Fidabio

FIDA NEO

In-solution kinetics:

No more restrictions.

- **No-immobilisation:** access all binding sites
- **No constraints on:** detergents, ionic strengths, temperature, pH etc.
- **No need for purification**: work in crude samples
- **No regeneration:** Eliminate risk of denaturing immobilised protein

One technology to measure:

- Affinity (K_D)
- Kinetics (k_{on} & k_{off})
- Sample Quality Control
- Quantity

fidabio.com

IN-SOLUTION KINETICS

Benefits:

No buffer constraints
No need for regeneration
Access to all binding sites
No more non-specific binding issues
No need for purification: work in crude samples

ABSOLUTE MEASUREMENTS

5% size change detection
0.5-500 nm dynamic range
pM-mM affinities
sec-hrs kinetics

SAMPLE QUALITY CONTROL MODULE

Dedicated Quality Control Module
Customised Reporting Tool
Data & Graph Exporting (PDF, .txt)
8 QC Parameters for each sample

FIDA NEO

New Instrument by Fidabio

Fida Neo is the next generation of FIDA - Flow Induced Dispersion Analysis instrument. It packs all the reknown benefits of FIDA (e.g. absolute measurements, small sample amounts, matrix and buffer flexibility), with an addition of:

- **In-Solution Kinetics**
- **New high precision detector**
- **New Quality Control & Reporting Module**

Yes, we made it possible to answer all biophysics questions with a single technology.

Affinity (K_D)
Kinetics (k_{on} & k_{off})
Quantity & Quality

No-immobilisation character of FIDA solves a multitude of common issues:

No steric hindrance to high density immobilised ligands
No non-specific binding issues
No risk of re-binding

All this under native conditions: serum, plasma, cell lysate or fermentation media, and with no constraints on detergents, ionic strengths, temperature, pH etc.

Based on 1st Principles.

01 In-Solution KINETICS

No environmental restrictions

Seamlessly operate in **complex matrices including fermentation media, plasma or serum.**

Avoid non-specific binding

No steric hindrance to high density immobilised ligands
No non-specific binding issues
No risk of re-binding

No restrictions on detergents, ionic strengths, temperature, pH etc.

Minimise assay development time
Expand the scope of biological systems you can characterise
Increase environmental relevance

No need for regeneration

With FIDA there is no surface chemistry involved.
Eliminate the risk of denaturing immobilised protein
Rapidly determine slow off rates for high affinity interactions

