



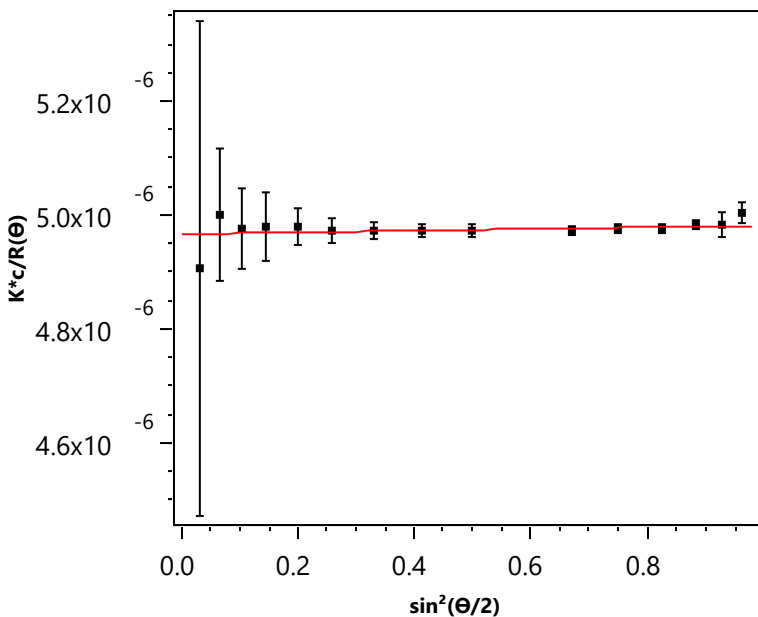
**File Properties**

**File Name:** D:\GoogleDrive\LBNI\SIBYLS\_Group\MALS and DLS Data\Sequences\Covid\_anti2[070920\_Covid].afe7  
**Created:** July 10, 2020 17:16:32.594

**Sample:** Covid\_anti2

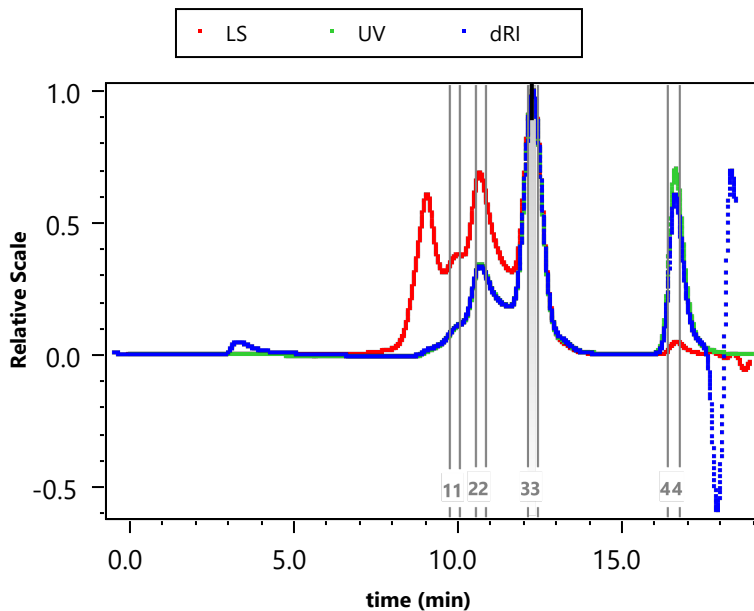
**dn/dc:** 0.1750 mL/g  
**Concentration:** 2.000 mg/mL

