

Research Project

NCCR MolSysEng: Hybrid Molecular Devices for Energy Conversion

Third-party funded project

Project title NCCR MolSysEng: Hybrid Molecular Devices for Energy Conversion

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Departement Physik / Physik

Department

Project Website http://www.nccr-mse.ch/en/no_cache/research/projects-detail/project/hybrid-molecular-devices-for-energy-conversion/

Project start 01.07.2014

Probable end 30.06.2018

Status Completed

Ionic gradients and biomarkers play a crucial role in molecular factories for establishing, maintaining and controlling the targeted functionality. To monitor these biomarkers, miniaturized sensing devices with dimensions smaller than the molecular factory volume shall provide valuable information about its dynamical behavior. Ion-sensitive field-effect transistors (ISFETs) based on silicon nanoribbon transistors (SiNRs) are a very promising platform to measure local concentrations of ions such as protons (pH), sodium, potassium or calcium ions or even small biomarkers relevant to a large variety of biological processes. Here, the SiNR sensor transduces a biochemical reaction into an electrical signal which can then be used to feedback on control processes. Within this project, we strive to combine our well-established SiNR sensing platform with molecular systems integrated in *on-chip* compartments that will play the role of molecular factories to gain further insight into their functioning and dynamical behavior.

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Add publication

Published results

3373187, Stoop, Ralph L.; Wipf, Mathias; Müller, Steffen; Bedner, Kristine; Wright, Iain A.; Martin, Colin J.; Constable, Edwin C.; Fu, Wangyang; Tarasov, Alexey; Calame, Michel; Schönenberger, Christian, Competing surface reactions limiting the performance of ion-sensitive field-effect transistors, 0925-4005, Sensors and actuators. B, Chemical, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

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