

PSF

Microscope info:

Image		Composite				
image's creation	date	unknown				
	method used	original file info & metadata could not be found				
Actual image depth		16				
Microscope type		WideField				
Objective	NA	0.3				
	im. refractive index	1.0				
Channel(s)		Wavelengths		Saturation	sampling (X,Y,Z)	
		Ex. (nm)	Em. (nm)		Nyquist (μm)	Nyquist/found ratio
Channel 0			405.0	none	0.338x0.338x4.396	0.0, 0.0, 0.2
Channel 1			450.0	none	0.375x0.375x4.885	0.0, 0.0, 0.2
Channel 2			525.0	none	0.438x0.438x5.699	0.0, 0.0, 0.2
Channel 3			570.0	none	0.475x0.475x6.187	0.0, 0.0, 0.2

Warnings:

(No saturated pixels detected). (All channels sampled following Shannon-Nyquist criterion). (A subresolution bead is used for all channels).

Resolution table:

Channel	Sig/Background ratio	Dimension	Measured FWHM (μm)	theory (μm)	Fit Goodness	Mes./theory ratio
Channel 0 (em. 405.0nm)	100.6	X	0.109	0.689	0.68	0.16
		Y	0.081	0.689	0.81	0.12
		Z	21.416	7.965	1.0	2.69
Channel 1 (em. 450.0nm)	223.8	X	0.034	0.765	0.08	0.04
		Y	0.08	0.765	0.97	0.1
		Z	1.547	8.85	0.11	0.17
Channel 2 (em. 525.0nm)	71.3	X	0.006	0.893	0.01	0.01
		Y	0.082	0.893	0.92	0.09
		Z	0.273	10.325	0.01	0.03
Channel 3 (em. 570.0nm)	45.4	X	0.113	0.969	0.83	0.12
		Y	0.104	0.969	0.76	0.11
		Z	36.773	11.21	0.99	3.28

The annulus drawn around the bead to compute the background mean intensity is bigger than the image (channel 2), channel 3). Green: within specifications, red: outside specifications (ie. XY ratios above 1.5 or Z ratio above 2.0)

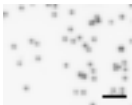
Lateral asymmetry ratios:

Channel	Ratio
Channel 0 (em. 405.0nm)	0.75
Channel 1 (em. 450.0nm)	0.42
Channel 2 (em. 525.0nm)	0.07
Channel 3 (em. 570.0nm)	0.92

Detailed channel detection info:

Channel #0

XY



YZ

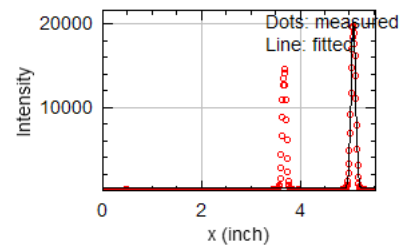


XZ

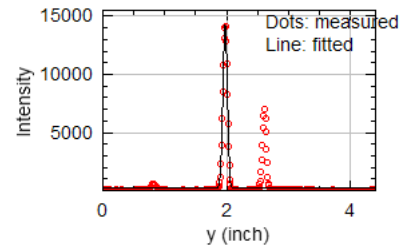


Channel 0 (em. 405.0nm)				
Sig./Backgnd ratio	LAR	Dimension	FWHM	Fit goodness
100.6	0.75	X	0.109	0.68
		Y	0.081	0.81
		Z	21.416	1.0

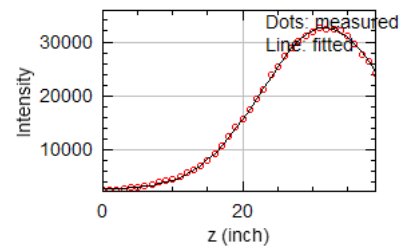
X profile & fitting parameters:
Fit equation $I(x) = a + (b-a) \exp(-(x-c)/(2*d*d))$
Sum of residuals squared: 1.39161E9
Standard deviation: 1618.86823
R^2: 0.68458
Parameters:
a = 324.98092
b = 20207.7749
c = 5.08057
d = 0.046271



Y profile & fitting parameters:
Fit equation $I(y) = a + (b-a) \exp(-(y-c)/(2*d*d))$
Sum of residuals squared: 264486641
Standard deviation: 790.73632
R^2: 0.81129
Parameters:
a = 218.96215
b = 14312.7176
c = 1.97348
d = 0.034604

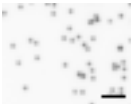


Z profile & fitting parameters:
Fit equation $I(z) = a + (b-a) \exp(-(z-c)/(2*d*d))$
Sum of residuals squared: 1457224.69
Standard deviation: 193.29960
R^2: 0.99973
Parameters:
a = 2654.02430
b = 32619.4837
c = 31.74443
d = 9.09444