results graph



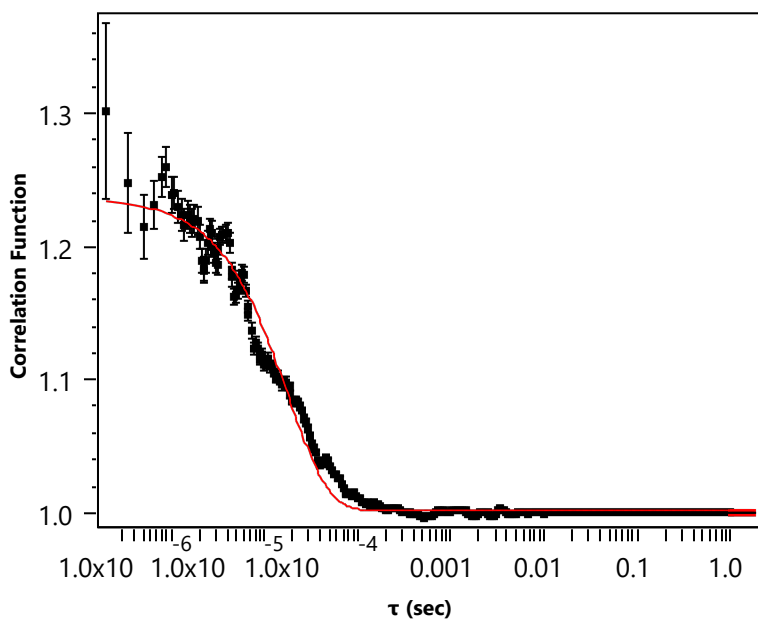
Fit  $R^2=0.1242$

control graph



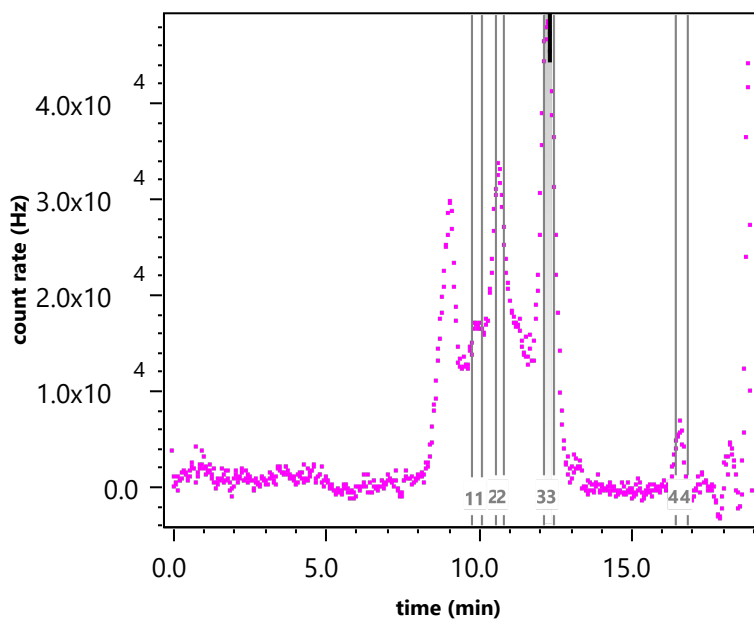
Index = 12.289 min

Correlation Function



