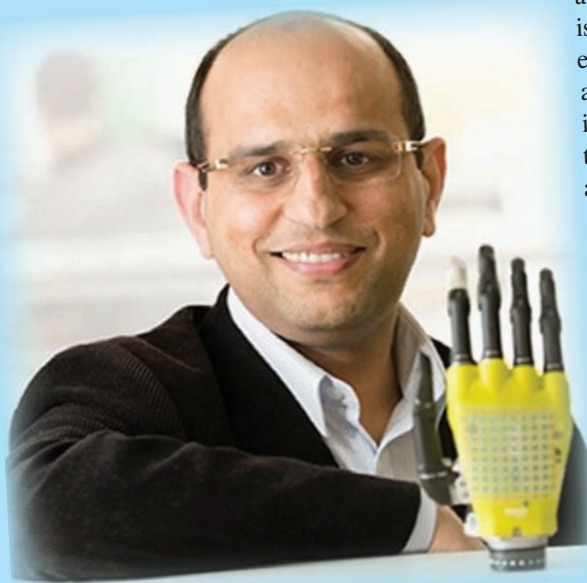
A new way of harnessing the sun’s rays to power ‘synthetic skin’ could help create advanced prosthetic limbs capable of returning the sense of touch to amputees.

Engineers from the University of Glasgow, who have previously developed an ‘electronic skin’ covering for prosthetic hands made from graphene, have found a way to use some of graphene’s remarkable physical properties to use energy from the sun to power the skin.

Graphene is a highly flexible form of graphite which, despite being just

a single atom thick, is stronger than steel, electrically conductive, and transparent. It is graphene’s optical transparency that allows around 98% of the light striking its surface to pass directly through it, making it ideal for gathering energy from the sun to generate power.

A new research paper published in the journal *Advanced Functional Materials*, describes how Dr. Dahiya and colleagues from his



Bendable Electronics and Sensing Technologies (BEST) group have integrated power-generating photovoltaic cells into their electronic skin for the first time.

Dr. Dahiya, from the University of Glasgow’s School of Engineering, said: “Human skin is an incredibly complex system capable of detecting pressure, temperature and texture through an array of neural sensors which carry signals from the skin to the brain. My colleagues and I have already made significant steps in creating prosthetic prototypes which integrate synthetic skin and are capable of making very sensitive pressure measurements. Those measurements mean the prosthetic hand is capable of performing challenging tasks like properly gripping soft materials, which other prosthetics struggle with. We are also using innovative 3D printing strategies to build more affordable sensitive prosthetic limbs, including the formation of a very active student club called ‘Helping Hands’.”

“Skin capable of touch sensitivity also opens the possibility of creating robots capable of making better decisions about human safety,” Dr. Dahiya further said. “A robot working on a construction line, for example, is much less likely to accidentally injure a human if it can feel that a person has unexpectedly entered their area of movement and stop before an injury can occur.”

The team’s paper, titled ‘Energy Autonomous Flexible and Transparent Tactile Skin’, was published in *Advanced Functional Materials*.

Smart Phone Apps in Criminal Investigation



COMPUTERS

and mobile devices are also being used to support crime scene investigators, organisations and the common people to transfer crime related

data. Software are being designed so that the chain of custody of the evidence is maintained and sensitive digital data could be utilised further in court room trials.

Numerous investigators around the world are using android applications to strengthen cyber security, keep them updated with related cases, new laws and amendments through these mobile applications. A recent app Ballistic Energy Calc helps to reconstruct crime scenes by determining ballistic energy of a fired bullet (projectile).

Cargo Decoder is designed to tell exactly what is inside every tanker truck encountered during inspection. It provides information on toxic inhalation hazards, protective distance information and references material to provide safety guidelines to the officials.

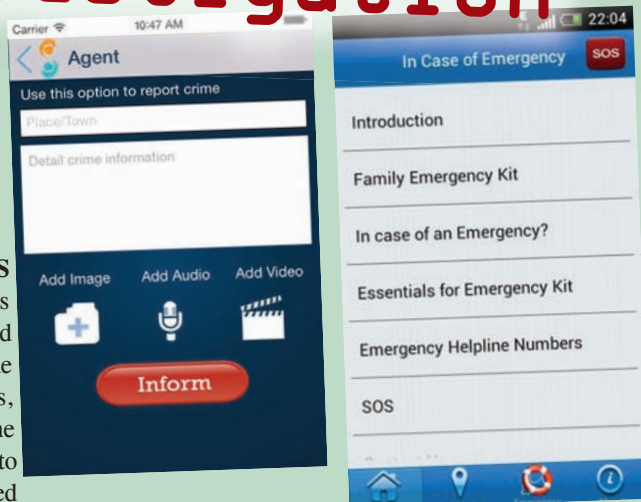
Crime Scene Tracker app was developed to help law enforcement professionals create digital recordings of hints, reminders and pieces of evidence from crime scenes. Crime scene information is superimposed on a Google Map for pinpointing accuracy and can be emailed or printed to be used by other officers.

