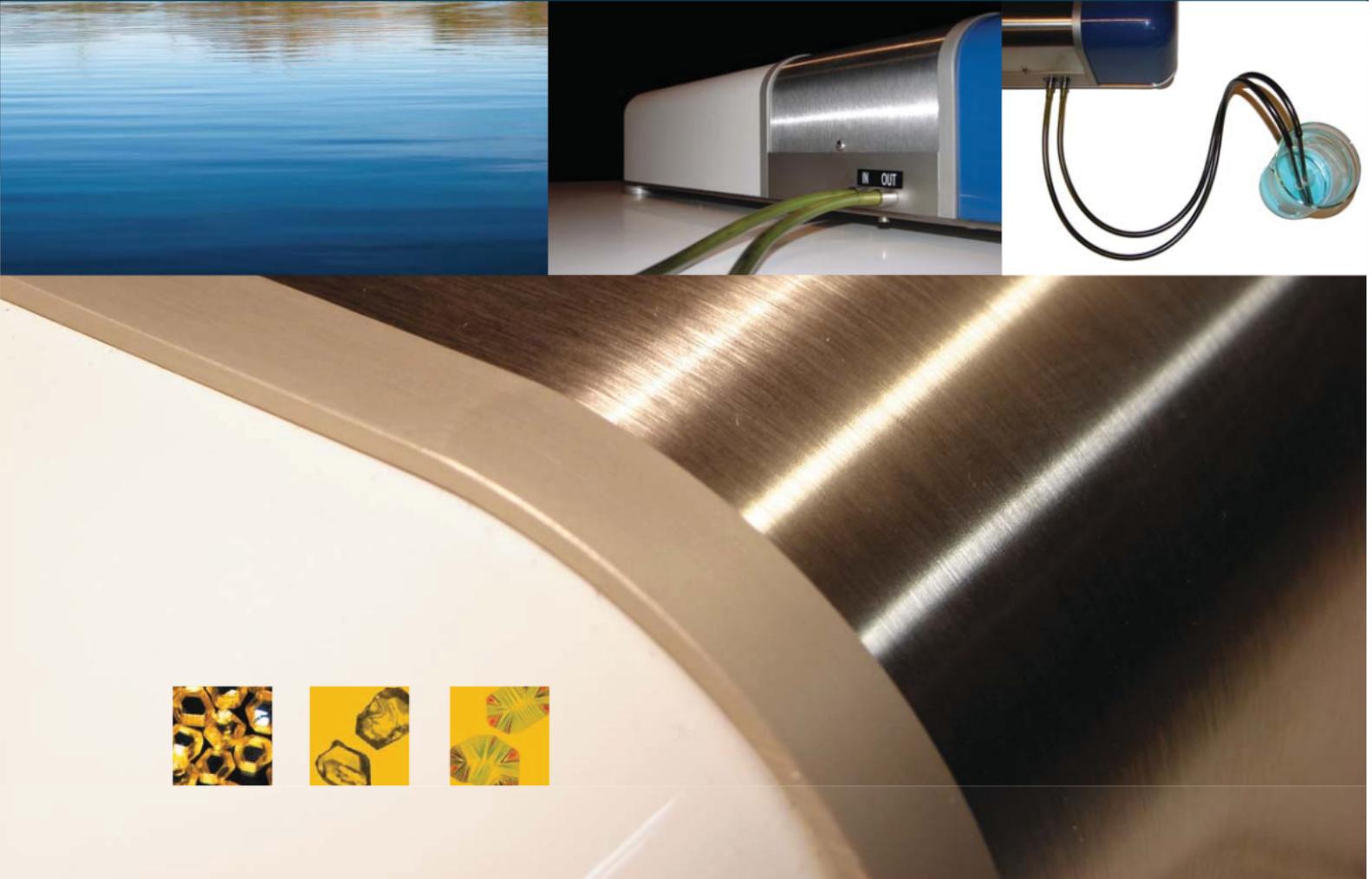




You need precision, you want morphology



## OCCHIO Flow-Cell FC200M

The best solution for measuring particles in suspensions



**QAQC LAB**

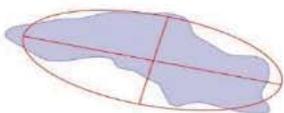
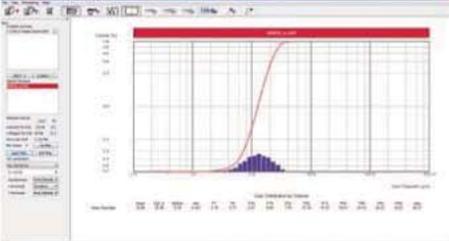
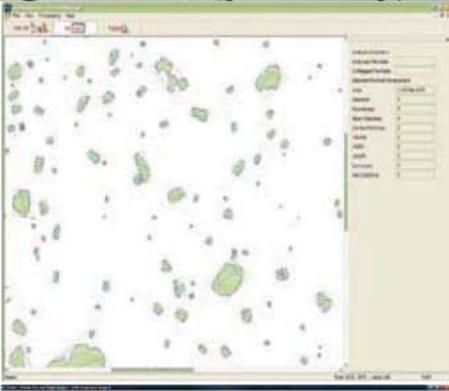
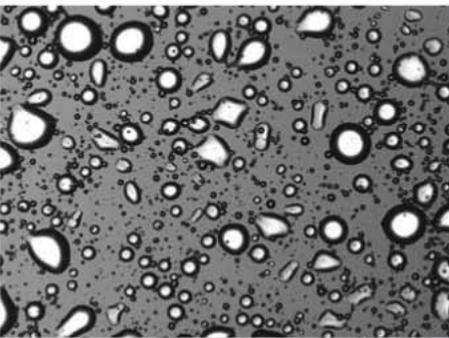
**[www.qclabequipment.com](http://www.qclabequipment.com)**

Imaging solutions in particle analysis



## OCCHIO Flow-Cell FC200M

# Size , shape & counting for particles in suspensions



Through the efforts of an international and multidisciplinary team of engineers, **OCCHIO** offers you a complete range of solutions, starting from 200 nanometers and ranging up to centimeters.

