researchers create energy-saving glass that self-adapts across warm and cool seasons

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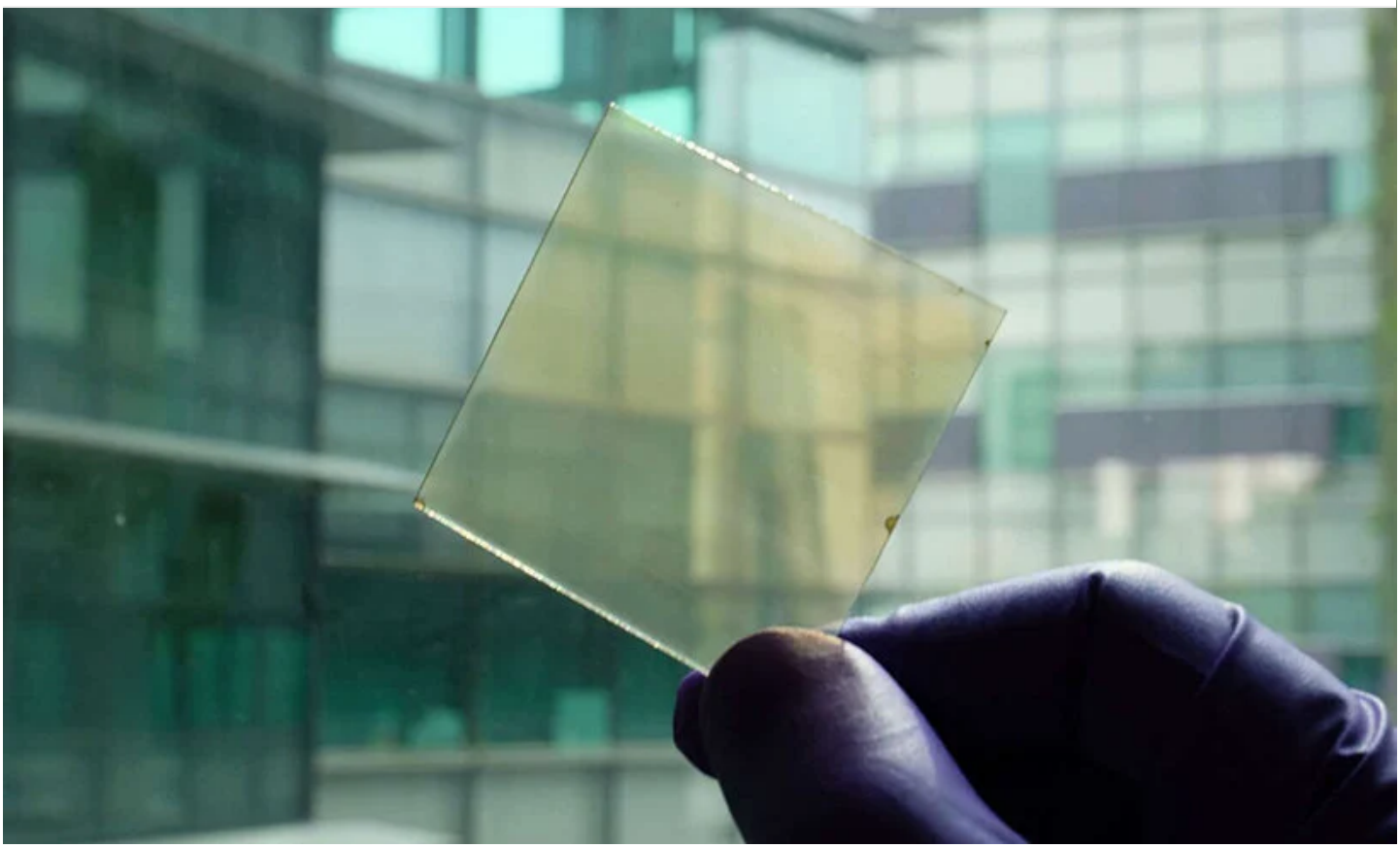
REDUCING ENERGY USAGE IN ANY CLIMATE

with windows being one the most important elements in a building's construction, it is one of the least energy-efficient. a large percentage of energy consumption worldwide can be attributed to window-associated energy consumption, heating and cooling. seeking to create windows that are more energy efficient, a team of scientists from NTU singapore have developed a material which is coated on glass, that 'self-adapts' to heat or cool rooms across different climate zones.

the uniquely responsive coated glass aims to account for areas with fluctuating climates, allowing

