IIT-I's marvel project: A device that filters heat from sunlight

Meenakshi.Sharma
@timesgroup.com

Indore: It's a eureka moment for Indian Institute of Technology (IIT) Indore. A research team has developed technology that will keep houses and cars cooler than external environment by insulating about 50 per cent of direct heat from the sun. The electrochromic device can be used in smart windows, flexible devices, automobile industry to modulate colour and heat with one's requirements without compromising on visibility inside. Currently, the device is 50 per cent heat insulated.. But the quest for perfection is on as the institute is working on enhancing capacity to around 70 per cent for better results.

A team of four members were working on this technology for over three years led by Dr Rajesh Kumar, associate professor of Physics at IIT-Indore, main investigator Anjali Chaudhary, Devesh Pathak and Manushree Tanwar.

Kumar said, "This device insulates the two environments and minimizes flow of heat. It allows normal light to pass through but blocks the heat. It stops approximately 50 per cent heat component of sunlight helping in modulating inside temperature." It is easy to install the device on transparent glass substrates as well as on flexible ones allowing one to integrate them on windows of any shape.

Kumar said that in winters inside temperature can be kept warm with help of this device that can be easily fitted on to any normal glass used in buildings, cars and industries.

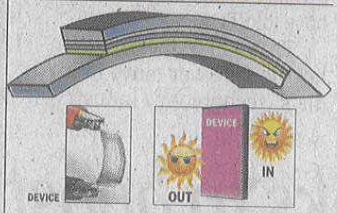
He said major part of sunlight that falls on earth consists of visible and infrared radiation. If these two components are isolated, a better solution to use them can be achieved with minimum utilization of energy.

Currently, almost 41 per cent of energy consumption in the world takes place to maintain appropriate light and temperature conditions in buildings.

Main Investigator Anjali Chaudhary said that the device insulates two sides so that comparatively less energy is required to maintain temperature, either by air conditioning or heating, in one side. The new technology relies on organic materials and consumes very little energy. The institute is planning to apply for patent once performance of device reaches 70 per cent of heat insulation.

HOW THE 'COOL' MACHINE WORKS

- When an electrical bias of 1V is applied, the device becomes transparent allowing only visible light to pass but filters the heat (infrared radiation) from sunlight. This helps a building remain cooler than external environment without compromising on visibility



- This property of the device is used for lighting and thermally insulating features of buildings

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