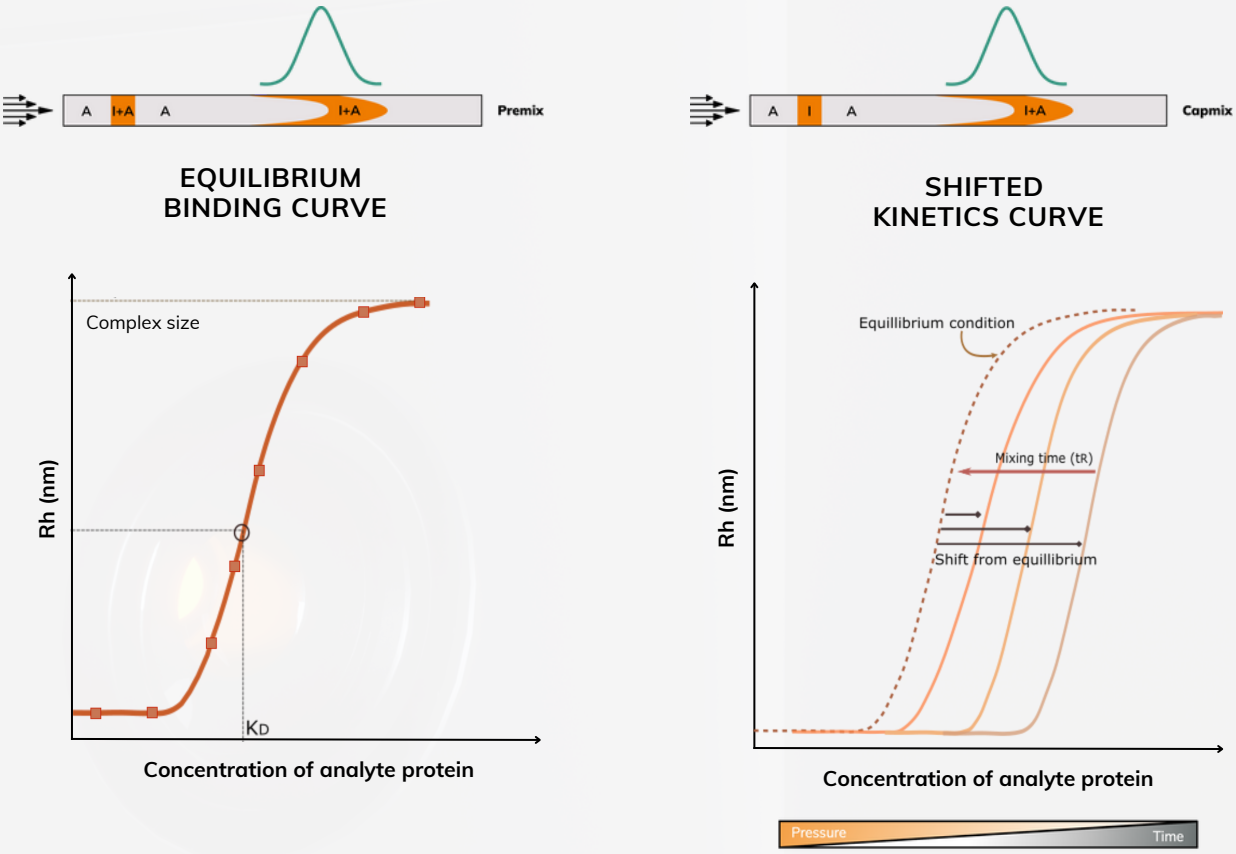
Detect Strong & Weak Binders

FIDA is capable of measuring kinetics of both strong and weak interactions in-solution.

FIDA IN-SOLUTION KINETICS Explained

The figure below presents equilibrium binding curves and kinetic binding curves.
The top figure describes the mixing principles inside the capillary while the bottom figure describes the equilibrium binding curves and the shifted kinetics curve. The samples already prepared for the equilibrium affinity determination can be reused to measure the kinetics binding curve, minimising sample consumption.

MIXING PRINCIPLES INSIDE OF THE CAPILLARY



Note that You can use Fida Neo for more than just kinetics.
We made it possible to answer all biophysics questions with one technology:

Affinity (K_D)
Kinetics (k_{on} & k_{off})
Quantity & Quality
Size (R_h & PDI)

02 Sample Quality QC MODULE

Structural integrity

- Size measured as hydrodynamic radius (Rh).
- Validate your protein stability
- Get insight into folding/unfolding and conformational changes.

Functionality/ Binding

- Automated binding curves and equilibrium Kd's are obtained by loading the autosampler with your titrations.

Aggregation

- Protein/particle aggregates are clearly detectable and quantifiable whilst still leaving the core signal useful for standard measurement.

PDB Correlator

- Use the absolute size as a firm reference point.
- Compatible with Protein Data Bank, Pymol or AlphaFold.

Labelling efficiency

- Option of measuring size of up to 3 species in solution.
- Can e.g. reveal the percentage of free vs. conjugated fluorophore in your sample when you choose to use Fida 1 for labelled assays.

Stickiness

- The shape of the core signal will reveal any stickiness of your binding partners or your binding complexes.
- The core signal is useful for standard measurement despite of the stickiness.

Heterogeneity (PDI)

- PDI Index allows for checking the heterogeneity of your sample.