Whether it is for laboratory instrumentation, «at line» or even «on line» solutions, **OCCHIO** is prepared to be your partner in high-level powder characterization. **OCCHIO** and **OCCHIO Flow-Cell** bring you accuracy, profit and innovation.

### \_ Accuracy

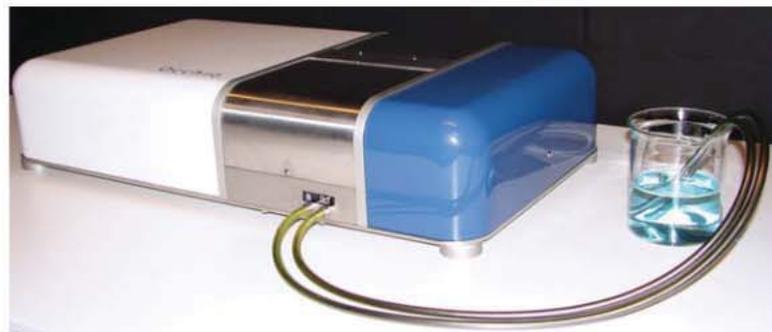
With its proprietary Light and high quality lens, **OCCHIO Flow-Cell** will change your own perception of image analysis, measuring suspensions or emulsions which are invisible under normal microscopy.

### \_ Profit

**OCCHIO FC200 M** is an automatic device dedicated to suspensions quality characterization. Based on image analysis technique associated with a specific pump to avoid breakage of particles, FC200M provides size, shape and counting measurements.

