

Flow Imaging Microscopy for Protein Therapeutics

OVERVIEW

FlowCam® is an imaging particle analysis system that uses flow microscopy to image and analyze subvisible particles with diameters ranging from 1 µm to 600 µm. Simultaneously determine particle shape, type, and size distribution of all detectable particles in your solution.

- Minimum sample volume = 100 µl
- Advanced thresholding capabilities enable accurate analysis of translucent particles
- Auto-rinse and clean cycles prevent cross-contamination
- Typical analysis rate = 250 µl/min
- Compatible with FlowCam Automated Liquid Handling system (ALH)

INDUSTRY-LEADING IMAGE QUALITY

Better image quality yields more accurate measurements

		FlowCAM™	MFI™
Polystyrene beads	2 µm		
	5 µm		
	10 µm		
glass spheres	2 µm		
	8 µm		
"pseudo protein standard"	2 µm		
	5 µm		
	10 µm		
	25 µm		
aged mAb aggregates	2 µm		
	5 µm		
	10 µm		
	25 µm		

Reprinted from European Journal of Pharmaceutical Sciences 53 (2014) 95-108, Werk, Tobias, Volkin, David B., Mahler, Hanns-Christian, *Effect of solution properties on the counting and sizing of subvisible particle standards as measured by light obscuration and digital imaging methods*, with permission from Elsevier.

APPLICATIONS

Characterization of subvisible particles in protein therapeutics

+

Microencapsulation formulation and quality control

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Characterization of dry active pharmaceutical ingredients (API's), fillers, and excipients

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Characterization of dry and rehydrated lyophilized particulates



FLOWCAM® 8000

Flow Imaging Microscopy for Protein Therapeutics

FlowCam 8000	
Particle Size Range	1 µm to 600 µm
Magnification & FlowCells	20X (~200X magnification), flow cell depth option: 50 µm Field-of-View (FOV) 10X (~100X magnification), flow cell depth option: 100 µm FOV 4X (~40X magnification), flow cell depth option: 300 µm and 600 µm FOV
Sample Processing Capability	0.05 mL/minute at 20X and up to 3mL/minute at 4X
Measured Parameters	<p>Basic Shape Parameters: Area, Aspect Ratio (width/length), Area Based Diameter (ABD), Equivalent Spherical Diameter (ESD), Length, Volume (ABD-based), Volume (ESD-based), Width, 3 Biovolume Measurements</p> <p>Advanced Morphology Parameters: Area (Filled), Circle Fit, Circularity, Circularity (Hu), Compactness, Convex Perimeter, Convexity, Elongation, Fiber Curl, Fiber Straightness, Geodesic Aspect Ratio, Geodesic Length, Geodesic Thickness, Perimeter, Roughness, Symmetry</p> <p>Fluorescence Detection & Measurements: Channel 1 Area, Channel 1 Peak, Channel 1 Width, Channel 2 Area, Channel 2 Peak, Channel 2 Width, Channel 2/Channel 1 Ratio</p> <p>Gray Scale and Color Measurements: Average Blue, Average Green, Average Red, Edge Gradient, Intensity, Blue/Green Ratio, Red/Blue Ratio, Red/Green Ratio, Edge Gradient, Intensity, Sigma Intensity, Sum Intensity, Transparency</p>
Camera	High resolution (1920x1200 pixels) CMOS. Monochrome and color available.
Frame Rate	Shutters up to 100 frames per second.
Fluidics	Micro-syringe pump with multiple sizes to optimize flow rates: 0.5 mL, 1 mL, 5 mL
Data Acquisition Method	FlowCam 8400 - fluorescence based laser triggering and auto imaging FlowCam 8100 - auto imaging
Fluorescence Emission & Detection	Excitation Options (488 nm, 532 nm, 633 nm) with 2-Channel Fluorescence Detection: - 488 nm laser - Ch 1: 650nm long pass / Ch 2: 525nm ± 15nm (FITC) - 532 nm laser - Ch 1: 650 long pass / Ch 2: 575nm ± 30nm (Phycoerythrine) - 633 nm laser- Ch 1: 700nm ± 10nm (Chlorophyll) / Ch 2: 650nm ± 10nm (Phycocyanin)
VisualSpreadsheet®	Interactive, image-based analytical software that generates 40+ particle measurements per cell. Filter, sort, and classify data based on user-defined criteria. Create libraries to automate classification for future sample analyses.

REQUEST A FREE SAMPLE ANALYSIS

Send us your sample and we will provide:

- A web-based, interactive presentation of results
- Histograms and scattergrams showing size and distribution of particles
- A Microsoft Excel spreadsheet with measurement data, including count, length, width, and ESD
- Digital images of the cells and particles

