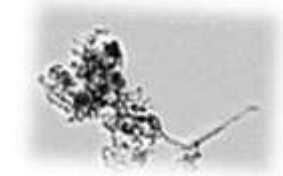
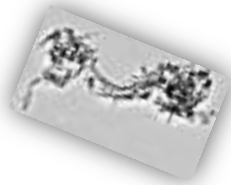


FLOW IMAGE ANALYSIS OF PROTEIN AGGREGATES PARTICLE SIZE, SHAPE AND COUNT



OCCHIO BIOTECH
JEROME SABATHIER

INTRODUCTION

- OCCHIO is collaborating with university of liege
- OCCHIO inherits of more than 15 years experience in :

- Digital image analysis

of materials

- Optical microscopy

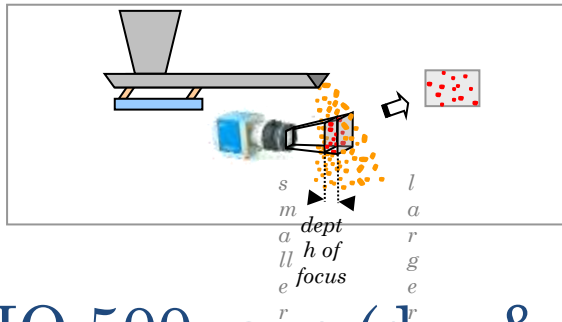
- Industrial vision

- Statistical data analysis



IMAGING SOLUTIONS IN PARTICLE ANALYSIS (SIZE / MORPHOLOGY / COUNTING)

- ZEPHYR for powders (range 20 μm – 30 mm)



- OCCHIO 500nano (dry & wet analysis; 0.4 μm – 3 mm)

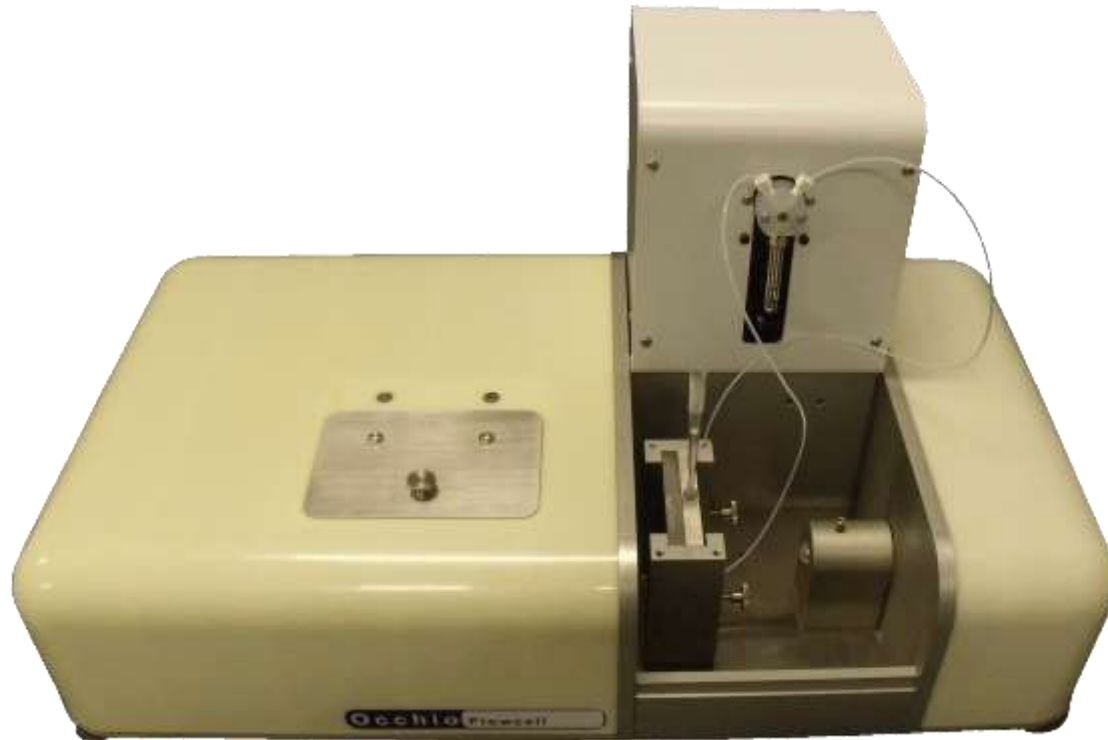


- OCCHIO Flowcell FC200 line (WET 0.2 μm – 1mm)