### \_ Innovation

Morphology measurement is more than shape description. To improve, you need robust and significant measurement. Based on decades of university research, the **OCCHIO Flow-Cell** provides your R&D and Production departments with dedicated parameters, specially engineered



### \_ Size measurements (from 400 nm up to 1000 µm)

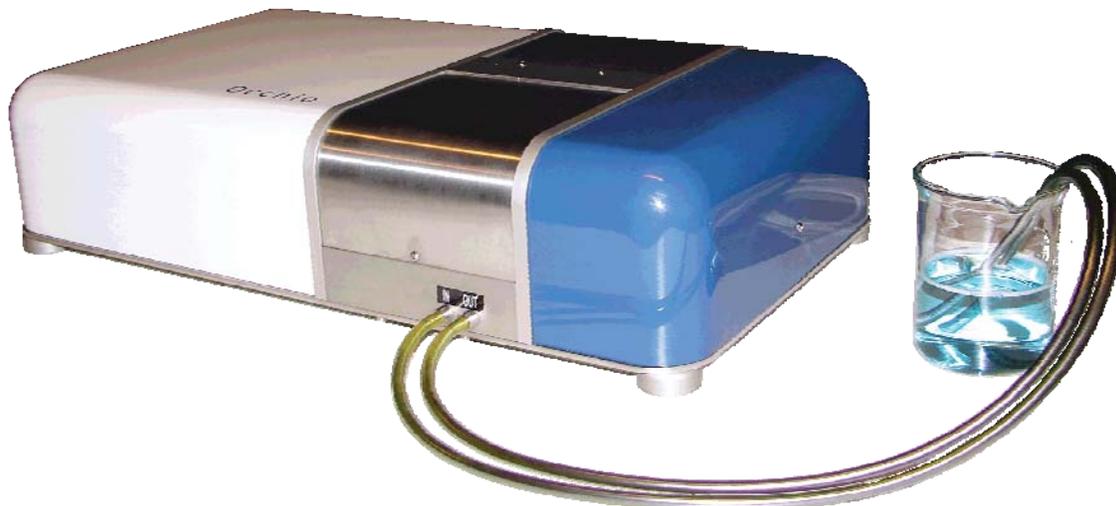
Area diameter - Mean diameter - Length - Width - Maximum distance ....

### \_ Shape parameters

Elongation - Circularity - Convexity - Shape factor - Luminance & Special parameters.....

### \_ Counting and kinetics...

Reference code: OCC242-01 Occhio Flowcell FC200 M



**Particle size range (0.8 microns – 1000 microns)**

**Technical specifications**

Working conditions

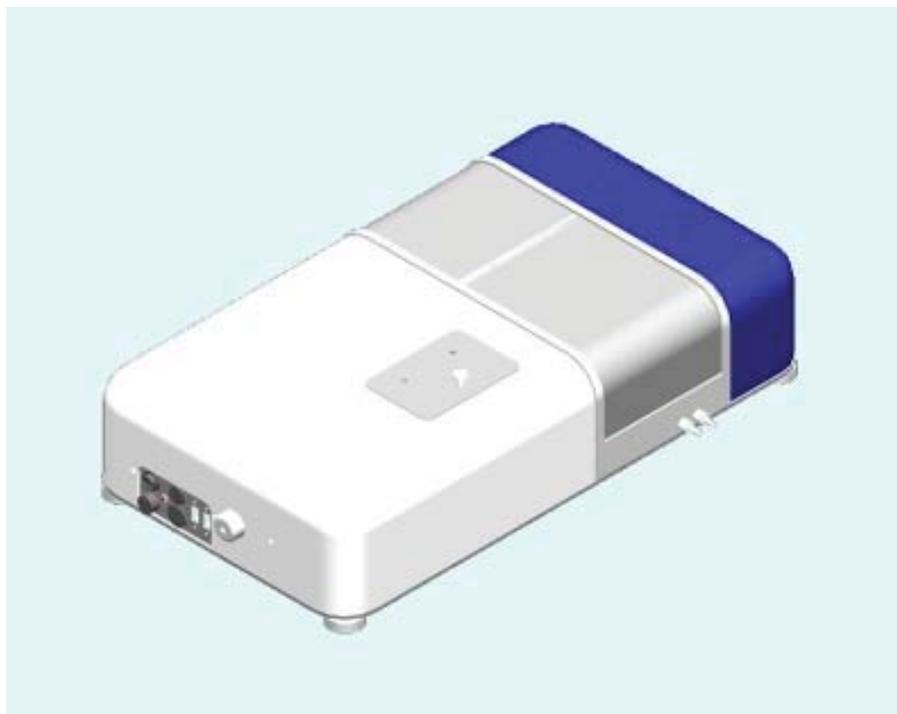
	Description
Working temperature	5-40 °C non condensing
Power Supply	100-220 Vac 50-60Hz

