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Scientists identify mind-bending, color-changing material with exciting potential to improve energy efficiency in buildings

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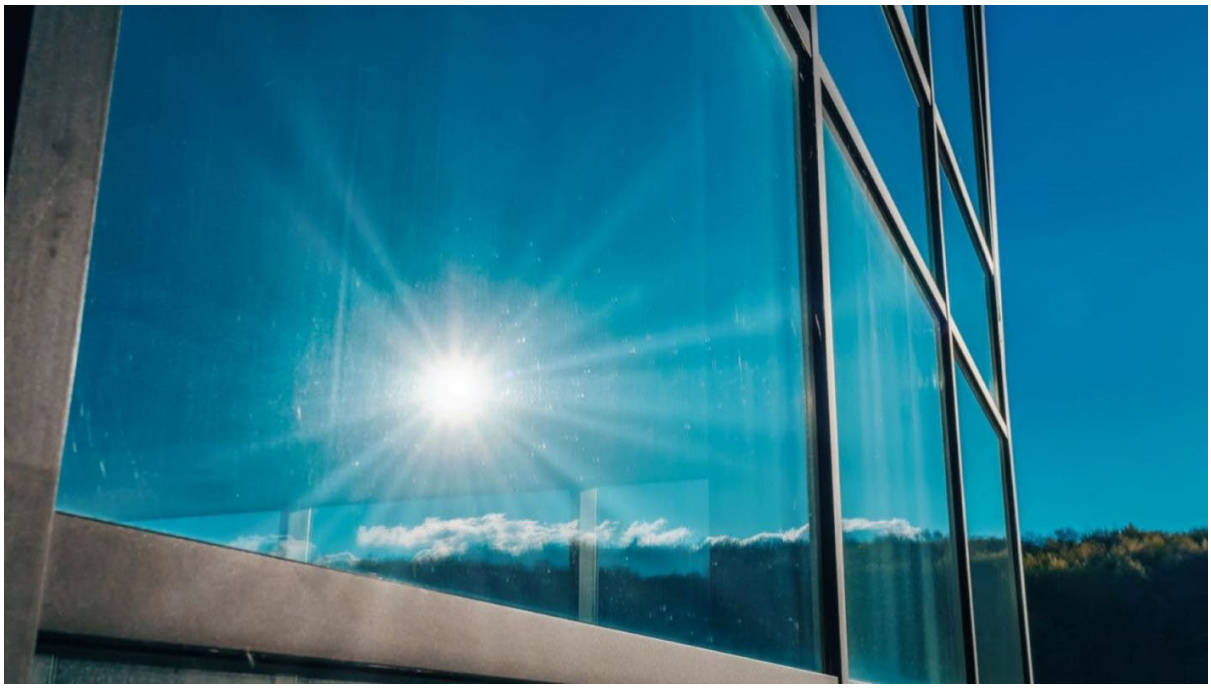

A team of scientists has created new semiconductor materials that could transform how buildings save energy, according to *Tech Xplore*.

Their findings appear in the *Journal of the American Chemical Society*.

The discovery centers on a special type of semiconductor called 2D halide perovskites. These materials switch between different colors at specific temperatures, opening possibilities for smart windows and building coatings that automatically adjust to help keep indoor spaces comfortable.

The research team at Nanyang Technological University made this breakthrough by adding non-toxic dimethyl carbonate into perovskite crystals. This combination created four new types of semiconductors with unique properties.

One of the most exciting findings was that one material could switch between orange and red colors when heated to about 176 degrees Fahrenheit, then return to orange

when cooled down. The team showed this color change could happen repeatedly; at least 25 times in their tests.

These smart materials could be used in building coatings that automatically respond to temperature changes. For example, windows or walls could become more reflective on hot days, helping keep buildings naturally cool without using extra air conditioning. This would reduce both energy bills and air pollution from power plants.

The materials could also improve solar panels and LED lights, making clean energy technology more efficient and affordable for homes and businesses.

The technology builds on years of research into perovskite semiconductors, which scientists have studied intensely because they're cheaper and easier to make than traditional semiconductors. This latest advance makes them even more practical by adding the ability to respond to temperature changes.

These new materials will need more testing before they appear in consumer products. However, the research team has already proved the basic concept works. Going forward, they'll attempt to make the materials more durable and test them in real-world conditions.

https://www.msn.com/en-us/news/technology/scientists-identify-mind-bending-color-changing-material-with-exciting-potential-to-improve-energy-efficiency-in-buildings/ar-AA1wMQ2f?apiversion=v2&noservercache=1&domshim=1&renderwebcomponents=1&wcseo=1&batchservertelemetry=1&noservertelemetry=1