

S16-1 Analytical techniques using precisely-controlled nanospace for preventive medical engineering

○Noritada KAJI^{1,2}

¹Department of Applied Chemistry, Graduate School of Engineering, Nagoya University, ²MEXT Innovative Research Center for Preventive Medical Engineering, Nagoya University

Owing to the development of nanotechnology, analytical chemists, who are not experts in micro- or nano-fabrication, can utilize micro- or nanometer sized spaces for various analysis. These analytical techniques, which are called as μ TAS or Lab-on-a-chip, achieved high-speed analysis and reduced consumption of reagents. More recently, novel analytical techniques are developed by using nanospace which has comparable size of biomolecules such as DNA and proteins.

We have demonstrated that nanopillar array structures have ability to separate DNA molecules and DNA migration mode could be easily controlled by arranging the nanopillar array pattern. We revealed that the nanopillar chips had an intrinsic function to suppress EOF, and thus, the separation of biomolecules over wide size ranges (21-340 kDa in protein, 1-48.5 kbp in DNA) could be achieved without any surface coating. In this presentation, these novel analytical techniques utilizing nanospace and our approach for clinical applications of these analytical techniques will be mentioned.