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Type: Plenary Talk

Nano-needles, nano-conduits, nano-biocatalysts and nano-biopores On powerful tiny tools for atomic/molecular resolution surface inspections and effective nanoscopic facilitators of electroanalysis, bacterial cell survival and antibiotic design

Tuesday, November 29, 2016 9:10 AM (40 minutes)

Global work in the Nanoscience & Nanotechnology (NS & NT) section is with great enthusiasm a nonstop challenge in methodology development for high-quality visualization and controlled manipulation of surface and/or bulk matter properties on the nanometre scale. Logical further exciting endeavour in the field is obviously clever utilization of developed skills in the defined delicate tasks for miniaturized device fabrication and advanced high-tech commercial product synthesis. Introduced in this plenary session will be recent and current research work of the Biochemistry-Electrochemistry Research Unit of Suranaree University of Technology that, in a broader sense, has a relation to the distinct frame setting of the NS & NT research. Covered with a general technical background introduction and presentation of own accomplishments will be:

- Graphitic STM probe tip ('carbon nano-needle') fabrication for in situ electrochemical scanning tunnelling microscopy (EC-STM) with widened assessable electrochemical potential window.
- Carbon nanotube ('nano-conduit') utilization in enzyme biosensors with a joint of high signalling molecule collection efficiency and long response stability.
- Disease marker biosensing with allosteric enzyme ('nano-biocatalyst') facilitation.
- Bacterial outer membrane protein channel ('nano-biopore') adaptation for efficient nutrient uptake under tough environmental conditions.

Worth mentioning that the enormous level of sophistication that with no doubt has been gained in areas such as s

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