Channel #1

XY



YZ

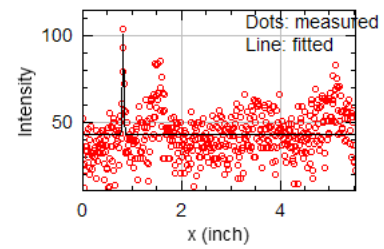


XZ

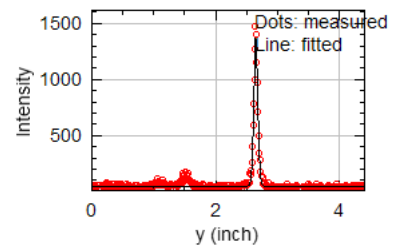


Channel 1 (em. 450.0nm)				
Sig./Backgnd ratio	LAR	Dimension	FWHM	Fit goodness
223.8	0.42	X	0.034	0.08
		Y	0.08	0.97
		Z	1.547	0.11

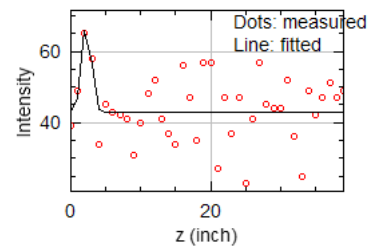
X profile & fitting parameters:
Fit equation $I(x) = a + (b-a) \exp(-(x-c)/(2*d*d))$
Sum of residuals squared: 87598.3295
Standard deviation: 12.84401
R^2: 0.08624
Parameters:
a = 42.65147
b = 101.23380
c = 0.81478
d = 0.014288



Y profile & fitting parameters:
Fit equation $I(y) = a + (b-a) \exp(-(y-c)/(2*d*d))$
Sum of residuals squared: 266766.971
Standard deviation: 25.11284
R^2: 0.97346
Parameters:
a = 51.44727
b = 1372.80521
c = 2.64939
d = 0.033860

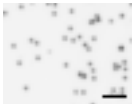


Z profile & fitting parameters:
Fit equation $I(z) = a + (b-a) \exp(-(z-c)/(2*d*d))$
Sum of residuals squared: 2702.94827
Standard deviation: 8.32504
R^2: 0.20101
Parameters:
a = 42.99864
b = 67.93779
c = 2.26431
d = 0.65676



Channel #2

XY



YZ

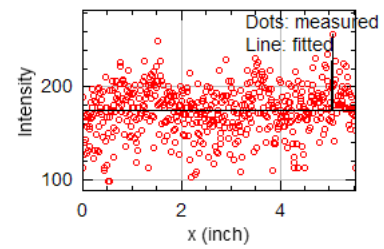


XZ

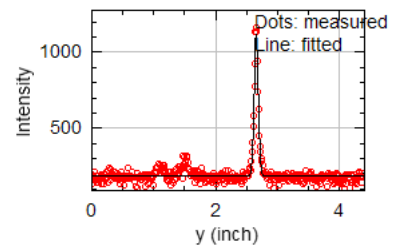


Channel 2 (em. 525.0nm)				
Sig./Backgnd ratio	LAR	Dimension	FWHM	Fit goodness
71.3	0.07	X	0.006	0.01
		Y	0.082	0.92
		Z	0.273	0.01

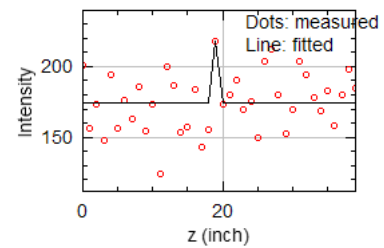
X profile & fitting parameters:
Fit equation $I(x) = a + (b-a) \exp(-(x-c)/(2*d*d))$
Sum of residuals squared: 360210.500
Standard deviation: 26.04539
R^2: 0.02009
Parameters:
a = 174.50000
b = 733.86612
c = 5.05793
d = 0.0023367



Y profile & fitting parameters:
Fit equation $I(y) = a + (b-a) \exp(-(y-c)/(2*d*d))$
Sum of residuals squared: 460892.946
Standard deviation: 33.00881
R^2: 0.91687
Parameters:
a = 182.84801
b = 1121.48057
c = 2.65595
d = 0.034885

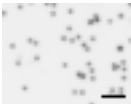


Z profile & fitting parameters:
Fit equation $I(z) = a + (b-a) \exp(-(z-c)/(2*d*d))$
Sum of residuals squared: 14797.8974
Standard deviation: 19.47905
R^2: 0.11289
Parameters:
a = 174.05128
b = 238.29884
c = 19.10087
d = 0.11575



