ZERNIKE INSTITUTE COLLOQUIUM

Thursday, May 8th, 2014

16:00h, Lecture Hall: 5111.0080 **Coffee and cakes from 15:30h**

Inorganic voltage nanosensors

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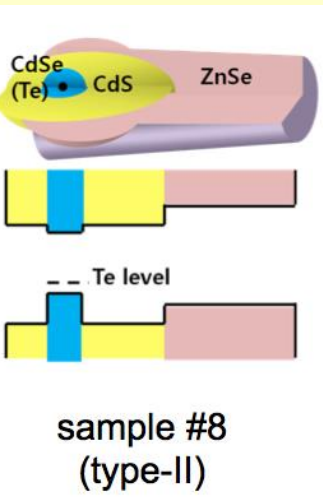
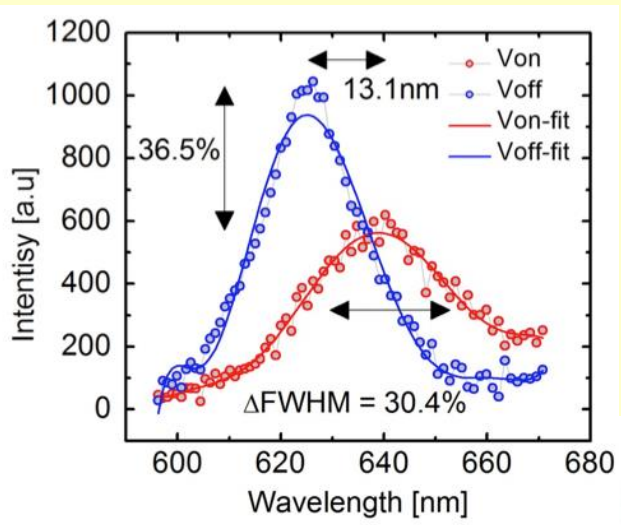
We have been developing targetable voltage sensing inorganic nanoparticles (vsNPs) that are designed to self-insert into the cell membrane and optically record, non-invasively, action potential on the single-particle level, at multi-sites and in a large field-of-view.

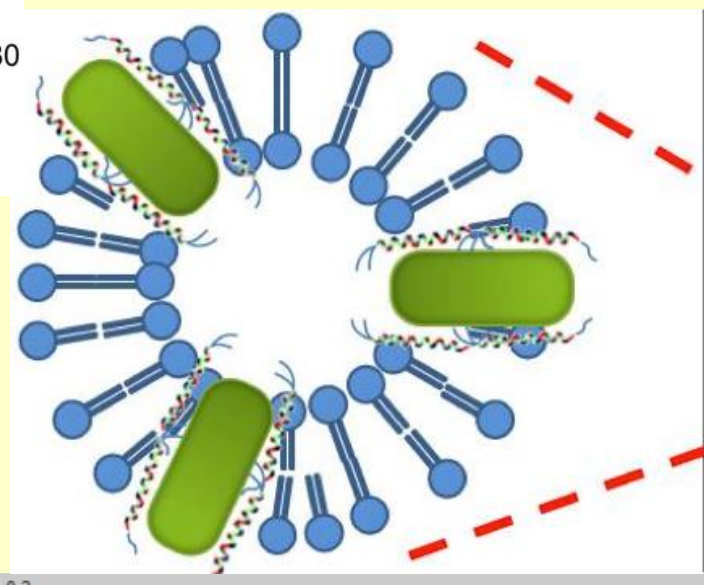


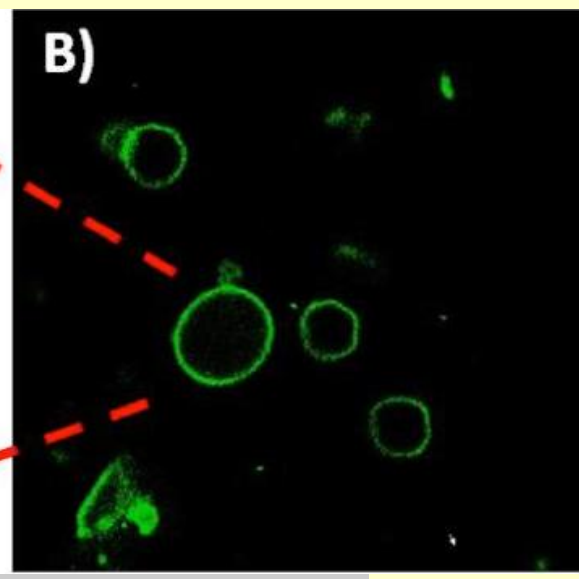
sample #8
(type-II)