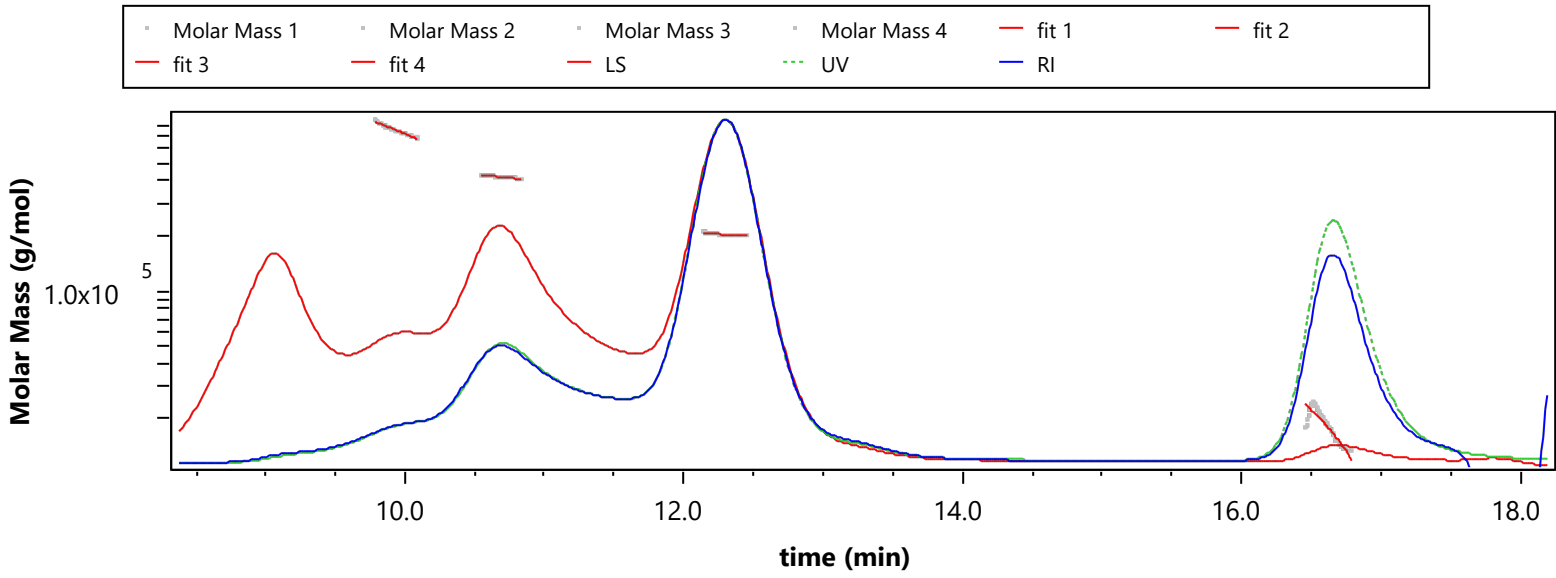
Fit  $R^2=0.9654$

control graph



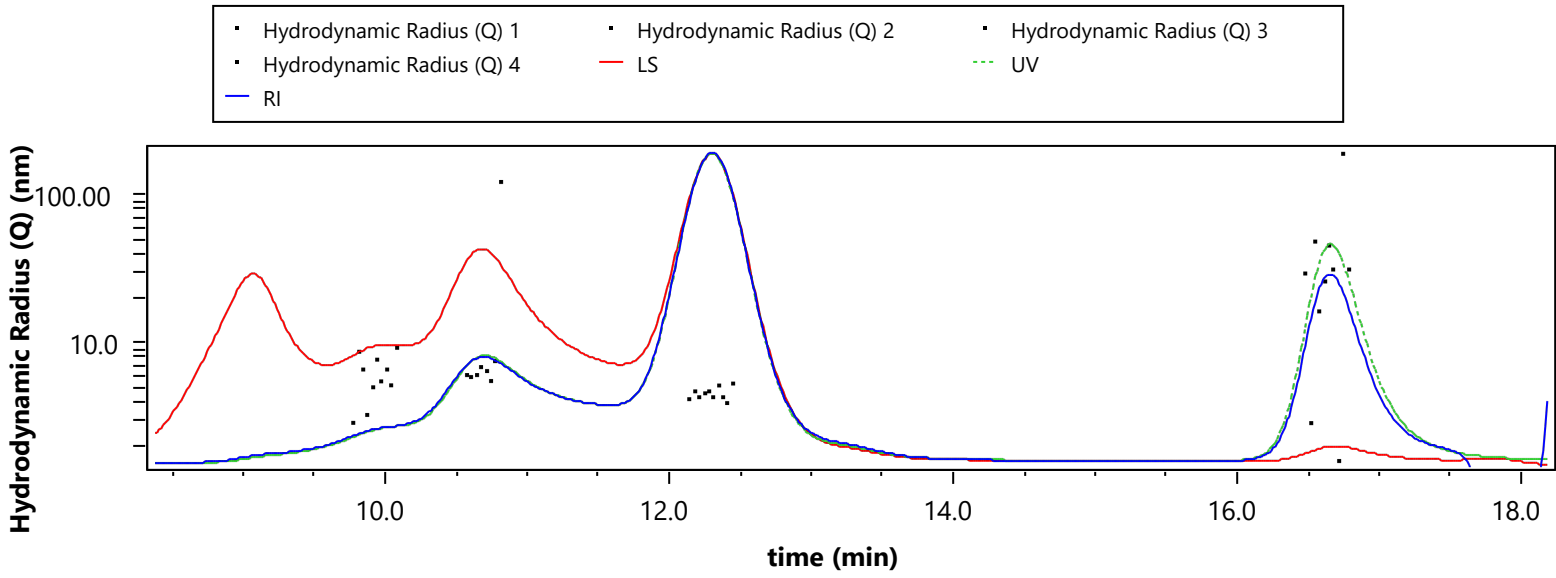
Index = 12.313 min

Results Fitting

