Product Brochure

Fluidic Analytics

Fluidity One-M

Examine the most challenging protein interactions under native conditions and gain insights that were previously unattainable

Measure what really matters

The Fluidity One-M reliably and accurately measures interactions based on changes in molecular size without the need for immobilization or purification

The Fluidity One-M allows you to study biomolecular interactions using proteins, peptides, DNA, RNA, or lipids.

Key features:

1. Measure a wide range of affinities (K_D, pM to μM range)
2. Determine the concentration of targets in complex mixtures (nM to μM range)
3. Obtain stoichiometric information to study mechanism of action or target engagement
4. Work directly in biologically relevant backgrounds such as cell lysates or clinical samples (e. g., plasma, serum or saliva)

Quick

Easy

Robust

Multiple parameters
(K_D, concentration, stoichiometry, size)

Purified or crude samples

Low sample consumption

"[MDS] is the breakthrough that gives us invaluable new insights and could be a game-changer..."

Prof Adriano Aguzzi
University Hospital Zurich
Quote from a BBC interview showcasing Fluidic Analytics' clinical collaboration with Prof. Aguzzi (Oct 20, 2020)

Document reference: PPM-119v2

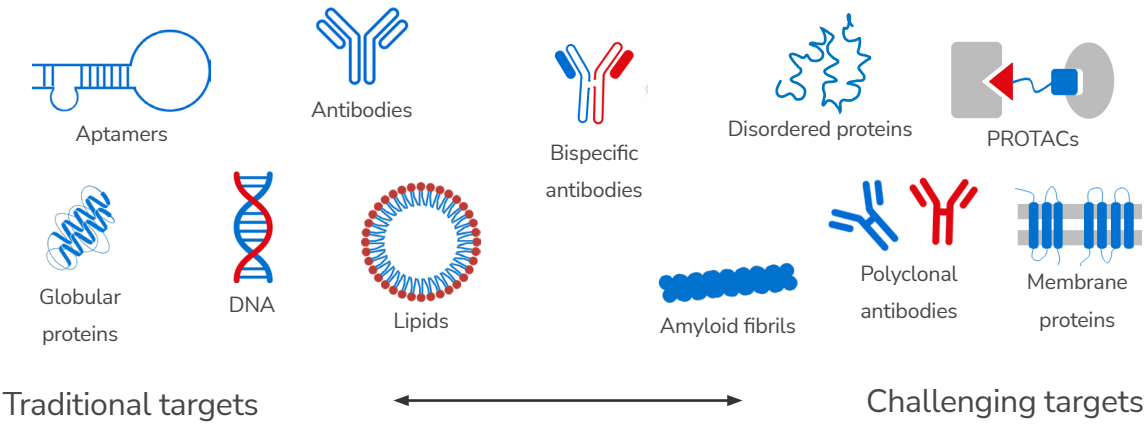
Maintenance-free design and plate-based consumable

Stop tampering with your assay setup—if you can pipette, you can use MDS

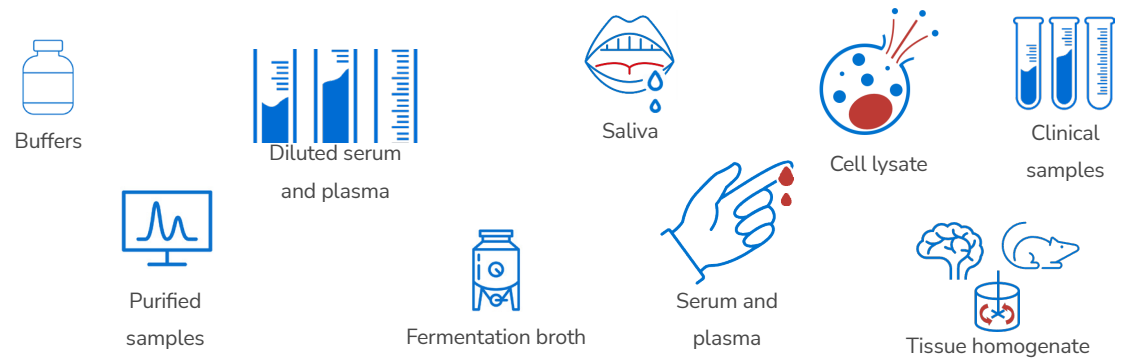
- Microfluidics contained within the consumable
- No flushing, no clogging when using crude samples, no risk of cross-contamination
- Intuitive graphic user interface
- Guided experimental setup
- 24 data points per consumable
- Measurement time of 25 min per consumable (24 data points)
- 4.0 µL per data point
- Directly compatible with multi-channel pipettes

MDS technology enables a wide range of applications

Quantify protein interactions with any target type...