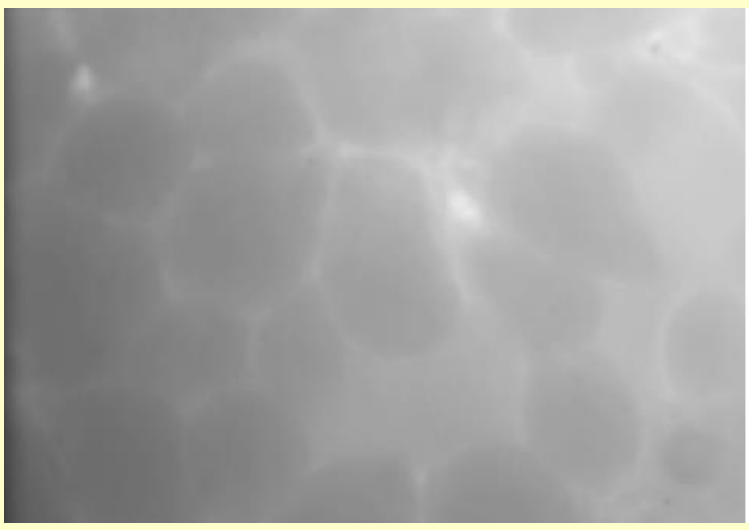
averaged spectra

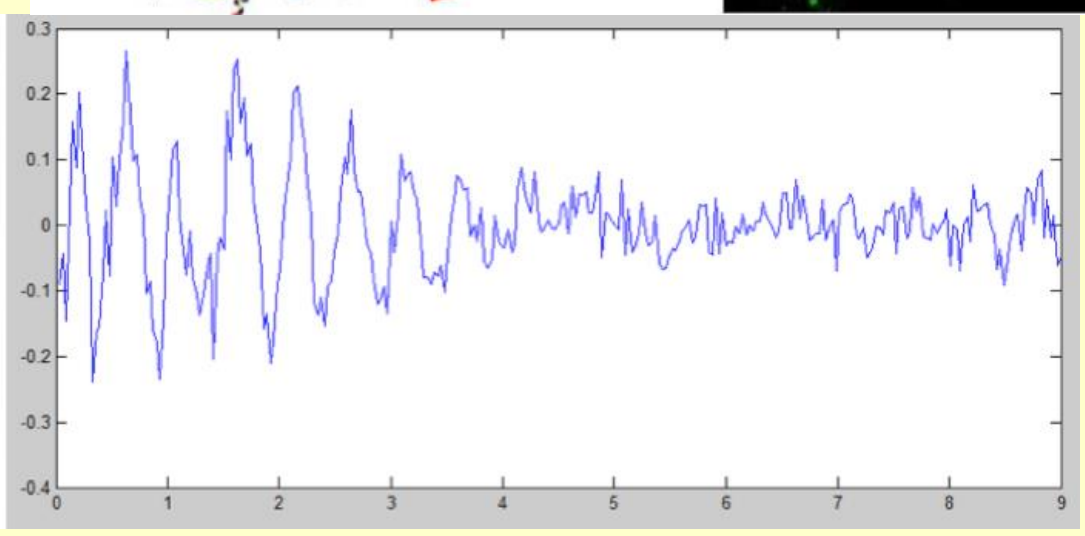
Using the first generation of vsNPs, we measured large quantum confined Stark effect (QCSE) shifts as function of voltage (in-vitro, using electrodes) . We are currently working on functionalization and membrane insertion schemes for these probes.





Once fully developed, we hope that these vsNPs could be generally useful for the study of action potential signals in the central and peripheral nervous systems and in muscle tissues.





Park, K.; Deutsch, Z.; Li, J.J.; Oron, D.; Weiss, S.; “Single Molecule Quantum Confined Stark Effect Measurements of Semiconductor Nanoparticles at Room Temperature”, ACS Nano, 2012, 6, 10013–10023.

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