

Researchers Develop Tiny Droplets That Harness Laser Light To Detect Disease Markers

Researchers led by NTU Singapore have created tiny droplets that, when activated by laser light, can detect viral protein biomarkers indicating the presence of certain diseases.

These microdroplets, about one-third the diameter of a strand of human hair, could potentially travel in the bloodstream to reach all parts of the human body and detect particles shed by cells which function as disease biomarkers.

When a laser enters the droplet, its energy and light are amplified as the laser reflects and bounces inside the droplet repeatedly before exiting the droplet. This creates a stronger energy signal that is emitted from the droplet, leading to more accurate, precise and easily detectable signals.

The wavelength of the light reflected out of the microdroplet changes when a droplet encounters a protein that reacts with one of its attached antibodies – suggesting the presence of disease or infection.

By measuring the wavelength shift as it leaves the microdroplet, researchers led by Nanyang Assistant Professor Chen Yu-Cheng from NTU's School of Electrical and Electronic Engineering have used the technology in lab trials to successfully detect neurological disorders, genetic diseases and cancerous cells.

Source: Nanyang Technological University

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