...in any background



Basic Research

- Measure binding and activity of your most challenging targets
- Unlock competition experiments and work with ternary complexes

Drug Discovery

- Validate and characterize hits without having to purify
- Optimize leads and understand their mechanism of action
- Determine binding affinities and cooperativity in a single experiment

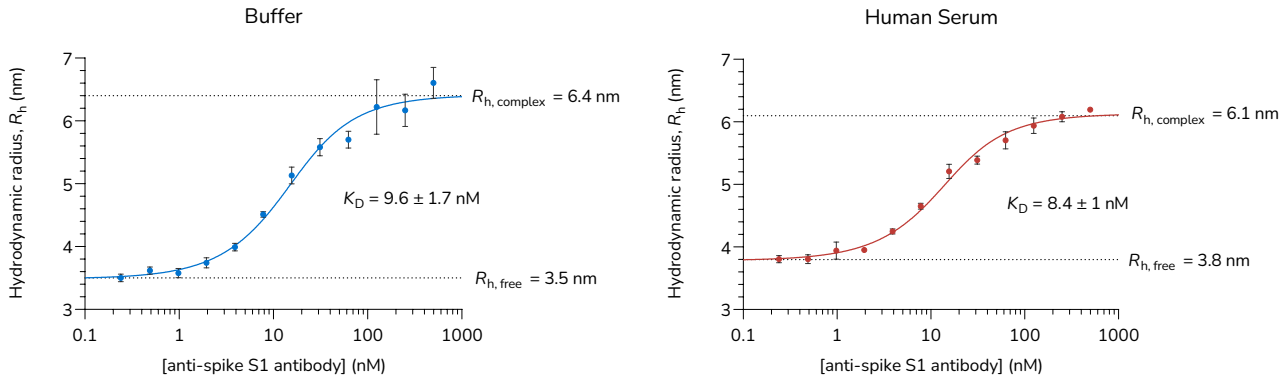
Translational Research

- Obtain concentration and affinity of serum antibodies and overcome limitations imposed by ELISA titers
- Evaluate immune responses directly in patient samples (e. g., vaccine development)

Measure directly in complex backgrounds

No cumbersome sample preparation—MDS just works

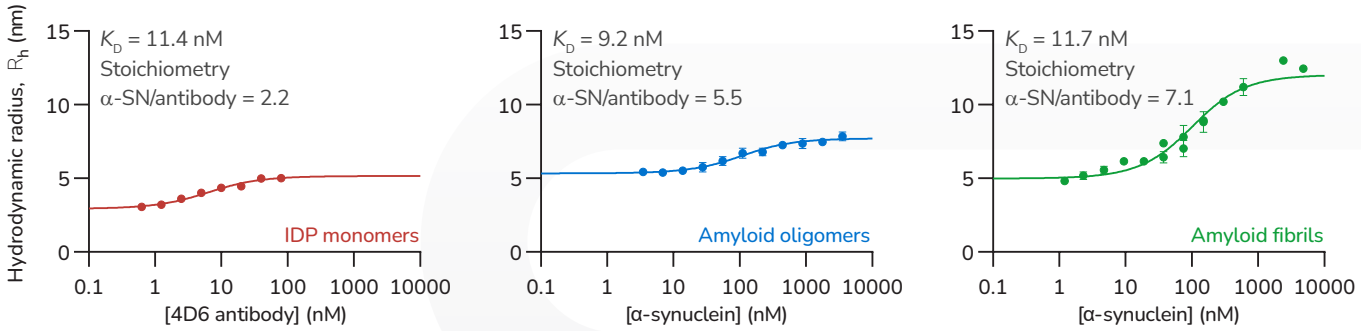
- Antibody-affinity determination using spike-in samples
- SARS-CoV-2 anti-spike antibody against SARS-CoV-2 RBD comparing PBS-T and >90% serum matrix



Experimental conditions: Alexa Fluor™ 647-RBD at constant 20 nM, PBS-T or pre-pandemic serum used as sample matrix (serum concentration 91-97%). Application note: Solution affinity profiling of SARS-CoV-2 antibody in serum.

Measure your most challenging targets

Study intrinsically disordered or aggregated proteins in their native state



Experimental conditions: Alexa Fluor™ 647-α-syn monomer or 4D6 at 5 nM for monomer and oligomer/fibril experiment, respectively, in PBS-T. Application note: In-solution measurement of antibody affinities and binding stoichiometries to neurotoxic amyloid species.

