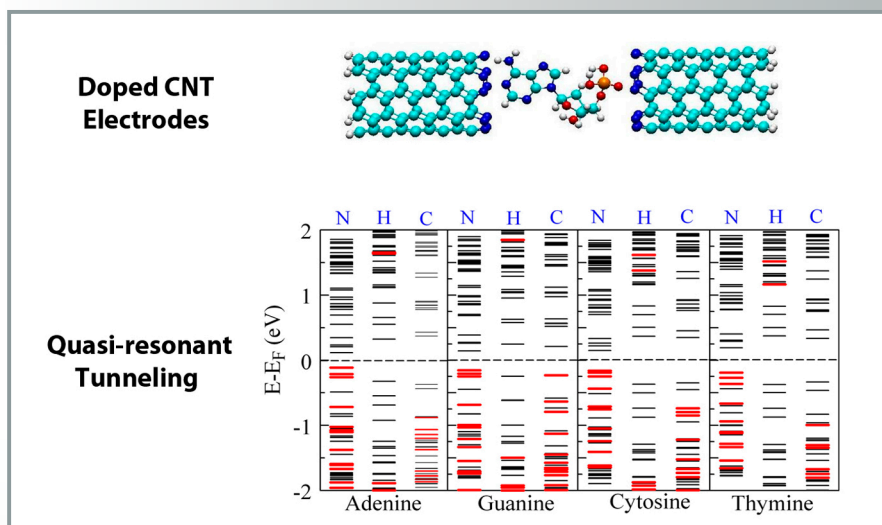


Nanoscopic Electrode Molecular Probes

UT-B ID 200701981



Technology Summary

ORNL researchers invented a nanoscopic electrode system for measuring the electron transport properties of a molecule. This invention offers a means of enhancing measurements of a molecule positioned between two nanoscopic electrodes for study. Currently, molecular sensing and identification is challenged by uncertainty in conductance measurements.

In this invention, a molecule of interest is placed inside the nanogap created between electrically conductive carbon-based electrodes functionalized with a selected dopant atom. The calculated current response of the molecule results in a many-orders-of-magnitude improvement in enhanced current response; this response yields improved molecular recognition.

The resulting measurement could be used as a sequencing method when a DNA strand is threaded inside the nanogap created between the electrodes, or for detection/recognition of biomolecules.

Advantages

- Improved speed, cost, and accuracy for DNA sequencing and other molecular sensing

Potential Applications

- Cancer genome sequencing
- Comparative genome sequencing
- Human genotyping
- Medical sequencing
- Model systems
- Parasite and vector genomes
- Detection and recognition of organic molecules

Patent

Predrag S. Krstic and Vincent Meunier, *Nanoscopic Electrode Molecular Probes*, U.S. Patent Application 12/321,823, filed January 26, 2009.

Inventors

Predrag S. Krstic¹ and Vincent Meunier²

¹Physics Division

²Computer Science and Mathematics Division
Oak Ridge National Laboratory

Licensing Contact

Jennifer Tonzello Caldwell
Group Leader, Technology Commercialization
UT-Battelle, LLC
Oak Ridge National Laboratory
Office Phone: 865.574-4180
E-mail: caldwelljt@ornl.gov

 PARTNERSHIPS