

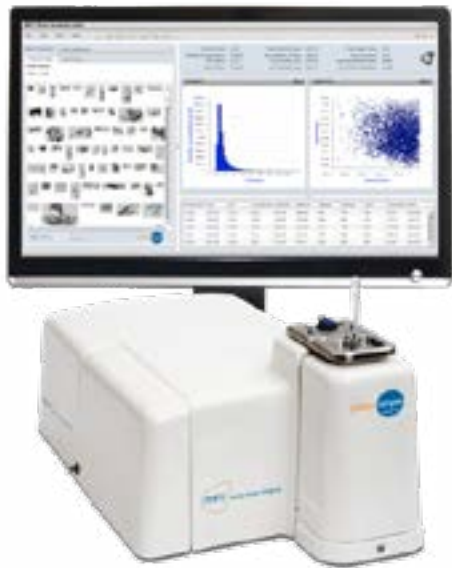
# SEE SUB-VISIBLE PARTICLES

## MICRO-FLOW IMAGING



## THE MFI 5000 SERIES

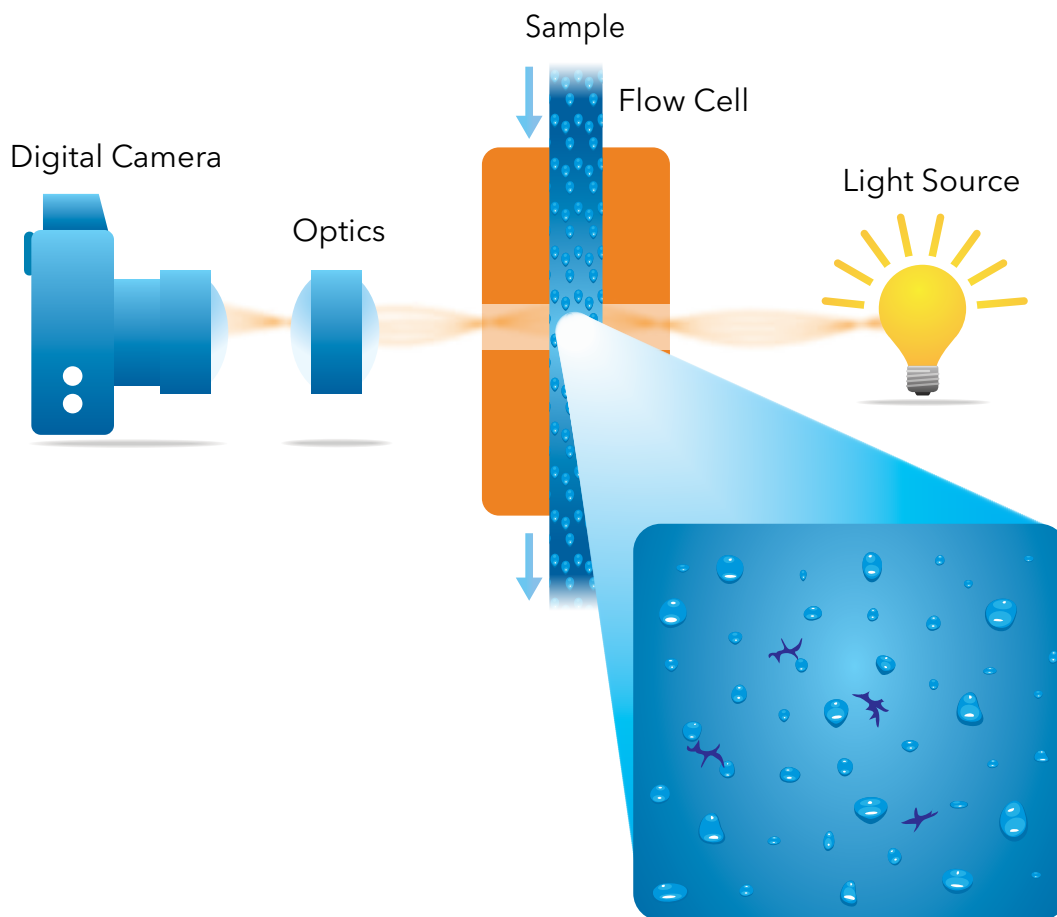
Do you need to answer tough questions about sub-visible particles? Regulatory agencies are concerned about undesired side effects and reduced efficacy and require them to be well-characterized in biopharmaceutical formulations. But as their name implies, doing that can sometimes be a challenge. The MFI 5000 Series detects, quantitates and differentiates particles that you may not see now. Can't beat that, right?



