

Project Title: Development and fabrication of low-cost sterilizer box using UV-Hot Air combination (yoUVen)

Additional Info

In view of current outbreak of COVID-19, it is essential to slow down the spread of the Corona virus to prevent our medical infrastructures from getting overwhelmed. One major channel, through which the virus has still been managing to spread is vegetables, groceries and, particularly, mobile phones. It is observed that people have been using their mobile phones with contaminated hands for payment through e-wallets, while going out for purchase of essential goods. Thus, it is very important to thoroughly sterilize entire surface of mobile after use. In addition, the surfaces of vegetables, fruits and groceries may also be carriers of the virus and need to be sterilized before using them. Although several new designs of sterilizer box have been emerging recently for decontamination of these surfaces in view of current outbreak of COVID - 19, most of them rely on irradiation of UV-C on the surfaces to deactivate virus. However, the complete sterilization of entire surface may not be guaranteed by mere UV irradiance, particularly due to shadowing in case of objects with irregular shape or when the objects are in bunch, such as currency notes.

We have developed and fabricated a novel sterilizer box to overcome this problem. The design involves optimized combination of UV-C radiation along with hot-air to ensure thorough sterilization of various objects, even when the surface is irregular in shape. The box is basically a combination of a UV source and a hot-air oven, hence named 'yoUVen'. The yoUVen allows the user to select between only UV-C irradiation or the combination of it with hot-air for a desired amount of time and the user can also chose the temperature of the air, which is kept constant for the entire cycle. This selection-knob is important because there are certain objects, such as mobile phones, on which hot air cannot be blown. However, in such cases only UV-C radiation can serve the purpose, since the surface is generally regular in shape. A specially designed platform with transparent quartz-top is also placed in the box, specifically to sterilize mobile phones from all the sides.

The equipment is low-cost and can serve the purpose of sterilization of various items used for domestic purpose in day-to-day life during the Corona outbreak. It can be a key-component in our efforts to reduce the spread of the virus and eventually contain it. Following are some exemplary images of the 'yoUVen' in action.

