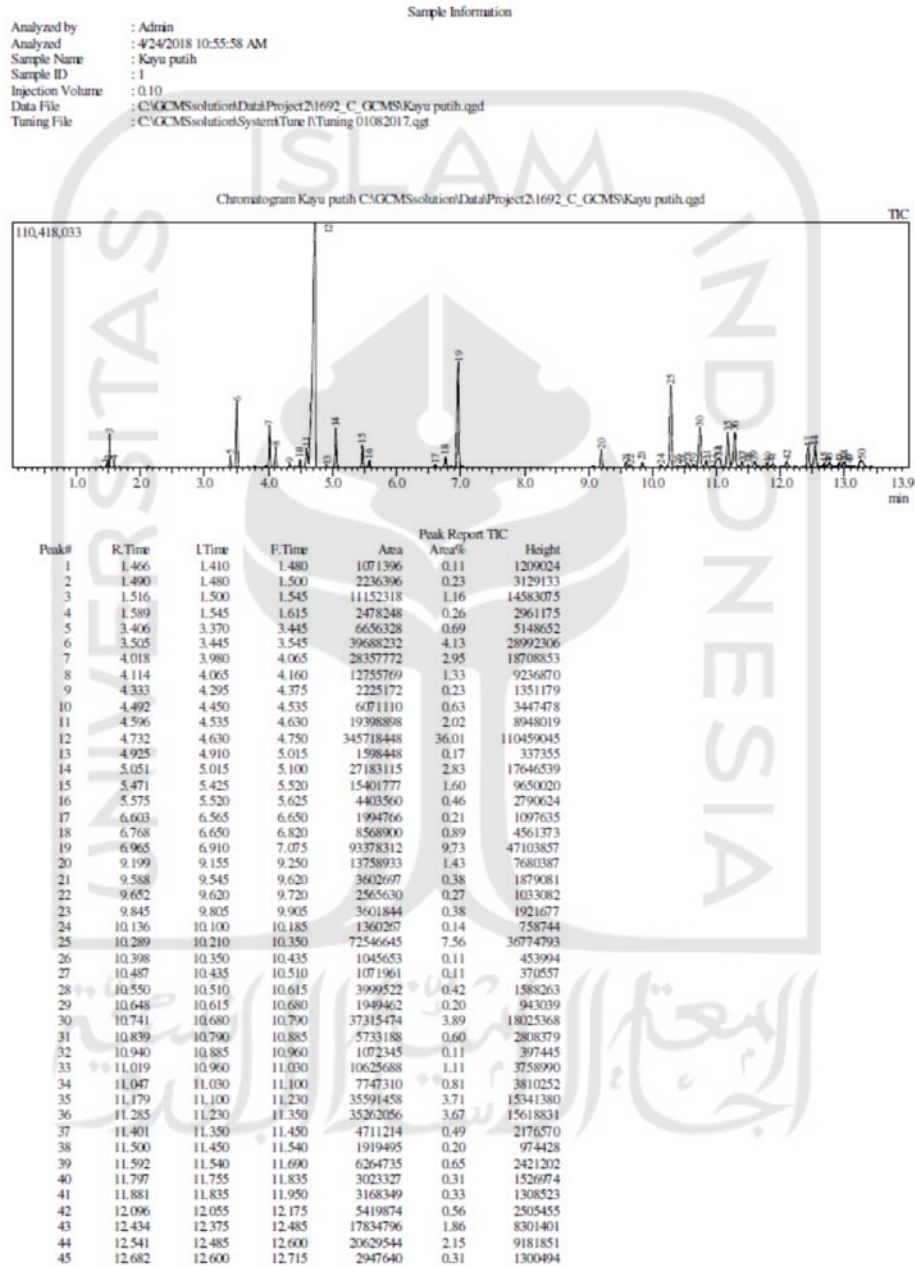


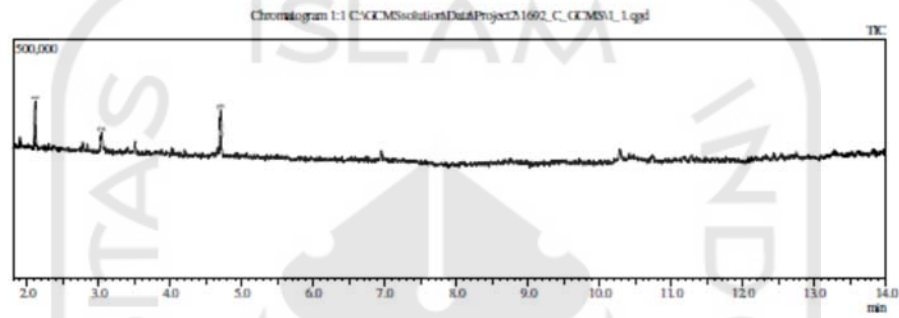
## LAMPIRAN

### Lampiran 1. Kromatogram minyak kayu putih



## Lampiran 2. Kromatogram mikroenkapsulat 1:1

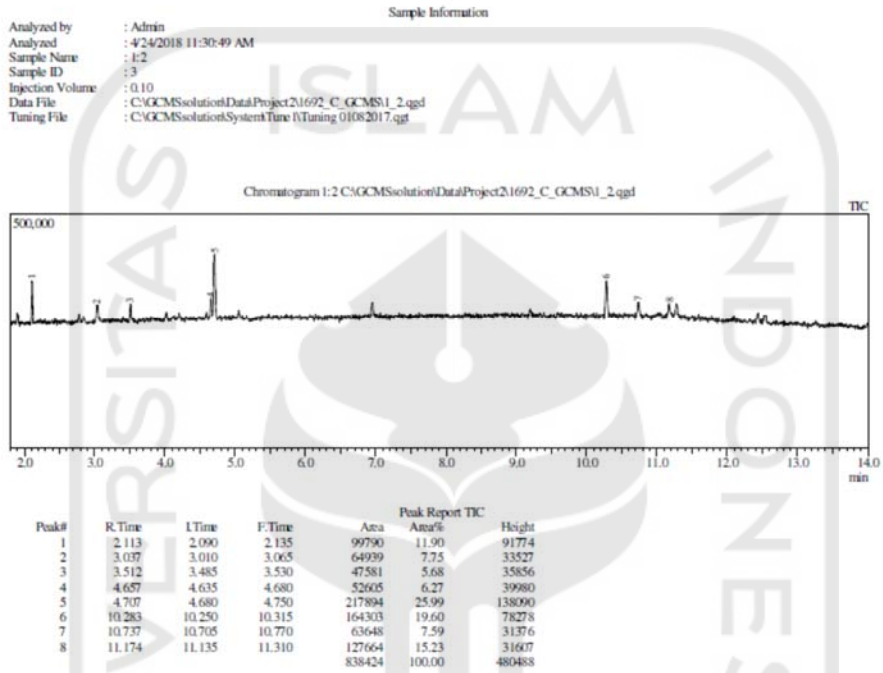
Sample Information  
Analyzed by : Admin  
Analyzed : 4/24/2018 11:13:28 AM  
Sample Name : 1:1  
Sample ID : 2  
Injection Volume : 0.10  
Data File : C:\GCMSolution\Data\Project2\1692\_C\_GCMSU\_1.gsd  
