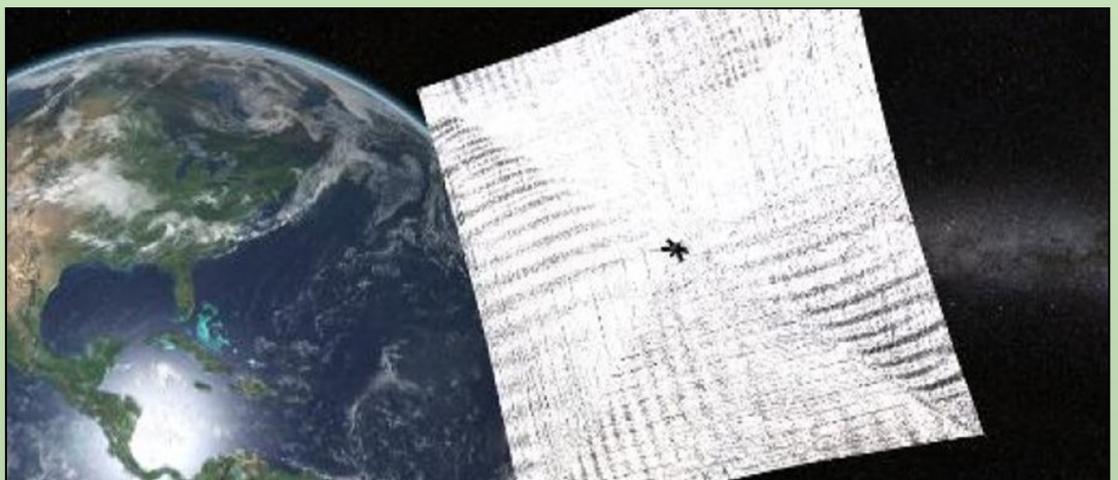




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Wireless energy transfer achieved across 55m



Latest Energy and Environment News

- World's largest solar plant (capacity of 750 MW) has been commissioned to be installed in Rewa district of M.P., India.
- Latin American country Costa Rica has achieved the milestone of generating 100 % of its energy from renewable resources for first 75 days of 2015.
- This year, The Stockholm Water Prize, commonly known as "the Nobel Prize for water" has been given to an Indian campaigner, Rajendra Singh (dubbed as Water Man of India) who has brought water to 1,000 villages.

Researchers from the Japan Aerospace Exploration Agency (JAXA) announced that they have used microwaves to deliver 1.8 kilowatts of power - just enough to power a kettle - through the air to a receiver 55 meters away. The beam was transmitted with a great degree of accuracy, showing the technique may be used on a larger scale. It's a game-changing achievement for electricity generation that could one day allow us to place huge solar sheets in space and beam the energy back to Earth. Japan is dependent on imports for most of its energy needs, feeding a desire to develop their own systems. The nation had utilized nuclear reactors to generate electricity, but those plants shut down in the wake of the 2011 Fukushima disaster. We are all getting excited about the potential of wireless energy transfer here on Earth, with researchers recently developing technology that uses a magnetic field to charge devices from five meters away, and a router that can beam

electricity to up to 12 devices at once. But even though this is pretty impressive, it's got nothing on the distance of JAXA's wireless energy transfer. Solar energy might, one day, be collected by massive solar panels in space, and the energy generated from the systems could be sent to Earth in the form of microwaves. Such networks for generating electricity in space would have some advantages over ground-based systems. Solar collectors in space would not be subject to the cycles of day or night, or cloudy conditions. Additional uses for the transmitters could include charging electric cars, or sending electricity to remote regions in the wake of natural and man made disasters. Future development of the current system could produce a device capable of transmitting and receiving energy from a ocean platforms, far from the nearest coast.

Source : www.phys.org



Wonder Material Graphene to revolutionize Lighting

After years of experiments and research, scientists have finally created the first commercially viable graphene product: a light bulb. It is brighter, cheaper, longer-lasting and uses 10 percent less energy than even the best LEDs as its creators expect.

The dimmable lightbulb contains a filament-shaped LED that's coated in graphene, a one-atom-thick material that's 200 times stronger than steel, super flexible and also extremely conductive. If all goes to plan, this will be the first commercial graphene product to hit the market.

According to the developers at the University of Manchester in the UK, where this wonder material was first discovered, it's the conductive ability of graphene that makes the light bulbs so efficient.

