Realization of Common Platform Technology, Facilities, and Equipment that creates Innovative Knowledge and Products

Development of Minimally Invasive High-throughput Optical Condensation System

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Summary :

We will develop a system accelerating biochemical reactions by “optical condensation” of a very small amount of biological samples (protein, DNA, microbe, cell, etc.) with maintaining their functions at the aimed position, and innovate the fields of preventive medicine, food inspection, and environmental measurement.

Utilizing the synergistic effect of light-induced force and light-induced convection, we clarify a principle for “optical condensation" of biological materials for the acceleration of their reactions, and develop extremely rapid and highly sensitive detection method. Particularly, we will clarify mechanisms of intermolecular interaction under optical condensation, and establish a high-throughput measurement technology for an ultra-early diagnostic method in the medical field. Furthermore, by developing a multipurpose optical condensation system, we will expand applications to the detection of microorganisms and environmentally hazardous substances, and provide innovations in food inspection and environmental measurement.

http://www.p.s.osakafu-u.ac.jp/~t-iida/LAC-SYS/e_index.html