

Executive summary

COVID-19 or Corona virus has been spread rapidly all over the world. This fast spreading is due to its stability for several hours to days in aerosols and on surfaces, accordingly to recent study. However, stability of COVID-19 can be affected by surface roughness & texture, temperature, humidity, and other environmental conditions. This virus can spread from person to person via contact with commonly handled objects and particularly personal protective care equipment. Therefore, if their surfaces can be made bactericidal and virucidal, the extent of this spread can be reduced.

Bactericidal & fungicidal superhydrophobic coatings for cloth and wood surfaces are already developed in our lab. But COVID-19 is new virus and its structure and behaviour have not been studied in detail yet. As studied, this may be hybrid in nature. The chemicals which have anti-bacterial and anti-fungal properties might not have ability to kill COVID-19. Therefore, a new polymeric superhydrophobic coating is required to develop to kill this virus. In this, project will be carried out in two phases. In first phase polymeric superhydrophobic coatings will developed in lab scale. Later characterization and testing of superhydrophobic coatings will be carried out. Beside these, durability for UV exposure, heat treatment, chemical stability, and mechanical disturbances on coatings will also be studied. Finally, cost of coatings at lab scale will be estimated. In later phase, the process and technology will be up-scaled on the commercial level.

This research will result in development of highly durable virucidal and bactericidal coatings for personal protective care equipment such that these equipment can be repetitively used without affecting person in contact.