

Creation of Smart Textiles with High Visibility and Persistence Using High-Visibility Safety Clothing and Novel Light-Storing Fabrics Creation of smart textiles for the safety of the socially vulnerable

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Abstracts

This research proposes a design guideline for high-visibility safety clothing by creating a luminescent fabric using a yarn with a luminescent material kneaded into it.

The phosphorescent material has the property of storing light and becoming phosphorescent in the dark. The realization of highly visible phosphorescent safety clothing will enable victims to visually confirm the presence of rescuers in the event of a disaster, and will enable rescuers to shorten the time required for rescue operations. In addition, it can be expected to reduce the number of traffic accidents at night during normal times, especially for the socially vulnerable, and to alleviate the anxiety of both pedestrians and drivers.

We investigated the mechanical properties and consumption performance of the fabric, and measured the effects of phosphorescence on the physiological and psychological responses of people who perceive phosphorescence.

The results showed that the phosphorescent luminance of the woven phosphorescent fabrics was lower than that of ordinary phosphorescent materials, but the warm-colored phosphorescent fabrics were highly visible.

In addition, salivary amylase activity and psychometric values tended to increase as more phosphorescent fabrics were placed in the design of high-visibility safety clothing.