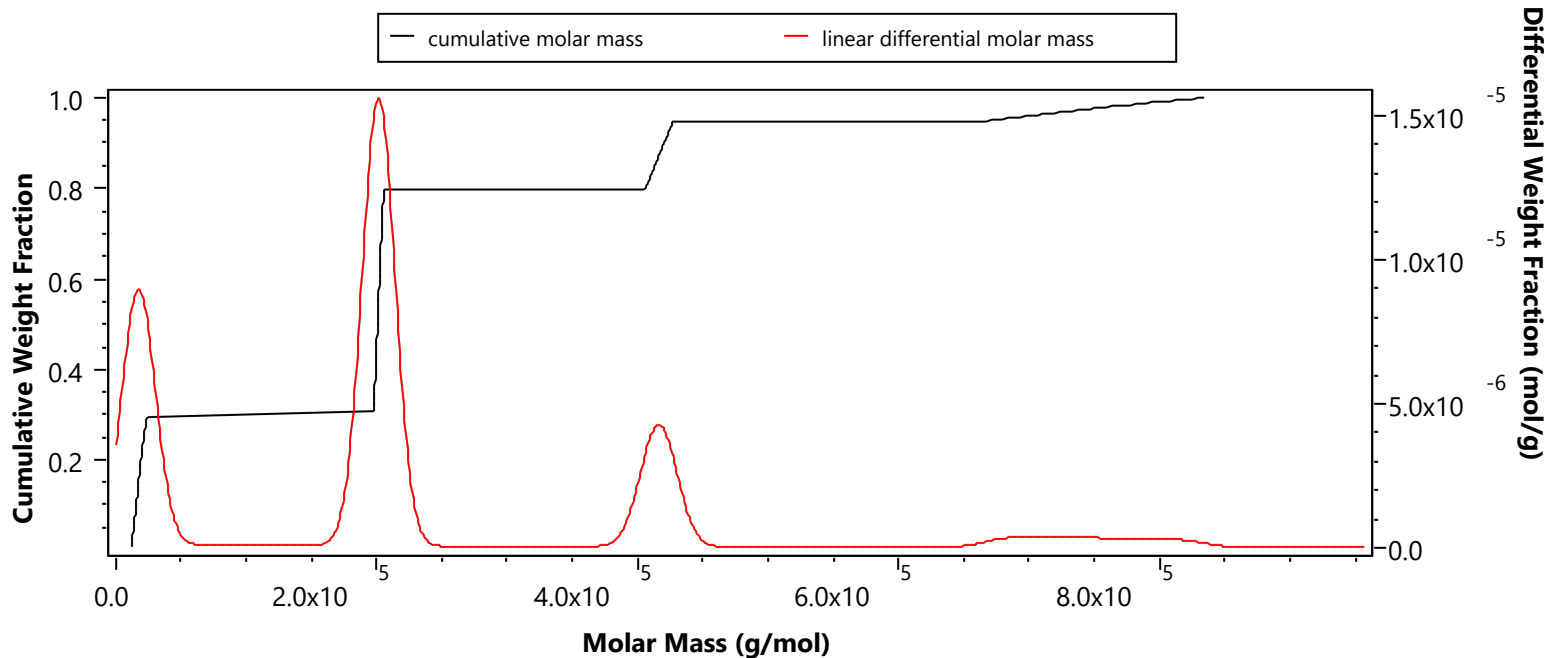


Peak 1 Fit Adjusted  $R^2=0.9729$ ; Peak 2 Fit Adjusted  $R^2=0.9736$ ; Peak 3 Fit Adjusted  $R^2=0.8604$ ; Peak 4 Fit Adjusted  $R^2=0.9081$

