Scientists develop daylight harvesting 'smart' device for commercial applications

Want to maximise your energy savings? NTU Singapore Scientists may have the answer

By Sarah Rizvi / 31 Mar 2021 / SHARE

Daylight Harvesting is one of the most advanced techniques that allows businesses to conserve energy and bring natural light into their buildings and workspaces.

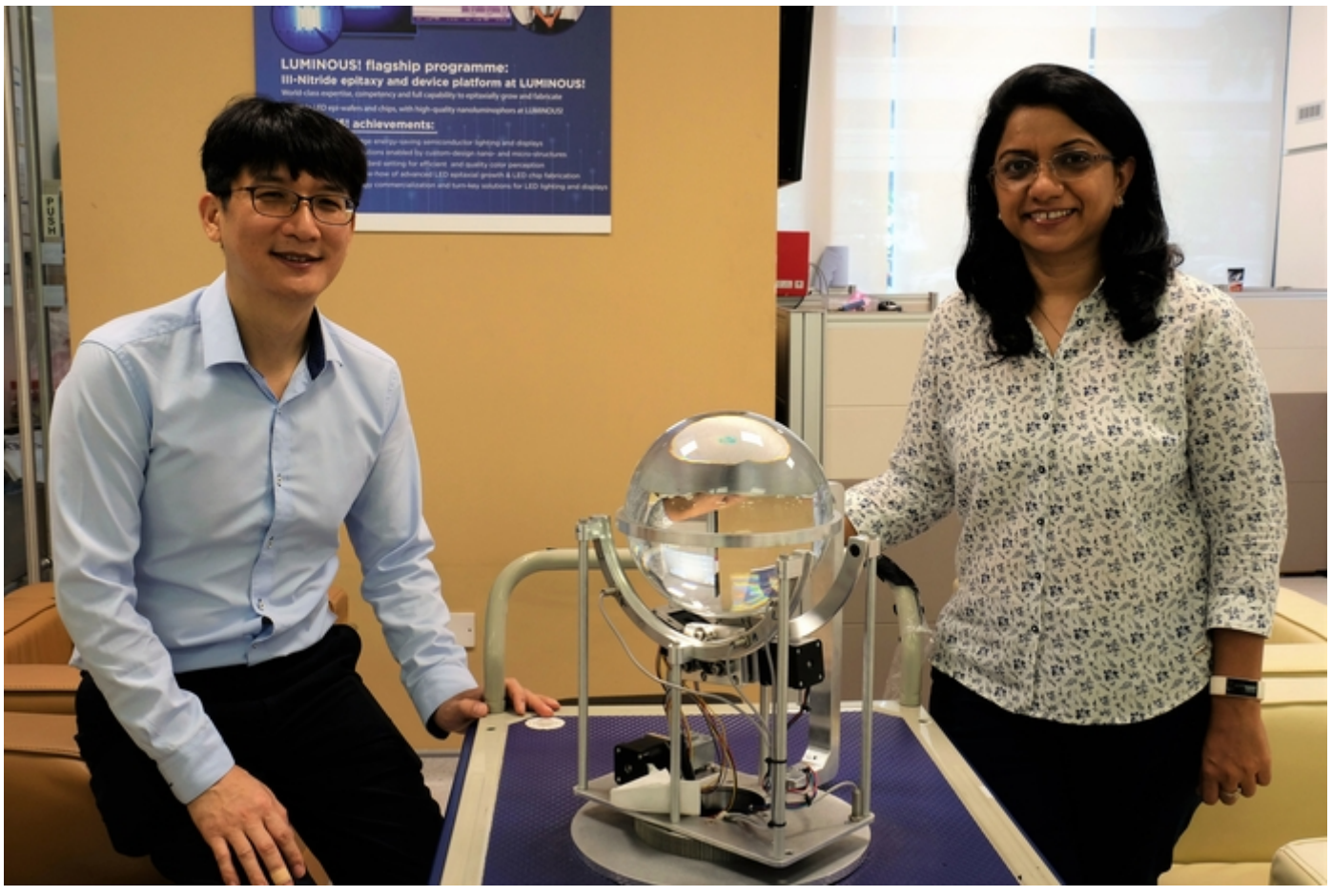
Addressing the ever-increasing demand for energy savings, researchers at Nanyang Technological University Singapore have designed a smart device to light up dark underground spaces in daytime and reduce energy use.

The device will reduce the dependance on traditional energy sources for lighting by harvesting daylight and relaying it to underground spaces, according to NTU.

There is a growing demand for round-the-clock underground lighting in Singapore where authorities envisioning an underground future are on the look-out for space for new infrastructure, storage and utilities. The NTU team has deveveloped this smart device to address this need sustainably.

The device uses an off-the-shelf acrylic ball, a single plastic optical fibre – a type of cable that carries a beam of light from one end to another - and computer chip-assisted motors.

According to NTU researchers, this device can be easily incorporated into existing infrastructure in the urban environment due to its light weight and compact size.



Researchers behind the ‘smart’ device to harvest daylight are Assistant Professor Yoo Seongwoo (left) from the School of Electrical and Electronics Engineering and Dr Charu Goel (right), Principal Research Fellow at NTU’s The Photonics Institute

In experiments in a pitch-black storeroom (to simulate an underground environment), the NTU researchers found the device to be more efficient than LED bulbs, with it, for example, being more than two times brighter than commercially available LEDs.

A Singapore-based company is now looking at ways to potentially incorporate the ‘smart’ device into its industrial projects for improved efficiency and sustainability.