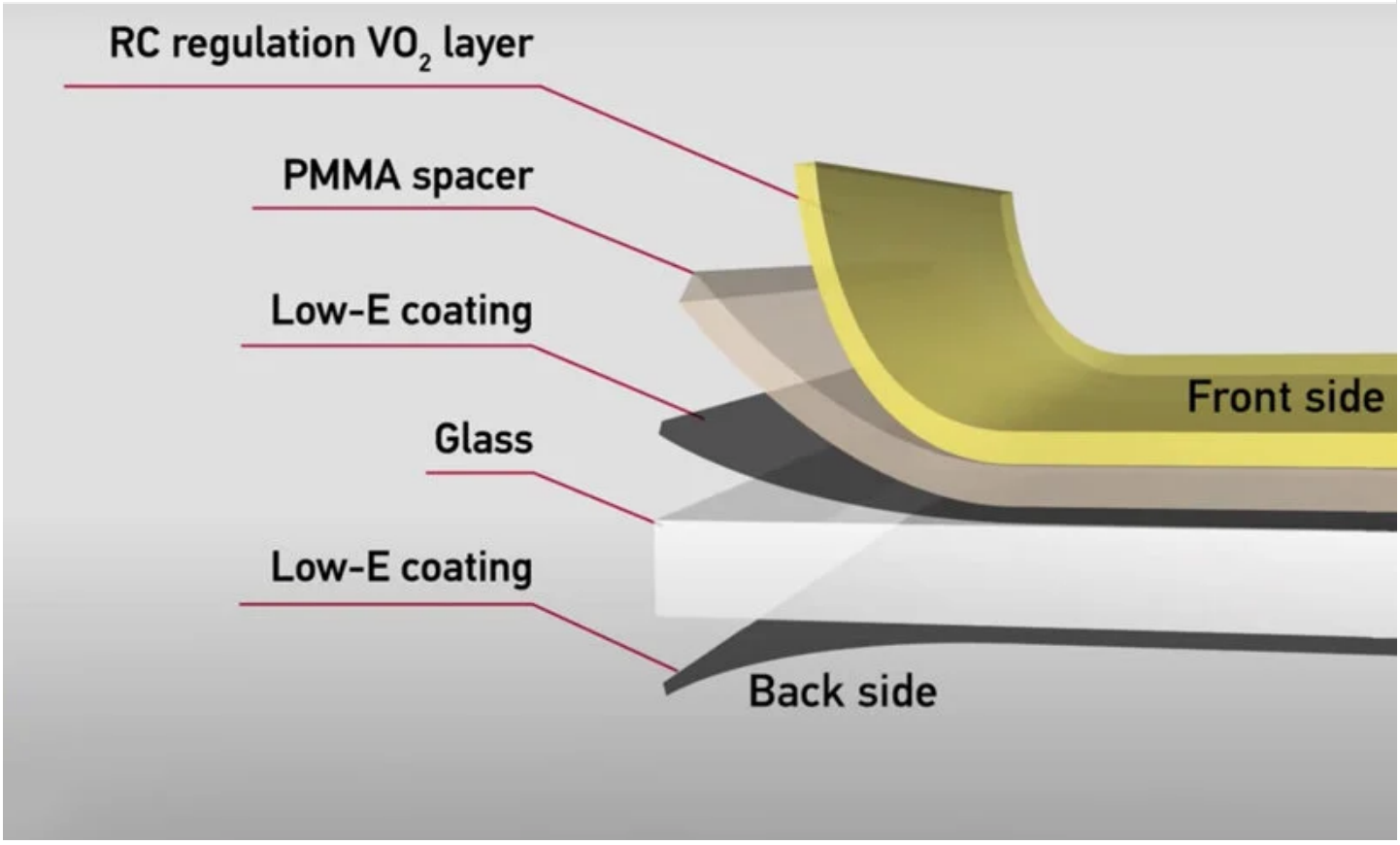


images courtesy of NTU singapore

HOW THE SELF-ADAPTING GLASS WORKS

the international team of researchers at NTU in singapore (see more here) developed the self-adapting glass to help cut energy usage in buildings worldwide. the team explains that the coating works by exploiting the spectrums of light responsible for heating and cooling. during the summer, the glass suppresses solar heating (near infrared light), while boosting radiative cooling (long-wave infrared) — a natural phenomenon where heat emits through surfaces towards the cold universe — to cool the room. during the winter, it does the opposite to warm up the room.

in lab tests, the glass allowed a controlled amount of heat to emit in various conditions — from room temperature, to temperatures reaching 160 degrees fahrenheit — proving its ability to actively respond to changing climate conditions. the team found the glass they developed showed energy savings in both warm and cool seasons, with an overall energy-saving performance of up to 9.5% when compared to commercially available low-emissivity glass in a simulated medium-sized office building.



a patent has been filed in singapore for the technology. next, the team aims to achieve even higher energy-saving performance by further developing its nanocomposite coating.

project info:

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study via NTU, and reported in science