Graphene is world's first 2D material because it is only one atom thick. As



a result, it has phenomenal properties that make it so attractive: it is 200 times stronger than steel, harder than diamond, and more conductive than silicon. It's been dubbed as the "Wonder Material". In its simplest form, graphene is a single layer of carbon atoms arranged in a hexagon. It looks like a honeycomb under a microscope, and that structure is the secret to its incredible strength. In non-scientific parlance, graphene makes electrons go all wobbly.

Cutting the energy we need to light our homes and businesses by 10 percent is an ambitious start, but there's plenty of potential commercial applications in the pipeline, ranging from doubling the efficiency of solar cells to making smaller transistors. Some of the futuristic ideas that have been floated for graphene have been truly awe-inspiring, such as the creation of a "space elevator" extending skyward to outer space.

Other applications won't be as quick to hit the market, but its pretty exciting, like graphene's potential to create technology that can filter hydrogen fuel right out of thin air or produce a 'million-fold' increase in our hard drive storage.

Source : www.manchester.ac.uk

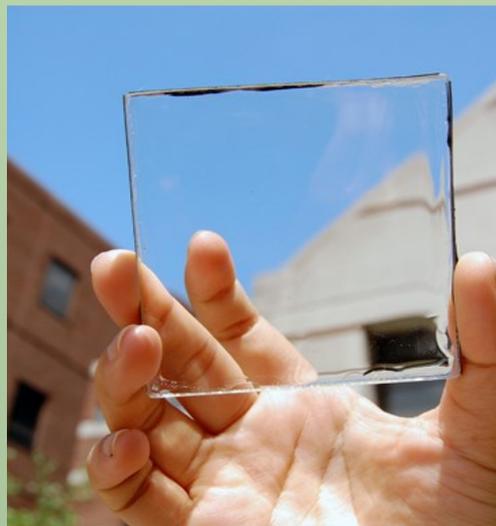
Solar Panel that doesn't Block the View

Researchers at Michigan State University have developed a new type of solar concentrator that when placed over a window creates solar energy while allowing people to actually see through the window. It is called a "Transparent luminescent solar concentrator" and can be used on buildings, cell phones and any other device that has a clear surface.

Research in the production of energy from solar cells placed around luminescent plastic-like materials is not new. These past efforts, however, have yielded poor results – the energy production was inefficient and the materials were highly colored.

The solar harvesting system uses small organic molecules developed by research team to absorb specific non-visible wavelengths of sunlight.

These materials can be tuned to pick up just the ultraviolet and the near



infrared wavelengths that then 'glow' at another wavelength in the infrared. The "glowing" infrared light is guided to the edge of the plastic where it is converted to electricity by thin strips of photovoltaic solar cells. Because the materials do not absorb or emit light in the visible spectrum, they look exceptionally transparent to the human eye.

One of the benefits of this new development is its flexibility. While the technology is at an early stage, it has the potential to be scaled to commercial or industrial applications with an affordable cost. It can be used on tall buildings with lots of windows or any kind of mobile device that demands high aesthetic quality like a phone or e-reader. Ultimate aim is to make solar harvesting surfaces that you do not even know are there.

Researchers said more work is needed in order to improve its energy-producing efficiency. Currently it is able to produce a solar conversion efficiency close to 1 percent, but noted they aim to reach efficiencies beyond 5 percent when fully optimized. The best colored LSC has an efficiency of around 7 percent.

Source : msutoday.msu.edu

Reinforced Concrete with Plastic Waste

Researchers from James Cook University in Australia have successfully reinforced concrete with plastic waste, paving way for the first large-scale sustainable construction practice. The revolutionary practice can surely have a huge impact on the ecology by ensuring plastic waste is reused and environmental impact of concrete gets reduced.

Using recycled plastic, researchers were able to get more than a 90 percent saving on CO2 emissions and fossil fuel usage compared to using the traditional steel mesh reinforcing. The recycled plastic also has obvious environmental advantages over using virgin plastic fibers.

The concrete was reinforced using recycled polypropylene plastic instead, and strength and durability



tests show that the end result could be used to build footpaths and precast elements such as drainage pits and concrete sleepers.

Concrete is the second most-used material on Earth. In fact, it is the most used artificial material and second only to water when all the materials are taken into consideration. Production of cement, one of concrete's key ingredients, is alone responsible for 5 percent of the

world's annual CO2 production.

While the percentage might not sound much, plastic on the other hand, which is derived from crude oil, is responsible for generation of millions of tons of waste each year that is not only found on land, but in the ocean as well.

Reinforcing concrete with plastic can ensure the end result is not only strong and durable, but sustainable and eco-friendly as well. Researchers are also working on making concrete more sustainable in other ways, such as replacing natural sand with 100 percent crusher dust, which is a by product of stone quarries and replacing cement with up to 30 percent mining waste.

