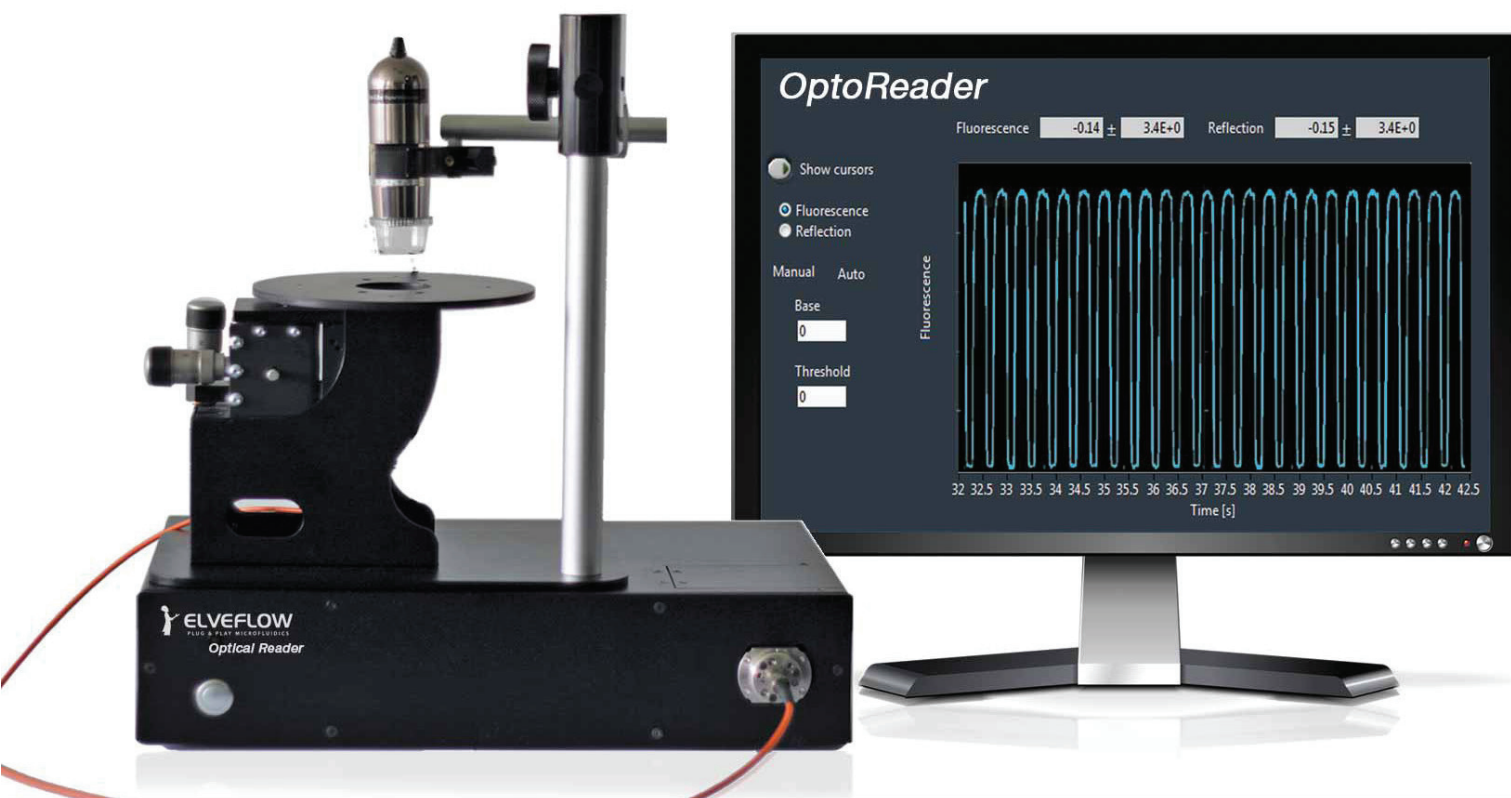


# OPR

## Microfluidic Optical Reader



### OPTOREADER - OPTICAL DETECTION FOR MICROFLUIDICS

OptoReader uses one optical fiber to both illuminate and capture light emitted by the sample. In function of your needs, there are different available versions:

- **OptoReader Basic:** Measurement of fluorescence.
- **OptoReader Fluor:** Simultaneous measurement of reflection & fluorescence.