Tuning File : C:\GCMSolution\SystemTune\1\Tuning\_01082017.qst



Peak	R. Time	I. Time	F. Time	Area	Area%	Height
1	2.111	2.085	2.145	110445	35.45	100171
2	3.043	3.025	3.060	58501	18.78	35179
3	4.706	4.675	4.745	142604	45.77	94506
				311550	100.00	229859

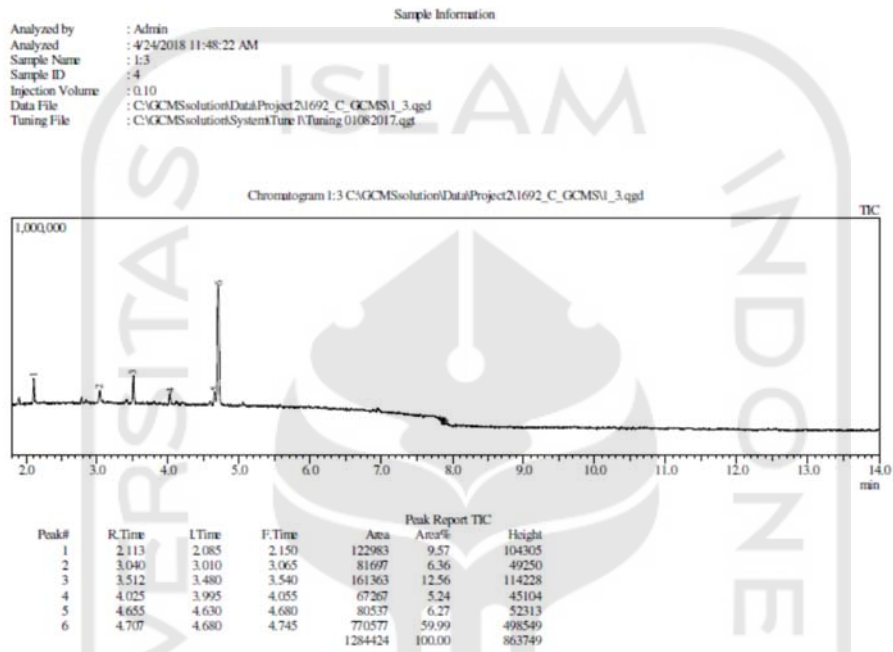
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الجامعة الإسلامية العالمية  
الاستد بالاندية