ABSOLUTE COUNTING OF PROTEIN SUSPENSION IN THIN CELL USING HIGH RESOLUTION IMAGING TECHNOLOGY

- FC200S-IPAC to reach the goal
(Particle size range $0.3 \mu\text{m}$ – $1000 \mu\text{m}$)



SOFTWARE CALLISTO

Occhio - Powder Size and Shape Analysis - [OPh Acquisition Image1]

File View Processing Help

Start Analyse Sequence

Static

Available Analyses

C:\DATA\Jerome\Manip\Interve

- 000080_Sample
- 000081_Sample
- 000083_Sample
- 000084_Sample
- 000085_Sample
- 000087_AMORPHE
- 000088_AMORPHE BIS
- 000090_AMORPHE 4
- 000323_Sample

Select - V Unselect - ^

Opened Analyses

- 000082_suspension5535
- 000079_suspension5535
- 000086_PA_05524_D
- 000085_AMORPHE TR2

Selected Analysis

Count	%V
Analysed Particles 16796	100
Unflagged Particles 16796	100
Micron per Pixel 0.55	
File Version 6	No Filter
Apply Filter	SOP Filter

View parameters

Distribution & boxplots

by number

Size Estimator Area Diameter

X Parameter Area Diameter

Y Parameter Satelity

Selected Particle Parameters

Mean Diameter	3.33301
Inner Diameter	1.90967
Area Diameter	3.28395
Width	2.76163
Length	4.3999
Max Distance	3.88509
Convexity	0.982456
Elongation	0.372342
Circularity	0.661047
Luminance	0.490196
Blurriness	0.568794
Satality	0.0591753
Volume	18.5434

47.3 µm

Selected Particles 0

Unselect

Start a complete Analyse Sequence, from Calibration to the Sample Analyse

- Specifications
 - Particle counting: Particle number/mL
 - Morphology filters (aggregates, bubbles, oil droplet, fibers)
 - Relative or absolute counting
 - Ghost algorithm for protein aggregates detection
 - Pump speed function of sampling
 - User choice for particle size class
 - More than 52 parameters (size, morphology)
 - Real pictures view
 - Post treatment image analysis possible

