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IIT-D creates handheld device for detection of dengue & HIV

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The handheld device has been successfully tested on clinical blood samples

The GLancing Angle Deposition (GLAD) research group at IIT Delhi's Physics Department has developed a handheld Surface Enhanced Raman Spectroscopy (SERS) based platform for early diagnosis of dengue virus. It also gives dengue test results within one hour (rapid diagnosis).

The handheld device has been successfully tested on the clinical blood samples collected from hundreds of individuals in collaboration with ICMR-National Institute of Malaria Research (NIMR), New Delhi.

The intergrated device was able to clearly differentiate the three sets of blood samples; dengue positive, negative and healthy. This method provides a sensitive, rapid, and field deployable diagnosis of dengue at the early stage.

The research work was funded by IMPRINT India program of the Ministry of Education with New Age Instruments and Materials Pvt Ltd as the industry partner.

The detection and distinction of human immunodeficiency virus (HIV-1) was also carried out in collaboration with ICMR-National AIDS Research Institute (NARI), Pune through the handheld SERS based platform.

Binding of viruses directly on Ag nanorods without using antibodies or intermediate reagents was successfully demonstrated. The SERS platform was capable of distinguishing different tropic strains of HIV-1 suggesting tropism-based detection. The SERS based platform gives HIV-1 test results within an hour.