



**National Research
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Professor Young Min Song's research team has developed eco-friendly cooling materials in various colors (National Research Foundation of Korea)

- Flexible and colorful colors are added to environmentally friendly cooling materials that lowers the temperature products and buildings. GIST (President Seung Hyeon Moon) – Professor Young Min Song of the School of Electrical Engineering and Computer Science has developed a bendable color cooling material that does not require power supply.
- Eco-friendly cooling materials have recently been emphasized in environmental issues, such as depletion of fossil fuels and global warming. Among them, passive fire protection material emitting infrared light, reducing ambient temperature, and minimizing power consumption are actively studied.
- However, most of them are silver or white to reflect the sunlight, causing severe light pollution. In addition, it is made of rigid material with no flexibility, so it is only manufactured as a flat piece with a somewhat limited range of utilization.

- The research team overcame the limitations of these existing technologies and developed flexible cooling radiating materials with various colors.
 - The developed material consists of amplifying visible light to express color and to radiate long-infrared radiation for cooling. The color portion is composed of silver silicate and the color can be selectively implemented by controlling the thickness of the silicon dioxide layer which is an insulator.
 - Subsequently, silicon nitride and silicon dioxide were successively layered to effectively heat radiation and cool the surroundings. The surface temperature of the cooling material placed under the sun was up to 5.6 degrees Celsius below the ambient atmosphere.
- Professor Young Min Song said, "This research solves the light pollution issue which is the limit of the existing passive cooling radiating structures, and it also considered aesthetic factors. In addition, it can be used as a flexible material because it has a thickness of several hundred nanometers. It can be used as a visual arts material for the exterior walls of buildings, and it is expected to be used as cooling material for wearable devices."

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