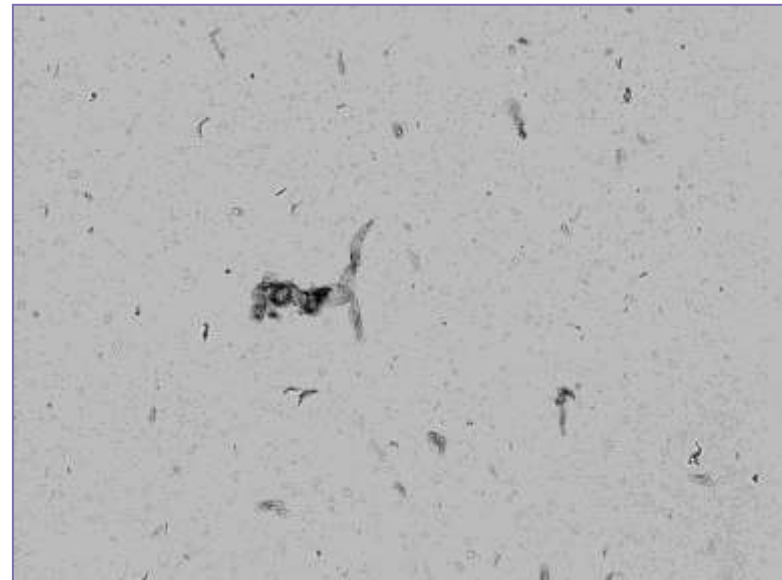
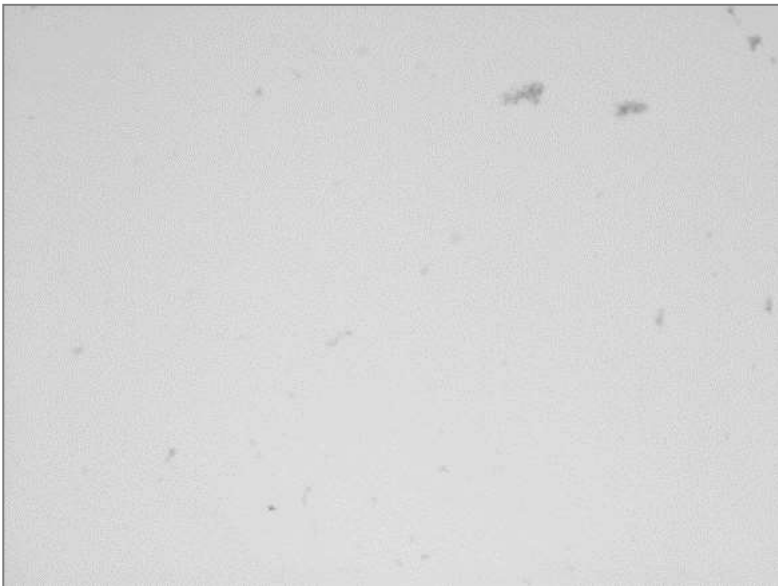


ABSOLUTE COUNTING OF PROTEIN SUSPENSION IN THIN CELL USING HIGH RESOLUTION IMAGING TECHNOLOGY

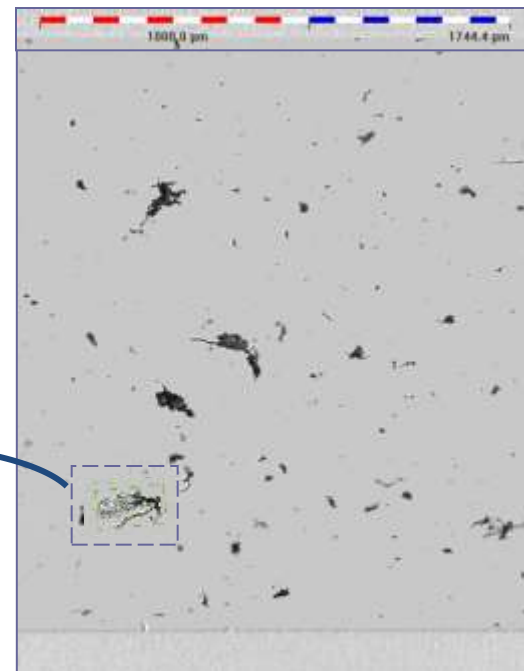
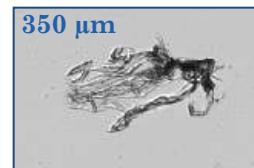


