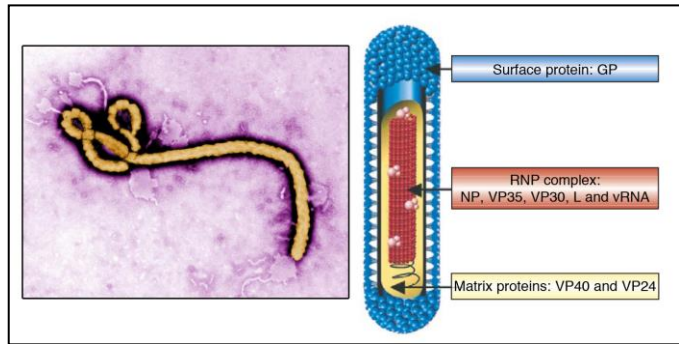


UVC and Flashlamp Dimer Formation

Ultraviolet light, in the other three bands, have longer wavelengths and less photon energy. Thus, their photons cannot break chemical bonds, but they actually change the chemical bond structure (called a dimer). With this new structure intact, the microorganism cannot reproduce, so infection doesn't occur. However, this structure is reversible and if that occurs, the organism can start to reproduce and re-infect again.

The Ebola virus is a large virus and uses many different enzymes to make it infective. Since its RNA-negative strand is non-infective, it makes the infective RNA-positive strand during a duplicative process. RNA lacks effective verification and control mechanisms. It could actually bypass the dimer formed in the negative strand RNA and produce an infective mutation in the positive strand RNA which is not an identical copy.



Technical literature has many papers that show when visible light is present during the creation of dimers, a photo-repair mechanism can be activated, and the dimer that was formed initially with UV light could quickly be repaired. This photo-repair mechanism may actually be the reason the flashlamp powered room disinfection robot actually produces less reduction (quoted as 7x) of bacteria than pure UVC mercury-based lamps, which tests show achieve 10 to 100x reduction.

The flashlamp-powered room disinfection unit actually produces 5% UV emission and 95% visible and infrared light emission. It is claimed to produce 2500 watts total emission, so the visible content is equivalent to four, 500-watt halogen lamps packed into the same source. A person can not safely stand anywhere near this lamp while it is on. Plastic face shields will not protect the face or the eyes from the intense visible and infrared emission. They would quickly suffer second and third-degree burns.

As an example of the amount of heat produced by flash lamps, a bottle cap firm could only get 1.7 log reduction before the caps started melting when the power was increased. In comparison, Far-UV produced 4 log reduction in half the time of exposure.

Pulsed xenon lamp output spectrum

