

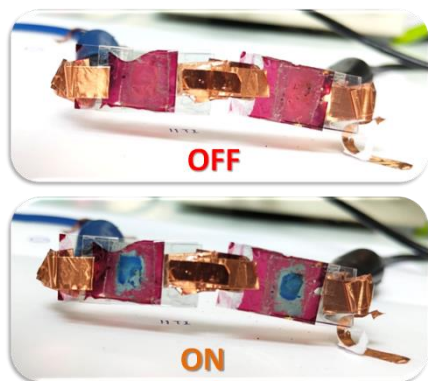
Beat the Heat! IIT Indore's New Goggles Keep Your Eyes Cool and Protected

When the whole world is concerned about the global temperature rise and finding ways to cope up with the heat and while the efforts are being put to reverse the global warming, a news giving some relief comes from the researchers working at IIT Indore. A team led by Professor Rajesh Kumar from the Physics Department at IIT Indore has developed a prototype for a new type of flexible goggles designed to block heat and provide a cooling effect to the eyes. These innovative goggles can actively filter infrared heat using a process called electrochromic color modulation, which allows it to adjust its heat-blocking ability in response to a small electric current. By integrating special materials, the device can quickly shift modes, taking only about a second to change, making it one of the fastest of its kind.

The goggle's unique structure includes a mix of materials, including tungsten chalcogenide and oxide, combined with electrochromic active materials. This combination lets the device block over 15% of heat when the device is ON and maintain a cooler temperature, with a measurable 6°C difference between the two sides of the goggles' surface. This not only makes the goggle effective for cooling but also adds to the comfort of the wearer. The lens switches color between blue and magenta, providing a visible sign of its active heat-filtering state.

In addition to blocking heat, the goggle shows a significant level of light control, with an optical modulation of up to 60%. The prototype is flexible and can be bent or twisted, making it adaptable for various practical applications where heat isolation is needed. This breakthrough points to a future of eye-care gadgets that not only protect from sunlight but also enhance comfort by reducing heat—a promising development for protective eyewear.

"The technology will be of immense use for people working under extreme heat conditions especially our army working in such areas and personnel working in sands. With a little modification in design the same technology can be utilized for making goggles for watching 3D cinema", adds Professor Rajesh. He further highlights that his research team was composed of 50% female scientists, Bhumika Sahu, Anjali Ghanghass, Nikita, Dr. Samera Ivaturi, Dr. Suchita Kandpal with other teammates Love Bansal, Deb Rath, Dr. Subin K.C. and Dr. Ravi Bhatia.



**The device prototype
his current team**



**Professor Rajesh Kumar and
his current team**