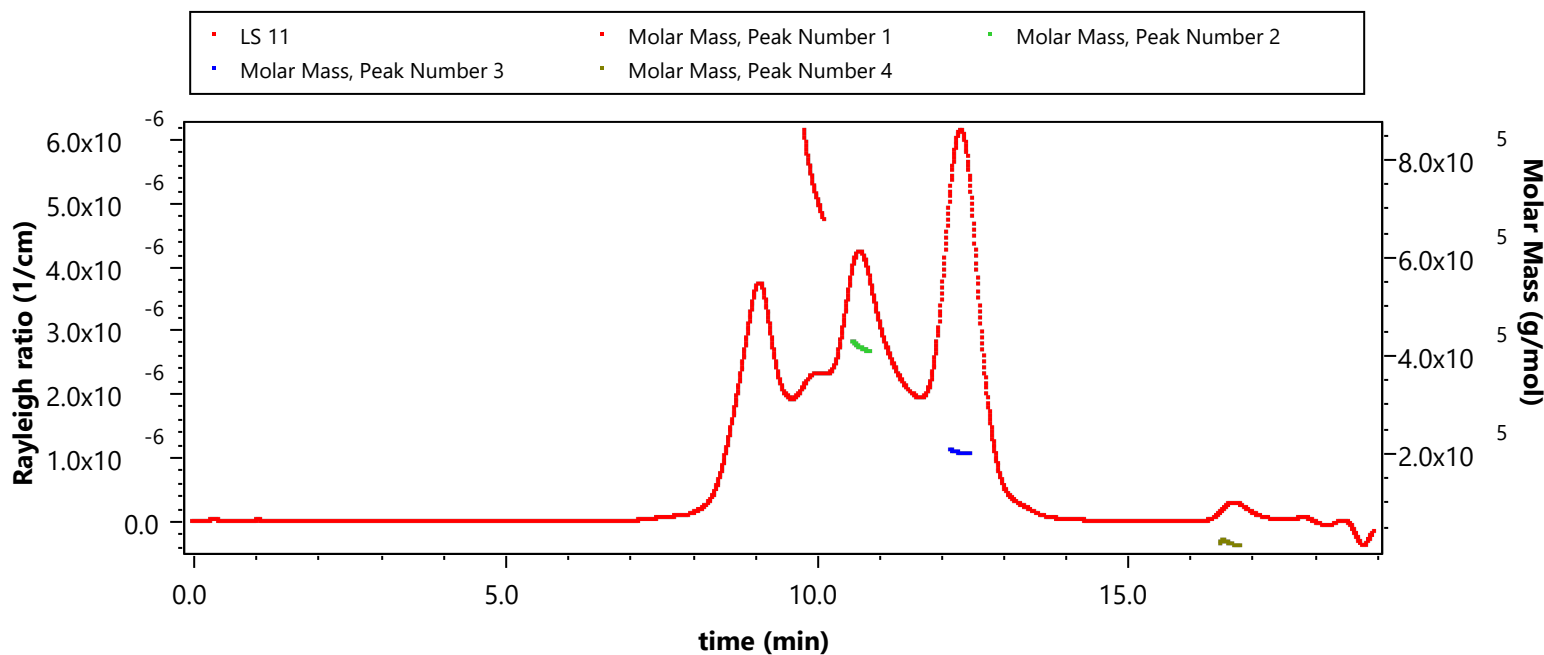
Results Fitting



### Distribution Analysis



### masses vs volume



### Configuration

Abcissa Units: min  
 Concentration Source: RI  
 Flow Rate: 0.500 mL/min  
 Pulse Correction Enabled: yes

Light Scattering Instrument: DAWN HELEOS  
 Cell Type: Fused Silica  
 Wavelength: 660.0 nm  
 Calibration Constant: 3.3316x10<sup>-5</sup> 1/(V cm)

RI Instrument: Optilab T-rEX  
 Wavelength: 658.0 nm

UV Instrument: Generic UV

Solvent: PBS, Aqueous

Refractive Index: 1.331

## Fluid Connections

Source Instrument	Destination Instrument	Delay Volume (mL)
Generic Pump	Injector	0.000
Injector	Generic UV Instrument	0.000
Generic UV Instrument	DAWN HELEOS	0.026
DAWN HELEOS	Optilab rEX	0.222

## Aux Connections

Source Instrument	Destination Instrument	Source Aux Channel	Destination Aux Channel	Calibration Constant
Generic UV Instrument	DAWN HELEOS		2	1.000
Generic UV Instrument	DAWN HELEOS	2	3	1.000

## Autoinject Connections

Source Instrument	Destination Instrument
autoinject	DAWN HELEOS

## Processing

Collection Operator: MICHAELFARADAY\Michael Faraday (MICHAELFARADAY\Michael Faraday (Michael Faraday))

Collection Time: Friday, July 10, 2020 11:05:10 AM

Collection Version: 7.1.4.8

Processing Operator: ALAN-TURING\Alan Turing (Alan Turing)

Processing Time: Saturday, July 11, 2020 11:09:44 AM

Despiking Level: Heavy

## Peak settings:

Peak Name	Peak 1	Peak 2	Peak 3	Peak 4
Peak Limits (min)	9.777 - 10.102	10.548 - 10.836	12.136 - 12.461	16.456 - 16.799
Light Scattering Model	Zimm	Zimm	Zimm	Zimm
Fit Degree	1	1	1	1
dn/dc (mL/g)	0.1700	0.1700	0.1700	0.1700
dn/dc Ref. Temp. (°C)	25.000	25.000	25.000	25.000
Modifier dn/dc (mL/g)	0.0000	0.0000	0.0000	0.0000
Modifier dn/dc Ref. Temp. (°C)	25.000	25.000	25.000	25.000
A2 (mol mL/g <sup>2</sup> )	0.000	0.000	0.000	0.000
UV Ext. Coef. (mL/(mg cm))	0.667	0.667	0.667	0.667
UV Ext. Coef. Ref. Temp. (°C)	25.000	25.000	25.000	25.000
Modifier UV Ext. Coef. (mL/(mg cm))	0.000	0.000	0.000	0.000
Modifier UV Ext. Coef. Ref. Temp. (°C)	25.000	25.000	25.000	25.000
Real Refractive Index	0	0	0	0
Imaginary Refractive Index	0	0	0	0
Shell Thickness (nm)	0.000	0.000	0.000	0.000
Shell Real Refractive Index	0	0	0	0
Shell Imaginary Refractive Index	0	0	0	0
Rod radius (nm)	0.000	0.000	0.000	0.000
Molecular Standard	n/a	n/a	n/a	n/a
Concentration (mg/mL)	2.000	2.000	2.000	2.000
Concentration Ref. Temp. (°C)	25.000	25.000	25.000	25.000
Mn (g/mol)	0.000	0.000	0.000	0.000
Mw (g/mol)	0.000	0.000	0.000	0.000
Mp (g/mol)	0.000	0.000	0.000	0.000
Intrinsic Viscosity (mL/g)	0.000	0.000	0.000	0.000
Intrinsic Viscosity Ref. Temp. (°C)	25.000	25.000	25.000	25.000
Mark-Houwink-Sakurada K (mL/g)	0.000	0.000	0.000	0.000
Mark-Houwink-Sakurada a	0	0	0	0
Flory-Fox Equation Phi Parameter	0	0	0	0
Ptitsyn-Eizner Equation Epsilon Parameter	0	0	0	0
Viscometry Model	Huggins	Huggins	Huggins	Huggins
Huggins Equation Parameter	0	0	0	0
Kraemers Equation Parameter	0	0	0	0
radius (nm)	3.480	3.480	3.480	3.480
Radius Type	rms	rms	rms	rms

