



Vabilo na seminar / Invitation to the seminar

Daisylea Paiva

Dynamic Biosensors GmbH, Martinsried, Germany

Email: Paiva@dynamic-biosensors.com

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Velika predavalnica Kemijskega inštituta /
Great Lecture Hall, National Institute of Chemistry;
Hajdrihova 19, Ljubljana

Biophysical Analysis of Molecular Interactions with **switchSENSE**[®]

switchSENSE[®] is an automated biosensor chip technology that employs electrically actuated DNA nanolevers for the real-time measurement of binding kinetics (k_{ON} , k_{OFF}) and affinities (K_D). Interactions between proteins, DNA/RNA, and small molecules can be detected with femto-molar sensitivity. At the same time, protein diameters (D_H) are analyzed with Angstrom accuracy and conformational changes as well as melting transitions (T_M) can be measured using minimal amounts of sample.

The principles and applicability of three complementary measurement modalities provided by **switchSENSE**[®] will be introduced in this talk: Fluorescence Proximity Sensing, Molecular Ruler Measurements, and Switching Dynamics Measurements. In addition to standard workflows we will discuss unique possibilities for the functionalization of the sensor surface, i.e. the electrical adjustment of ligand densities and the precise assembly of different ligands on bifunctional nanolevers.

Application examples from drug development, quality control, and fundamental research will be discussed, including:





- Small molecule binding and small molecule induced conformational changes in proteins
- Analysis of complex binders: high-affinity and bispecific antibody formats
- RNA/DNA binding proteins
- Enzymatic activity of polymerases and nucleases (CRISPR/Cas9)

Scientific Reports 5:12066 (2015)

Analytical Chemistry 87:4538 (2015)

Nature Comm 4:2099 (2013)

JPC B 118:597 (2014)

JACS 134:15225 (2012)

Bioanal Rev 4:97 (2012)

PNAS 104:17364 (2007)

Info: vesna.hodnik@ki.si