



Particle Characterization Report – PAL File Number P4561

Technology: Dynamic Light Scattering Product/Model: NanoFlex Reported for: SoluScience, 4600 Nautilus Ct S Boulder, CO 80301 Contact Information: Travis Newman, 602-770-8059, partners@soluscience.com

Sample(s) Description: water solution Date Received: 2020-03-25 Date Report Issued: 2020-04-01

Credit Card or PO#: **********3902 Sales Representative: N/A

PAL Lab Contact Information: Microtrac 3230 N Susquehanna Trail, York, PA 17406Toni Weigel1-888-643-5880 x 214 toni.weigel@Microtrac.comAaron Pyle1-888-643-5880 x 220 Aaron.Pyle@microtrac.comJason Barsotti1-888-643-5880 x 220 Jason.Barsotti@microtrac.com

Contents: This report provides the analysis of the samples submitted to our laboratory. It contains graphical and tabular data for diffraction particle size distributions, as described on the next page. This report and data can be customized to your specific application or needs. Contact the laboratory if you have any questions regarding the measurement data or assistance with interpretation of the data.

Example Data: Below is an example to assist you in understanding the reports for the samples. Please contact Microtrac for any assistance.

Background: Travis Newman, SoluScience sent a sample to Microtrac Particle Analysis Laboratory for Dynamic Light Scattering analysis.

Samples: One sample was submitted: 2020-03-13-656. The details of the measurements are provided below.

Sample Preparation:

NanoFlex

A 5.0mL beaker containing the concentrated, well-mixed sample preparation was transferred directly to the instrument sample stage and the instrument laser probe was inserted into the beaker for particle size distribution analysis.

Instrument loading was lower than the acceptable range of the instrument, but reproducible data with an adequately strong signal was able to be obtained. This low loading is most likely due to low concentration and/or the small particle size.



EXAMPLE: NanoFlex DYNAMIC LIGHT SCATTERING REPORT



Sample Results are in this Format on Following Pages.

Clockwise from upper left:

Tabular Data (1), Size Diameter (2), Volume Percent Between Sizes (3), Volume Percent Smaller Than the Size Data (4), Graphical Data (5), Sample Identifiers (6), Standard Operating Procedure (7), Summary Calculations (8), Percentiles (9), Peaks Summary (percent each peak contains when more than one peak present)(10).



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Instrument Model: Microtrac Dynamic Light Scattering