- Candidate antibody 4D6 for treatment of Parkinson's disease interacting with intrinsically disordered α-synuclein monomers, oligomers and fibrils
- Microfluidic diffusional sizing confirms oligomerization state of target
- Affinity measures strength of antibody binding
- Stoichiometry determines number of antibodies bound, giving insights on coverage of nucleation sites
- MDS revealed no change in solution-phase affinities of antibody for disordered α-synuclein monomer and large oligomers or fibrils

Measurement principle

Discover how MDS technology can propel your research forward

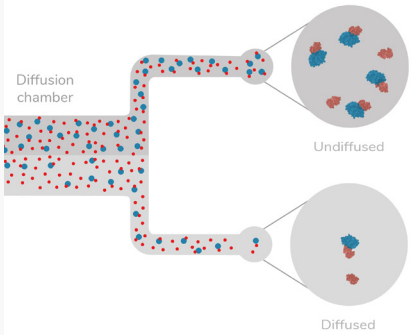
Microfluidic Diffusional Sizing (MDS) is a proprietary technology which opens the door to quantify and characterize protein interactions, regardless of background or target complexity. Utilizing MDS technology, the Fluidity One-M analyzes the most challenging targets, in buffers, cell lysates or serum, to deliver molecular size, affinity (K_D), concentration and stoichiometric data.

How does it work?

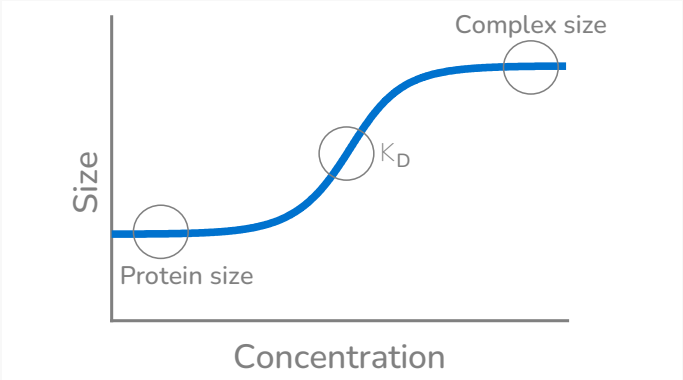
Microfluidic Diffusional Sizing (MDS) measures molecular size (hydrodynamic radius). Changes in molecular size indicate binding events.

MDS works with a broad selection of interaction partners: antibodies or other protein types, single species or higher

Since only species including the labeled protein are detected and measured, MDS allows measurements in physiologically-relevant, complex backgrounds.



The hydrodynamic radius (R_h) for the unbound protein and the protein complex are also automatically calculated and displayed. The $R_{h,\,free}$ provides a check on the quality of the labeled species and $R_{h,complex}$ reveals the size in solution of the saturated complex under the conditions tested.



Specifications

System	
Application	Determine size, K_D, concentration and stoichiometry in buffer systems or complex backgrounds such as serum or plasma
Technology	Microfluidic Diffusional Sizing (MDS)
Interaction analysis	
Run time	25 min for 24 data points to determine K_D
Size range: hydrodynamic radius, R_h	1 – 20 nm
Accuracy of size determination	± 10%
Reproducibility of size determination	CV < 10%
Working range molecular weight	1.4 kDa – 14 MDa
Sensitivity range (labeled HSA in PBS)	1 nM – 3 µM Alexa Fluor™ 488 | 100 pM – 3 µM Alexa Fluor™ 647
Typical sample consumption to determine protein K_D	50 – 80 µL
Sample volume per data point	4.0 µL
Compatibility	Compatible with crude, complex backgrounds such as undiluted serum or plasma Compatible with aqueous and biological buffers including components such as TRIS, HEPES, PBS, NaCl, KCl, TWEEN, DMSO and DMF
Data points per run	Up to 24 data points per run
Fluorescent labels	Alexa Fluor™ 647 and equivalents, RFP/Cy5, Alexa Fluor™ 488 and equivalents, GFP/FITC, Fluidiphore labeling kit (fluidiphore rapid amine 503)
Data export	USB Mass Storage Device / Fluidity Cloud
Exported data file formats	CSV, JSON
Data output from Fluidity Cloud	Result tables, binding curves and affinity (K_D), size (R_h) of complex and labeled species
Consumables	
	Kits sufficient for 192 data points
Specifications	
Temperature control	25 °C (actively controlled)
Operating environment	15 °C to 30 °C
Power requirements	100 – 240 V AC, 50 – 60 Hz
Safety and EMC standards	Designed to comply with all relevant safety and EMC standards
Dimensions	
Dimensions (D x W x H; mm)	666 x 432 x 489 (Drawer Out)
Weight (kg)	35

About us

Fluidic Analytics believes the understanding of proteins and their behavior will help customers develop better treatments and diagnose diseases faster and more accurately. By producing accessible instrumentation and software solutions, Fluidic Analytics aims to make the insight into how proteins interact widespread across research and industry, allowing quantitative analysis of the most complex targets and backgrounds. For more information go to fluidic.com or contact us under welcome@fluidic.com.

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