## Molar Mass &amp; Radius from LS:

**Peak Name:** Peak 3  
**Molar Mass:** (2.014 ± 0.004) e+5 g/mol  
**rms radius:** 3.8 ± 1.9 nm  
**Light Scattering Model:** Zimm  
**Fit Degree:** 1  
**Concentration:** (1.718 ± 0.000) e-1 mg/mL  
**dn/dc:** 0.171 mL/g  
**Slice Index:** 1507  
**Abscissa Position:** 12.289 min

Fit R<sup>2</sup>: 0.1242

Enabled Detectors: 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18

## rh from QELS:

Use Disabled Slices: no

Prefilter Correlation Function before Averaging: yes

Minimum Delay for Fit: 2.000×10<sup>-7</sup> sec

Maximum Delay for Fit: 1.0 sec

Minimum Radius Threshold: 1.00 nm

Maximum Radius Threshold: 300.00 nm

Suppress Distribution Peaks Below: 0.50 nm

Suppress Distribution Peaks Above: 10000.000 nm

## Results Fitting Procedure:

Data	Fit Model	Degree	R <sup>2</sup>	Extrapolation
Molar Mass	Polynomial	1	0.972943	none

## Results

## Peak Results

	Peak 1	Peak 2	Peak 3	Peak 4
<b>Hydrodynamic radius (Q) moments (nm)</b>				
rh(Q)n	6.113 (±10.455%)	20.593 (±6.414%)	4.490 (±4.118%)	46.367 (±20.773%)
Std Dev rh(Q)n	1.999	38.340	0.417	55.927
rh(Q)w	6.060 (±10.476%)	20.284 (±6.408%)	4.489 (±4.117%)	42.224 (±21.351%)
Std Dev rh(Q)w	2.013	37.988	0.415	51.047
rh(Q)z	6.009 (±10.499%)	19.978 (±6.402%)	4.488 (±4.115%)	38.402 (±22.067%)
Std Dev rh(Q)z	2.014	37.989	0.415	51.190
rh(Q)(avg)	4.594 (±3.593%)	6.140 (±2.114%)	4.395 (±1.286%)	1.979 (±12.439%)
<b>General (mL/(mg cm))</b>				
UV Ext. Coef. (mL/(mg cm))	1.350	1.451	1.378	1.606
<b>Masses</b>				
Injected Mass (µg)	100.00	100.00	100.00	100.00
Calculated Mass (µg)	2.89	7.90	26.39	15.52
Mass Recovery (%)	2.9	7.9	26.4	15.5
Mass Fraction (%)	5.5	15.0	50.1	29.4
<b>Concentration (mg/mL)</b>				
Average concentration	0.018 (±0.000%)	0.056 (±0.000%)	0.163 (±0.000%)	0.091 (±0.000%)
<b>Molar mass moments (g/mol)</b>				
Mn	7.431×10 <sup>5</sup> (±0.244%)	4.162×10 <sup>5</sup> (±0.079%)	2.013×10 <sup>5</sup> (±0.097%)	1.676×10 <sup>4</sup> (±2.624%)
Mp	6.667×10 <sup>5</sup> (±0.363%)	4.170×10 <sup>5</sup> (±0.057%)	2.015×10 <sup>5</sup> (±0.053%)	1.702×10 <sup>4</sup> (±1.689%)
Mv	n/a	n/a	n/a	n/a
Mw	7.463×10 <sup>5</sup> (±0.244%)	4.163×10 <sup>5</sup> (±0.079%)	2.014×10 <sup>5</sup> (±0.097%)	1.744×10 <sup>4</sup> (±2.631%)
Mz	7.496×10 <sup>5</sup> (±0.545%)	4.164×10 <sup>5</sup> (±0.176%)	2.014×10 <sup>5</sup> (±0.216%)	1.810×10 <sup>4</sup> (±5.963%)
Mz+1	7.528×10 <sup>5</sup> (±0.875%)	4.165×10 <sup>5</sup> (±0.283%)	2.014×10 <sup>5</sup> (±0.349%)	1.874×10 <sup>4</sup> (±9.476%)
M(avg)	7.455×10 <sup>5</sup> (±0.036%)	4.162×10 <sup>5</sup> (±0.012%)	2.014×10 <sup>5</sup> (±0.013%)	1.640×10 <sup>4</sup> (±0.367%)
<b>Polydispersity</b>				
Mw/Mn	1.004 (±0.345%)	1.000 (±0.111%)	1.000 (±0.137%)	1.041 (±3.716%)
Mz/Mn	1.009 (±0.597%)	1.000 (±0.192%)	1.000 (±0.237%)	1.080 (±6.515%)
<b>rms radius moments (nm)</b>				
rn	17.3 (±6.9%)	10.3 (±10.5%)	3.1 (±160.1%)	22.6 (±95.6%)
Std Dev rn	4.230	5.869	8.768	51.160
rw	17.3 (±6.8%)	10.3 (±10.4%)	3.2 (±147.1%)	31.2 (±56.4%)
Std Dev rw	4.297	5.878	8.771	51.848
rz	17.3 (±6.8%)	10.4 (±10.4%)	3.4 (±136.2%)	37.6 (±43.8%)
Std Dev rz	4.359	5.886	8.774	52.013
r(avg)	17.3 (±1.1%)	10.3 (±1.8%)	6.2 (±6.2%)	40.9 (±4.6%)
<b>Light scattering peak statistics</b>				
Peak Area (1/cm min)	7.336×10 <sup>-7</sup>	2.995×10 <sup>-6</sup>	8.910×10 <sup>-6</sup>	8.098×10 <sup>-7</sup>
Peak Height (1/cm)	2.402×10 <sup>-6</sup>	4.299×10 <sup>-6</sup>	6.162×10 <sup>-6</sup>	3.503×10 <sup>-7</sup>
Retention Time (min)	10.005	10.671	12.292	16.540
Peak Width at Half-Height (min)	0.000	0.000	0.000	0.000

