

Shadow-free UV-light Based Self-disinfecting Surfaces

New integrated UV-light technology eliminates the shadow effect in disinfection, reduces power consumption, and removes the need for bulky external light sources.

Decontamination via UV light is used on surfaces and water. The use of UV light as a disinfectant is popular in hospitals when it comes to cleaning surfaces unable to sustain chemicals. Additionally, chemicals are expensive and dangerous; there is also an economical and safety benefit. There is no record of any bacteria showing resistance to this method. However, for the process to be successful, the lighting source has to be within a certain distance of the surface. Due to the size of the source, it is difficult to be in close proximity; this decreases the amount of power received by the surface and increases the potential of the shadow effect. The shadow effect is one of the main issues with the current approach. If anything is blocking the light from reaching the surface (causing a shadow), then that part of the surface will not be disinfected. The need is a solution to the shadow effect.

Researchers at Purdue University developed a new approach to disinfection using UV light which eliminates the shadow effect, requires less power, and eliminates the current bulky light sources. The shadow effect is eliminated when the UV-light source exists in the surface, itself. Additionally, more space becomes available when extra equipment is no longer required. Initially, such changes would have the greatest impact on hospitals and water decontamination. However, this could eventually minimize the use of chemicals in general.

Advantages:

- The entire surface area is covered
- Requires less power
- More space becomes available since additional equipment (lighting) is no longer required

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Category
GreenTech/Water & Resource
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Potential Applications:

-Disinfection of surface areas

-Disinfection of water

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