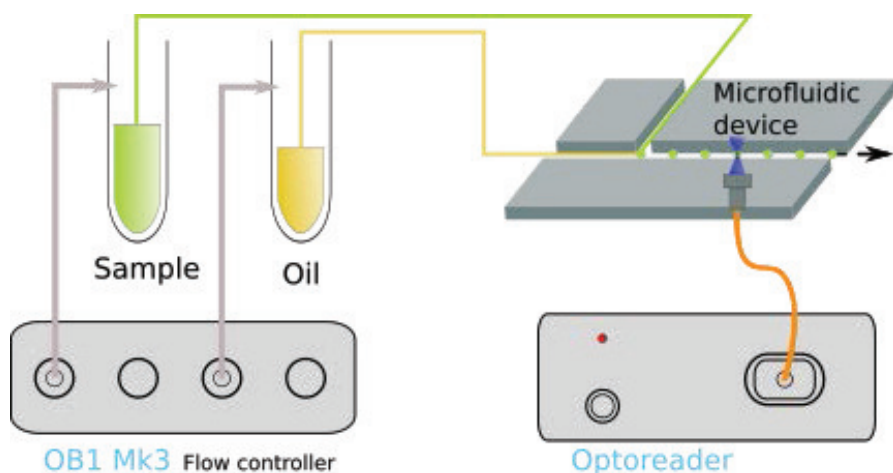
#### MAIN FEATURES

- Inspection camera: x10 to x90
- Alignment Module: sensitivity 50  $\mu\text{m}$ /rotation
- Custom filter set: 9 types of fluorophore
- Custom lens: magnification 0.5x to 5x
- Custom excitation wavelength: from 365 nm to 625 nm

#### BENEFITS

- Fast acquisition
- High sensitivity: detection limit down to 1 nM FITC
- Tiny detection spot with high aperture
- Simultaneous measurement of fluorescence and reflection
- Versatile integration

## OPR PRINCIPLE



## OPR FEATURES & BENEFITS



### › Compact optical fiber-based design

for an easy and versatile integration with your microfluidic device.

### › Bidirectional Optical fiber output

the optical fiber can perform simultaneous reflection and fluorescence measurement.

### › High throughput detection

100 kHz acquisition, capable of detecting thousands of events per seconds.

### › High sensitivity

Fluorescence detection limit: < 20 pW full bandwidth.



### › Monitoring

The OptoReader allows detection and quantification of flowing particles in a given point during microfluidic experiments.

### › Plug-and-Play

Control your experiments through C, Python, Matlab®, Labview® or the Elveflow® Smart Interface.



### › Technical support

A team of experts in microfluidics will provide you individual customer care, specialist advice and technical support: the guarantee for a solution tailored to your specific research

### › Many available options

- Higher sensitivity (25x)
- Alignment platform
- Focalization optics
- Multi band fluorescence detection (up to 3 colors)
- Lock in detection

### › Compact

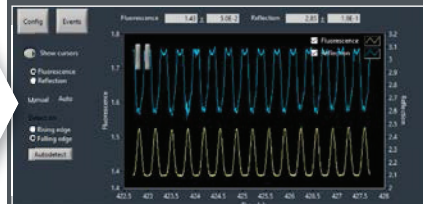
Offers great advantage over conventional microscopes thanks to its compact design, real-time processing capacity, high detection sensitivity and cost effectiveness.

## Our software Makes Your Work Easier

A user-friendly software that allows easily integrating Optoreader into your existing flow control system.

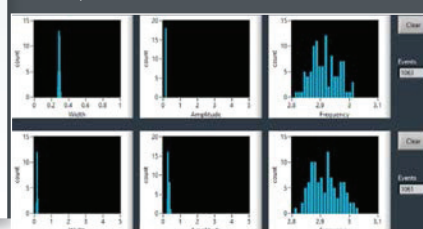
### ▶ Optical Detection Interface

Records the variation of the reflection and fluorescence signals due to the passing of the fluorescent objects.