Learn more | [proteinsimple.com](http://proteinsimple.com)

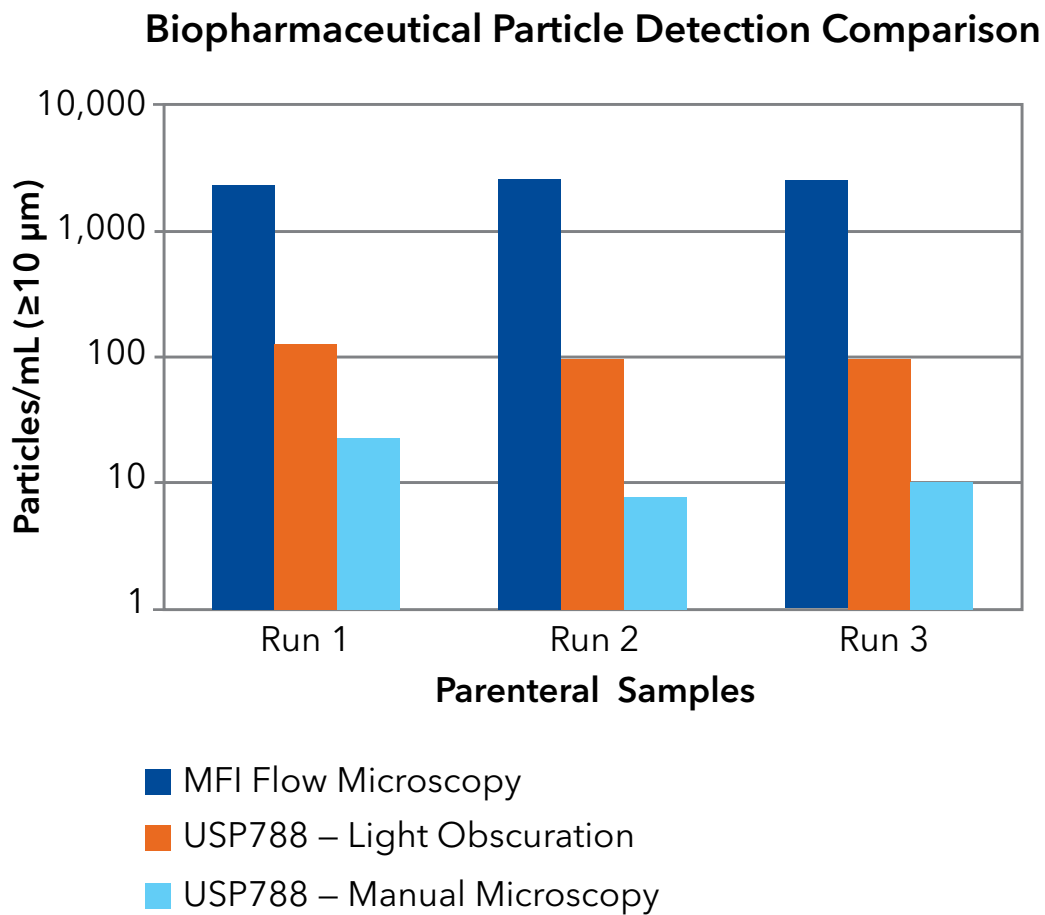
## HOW MFI WORKS

Micro-Flow Imaging™ combines the direct imaging capabilities of digital microscopy with the precise control of microfluidics. What does that get you? High resolution images with 85% sampling efficiency... more precise counts and sizing with full morphological detail for all sub-visible particles in your sample... the complete confidence that you can accurately identify every possible type – from protein aggregates to air bubbles.



