

## Development of a rapid and easy-to-use tool for stress measurement using microchip capillary electrophoresis

A rapid and easy-to-use tool for stress measurement based on microchip technology and electrophoretic separation technique was developed. Cortisol and secretory immunoglobulin A (s-IgA) in saliva were measured as stress-related compounds. Advantages of microchip system over conventional immunoassay methods include short analysis times, high separation efficiency, reduced cost and disposability. The detection sensitivity was improved by the development of laser-induced fluorescence detection system, microchip devices and optimal analytical conditions. We expect our research will provide self-care products for stress diagnosis in future.

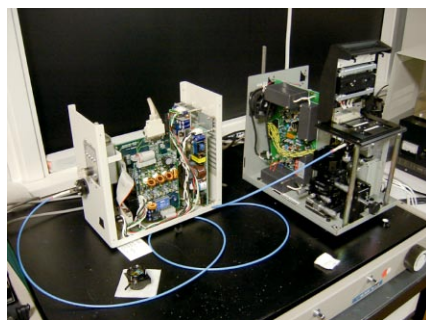


Figure 1: A highly sensitive measurement system based on microchip capillary electrophoresis and laser-induced fluorescence detection.

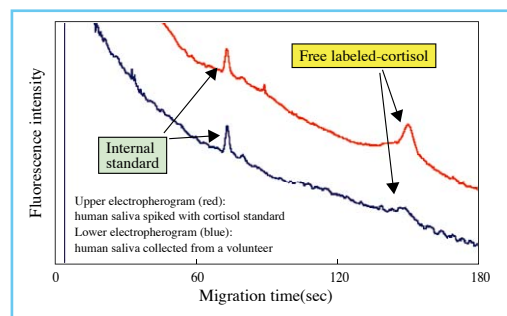


Figure 2: Analysis of salivary cortisol using competitive immunoassay and electrophoretic separation.

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## True 3D Display using Laser Plasma in the air

Most of the 3D displays reported until now draw pseudo-3D images on 2D planes by utilizing the human binocular disparity. However, many problems occur, e.g., the limitation of the visual field, and the physiological displeasure due to the misidentification of virtual images.

We have developed a 3D display, which utilizes the plasma emission phenomenon near a focal point of focused laser light. By controlling positions of the focal points in three directions of X-, Y-, and Z-axes, real 3D-images constructed by dot arrays were displayed in the air (3D-space).

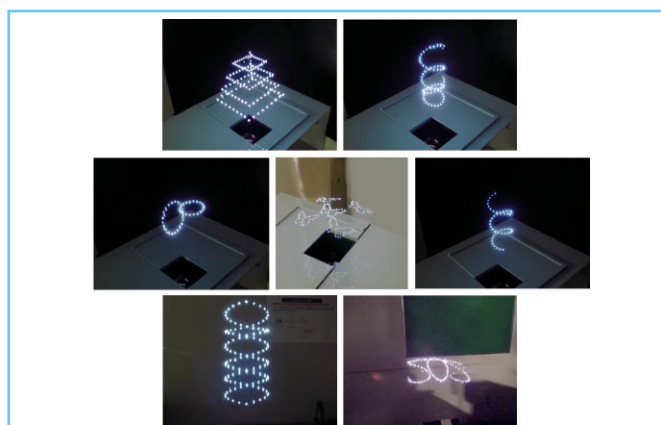


Figure : Various 2D and 3D objects drawn by the display device we have developed.

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