Expected Outcomes:

1. Identify natural self cleaning surfaces and their textures at nano scale level.
2. Design and develop self-cleaning medical equipment.

Research Proposal:

At present the doctors and nurses treating COVID-19 patients are using conventional testing and drug delivery equipment. These medical devices get infected due to virus when these come in contact with the virus infected patients. As such, the chances of spreading virus among medical staff and on other medical equipment present in the hospital is likely to happen. Cleaning of these medical devises demand typical cleaning process depending upon the type of virus. It is obvious that doctors and nurses treating such patients will be first of all infected by the virus present on infected medical devices. Therefore, Medical staff treating virus infected patients, in particular, COVID-19 infected patients are put to high risk. Doctors and nurses have already become victim of COVID-19 virus while treating infected patients. Therefore, it is inevitable to design and develop self cleaning medical devices.

Mimicking of natural surfaces (possessing superhydrophobic effect), and also designing and developing these surface textures on material used for manufacturing medical devices is need of hour. Nano-surface texturing technique based on based natural mimicking has already been applied, to develop hydrophobic surfaces on various materials. In this research project, detail studies will be carried out systematically:

a. Study of super hydrophobic surface textures on material used for medical devices using and applying tribological principles
b. Developing naturally superhydrophobic surface textures on material used for medical devices.
c. Measuring 3D surface profiles of developed surface at nanoscale level
d. Study self cleaning virus (Covid 19) capability of nano laser textured medical devices.

Cost of project is 10 Lacs

Duration of project 06 months