	Peak 1	Peak 2	Peak 3	Peak 4				
Peak Width at Quarter-Height (min)	0.000	0.000	0.000	0.000				
Peak Width at Tenth-Height (min)	0.000	0.000	0.000	0.000				
Peak Width at User-Specified-Height (4.4%, min)	0.000	0.000	0.000	0.000				
Asymmetry Factor	0.000	0.000	0.000	0.000				
Tailing Factor	0.000	0.000	0.000	0.000				
Column Plate Count	0.000	0.000	0.000	0.000				
Mean (min)	9.940	10.691	12.300	16.617				
Standard Deviation (min)	0.092	0.082	0.092	0.092				
Skew	-2.590	1.316	0.943	48.790				
Peak Area (%)	5.455	22.268	66.255	6.021				
Resolution Relative to Peak 2	0.000	n/a	0.000	0.000				
<b>Refractive index peak statistics</b>								
Peak Area (RIU min)	9.817×10 <sup>-7</sup>	2.688×10 <sup>-6</sup>	8.974×10 <sup>-6</sup>	5.278×10 <sup>-6</sup>				
Peak Height (RIU)	3.258×10 <sup>-6</sup>	9.877×10 <sup>-6</sup>	2.929×10 <sup>-5</sup>	1.772×10 <sup>-5</sup>				
Retention Time (min)	9.969	10.683	12.298	16.650				
Peak Width at Half-Height (min)	0.000	0.000	0.000	0.000				
Peak Width at Quarter-Height (min)	0.000	0.000	0.000	0.000				
Peak Width at Tenth-Height (min)	0.000	0.000	0.000	0.000				
Peak Width at User-Specified-Height (4.4%, min)	0.000	0.000	0.000	0.000				
Asymmetry Factor	0.000	0.000	0.000	0.000				
Tailing Factor	0.000	0.000	0.000	0.000				
Column Plate Count	0.000	0.000	0.000	0.000				
Mean (min)	9.949	10.691	12.301	16.634				
Standard Deviation (min)	0.093	0.080	0.091	0.093				
Skew	-9.608	-0.084	0.055	-3.902				
Peak Area (%)	5.478	14.996	50.076	29.449				
Resolution Relative to Peak 2	0.000	n/a	0.000	0.000				
<b>UV peak statistics</b>								
Peak Area (channel 1) (AU min)	7.798×10 <sup>-3</sup>	2.293×10 <sup>-2</sup>	7.274×10 <sup>-2</sup>	4.987×10 <sup>-2</sup>				
Peak Area (channel 2) (AU min)	-0.000	-0.000	-0.000	-0.000				
Peak Height (channel 1) (AU)	2.573×10 <sup>-2</sup>	8.095×10 <sup>-2</sup>	2.354×10 <sup>-1</sup>	1.663×10 <sup>-1</sup>				
Peak Height (channel 2) (AU)	-0.000	-0.000	-0.000	0.000				
Retention Time (channel 1) (min)	9.923	10.699	12.297	16.657				
Retention Time (channel 2) (min)	10.356	10.907	12.243	16.021				
Peak Width at Half-Height (channel 1) (min)	0.000	0.000	0.000	0.000				
Peak Width at Half-Height (channel 2) (min)	0.000	0.000	0.000	0.000				
Peak Width at Quarter-Height (channel 1) (min)	0.000	0.000	0.000	0.000				
Peak Width at Quarter-Height (channel 2) (min)	0.000	0.000	0.000	0.000				
Peak Width at Tenth-Height (channel 1) (min)	0.000	0.000	0.000	0.000				
Peak Width at Tenth-Height (channel 2) (min)	0.000	0.000	0.000	0.000				
Peak Width at User-Specified-Height (channel 1) (4.4%, min)	0.000	0.000	0.000	0.000				
Peak Width at User-Specified-Height (channel 2) (4.4%, min)	0.000	0.000	0.000	0.000				
Asymmetry Factor (channel 1)	0.000	0.000	0.000	0.000				
Asymmetry Factor (channel 2)	0.000	0.000	0.000	0.000				
Column Plate Count (channel 1)	0.000	0.000	0.000	0.000				
Column Plate Count (channel 2)	0.000	0.000	0.000	0.000				
Tailing Factor (channel 1)	0.000	0.000	0.000	0.000				
Tailing Factor (channel 2)	0.000	0.000	0.000	0.000				
Mean (channel 1) (min)	9.947	10.692	12.297	16.638				
Mean (channel 2) (min)	9.935	10.696	12.296	16.670				
Standard Deviation (channel 1) (min)	0.093	0.084	0.092	0.094				
Standard Deviation (channel 2) (min)	0.095	0.085	0.095	0.092				
Skew (channel 1)	-0.120	-0.008	-0.000	-0.037				
Skew (channel 2)	0.000	0.000	0.000	0.000				
Peak Area % (channel 1) (%)	5.086	14.957	47.434	32.524				
Peak Area % (channel 2) (%)	33.470	28.102	31.109	7.319				
Resolution Relative to Peak 2	0.000	0.000	n/a	n/a	0.000	0.000	0.000	0.000
<b>Translational diffusion coefficient moments (cm<sup>2</sup>/sec)</b>								
Dt(n)	5.88×10 <sup>-7</sup> (±10.68%)	4.53×10 <sup>-7</sup> (±5.62%)	7.10×10 <sup>-7</sup> (±4.09%)	4.02×10 <sup>-7</sup> (±20.26%)				
Dt(w)	5.96×10 <sup>-7</sup> (±10.70%)	4.54×10 <sup>-7</sup> (±5.62%)	7.10×10 <sup>-7</sup> (±4.09%)	3.95×10 <sup>-7</sup> (±20.63%)				