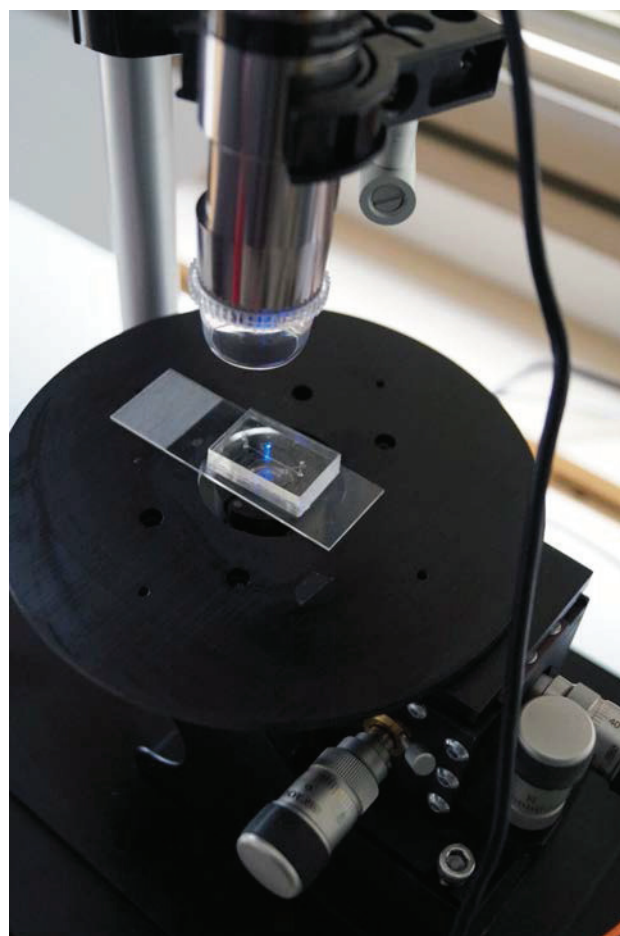
### ▶ Statistic Interface

Get real-time statistical information on the studied objects: frequency, amplitude, width.



# OPR TECHNICAL SPECIFICATIONS

PROPERTIES	SPECIFICATION		
<b>EXCITATION</b>			
Excitation wavelength	365nm, 470 nm, 530 nm, 590 nm, 625 nm		
Fluorescence filter Set	DAPI, FITC, TRITC, Texas Red, Cy5		
Power	0-1.5 mW (470 nm LED)		
Pulse duration (pulse mode)	10 $\mu$ s-10 s		
Frequency (Lock-in mode)	50 Hz-10 kHz		
<b>ACQUISITION</b>			
Acquisition frequency	0-100 kHz		
Acquisition resolution	16 bits		
Typ. acquisition dynamic	84 dB		
Reflection offset resolution	100 pW		
Bandwidth	RANGE		
	REFLECTION	FLUORESCENCE	
	0-12 $\mu$ W	0-120 nW	100 kHz
	0-3.6 $\mu$ W	0-36 nW	10 kHz
	0-1.2 $\mu$ W	0-12 nW	1 kHz
	0-360 nW	0-3.6 nW	100 Hz
	0-120 nW	0-1.2 nW	10 Hz
Noise equivalent power (NEP)	REFLECTION	4 pW/Hz <sup>1/2</sup>	
	FLUORESCENCE	40 fW/Hz <sup>1/2</sup>	
Reflection min. noise	6 pW (0-360 pW range)		
Fluorescence sensitivity (Specified on normal mode, can be improved with lock-in mode)	< 60 fW (0-360 pW range), or $5 \times 10^4$ photons/s* (available option with $2 \times 10^2$ photons/s sensitivity) **		
Minimal equivalent fluorescence background (Specified on normal mode, virtually zero in lock-in mode)	0.1 $\mu$ M FITC in 400 $\mu$ m spot (0-360 pW range, 200 $\mu$ W power)		
<b>OPTICS</b>			
Optical fiber diameter	50 $\mu$ m, 200 $\mu$ m, 400 $\mu$ m		
Optical fiber numerical aperture	0.50		
Focalized spot diameter	36 $\mu$ m, 143 $\mu$ m, 286 $\mu$ m		
Focalized spot numerical aperture	0.6		
<b>MECHANICS</b>			
Size LxIxh (mm)	348x253x124		



\*  $60 \text{ fW} = \text{noise\_detector} \times \text{sqrt}(\text{BW} = 1\text{Hz}) \times \text{N\_photon} = \text{noise\_detector} \times \text{sqrt}(\text{BW}) / e_{1\text{photon}}$

\*\* Using MCCP detector for or NA = 0.6

## Related Products & Services



### > Eppendorf® Microfluidic Tank

100% gas tight connection caps.  
1.5 - 2 mL Eppendorf® tubes  
15 mL BD Falcon® tubes  
100 mL - 2 L Upchurch® bottle caps.



### > Broad Product Line

Elveflow instruments are designed to work together on your microfluidic setup. Switch valve system, flow rate monitoring, temperature control...



### > Grants & Partnerships

Elveflow invests in co-development and cooperative projects with academic, SME and industrial partners to take an active part in the development of microfluidics.



### > Service

Benefit from our microfluidics PhD team's expertise. Take advantage of our support for specific developments on your setup.

It is no coincidence that the most prestigious names trust in us