Computer (if supplied by Occhio, minimum specifications)

	Description
Processor	Intel Core i5-650 @3.2GHz, 4MB cache
Ram	4 GB @ 1156MHz
Hard Disk	500MB
Display	LCD, FullHD, 21.5"
Mouse, keyboard	USB (English)
Operating system	Windows Seven compatible with XP, Vista

Optics and imaging device

	Description
Standard camera type	C-mos progressive scan
Camera resolution	6.6 Millions pixels (2200 x 3000 pixels)
Pixel size	3.5 µm side
Lens type	Telecentric variable magnification zoom
Lens resolution	From 0.38 to 2.33 µm/pixel
Field of view	836 x 1140 µm @0.38 µm/pixel 5133 x 7000 µm @2.33 µm/pixel
Light source	Collimated monochromatic light
Light wavelength	440 nm
Light output diameter	15 mm



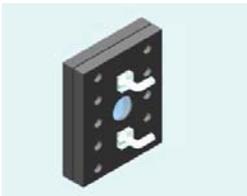
**Dimensions and weight**

	Description
Length	630 mm –24.8 in
Width	350 mm –13.8 in
Height	160 mm –6.3 in
Weight	17.5 Kg – 40.8 lbs
Connection	2 USB II at 480Mbps, 1 DIN5Pin 180°, 1 DIN3pin

**Integrated membrane pump**

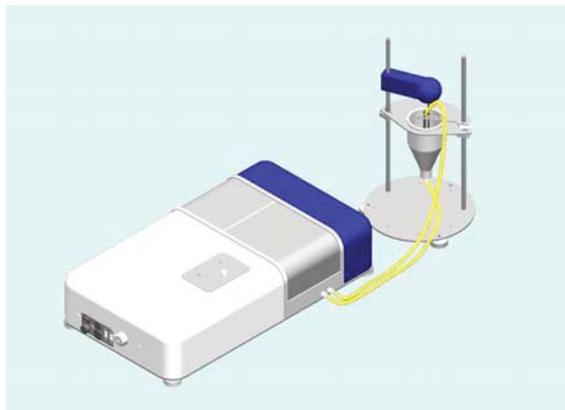
	Description
Power supply 0-12Volt DC	The pump is powered by internal power supply. Voltage variables 0 to 12 Vdc via a potentiometer located on the left side of the instrument
Valves and membrane	Polypropylene and PTFE
Pumping flow	0 to 2000ml/min

**Starting kit parts (these parts are included in the packing box at the delivery)**

Part number	Description	Quantity
OCC011SW 	CALLISTO EXPERT	1
242-508-R1 	Flow cell glass windows for FC200M – S – S+ - HR	2
242-509-R1 	Glass windows O-ring for FC200M-S-S+-HR	2
242-567-R1	Pipe flow in/out, AISI 316; 4x6mm length 80mm	2
999-0001-R1	USB 2, m/m 1.5m, instrument connection cables	2
242-565-R1	Tube Tygon Solva 4.8x8mm; 2m	1
242-050-R1-16000x250µm	Paper spacer channel width 16000µm thickness 250µm	2
242-050-R1-16000x400µm	Paper spacer channel width 16000µm thickness 400µm	2
242-050-R1-16000x500µm	Paper spacer channel width 16000µm thickness 500µm	2
242-050-R1-16000x800µm	Paper spacer channel width 16000µm thickness 800µm	2
242-050-R1-16000x1000µm	Paper spacer channel width 16000µm thickness 1000µm	2
242-566-R1	Power supply module; 5-12-24VDC for FC200M	1
242-901-R1	Set: 10 screws for flowcell core	1
242-902-R1* 	Set: complete mounted flowcell core for FC200M 2x 242-508-R1 2x 242-509-R1 1x 242-040-R1 1x 242-041-R1 1x 242-050-R1-16000x400µm 1x 242-901-R1 2x 242-532-R1	1
999-0003-R1	Power supply cable North America	3
999-0004-R1	Power supply cable Europe	3
999-0013-R1	Desk top computer + LCD, FullHD, 21.5" + Mouse + Keyboard US	1
999-0010-R1	USB Keyboard USB (FR) instead of Keyboard US according with customer country	1
999-1004-R1	Particle size standard Borosilicate glass beads 20µm	1 bottle

