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Fluorescence microscopy studies of the DNA motion near voltage biased solid-state nanopores KAZUHIKO OBANA, YOICHI NAKAMURA, KAYA KOBAYASHI, TOSHIYUKI MITSUI, Aoyama Gakuin University — A solid state nanopore in a Si-based thin insulating membrane works as a single DNA molecule sensing device that provides the information of the length and the folding configuration of the DNA by measuring ionic currents when the DNA translocates through the pore [1]. These nanopores may play a significant role in molecular electronics and rapid DNA sequencing. Now one of the issues related to this nanopore sensing technique is clogging the nanopores by DNA molecules because it significantly extends the DNA translocation time. To elucidate this issue, we use time-resolved fluorescence microscopy to observe the DNA motion near voltage biased nanopores. We will discuss the DNA motion near nanopores under the various applied voltages. [1]. J. Li M. Gershow, D. Stein, E. Brandin, and J.A. Golovchenko, Nature Materials 2: 611 (2003); T. Mitsui, D. Stein, Y.-R. Kim, D. Hoogerheide, and J.A. Golovchenko, Phys. Rev. Lett. 96: 036102-1 (2006)

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