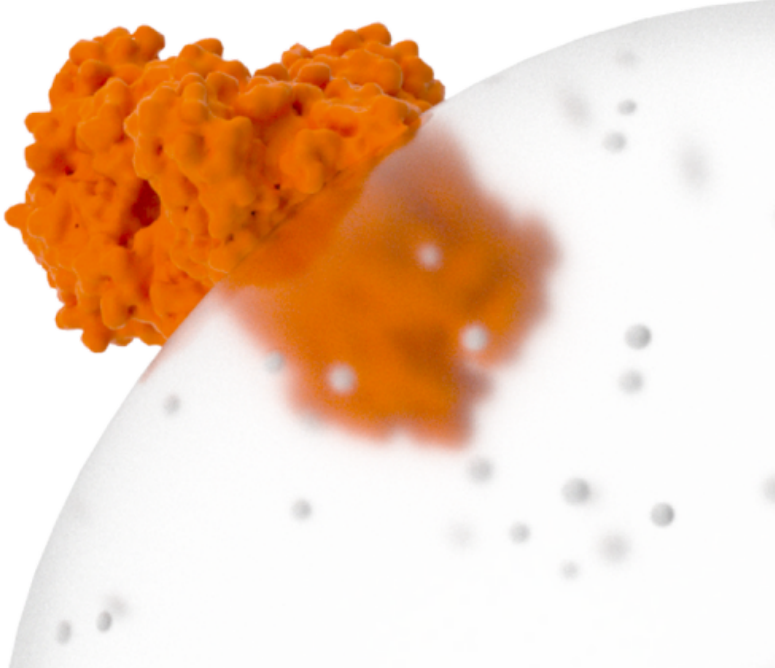
Viscosity

- Every measurement you take provides viscosity data.
- Viscosity compensation

Sample Loss

- Transparently exposed
- Troubleshoot efficiently

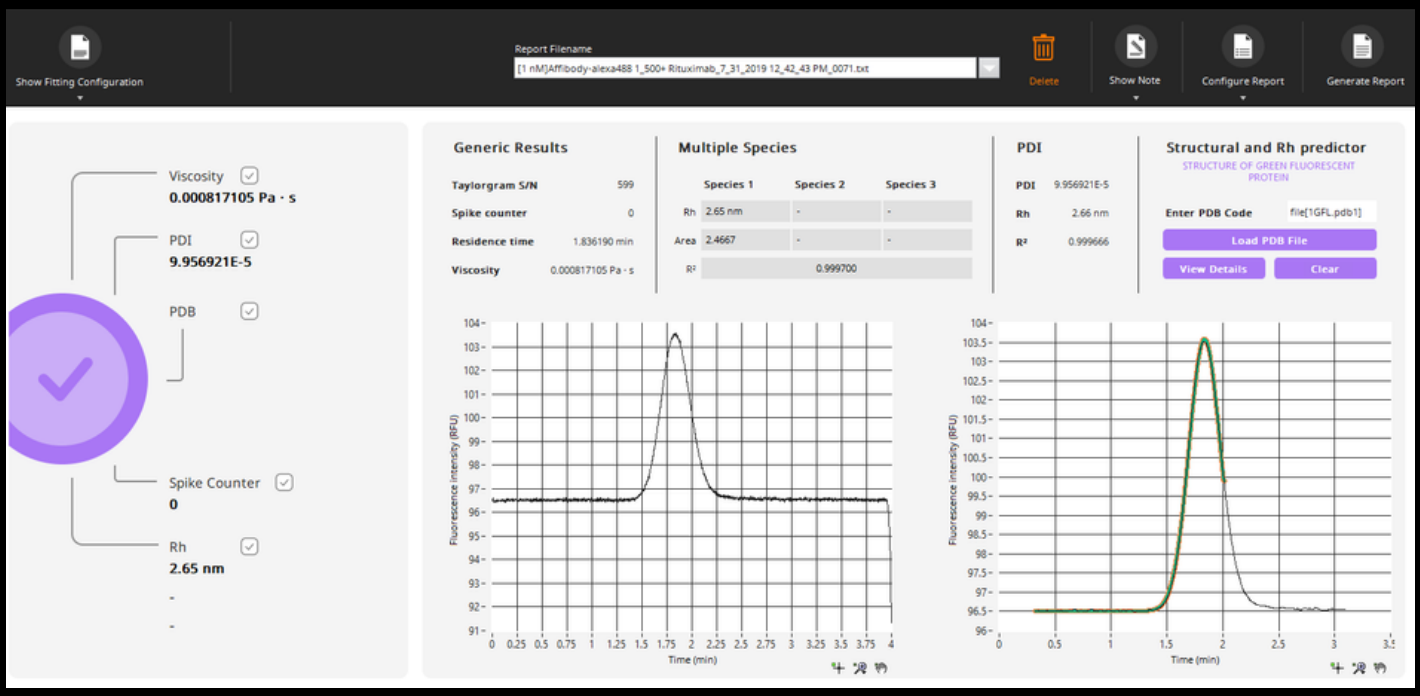
All parameters included with every sample measured