Sample Identification: 2020-03-13-656

Microtro Total Solutions In Particle Character	- Particle	Size Analysis -	L:\W3216\12.0.0.1\SoluScience.MDB
	Tabula	r Data	Particle Size Distribution
Size(um) %Chan 6.54 0.00 6.00 0.00 5.50 0.00 5.64 0.00 4.62 0.00 3.89 0.00 3.57 0.00 3.27 0.00 2.999 0.00 2.750 0.00	%Pass Size(um) %Chai 100.00 0.2890 0.24 100.00 0.2650 0.34 100.00 0.2430 0.44 100.00 0.22430 0.44 100.00 0.22430 0.44 100.00 0.2430 0.44 100.00 0.2444 0.61 100.00 0.1874 0.68 100.00 0.1719 0.75 100.00 0.1445 0.96 100.00 0.1445 1.12 100.00 0.1215 1.33	%Pass Size(um) %Cha 99,74 0.01277 0.00 99,50 0.01171 0.00 99,16 0.01074 0.00 98,172 0.00985 0.00 98,19 0.00903 0.00 97,58 0.00828 0.00 96,15 0.00656 0.00 96,31 0.00639 0.00 94,35 0.00656 0.00 93,23 0.00537 0.00	an %Pass 90 9 10 9 10 10 10 00 00 66 5 5 6 5 5 6 5 5 4 2 4 2 4 2 2 2 2 2 2 2 2 2 2 3
2.522 0.00 2.312 0.00 2.120 0.00 1.944 0.00 1.783 0.00 1.635 0.00 1.499 0.00 1.375 0.00	100.00 0.1114 1.56 100.00 0.1022 1.81 100.00 0.0937 2.01 100.00 0.0859 2.14 100.00 0.0783 2.21 100.00 0.0773 2.21 100.00 0.0663 2.22	91.90 0.00492 0.00 90.34 0.00452 0.00 88.53 0.00414 0.00 86.52 0.00 0.00 84.38 0.00348 0.00 82.17 0.00319 0.00 79.96 0.00293 0.00 77.74 0.00269 0.00	10 0.00 10 1 1 10 0.00 0.00 0.001 0.001 0.01 10 0.001 0.001 0.01 0.1 1 10 0 0.001 0.001 0.01 Size(microns) 0.1 1 10 0 0.000 Measurement Info SOP Info 000
1.261 0.00 1.156 0.00 1.060 0.00 0.972 0.00 0.891 0.00 0.818 0.00 0.750 0.00	100.00 0.0557 2.42 100.00 0.0511 2.72 100.00 0.0469 3.25 100.00 0.0430 4.00 100.00 0.0394 4.95 100.00 0.0361 6.11 100.00 0.0361 7.21	75.49 0.00246 0.00 73.07 0.00226 0.00 70.35 0.00207 0.00 67.10 0.00190 0.00 63.10 0.00174 0.00 58.15 0.00160 0.00 52.04 0.00164 0.00	10 0.00 Title DEFAULT SETUP(*) 00 0.00 SoluScience Timing 10 0.00 Identifiers Setzero Time 30 (sec) 10 0.00 2020-03-13-656 Run Time 90 (sec) 10 0.00 MT17368, File P4561 Number of Runs 1 10 0.00 Database Record 5 Analysis 00 0.00 Run Number 1 of 1 SoluScience
0.736 0.00 0.637 0.00 0.578 0.00 0.578 0.00 0.486 0.00 0.446 0.00 0.446 0.00	100.00 0.0304 8.18 100.00 0.02786 9.01 100.00 0.02555 9.76 100.00 0.02148 5.94 100.00 0.01970 3.26	32.64 0.00134 0.00 36.65 0.00123 0.00 27.64 0.00113 0.00 17.88 0.00044 0.00 9.20 0.00095 0.00 3.26 0.00087 0.00	0 0.00 Date 3/31/2020 Refractive Index 1.37 10 0.00 Time 3:20 PM Transparency Transp. 10 0.00 Acquired Date 3/31/2020 Marginaria Shape Irregular 10 0.00 Acquired Date 3/31/2020 WATER WATER 1.33 10 0.00 Serial Number W3216 Low Temperature 20.0 10 0.00 Calcs/Wer 12.0.0.1 Low Temperature 20.0 00 0.00 Calculated Data High Temperature 30.0
0.405 0.00 0.375 0.00 0.344 0.09 0.315 0.17 Warnings: Sample Loading	100.00 0.01657 0.00 100.00 0.01519 0.00 99.91 0.01393 0.00	0.00 0.00 0.00	Residuals, Above:Below 0:0 High Temp. Value 50:0 Loading Index 4.01E-2 Options: Options: Conc. Index 0.182 Analysis Type Distribution Concentration cc/ml 7.76E-5 Filter.Resolution Stick.Norm RMS Residual 0.085% Sensitivity Standard Cell Temp (C) 24.82 Algorithm: 2.0 Viscosity(cp) 0.8940 Berconding
Summary Data Value MV(um): 0.0496 MN(um): 0.02570 MA(um): 0.0340 CS: 176.4 SD: 0.0232 PDI: 0.335 M2: 0.0443 si: 0.0443	Percentiles %Tile Size(um) 10.00 0.02167 20.00 0.02388 30.00 0.02613 40.00 0.02884 50.00 0.0372 70.00 0.04654 80.00 0.04654	Peaks Summary Dia(um) Vol% Width 0.0323 100 0.0546	FLEX Reflected Pwr (uW) 2.60 Perspective 12.0.0.1 User Defined Calculations Distribution Volume 12.0.0.1 Recalculation Status User Edge(um) 0.0008 DB-Meas :: Original : Notes -
Ski: 0.731 Kg: 1.653	90.00 0.1005 95.00 0.1404	4/1/2020 7:51 AM	

Thank you for your interest in Microtrac products.

Report submitted by Aaron Pyle. Report reviewed by Toni Weigel