

NANO HOUR

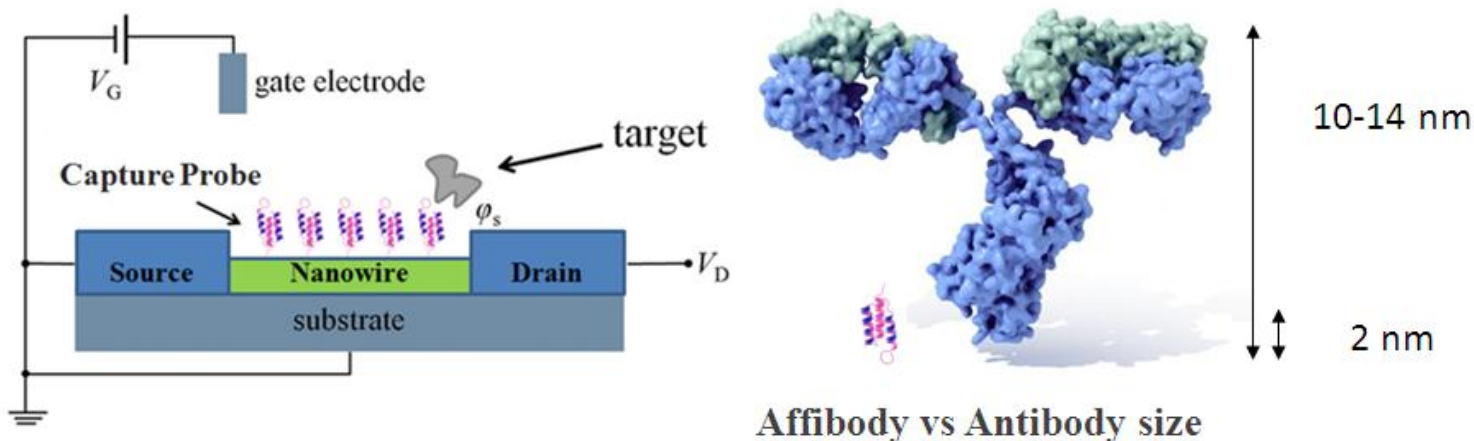
Wednesday, March 7, 2012 3:00 pm
Beckman Institute - Room 3269

Silicon Nanowires Used for Biosensor Applications – Possibilities and Pitfalls of the Nanoworld

Nima Jokilaakso, Royal Institute of Technology (KTH), Sweden

Visiting Scholar with Professor Rashid Bashir

Semiconducting Silicon Nanowires, SiNW, have gained much attraction due to their potential to be used as sensors for label-free detection of biomolecules. The binding of biomolecules carrying a net charge leads to a change in the conductance of the nanowire, which is detected by an altered current passing through the wire. The detection sensitivity increases with decreasing dimensions of the wire, and detection of fM concentrations of biomolecules have been reported. For specific detection, the nanowire is typically functionalized with a selected capture probe. In the current talk focus will be on Affibody molecules as the capture probe for protein sensing. Affibody molecules are small, three-helix bundle affinity proteins based on the Z domain, derived from staphylococcal protein A, which have earlier been shown to be robust alternatives to antibodies in various applications, including protein capture microarrays. Selective functionalization of individual silicon nanowires will be shown by spotting the Affibody molecules with a microarray printer on a preactivated chip surface. The SiNW sensor technology shows great potential for rapid on-site analysis by combining low cost chip production with high sensitivity, label-free detection and direct electrical readout, but as with any young field we must be observant so that pitfalls of the technique are avoided or learned from.



Affibody vs Antibody size

Coffee and cookies will be served

<http://nanohour.beckman.illinois.edu>