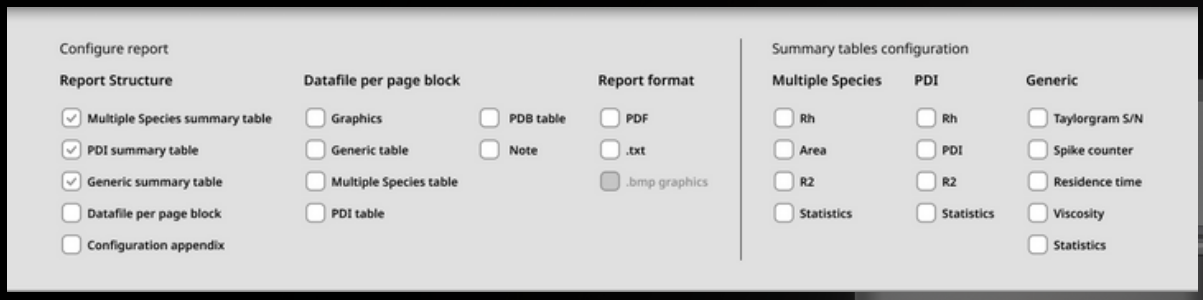
Sample Quality - Reporting Tool

CUSTOMISE & EXPORT REPORTS

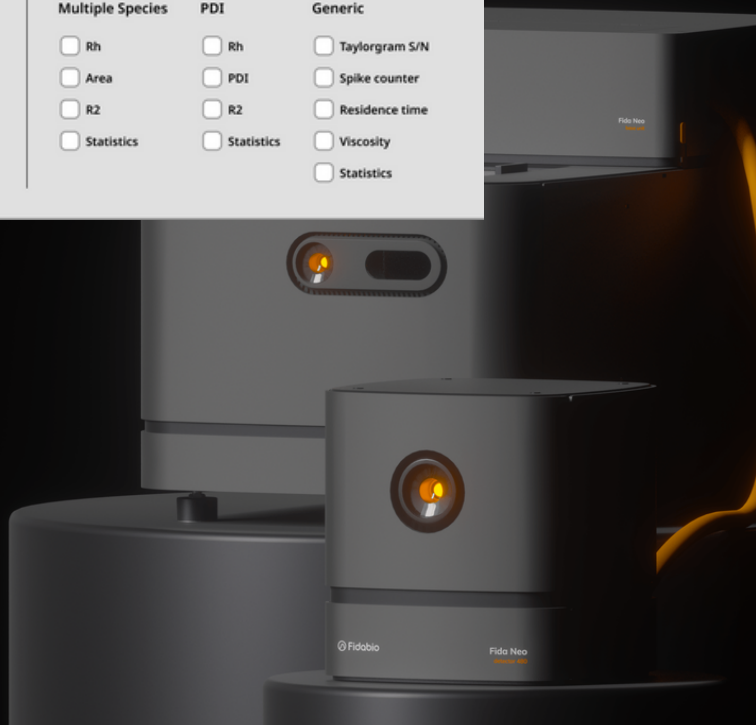
Reports that meet your requirements



Easy to implement in your workflow.



With Fidabio Quality Control Module you can custom make and export Quality Control reports of your samples. The data can be exported as a PDF report file with graphs included, or a .txt file, which is easily processed by any data analysis software.



03 Detection
PRECISION & FLEXIBILITY

Fida Neo's detectors have been carefully engineered in order to make FIDA even more precise and robust. Their unmatched Signal-to-Noise Ratio (3-fold higher compared to current state-of the art detectors) improves detection limits, allows for clearer signal interpretation, efficient data acquisition and processing. By enabling the detection in lower concentrations and reducing the time and effort required for data analysis, a high SNR can accelerate exploratory academic research, as well as research and development processes in the pharmaceutical industry.

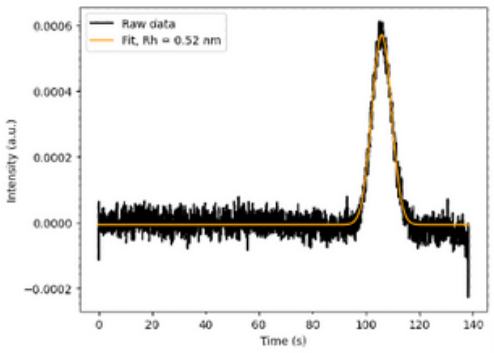
480 nm, 640 nm, 280 nm

Fida Neo detectors come in 3 wavelength (LED) options. If you need to use different wavelengths for diverse experiments, you can simply change the detector.

3-fold increase in Signal to Noise

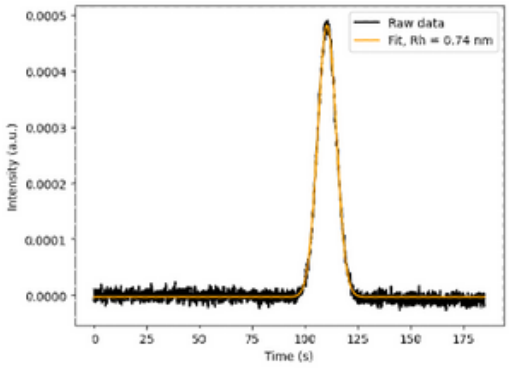
***Compared to current state-of the art detectors**

