

Introduction of 222nm Far UVC Working Principle and Applications

This article introduces what is Far UVC and the relative products, At the end of this article, there shows some applications of the 222nm Far UVC.

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/EINPresswire.com/ -- 1. Brief introduction to Far UVC

Before talking about Far UVC, here is a briefly introduction about UVC. UVC light refers to light with a wavelength within 200nm to 280nm. As known to all, the light in this wavelength can eliminate 99.9% of pathogens such as viruses, bacteria, fungi and mold spores. Most traditional UVC disinfection products (such as low-pressure mercury lamps) mostly use 254nm wavelength energy, because the sterilization effect in this wavelength is the best. UVC LED is a product that has emerged in recent

years, and it is also a popular disinfection product, with a general wavelength from 260nm to 280nm. There are also some broad-spectrum ultraviolet products that are a combination of UVA, UVB and UVC wavelengths. After studies found that UVC light can kill SARS-CoV-2 which causes COVID-19, more and more people began to buy UVC products to sterilize and keep health.

Far UVC is a part of UVC, the wavelength is between 200nm~230nm. Far UVC mainly used for wavelengths in the range of 207nm~222nm, and most far UVC products contains 222nm wavelength light. Both UVC and far UVC can destroy the molecular structure of DNA or RNA in microbial cells, causing growth cell death and/or regenerative cell death, and achieve the effect of sterilization and disinfection. Other wavelengths of UVC can cause harm to the human body(eyes and skin), but far UVC can be used for human body disinfection. This is why the 222nm UVC is popular in medical use, [hand and skin disinfection](#) and sterilize baby items.



40W 222nm far UVC excimer module with filter and reflector installed

2. Advantages of Far UVC

Dr. David Brenner of Columbia University began researching far ultraviolet rays before the COVID-19 pandemic, and published on TED about the effect of far ultraviolet rays on the fire extinguishing of super bacteria such as coronavirus and influenza. He believes that far ultraviolet is an effective disinfection method that can be used to limit the spread of SARS-CoV-2 in public places.

Subsequently, the research team of Kobe University and Ushio confirmed through experiments that the human body has no signs of erythema or other adverse reactions after being exposed to 222nm UVC for 3 months. Therefore, there came to a scientific conclusion that 222nm UVC is harmless to human body. In terms of the disinfection effect of the SARS-CoV-2, Kobe University, Ushio and Columbia University have conducted related experiments. They have confirmed that the bactericidal effect of 222nm UVC can reach 99.9%, But the test object is a seasonal coronavirus with a similar structure to the COVID-19.

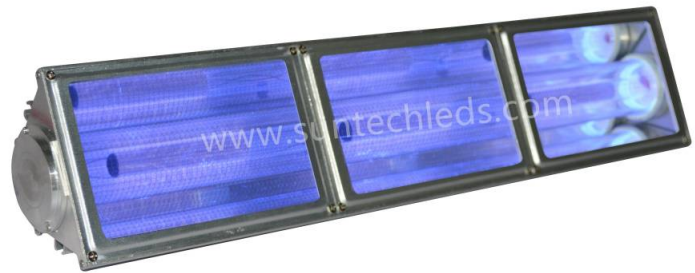
Later, Hiroshima University

researchers proved for the first time that far ultraviolet light with a wavelength of 222nm can effectively eliminate the SARS-CoV-2 to avoid the COVID-19. The researcher sprinkled 100 microliters of the solution containing the new coronavirus on a 9 cm sterile polystyrene plate, placed it in a biological safety cabinet, dried at room temperature, and irradiated it with a UVC lamp. The distance between the lamp and the plate was 24. cm.

The experimental results showed that after 30 seconds of irradiation with 222 nm UVC with a light irradiance of 0.1 mW/cm², the bactericidal rate of the SARS-CoV-2 culture was 99.7%.

3. The working principle of 222nm UVC Excimer Lamp

Due to the limitations of LED technology, 222nm LED products have not yet appeared on the



60W 222nm far UVC excimer module with filter and reflector installed



100W far UVC excimer module (filter and reflector included)

market. The 222nm excimer lamp is a new product for far UVC disinfection, and is gradually be promoted. Now let's how is the [Suntech 222nm](#) excimer lamp work.

The material used in the lamp tube is different due to the wavelength. By using high-purity synthetic quartz and higher-quality materials, the generated wavelength is released to the outside of the lamp tube as efficiently as possible. The wavelength is shorter than usual. Atmospheric gas discharges in the atmosphere to make it emit light at a fixed wavelength.

The excimer tube forms a double structure of inner tube and outer tube according to the quartz used. There are metal electrodes on the inner side of the inner tube, and thin wires on the outer side of the outer tube. In addition, the special gas corresponding to various wavelengths in the outer tube and the inner tube has different filling pressures due to different wavelengths, but they all need to be sealed tightly. If an AC high voltage is applied to the inner tube and the outer tube, some discharge will occur between the inner and outer electrodes, and the discharge energy will react with the gas filled inside to emit light.

4. Application of [222nm Far UVC Disinfection](#)

The far UVC can be used in various disinfection conditions.

1. Medical use, disinfection of surgical sites, treatment of infected chronic wounds
2. Kill all kinds of viruses, Covid-19, H1N1, Sars, etc
3. Hand and skin disinfection
4. Air and water disinfection
5. Sterilize baby products, toothbrush disinfection, cellphones disinfection, etc.
6. Disinfection of public places, for example hospitals, schools, airplanes, super market, etc.

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