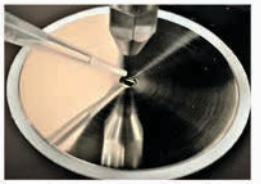
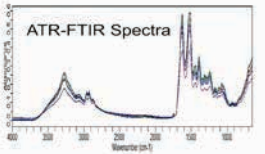
ATR-FTIR Spectroscopy for Detecting Severity of COVID-19





Problem Statement: India saw a huge number of cases during the second wave of the COVID-19 pandemic that put immense pressure on the medical infrastructure. Appropriate medical facilities were at times not available to those who had severe symptoms and needed them the most. The golden test to check for COVID-19, the RT-PCR test, can only tell whether a person is infected or not. Unfortunately, the test cannot determine the severity of the infection or predict how severe the symptoms of an infected person could become. The researchers have addressed the challenging problem of prognosis of the severity of COVID-19 disease by designing a simple, rapid test called ATR-FTIR (Attenuated total reflectance-Fourier transform infrared) Spectroscopy. It can be conducted at the point of patient admission and can help transform hospital management during crises.

Uniqueness of the Solution: The ATR-FTIR Spectroscopy test gives information about the severity of one's COVID-19 infection, which other diagnostic tests do not provide. The simplicity of the sample preparation and spectral acquisition methods are the unique features of this test. Therefore, it can be quickly undertaken by clinical laboratory personnel.

Current Status of Technology: The researchers have demonstrated experimental proof of concept for this work and performed a blinded test (where the test is masked from the participant's knowledge to eliminate bias until after the trial outcome is known).

Societal Impact: ATR-FTIR is a promising technology for rapid, real-time COVID-19 triaging. It is an ultra-compact and flexible benchtop instrument that can easily be employed in the hospital setting. It can help hospital management take timely action by identifying the severity and risks faced by patients who have tested positive for COVID-19. The researchers envisage that the product will be in high demand in global markets for COVID-19 prognosis.

Patent(s): Filed

Relevant Industries: Healthcare, Medical Devices.

Faculty: Prof. Sanjeeva Srivastava, Biosciences & Bioengineering.