LOD, 0.1 nM, FITC



As low as 100 pM FITC in PBS with SNR > 30 for 480 detector

LOD, 1 nM, CY5



As low as 1 nM CY5 in PBS with SNR > 30 640 detector

04 TECHNICAL SPECIFICATIONS

and instrument characteristics

Detection technology	Fluorescence - multiple wavelengths available: UV (label free), 480, 640
Size accuracy	5%
Kinetics	sec-hrs
Dissociation constant (K_D):	pM - mM
Size detection	Rh of 0.5 - 500nm
Signal-to-noise ratio	> 30
Assay control	Built-in Quality Control parameters
Sample capacity per run	Up to 2 x 96 samples
Pressure range	1 - 3500 mBar
Autosampler temperature control	5°-50°C (41°-122°F)
Capillary chamber temperature control	15°-45°C (59°-113°F)
Capillary types	Fused silica; dynamic coatings or permanently coated
Power	120-240VAC, 50/60Hz
Operating system	Windows

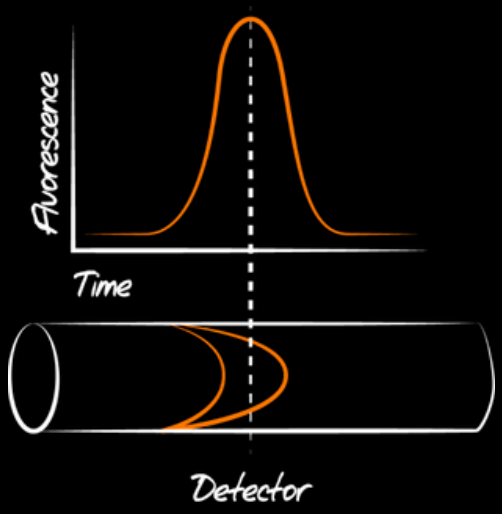
05 FIDA in a nutshell

FLOW INDUCED DISPERSION ANALYSIS

FIRST PRINCIPLE THINKING

FIDA technology is a “1st Principle” technology. **This means that FIDA does not dependent on a priori assumption or on empirical calibration.** It uses first principles of physics and fluid mechanics to analyse the movement of particles in a fluid. This brings simplicity and robustness straight into the users' lab.

Independently of the biology being investigated, each data point has a **range of built-in QC parameters included.** Thanks to that, data interpretation is straightforward, and R&D iterations can be performed instantly, which speeds up users' workflows.



HOW DOES IT WORK? SIMPLIFIED.

FIDA measures fluorescence of particles in the laminar flow and analyses their dispersion over time, which allows for calculation of the hydrodynamic radius of a particle of interest. The two basic principles used are Taylor Dispersion and Laminar Flow.

The sample of interest is passed through a thin capillary. Due to the difference in velocity between the walls and centre of the capillary, the sample shapes into a parabolic profile. Molecules diffuse radially, away from the flow axis. The fluorescence emitted by the molecules is acquired as a Gaussian signal by a high sensitivity detection system and is plotted against time. The size of the molecules in the sample determines their radial diffusivity, which in turn defines the extent of sample’s dispersion.

FIDA can detect size changes smaller than 5%.

$$\text{Diffusivity} = \frac{a^2}{24\sigma^2} t_R$$

$$\text{Hydrodynamic Radius} = \frac{k_b T}{6\pi n D}$$

Scan to see how it works!

06 NEXT STEPS

Have a chat with our sales representative to learn more about FIDA technology. Scan the code to the right to book a discovery call.

Discovery call

Visit our literature base to explore publications, application notes, posters and other pieces of literature.

Literature base

Or visit us on

fidabio.com

FIDA NEO

New Instrument by Fidabio

Free Yourself

No immobilisation

In-solution nature of FIDA allows for access to all binding sites - no more non-specific binding issues.

No constraints

Crude or purified samples. Any pH, ionic strength, temperature, detergents or buffers.

No regeneration

Eliminates risk of denaturing immobilised protein. Allows for fast determination of slow off rates for high affinity interactions.

Stay in control

Flexible Assay Design

Adjust interaction times for kon/koff measurement; modulate mixing time through in-capillary sample mobilisation.

Embedded Quality Control Reporting

Full transparency of sample material quality thanks to embedded Quality Control Module & Reporting Tool.

Detect Strong & Weak Binders:

Capable of measuring kinetics of both strong and weak interactions in-solution.

Boost efficiency

Small sample volumes

With as little as 4 µL analyte with fixed 40 nL indicator. Save material & effort.

No time wasted

Run 4 minute long assays & take informed decisions thanks to high data transparency.

Label-free or labelled

Have an option of switching detectors while using a single base instrument.

No expert user requirements

With just a few hours of training all scientists can run FIDA experiments.

Read more on:

fidabio.com

Fidabio

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