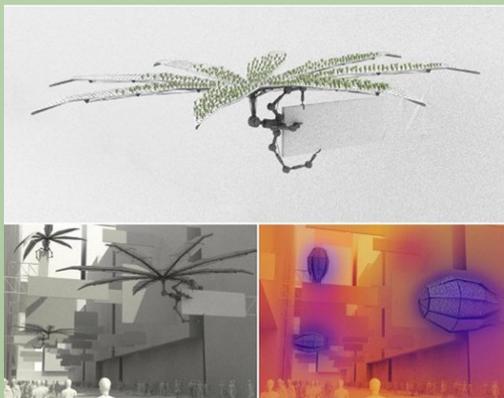
Source : www-public.jcu.edu.au

Parasitic drones to suck up carbon and turn it into fuel

A team of designers in Hong Kong has come up with one of the coolest and creepiest air-filtering solutions ever heard- winged parasitic drones that come out at night, steal energy from neon lights and then use it to grow a forest of tiny air purifying plants on their backs. Not only would the 'drones' grow CO2 absorbing plants, they would also be creating a new source of renewable fuel.

The team behind the parasitic robots, NAS-DRA, has explained that the drones would latch onto neon billboards in big cities such as Hong Kong with their insect-like legs.

During daylight, they'd perch on buildings, their plant-covered wings spread, quietly sucking up urban pollution through a carbon-absorbent polymer paint. At night, when the billboards light up, the drones would attach to them and use the heat given



off by the neon signs to turn that carbon into a source of energy. Heating up the polymer paint to a certain temperature would release the CO2, which could be collected and used in energy production.

That CO2 could also be used to grow plants on the robots' wings, which will help it filter the air and also could be used as hydroponic farms. And the organic waste from these plants could then be converted into biogas, and any left over CO2 would be used to create methane.

Plant and drone will work as hybrid, because ultimate goal is to reduce CO2 level. The generated fuel would power the robot itself, meaning that it would be self-sustaining.

It's purely fighting for a green on the street, for less air pollution, light pollution, noise pollution with the use of modern technology.

Of course, we're still a long way from seeing these drones being released. Researchers over at the University of California, Los Angeles, are now working on the robotic design of these flying parasites, including the carbon - absorbing polymer paint. But NAS-DRA report they're hoping to test prototypes of the robots soon.

Source: www.dronelife.com

EARTH HOUR

GLOBAL PARTICIPATING LANDMARKS

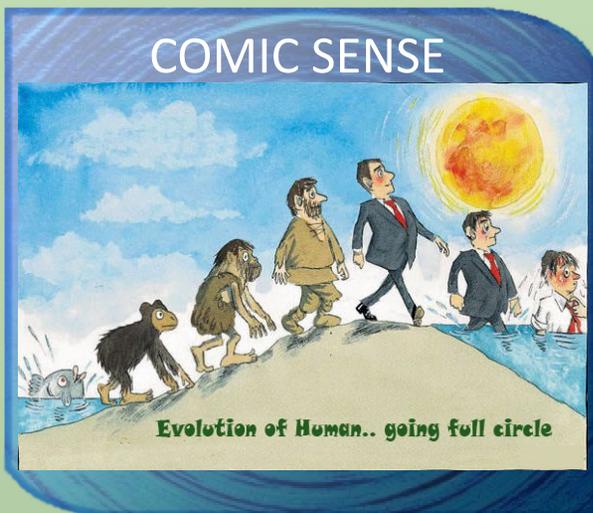
EARTH HOUR STARTS IN SAMOA 8.30PM

EARTH HOUR FINISHES IN COOK ISLANDS 8.30PM

154 countries celebrated Earth Hour - across all 7 continents.

876 000+ people have joined the Earth Hour global Facebook community.

EARTH HOUR WAS EVEN CELEBRATED IN SPACE!
Canadian Astronaut Commander Chris Hadfield tweeted images from the ISS and Russian Cosmonaut sent a video message from space.



Life has always been a caravan. Energy Club is proud to have you as a part of its caravan.

Ankush Mittal
Anshuman
Ashu Airan
Kuldeep Singh Bhati.

Wishing you great success in all the avenues of life. Also thank them for their contribution towards Energy Headlines as well as towards Energy Club.

QUIZ

1. Which organization has started the worldwide famous 'Earth Hour' ?
2. Recently which state banned the use of term "Global warming" ?
3. Which area of the world consumes the most energy (region wise)?

Send your entries to energyclub@mnit.ac.in
Winning entries to win exciting prizes.

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