New NanoTemper's solutions for binding affinity measurements of challenging molecular interactions, and combined protein stability characterization.

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Where: Institute of Biochemistry and Biophysics of Polish Academy of Science

Speaker: Paweł Kania – Senior Technical Specialist

Presentation abstract.

Among many existing fluorescence-based applications, dedicated to characterization of molecular interactions, vast majority depends on site-specific labeling, binding- induced change of conformation, or size of interacting molecules. To overcome these limitations, we applied a ratiometric dual-emission approach that quantifies ligand-induced spectral shifts with sub-nanometer sensitivity. The use of environment-sensitive, near-infrared dyes with the method we describe enables affinity measurements and thermodynamic characterization without the explicit need for site-specific labeling or ligand-induced conformation changes. The newest **isothermal spectral shift technology,** implemented in latest NanoTemper's system, **Monolith X, allows** researchers to work in solution, with variety of biomolecules, including proteins, antibodies, and nucleic acids, as well as with the most challenging types of targets and drug modalities, like membrane and intrinsically disordered proteins, or PROTACs.[1]

Together with revolutionary solutions for binding, and in response to the growing demands of the research community, we are pleased to present our newest platform for protein characterization - **Prometheus Panta**. For the first time parallel particle sizing (**DLS**), thermal unfolding(**nanoDSF)**, and aggregation(**backreflection)** results can be collected throughout an entire thermal ramp and give researchers completely new perspective about stability attributes at the domain level of analyzed protein. The uniqueness of the new Prometheus on the market, rich in a variety of technologies, lies in obtaining more than 12 parameters describing stability from a sample of 10ul volume.

By combining the capabilities of both platforms with our experience in creating tools for biophysical measurements, and by providing complex, high-quality data, we hope to significantly contribute to supporting scientists in overcoming the current challenges and limitations of interdisciplinary research.

1) Langer, A., Lüdecke, A., Bartoschik, T., Cehlar, O., Duhr, S., Baaske, P., & Streicher, W. (2022). A new spectral shift-based method to characterize molecular interactions. *ASSAY and Drug Development Technologies*, *20*(2), 83-94.

Contact

Paweł Kania

Senior Technical Sales Specialist CEE

Tel.: +48 728 428 130
pawel.kania@nanotempertech.com

NanoTemper Technologies GmbH

Toelzer Str. 1

81369 München

Germany

Tel.: +49 (0)89 4522895 0

Fax: +49 (0)89 4522895 60

info@nanotempertech.com

nanotempertech.com