	Peak 1	Peak 2	Peak 3	Peak 4
<b>Dt(z)</b>	6.03×10 <sup>-7</sup> (±10.72%)	4.56×10 <sup>-7</sup> (±5.62%)	7.10×10 <sup>-7</sup> (±4.09%)	3.86×10 <sup>-7</sup> (±21.08%)
<b>Dt(avg)</b>	4.67×10 <sup>-7</sup> (±3.51%)	3.78×10 <sup>-8</sup> (±4.50%)	7.04×10 <sup>-7</sup> (±1.29%)	2.29×10 <sup>-8</sup> (±10.48%)

**laser monitor average:** 0.999 V

**Forward Monitor Average:** 0.936 V

**laser current average:** 0.156 amps

**laser voltage average:** -226295.223 V

**rms conformation plot slope:** -0.24 (±4.11%) log(nm)/log(g/mol)

**rms Conformation Plot y-intercept:** 2.594 (±2.199%) log(nm)

**rh(Q) conformation plot slope:** -0.018 (±91.516%) log(nm)/log(g/mol)

**rh(Q) Conformation Plot y-intercept:** 0.839 (±10.824%) log(nm)

**rms radius vs. rh(Q) plot slope:** 0.029 (±15.789%) rms radius vs. rh(Q) plot slope

**rms radius vs. rh(Q) Plot y-intercept:** 17.021 (±1.073%) log(nm)