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**Direct observation of DNA dynamics toward solid state nanopore studied by fluorescence microscopy** TOMOHARU TAKITA, NORIYUKI TOYAMA, KAYA KOBAYASHI, TOSHIYUKI MITSUI, Aoyamagakuin University
— Translocation of single DNA through a solid state nanopore provides information of the length and the folding configuration of the DNA by sensing the ionic current profile. This sensing method opens the possibility to characterize individual polynucleotide molecule such as DNA and RNA and their interaction with various proteins. The interesting phenomena related to the nanopore based DNA sensing with the translocating ionic current have been reported recently and we also have found unexpected clogging probability of DNA into pore as a function of the biased voltage across the pore membrane. To visualize these phenomena as the dynamics of individual DNA molecule near nanopore, we have used fluorescence microscopy. The acceleration of DNA caused by an attractive force toward nanopore was observed in sequential sets of the microscope images. By applying the langevin equations to follow the dynamical motion of DNA, the electric fields near the nanopore under the various biased voltages and ionic concentrations were estimated in DNA solution. In this presentation, we will report the results of the estimated electric fields near nanopore and discuss the shape of the potential.

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