Tatpar is an app functional in Uttar Pradesh. It provides instant police assistance in case of emergency by simply pressing a button on the mobile phone. After initiation of the alert, the location of the user is sent to the emergency response control room, which can be traced back to apprehend the criminal.

Vahan Info includes vehicle details of 19 crore Indian vehicles registered till date. The vehicle number can be fetched by using the vehicle details "VIN (Vehicle Identification Number) or registration number. It will be helpful in determining the address of suspects in hit-and-run cases and other crimes. This application will prove useful to people who are buying second hand cars also.

Setu is an Android app initiative by Surat police authorities. It provides people the power to lodge complaints and share audio/visual data related to cognizable crimes.

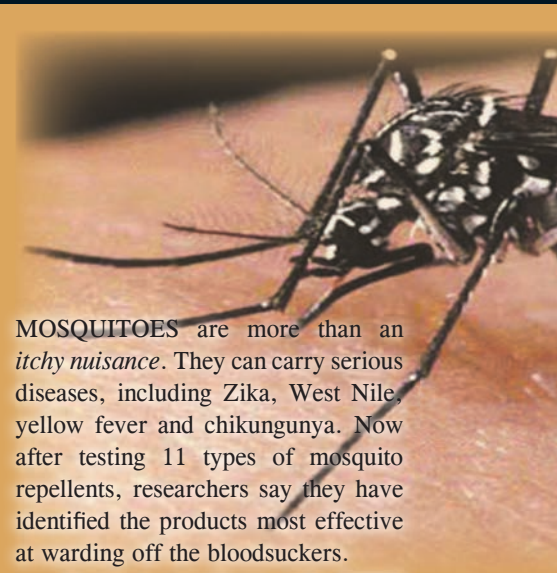
ICE App of Mumbai Police creates public awareness about the preparations for the first response in case of identified emergency situations. Similar to Setu and Tatpar, users can send SOS distress messages with just one touch. Another feature enables the user to find the nearest hospital based on their GPS locations. It also searches for hospitals across major cities in the country.



West Bengal Governor Mr Keshari Nath Tripathi delivering the opening lecture



Mr Madhur Bhandarkar at the film festival



MOSQUITOES are more than an itchy nuisance. They can carry serious diseases, including Zika, West Nile, yellow fever and chikungunya. Now after testing 11 types of mosquito repellents, researchers say they have identified the products most effective at warding off the bloodsuckers.

Spray-on repellents with DEET or a refined tree extract called oil of lemon eucalyptus are most likely to

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Winners of the Technical Excellence Award



Winners in the category 'Films made by school students'

7th National Science FILM FESTIVAL AND COMPETITION - 2017

VIGYAN Prasara organised the 7th National Science Film Festival at the Birla Industrial & Technological Museum, Kolkata from 14 to 18 February 2017.

There were 176 entries received in different categories like (a) Films made by organisations/institutions, (b) Films made by independent film makers/production houses, (c) Films made by college students, (d) Films made by school students and (e) Films made on spot mobile phone.

The national jury comprised well

known and prominent personalities like Professor Partha Ghose, Eminent Film Personality Ms Reena Mohan, Shri Arun Chadha, Prof. Amaresh Chakraborty, Prof. Shambhu Nath Singh, Shri Anwar Jamal, Prof. Syamal Chakrabarti, Ms Smriti Nevatia, and Ms Ranu Ghosh.

The Science Film Festival was inaugurated on 14 February 2017 by West Bengal Governor Keshari Nath Tripathi. Shri A.S. Manekar, Director General, National Council of Science Museums, gave the opening remarks

and Sk. Emdadul Islam, Director, BITM welcomed the participants.

Noted film maker Mr Goutam Ghose, Dr. R. Gopichandran, Director, Vigyan Prasara and Mr Nimish Kapoor, Scientist and Convener, Science Film Festival Division, Vigyan Prasara were also present.

The award presentation ceremony was held on 18 February 2017-18 at BITM, Kolkata. The Chief Guest was prominent film maker Mr Madhur Bhandarkar, and the Guest of Honour was Professor Partha Ghose.

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Getting Rid of the ITCHY NUISANCE

keep you bite-free, the scientists report online February 16 in the *Journal of Insect Science*.

The OFF! Clip-On repellent, which puffs out a vapour of the chemical metofluthrin, killed every mosquito in the cage. But co-author

Immo Hansen, an insect physiologist at New Mexico State University in Las Cruces, says the mosquitoes couldn't escape, so they probably got a higher dose than they would in a natural setting.

Other tested repellents such as a citronella candle simply don't work, says the study. "There are a whole lot of different products out on the market that are sold as mosquito repellents, and most of them haven't ever been

tested in a scientific setting," Hansen says.

To evaluate the repellents, the researchers used a person, safely protected from bites, as "bait". The volunteer sat in a wind tunnel as her alluring scent – and repelling chemicals – were pulled toward a cage of *Aedes aegypti* mosquitoes.