## DETECT

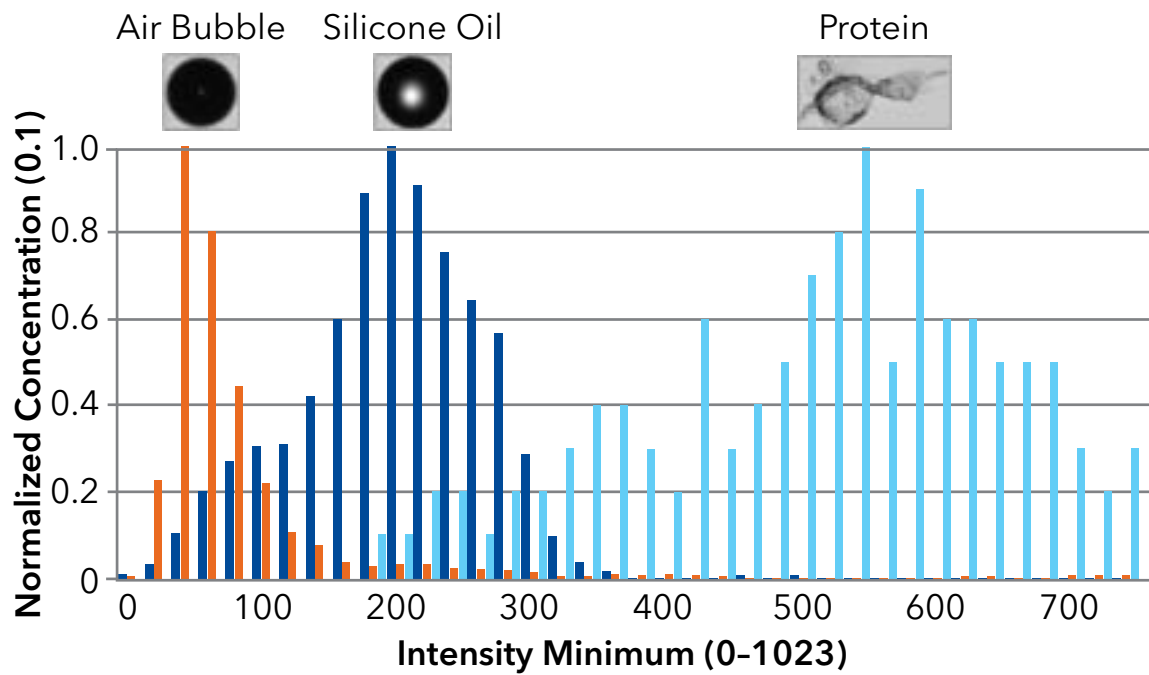
MFI is just more sensitive than other technologies, so it can easily detect translucent and transparent sub-visible particles. It's also much less affected by a particle's optical properties, giving you more accurate sizing even in viscous and highly concentrated solutions. End result? A more realistic picture of what's actually in your sample. Armed with better information, you'll quickly be on the best path to improving product quality and safety.



# CLASSIFY

Protein aggregate, silicone micro-droplet, air bubble or something else? The MFI 5000 Series gives you the size, concentration and image for each particle in just one test, and then lets you isolate them by different sub-populations. When you can group data by specific characteristics like size range, count, intensity, transparency and shape, you'll always know exactly which particles you're dealing with.

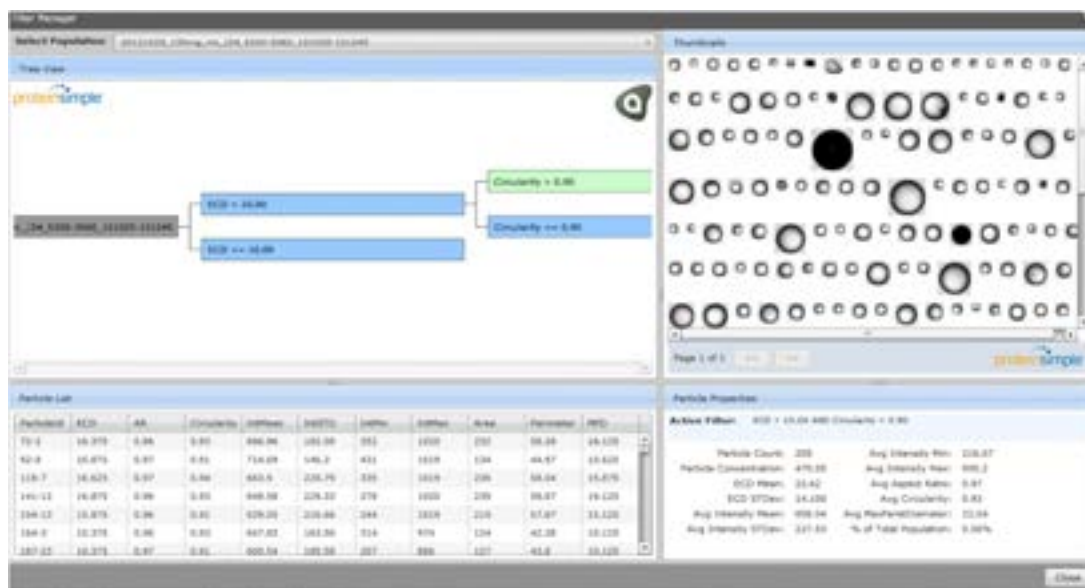
## Differentiation of Protein Aggregates from Non-Aggregates