Channel #3

XY



YZ

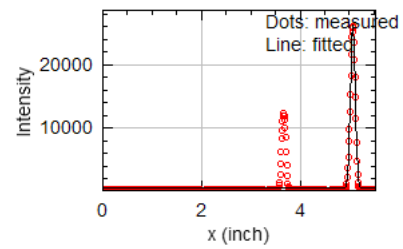


XZ

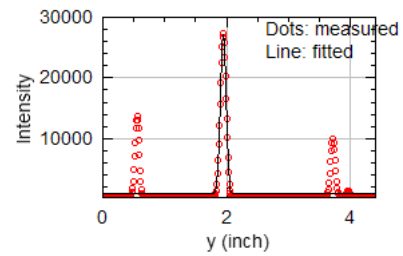


Channel 3 (em. 570.0nm)				
Sig./Backgnd ratio	LAR	Dimension	FWHM	Fit goodness
45.4	0.92	X	0.113	0.83
		Y	0.104	0.76
		Z	36.773	0.99

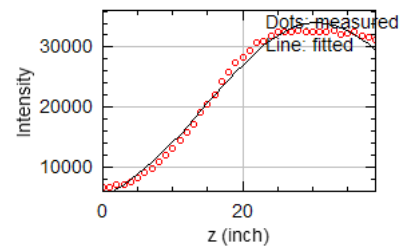
X profile & fitting parameters:
Fit equation $I(x) = a + (b-a) \exp(-(x-c)/(2*d*d))$
Sum of residuals squared: 1.08671E9
Standard deviation: 1430.57223
R^2: 0.82882
Parameters:
a = 482.90551
b = 26229.0083
c = 5.07051
d = 0.048134



Y profile & fitting parameters:
Fit equation $I(y) = a + (b-a) \exp(-(y-c)/(2*d*d))$
Sum of residuals squared: 1.58721E9
Standard deviation: 1937.07939
R^2: 0.76419
Parameters:
a = 757.91525
b = 27370.5115
c = 1.94417
d = 0.044254



Z profile & fitting parameters:
Fit equation $I(z) = a + (b-a) \exp(-(z-c)/(2*d*d))$
Sum of residuals squared: 40696251.1
Standard deviation: 1021.51535
R^2: 0.98984
Parameters:
a = 47.87823
b = 34049.8641
c = 30.60198
d = 15.61595



Analysis parameters

Tool & Operator	Tool	PSF Profiler
	Versions	MetroloJ_QC v1.3.1.2, ImageJ v2.16.0/1.54p, Java v1.8.0_452, OS Windows 11
	Operator & date	Hanna, July 2, 2026 9:53 AM
data	result folder	Z:\CTIU\QC\2026-06-16\Evident\Processed\PSF\10x\Processed\PSF\
	Type of saved data	.pdf, .jpg, .xls
	Input data bit depth	16
Dimension order		XY-(C)Z
Discard saturated samples		false
Beads	Bead detection threshold	Legacy
	Center detection method	Legacy Fit Ellipses
	Discard bead if more than one particle are thresholded	false
	Background annulus thickness in μm	1.0
	Background annulus distance to bead edges in μm	0.5
	Multiple beads in image	false
Square Root PSF Image displayed		true
Tolerance	Applied in this report	true
	X & Y FWHM ratios valid if below	1.5
	Z FWHM ratio valid if below	2.0

Analysis log

image name	creation date	saturation	sampling density	status
Composite	unknown	none	correct	analysed

Formulas used:

Lateral ($res_{x,y}^o$) and axial (res_z^o) theoretical resolution values used for widefield microscopes are calculated as defined in Wilhelm, S. Confocal Laser Scanning Microscopy, 2011:

$$res_{x,y}^o = \frac{0.51 \cdot \lambda_{em}}{NA} \quad res_z^o = \frac{1.77 n \cdot \lambda_{em}}{NA^2}$$

NA: numerical aperture, λ_{em} : emission wavelength, n: refractive index of the lens immersion & mounting media.

Axis profiles are fitted using ImageJ Gaussian Curve Fitter and the following formula $y = a + (b - a) * e^{\frac{-(x-c)^2}{2d^2}}$ (Gaussian fitting).

Measured lateral and axial resolution (Full Width at Half Maximum, FWHM) values are derived using $FWHM = 2d\sqrt{2\ln(2)}$

Compliance with the Shannon-Nyquist criterion uses the following formulas for Shannon-Nyquist distances calculation:

$$\alpha = \arcsin\left(\frac{NA}{n}\right)$$

$$\Delta_{x,y} = \frac{\lambda_{em}}{4 \cdot NA} \quad \Delta_z = \frac{\lambda_{em}}{2 \cdot n \cdot (1 - \cos(\alpha))}$$