### Lampiran 3. Kromatogram mikroenkapsulat 1:2



الجامعة الإسلامية  
 الجاهلية الإسلامية  
 الباندا

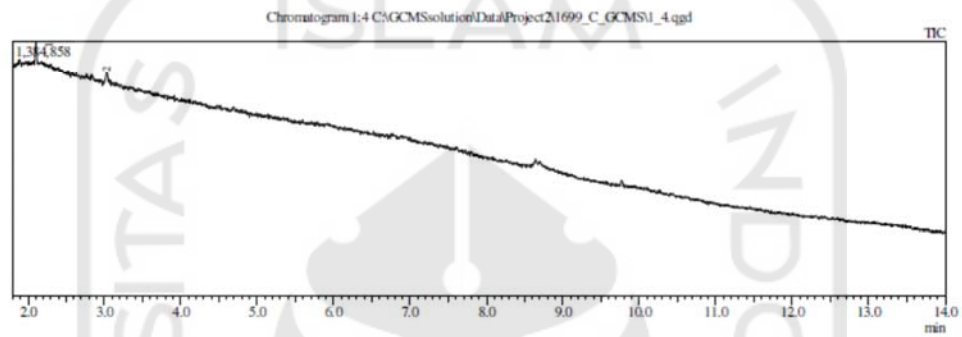
## Lampiran 4. Kromatogram mikroenkapsulat 1:3



الجمعة الإسلامية  
الاستدلال بالاندية

## Lampiran 5. Kromatogram mikroenkapsulat 1:4

Sample Information  
Analyzed by : Admin  
Analyzed : 4/26/2018 8:55:04 AM  
Sample Name : 1:4  
Sample ID : 1  
Injection Volume : 0.10  
Data File : C:\GCMSolution\Data\Project2\1699\_C\_GCMS1\_4.qgd  
Tuning File : C:\GCMSolution\SystemTune\Tuning 01082017.qgt



Peak#	R.Time	I.Time	F.Time	Area	Area%	Height
1	2.106	2.085	2.140	150390	63.27	122808
2	3.036	3.005	3.055	87298	36.73	50034
				237688	100.00	172842

الجمهورية الإسلامية اندونيسية

## Lampiran 6. Analisis PSA pada mikroenkapsulat 1:1

**HORIBA**  
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HORIBA SZ-100 for Windows [Z Type] Ver2.00

### SZ-100

083.P.PSA.IV.2018 R1.nsz

#### Measurement Results

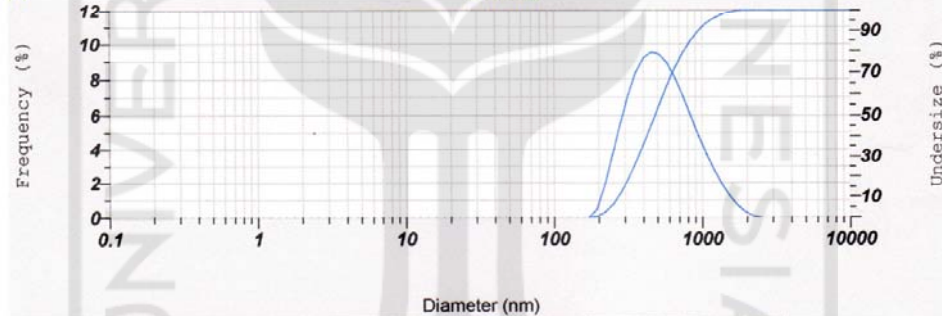
Date : Tuesday, May 15, 2018 1:20:03 PM  
 Measurement Type : Particle Size  
 Sample Name : 1:1  
 Scattering Angle : 90  
 Temperature of the Holder : 24.8 °C  
 Dispersion Medium Viscosity : 0.898 mPa·s  
 Transmission Intensity before Meas. : 29815  
 Distribution Form : Standard  
 Distribution Form(Dispersity) : Monodisperse  
 Representation of Result : Scattering Light Intensity  
 Count Rate : 1478 kCPS

#### Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	558.3 nm	290.1 nm	428.3 nm
2	---	--- nm	--- nm	--- nm
3	---	--- nm	--- nm	--- nm
Total	1.00	558.3 nm	290.1 nm	428.3 nm

#### Cumulant Operations

Z-Average : 300.9 nm  
 PI : 0.386



No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation
1	0.34	0.000	0.000	23	4.87	0.000	0.000	45	72.87	0.000	0.000	67	1068.52	3.885	93.341
2	0.35	0.000	0.000	24	5.61	0.000	0.000	46	82.83	0.000	0.000	68	1307.24	2.700	96.041
3	0.43	0.000	0.000	25	6.34	0.000	0.000	47	93.02	0.000	0.000	69	1363.97	1.853	97.894
4	0.49	0.000	0.000	26	7.17	0.000	0.000	48	105.10	0.000	0.000	70	1541.04	1.180	99.074
5	0.55	0.000	0.000	27	8.10	0.000	0.000	49	119.74	0.000	0.000	71	1741.10	0.639	99.713
6	0.62	0.000	0.000	28	9.15	0.000	0.000	50	134.16	0.000	0.000	72	1961.14	0.259	99.971
7	0.70	0.000	0.000	29	10.34	0.000	0.000	51	151.87	0.000	0.000	73	2222.51	0.098	100.000
8	0.80	0.000	0.000	30	11.68	0.000	0.000	52	171.25	0.000	0.000	74	2511.05	0.000	100.000
9	0.90	0.000	0.000	31	13.20	0.000	0.000	53	193.48	0.454	0.454	75	2837.04	0.000	100.000
10	1.00	0.000	0.000	32	14.81	0.000	0.000	54	218.90	1.636	2.090	76	3205.35	0.000	100.000
11	1.15	0.000	0.000	33	16.64	0.000	0.000	55	246.98	3.654	5.744	77	3621.48	0.000	100.000
12	1.30	0.000	0.000	34	18.63	0.000	0.000	56	279.94	5.501	11.245	78	4091.83	0.000	100.000
13	1.47	0.000	0.000	35	21.50	0.000	0.000	57	315.27	7.128	18.373	79	4628.81	0.000	100.000
14	1.66	0.000	0.000	36	24.29	0.000	0.000	58	356.20	8.381	26.754	80	5225.96	0.000	100.000
15	1.87	0.000	0.000	37	27.45	0.000	0.000	59	402.44	9.181	35.935	81	5901.02	0.000	100.000
16	2.11	0.000	0.000	38	31.01	0.000	0.000	60	464.69	8.502	44.437	82	6667.10	0.000	100.000
17	2.39	0.000	0.000	39	35.03	0.000	0.000	61	513.71	9.379	53.816	83	7524.85	0.000	100.000
18	2.70	0.000	0.000	40	39.58	0.000	0.000	62	580.41	8.865	62.681	84	8510.56	0.000	100.000
19	3.05	0.000	0.000	41	44.72	0.000	0.000	63	655.75	8.052	71.733	85	9615.42	0.000	100.000
20	3.45	0.000	0.000	42	50.53	0.000	0.000	64	740.89	7.035	78.767	86	10863.72	0.000	100.000
21	3.89	0.000	0.000	43	57.09	0.000	0.000	65	837.07	5.914	84.681				
22	4.40	0.000	0.000	44	64.50	0.000	0.000	66	945.74	4.773	89.454				

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## Lampiran7. Analisis PSA pada mikroenkapsulat 1:2