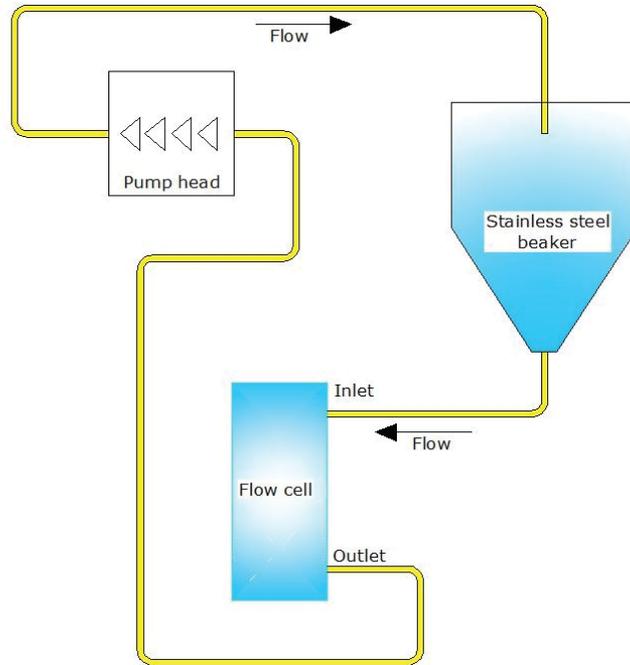
\* This part is installed on the instrument at the delivery (standard configuration)

**Option (Ref: 242111): stainless steel conical beaker with overhead stirrer**



	Description
Support module	Stainless steel 4mm thickness base includes two sides supports columns.
Stainless steel beaker	Stainless steel conical beaker 300ml
Overhead stirrer	Max volume 2liters Consumption 8w Speed 0-2000 rpm power cables delivered with the stirrer, speed and power supply are independent of the instrument
Stainless steel inlet outlet tube	One tube 6x4mm diameter and 80mm length, compatible with '242-565-R1' Tygon Solva 4.8x8mm
Tube support	One tube support with blocking screw

Recommended flow path for '242111' option



**Occhio 'FC200M' short instrument overview**

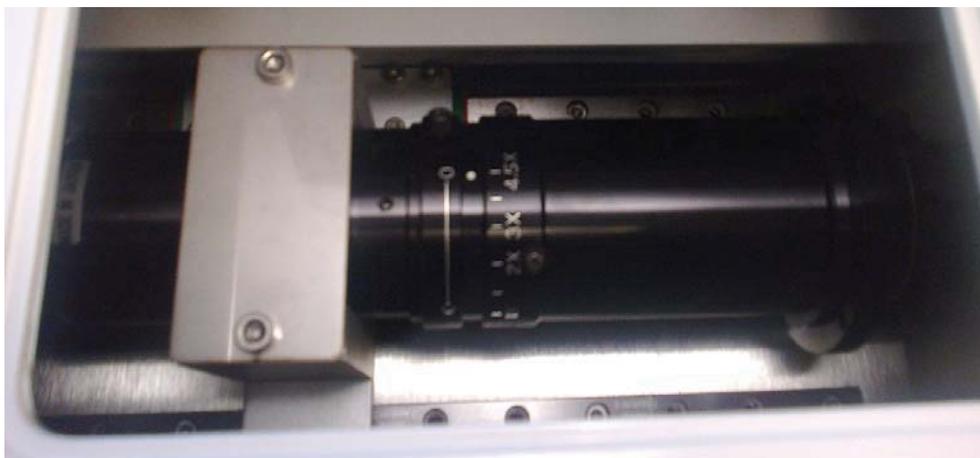
**Instrument calibration**

A first calibration is imposed using the magnification table according with the camera and lens specifications.

