Contribution ID: **189** Contribution code: **S1 Physics Innovation** Type: **Oral Presentation**

UV germicidal rays working with timer and motion sensors

Thursday 23 June 2022 11:45 (15 minutes)

As a result of the coronavirus (Covid-19) epidemic, the public has become actively involved in bodily sanitation. The 'New Normal'lifestyle now focuses on cleanliness and disinfection to prevent the spread of germs. This research designed and programmed a microcontroller for a UVC disinfection system using an Arduino board as an open-source electronics platform operated with a motion sensor (PIR) and a time control module (RTC). The optical properties of an 8 Watt (W) UVC source were measured. The four UVC sources investigated had wavelengths ranging from 251 to 577 nm. A UVC wavelength of 251 nm eradicates germs but also destroys tissues and is harmful to humans. Experimental results showed that UVC intensity decreased with distance from the source according to the exponential decay function. A control system, installed inside a building to kill germs when there are no humans or pets, can control UVC light source operation with a maximum power of 2 kW. Operational time can be adjusted by settings on the control box, while as an additional level of safety, the system can be turned off if a motion sensor detects movement. Movement detection distance at an angle of -90 to +90 degrees was recorded. Results gave 11 m detection distance at an angle of 0 degrees, with more than 3 m detection distance at -60 to +60 degrees, as suitable for installation above a door. This timer and motion sensor-operated UV germicidal ray system can be safely deployed to keep rooms germ free.

Authors: KOBKAM , Chatpong; Dr DANGUDOM, Kachain

Presenter: KOBKAM , Chatpong

Session Classification: S1 Physics Innovation

Track Classification: Physics Innovation