Classical Optical Microscopy

Occhio FC200S IPAC



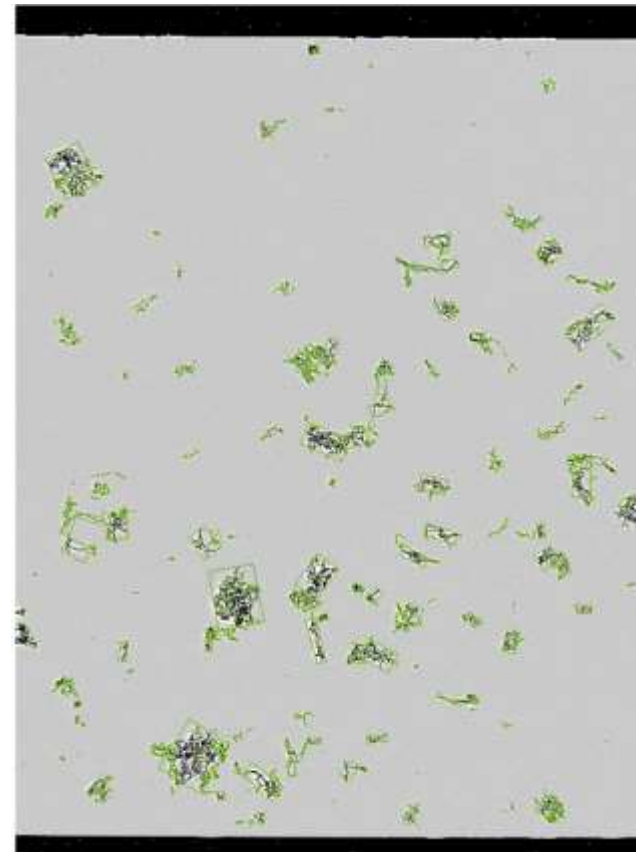
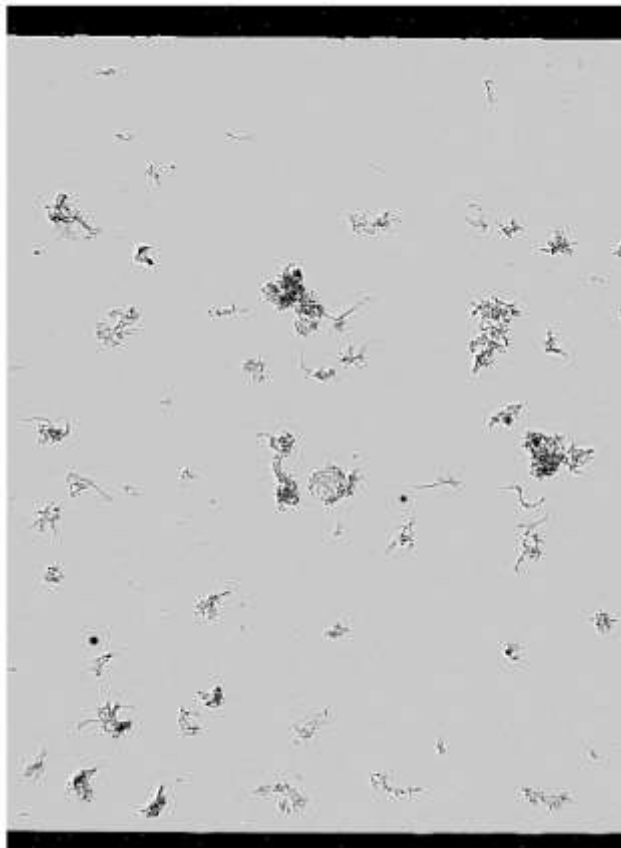
VACCINES ANALYSIS



SUB-MICRONIC DETECTION OF AGGREGATES

Occhio provides a local thresholding based on local variability

Ghost detection



AUTOSAMPLER ROBOPROT



ABSOLUTE COUNTING OF PROTEIN SUSPENSION IN THIN CELL USING HIGH RESOLUTION IMAGING TECHNOLOGY

Available parameters

Size	Shape
ISO Area Diameter	O Bluntness
ISO Inner Diameter	O Roughness
Mean Diameter	Elongation
Perimeter Diameter	ISO Aspect ratio
Crofton Diameter	Ellipsoid Elongation
Half Crofton Diameter	Ellipsoid Roundness
Width	Ellipse ratio
Length	ISO Eccentricity
Ellipse Width	ISO Straightness
Ellipse Length	ISO Roundness
ISO Max Distance	ISO Compactness
ISO Geodesic Length	ISO Extend
ISO Fiber Thickness	ISO Solidity
	Convexity
	ISO Circularity
	Luminance
	Luminance variance
	Porosity



2015: PHARMASCAN NON INVASIVE PARTICLE DETECTION