FC200M

Zoom magnification	Front lens magnification	Global magnification	Instrument calibration $\mu\text{m}/\text{pixel}$	Image size ( $\mu\text{m}$ ) Standard camera 2200x3000 pixels
1x	2x	2x	1.750	3850x5250
2x	2x	4x	0.875	1925x2625
3x	2x	6x	0.583	1282x1749
4.5x	2x	9x	0.389	855x1167

A second calibration, according with customer specifications, is done using standard latex beads from 1  $\mu\text{m}$  up to hundreds microns. A calibration table is implemented in the software allows computed distribution values through an automatic size correction.



**Sample analysis**

Model	Occhio Flowcell FC200M
Sample dispersion	Water, alcohols, oil (viscosity depending)
Sample particles size range	From 800nm to 1mm (FC200M)
Sample concentration	According with sample property and flowcell thickness (Typical dilution 5% in volume)
Sample analysis	Size distribution cumulate and proportional curve Number distribution or volume weighted distribution Particles counting distribution (size expressed in particles/ml for each size bins)
Standard Operating Procedure includes	Analysis volume(priming, analysis, rinsing) Volume sampling Light intensity calibration Background calibration Particles counting



	<p>Creation of a particle database          Image storage          Filtering procedure          Automatic reporting generation</p>
--	--

**Software mains features**

<b>Model</b>	Callisto Software for Flowcell FC200M
<p>Size parameters          (Iso 9276-6; 7; 8)          All the size parameters are displayable or not according with the customer setting preference</p>	<p>ISO Area diameter          ISO Inner diameter          Mean diameter          Perimeter diameter          Crofton diameter          Half Crofton diameter          Width          Length          Ellipse Width          Ellipse Length          ISO Max Distance          ISO Geodesic Length</p>
<p>Shape parameters          (Iso 9276-6; 7; 8)          All the shape parameters are displayable or not according with the customer setting preference</p>	<p>Occhio Bluntness          Occhio Roughness          Elongation          ISO Aspect Ratio          Ellipsoid Elongation          Ellipsoid Roundness          Ellipse Ratio          ISO Eccentricity          ISO Straightness          ISO Roundness          ISO Compactness          ISO Extent          ISO Solidity          Convexity          ISO Circularity          Luminance mean          Luminance var.          Porosity</p>
Advanced shape parameters	Developed in function of customer specifications
Image format	Bitmap
Data storage	<p>`.oph` binary Occhio files format contains:          Full size distribution values          Shape and size percentiles          Outline and greyscale levels of each particle</p>
Data comparisons	Open and compare more analysis on the same plots include `trends graphic`
<p>Plots and figure          (By number or volume weighted values)</p>	<p>Acquisition info (short overview of the used SOP)          Size distribution          Size percentiles          Shape percentiles</p>



	Shape distribution Mean shape by size 2D scatter-plot (fully selectable particles map) 3D scatter-plot (include animation) Percentiles sample images Sample images (BMP exportable format) Id card for each particle (BMP exportable format)
Statistics tools	Morphological and size filtering procedure
Reporting and data export	Raw data export (text format) Table distribution export (text format) Table distribution and percentile export (Excel format) Automatic or custom reporting Full image export (bmp format) Single particle image export (bmp format) Figure and graph export (bmp format)
Microscope mode pane	Manual pumping fast speed, low speed. Valve switching, rinsing procedure. Current live image analysis.

---

**OCCHIO SA**  
 4 rue des chasseurs ardennais BELGIUM Tel : +32 43729330 Fax : +32 43652346 [info@occhio.be](mailto:info@occhio.be)  
[www.occhio.be](http://www.occhio.be)