

IIT-I, RRCAT come up with affordable diagnosis technique

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Indore

Researchers at Indian Institute of Technology Indore, in collaboration with the research group of Raja Ramanna Centre for Advanced Technology and Homi Bhabha National Institute, Mumbai, have come up with simple, cost-effective and novel technique called Nano-Trap Enhanced Raman Spectroscopy (NTERS) for efficient detection of amount of traces of biochemicals.

"Reliable disease diagnosis and prognosis using body fluids require sensitive and accurate detection of disease-specific biochemicals present in the fluid. Understanding necessity of cost-effective technique for diagnosis of diseases, researchers of IIT Indore, RRCAT and HBNI proposed NTERS," said IIT Indore media coordinator Rahul Sharma.

The NTERS combines the optical tweezers, Raman spectroscopy, and nanotechnology to improve the signal to noise ratio of very low concentrations of biochemicals.

The continuous laser irradiation of sample mixed with nanoparticles induces the formation of nanoparticle clusters in the laser beam focal spot due to optical trapping of the nanoparticles.

The biochemicals get deposited within the nanoclusters, which leads to multi-fold Raman signal enhancement of these biochemicals in comparison with their aqueous suspension. "NTERS does not require preparation of any specialised substrate and could soon be a technique of choice for the detection reliability of disease-specific biochemicals with higher sensitivity and reproducibility," Sharma said.