

Thermal responsive fashion

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Project Information (EN)

Thermal responsive fashion: design concept

When we look at history, we seem to think that the only way to regulate your body's heat is to take off or put on your clothes. As technology continues to evolve, smart thermal inks offer the possibility of creating ambient temperature responsive clothing, and the team has realized this vision through a cross-fertilization of design and technology. The thermal responsive fashion design can self-adjust to the ambient temperature, thus achieving automatic temperature control of the garment without the need to add or remove clothes.

Dynamic-thermo ink

Dynamic-thermo ink is a composite of thermally responsive scattering nanocrystalline spheres and graphene sheets, which can effectively reflect the ambient light source and radiate its own infrared heat to achieve cooling at high temperature; at low temperature, the ink shows black surface phase switching for strong light absorption and warmth, thus achieving human comfort in high and low temperature environments. Constant temperature control. The phase switching temperature of the ink can be freely customized to realize the intelligent human thermal regulation function in different seasons and environments.

Design Process

Based on the data of human body thermal imaging, this project uses Grasshopper software to generate different graphic arrays and design the arrangement of intelligent thermal control inks by region to realize the function of temperature control of garments on demand. With the help of special digital printing technology, different color layers are mixed with intelligent thermal control ink and printed on the garment fabric. Based on the design of outdoor breathability and sports comfort, the thermal control ink on the surface of the garment intelligently responds to the temperature change of the wearer in the outdoors and performs human heat regulation to meet different wearing scenarios and temperature requirements. The heat control ink in different areas is gradually activated with the continuous change of day and night temperature. The ink turns from black to white, revealing the underlying color and graphic information first while the temperature gradually rises; while the temperature gradually falls, the ink turns black and begins to absorb heat radiation, raising the surface temperature of the garment for independent heating.

Image List

Filename	Caption	Credit
ddw-thermal-responsive-fashion_1662191836.jpg	Thermal responsive fashion	
0-thermal-responsive-fashion-2_1662191958.jpg	Intelligent thermal control pattern design	
thermal-responsive-fashion-3_1662191969.jpg	Removability design	
04_1662191975.jpg	Thermal responsive fashion Look 1	
05_1662191978.jpg	Thermal responsive fashion Look 2	

The images above are included in the ZIP under /images.