## OPTIMIZE

The MFI 5000 Series gives you a lot more insight into how to minimize particulates. Now you can monitor changes in particle groups over time, or even evaluate the impact of process variables on their formation. As an added bonus, MFI can address USP <788> guidelines for sub-visible particle analysis in both protein formulations and small molecules. But here's the true test: development and quality control groups in the world's largest pharmaceutical companies use MFI to do all these things, every day.

## DEFINE SETTINGS FOR PARTICLE ANALYSIS WITH USER-CREATED FILTERS



## AUTOMATE

Sometimes analyzing a few samples is all you need. But when it's time to scale up for routine testing, the Bot1 Autosampler lets you do just that. It handles sample loading, washing, and rinsing on up to 96 samples and boosts overall standardization in the process. Not sure what your sample load will be? Add a Bot1 to your MFI 5000 Series system at any time.

### WHAT REAL USERS ARE SAYING:

**"Particle counting [using MFI] may be the most sensitive technique available for the detection of aggregated protein."** 2011, *Journal of Pharmaceutical Sciences*, 100(2):492-503.

**"Subvisible particle analysis using MFI can help present a more complete picture of the solution and in some cases also help to identify the origins of the particles."** 2011, *Journal of Pharmaceutical Sciences*, 100(7):2563-73.

# SPECIFICATIONS

DESCRIPTION	MFI 5100	MFI 5200
Size Range	2 $\mu\text{m}$ to 300 $\mu\text{m}$	1 $\mu\text{m}$ to 70 $\mu\text{m}$
Percent of Sample Analyzed	>85% - entire size range	>85% - entire size range
Depth of Field (DOF)	400 $\mu\text{m}$	100 $\mu\text{m}$
Flow Cell Depth	400 $\mu\text{m}$ - DOF matched	100 $\mu\text{m}$ - DOF matched
Analysis Rate	200 $\mu\text{L}/\text{min}$	150 $\mu\text{L}/\text{min}$
Maximum Concentration (@2.5 $\mu\text{m}$ )	175,000 particles/mL	900,000 particles/mL
Automation	High Throughput Bot1 Autosampler (optional)	
Sample Loading Options	Pipette tip: 1 mL manual insertion, 1 mL Autosampler Syringe barrel: 2 mL, 10 mL, 20 mL manual insertion BD Hypak™ Syringe Introduction Adapter: 1 mL, 2 mL	
Flow Cell Coatings	Non-coated, hydrophobic, custom	
Precision Stirring	Variable speed control: 200-2,000 RPM Compatible with syringe barrel usage	
Data Output	Chart formats: histograms, scatterplots, trend charts Image formats: uncompressed TIFF (analysis), compressed JPG (storage)	
Particle Count Parameters	Particle count, concentration, mass, volume	
Morphology Parameters	Size (ECD), maximum feret diameter, aspect ratio, circularity, area, perimeter, intensity	
Customized Analysis Filters	Combine two or more image and count parameters in a filter, for up to 511 different custom analysis filters	
MFI View System Software (MVSS) See product brochure for full details	Method-based analysis protocols Time-resolved analysis and data compression for storage 21 CFR Part 11 enabling features Secure access with comprehensive audit/log files Fully compatible with MFI Image Analysis Software	
MFI Image Analysis Software See product brochure for full details	Integrates with MVSS for 21 CFR Part 11 compliant analysis Review images, parametric data and trend charts Isolate sub-populations using "find-similar" function Create multi-node filters with real-time feedback Generate comprehensive reports with multiple categories Create analysis templates for repeat use	
Dimensions	MFI 5000 Alone: 23.97 in W X 17.01 in D X 12.00 in H Automated: 23.97 in W X 17.01 in D X 26.20 in H	



# WHERE SCIENCE INTERSECTS INNOVATION™

At ProteinSimple, we're changing the way scientists analyze proteins. Our innovative product portfolio helps researchers reveal new insight into proteins, advancing their understanding of protein function. We enable cutting-edge research to uncover the role of proteins in disease and provide novel approaches to develop and analyze protein-based therapeutics. We empower you to make your next discovery by eliminating common protein analysis workflow challenges.

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