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DNA dynamics near modified solid state nanopore YOSHITAKA HAYASHI, GENKI ANDO, KAYA KOBAYASHI, TOSHIYUKI MITSUI, NANOPORE TEAM — Solid state nanopore is a promising method for rapid single DNA characterization. Translocation of the DNA through the nanopore provides information of the length and the folding configuration by measuring the ionic currents which flows through the nanopore. Recently, the surface modifications of nanopore for better sensing of ionic currents or the electrode fabrication near nanopore for current measuring are proposed and tested by several groups. Previously we have estimated the electric field profile using the Langevin equation near nanopore by tracing the dynamics of DNA's before translocation. Fluorescence microscopy is used to observe DNA's directly. We found that bias voltage above 1V applied across the nanopore produced prominent electric field extended up to 8 micrometer away from nanopore and induced DNA clogging into nanopore. To advance our research, modified nanopores are fabricated in two ways, 1. evaporating Au film, 2. depositing organosilanes around nanopore as we followed the recent development of the nanopore based DNA analysis. We will discuss how these modifications influence the electric field profile near nanopore.

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