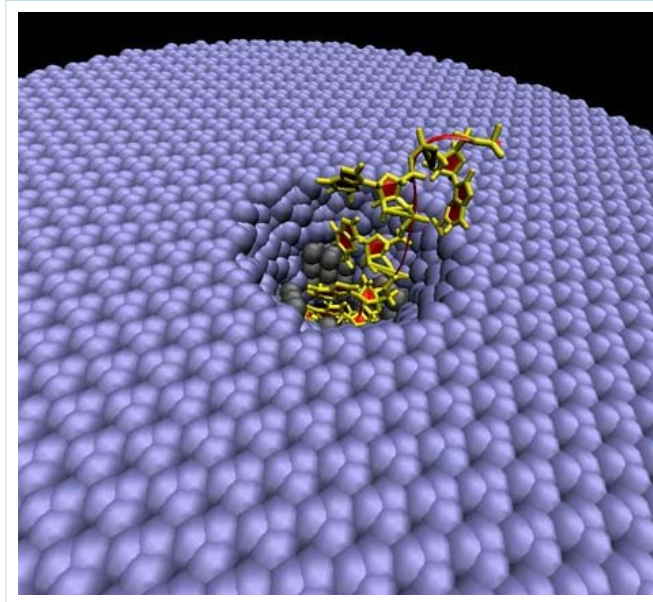


Wednesday, September 5, 2007

Nanopore-based Single-Molecule Spectroscopy

Filed under: [Nanomedicine](#)



Michael Berger at the *Nanowork* [blog](#) has an article on the latest efforts to use nanopores to characterize proteins and sequence single DNA molecules. His report focuses on successful experiments that demonstrated the feasibility of single-molecule DNA through-the-pore spectroscopy. On our pages, we wrote on a number of promising experiments in which scientists developed special nanopore channels, that interacted with translocating molecules and "reported" their molecular structure and sequence (see flashbacks below).

From the current *Nanowork* article:

"In recent years, the creation of nanochannels or nanopores in thin membranes has attracted much interest due to the potential to isolate and sense single DNA molecules while they translocate through the highly confined channels" Dr. Joshua Edel, a lecturer in micro- and nanotechnology at the Imperial College London, explains to Nanowork. "Nanopores for such [applications](#) have already been fabricated but in all studies to date, the detection of translocation events is performed electrically by measuring the ionic current" (what this means is that molecules translocating through a nanopore will momentarily perturb the ionic current, with the duration of the perturbation and the magnitude of the current blockade providing more detailed information about molecular shape and structure).

Edel's group, together with collaborators from Drexel University, recently presented proof-of-concept studies that describe a novel approach for optically detecting DNA translocation events through an array of solid-state nanopores which allows for ultrahigh-throughput, parallel detection at the single-molecule level ("[Single-Molecule Spectroscopy Using Nanoporous Membranes](#)").

[More](#) from *Nanowork*...

Flashbacks: [Using Nanopore Channels to Sort DNA](#); [Nanopore Method for DNA Sequencing](#)

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