**HORIBA**  
Scientific

HORIBA SZ-100 for Windows [Z Type] Ver2.00

### SZ-100

080.P.PSA.IV.2018 R1.nsz

#### Measurement Results

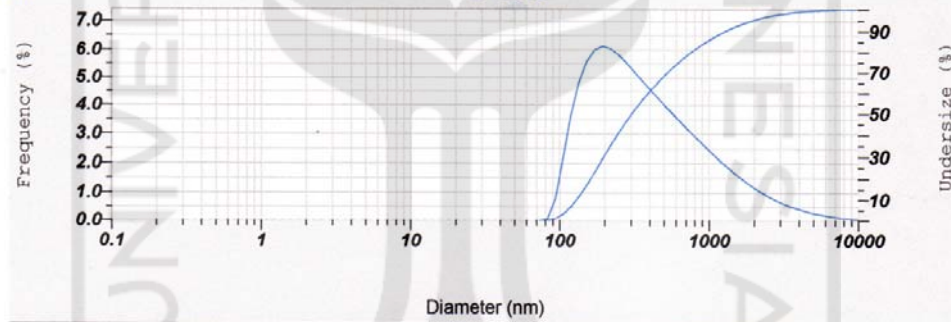
Date : Tuesday, May 15, 2018 10:59:57 AM  
 Measurement Type : Particle Size  
 Sample Name : 1:2  
 Scattering Angle : 90  
 Temperature of the Holder : 25.0 °C  
 Dispersion Medium Viscosity : 0.896 mPa·s  
 Transmission Intensity before Meas. : 24484  
 Distribution Form : Standard  
 Distribution Form(Dispersity) : Monodisperse  
 Representation of Result : Scattering Light Intensity  
 Count Rate : 1500 kCPS

#### Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	579.6 nm	798.1 nm	182.1 nm
2	---	--- nm	--- nm	--- nm
3	---	--- nm	--- nm	--- nm
Total	1.00	579.6 nm	798.1 nm	182.1 nm

#### Cumulant Operations

Z-Average : 410.6 nm  
 PI : 0.585



No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation
1	0.34	0.000	0.000	23	4.97	0.000	0.000	45	72.87	0.000	0.000	67	1068.52	2.291	95.942
2	0.38	0.000	0.000	24	5.61	0.000	0.000	46	82.33	0.049	0.049	68	1207.24	2.042	98.004
3	0.43	0.000	0.000	25	6.34	0.000	0.000	47	93.02	0.730	0.779	69	1363.97	1.805	99.808
4	0.49	0.000	0.000	26	7.17	0.000	0.000	48	105.10	2.183	2.962	70	1541.04	1.590	99.388
5	0.55	0.000	0.000	27	8.10	0.000	0.000	49	118.74	3.832	6.794	71	1741.10	1.371	93.760
6	0.62	0.000	0.000	28	9.15	0.000	0.000	50	134.16	4.799	11.573	72	1967.14	1.179	94.939
7	0.70	0.000	0.000	29	10.34	0.000	0.000	51	151.57	5.576	16.950	73	2224.51	1.004	95.942
8	0.80	0.000	0.000	30	11.68	0.000	0.000	52	171.26	5.992	22.942	74	2511.95	0.845	96.789
9	0.90	0.000	0.000	31	13.20	0.000	0.000	53	193.48	6.110	29.061	75	2837.04	0.706	97.495
10	1.02	0.000	0.000	32	14.91	0.000	0.000	54	218.60	6.037	35.098	76	3205.35	0.583	98.077
11	1.15	0.000	0.000	33	16.84	0.000	0.000	55	246.98	5.821	40.919	77	3621.48	0.475	98.552
12	1.30	0.000	0.000	34	19.03	0.000	0.000	56	279.04	5.529	46.448	78	4091.83	0.383	98.935
13	1.47	0.000	0.000	35	21.50	0.000	0.000	57	315.27	5.203	51.651	79	4622.81	0.304	99.239
14	1.66	0.000	0.000	36	24.29	0.000	0.000	58	356.20	4.870	56.521	80	5222.96	0.237	99.475
15	1.87	0.000	0.000	37	27.45	0.000	0.000	59	402.44	4.544	61.065	81	5891.02	0.181	99.656
16	2.11	0.000	0.000	38	31.01	0.000	0.000	60	454.69	4.231	65.296	82	6667.10	0.139	99.791
17	2.39	0.000	0.000	39	35.03	0.000	0.000	61	513.71	3.930	69.225	83	7532.85	0.097	99.888
18	2.70	0.000	0.000	40	39.58	0.000	0.000	62	580.41	3.641	72.866	84	8510.56	0.067	99.956
19	3.05	0.000	0.000	41	44.72	0.000	0.000	63	655.76	3.369	76.225	85	9615.42	0.044	100.000
20	3.45	0.000	0.000	42	50.53	0.000	0.000	64	749.89	3.084	79.309	86	10863.72	0.000	100.000
21	3.89	0.000	0.000	43	57.09	0.000	0.000	65	857.07	2.813	82.122				
22	4.40	0.000	0.000	44	64.50	0.000	0.000	66	945.74	2.549	84.671				

# Lampiran 8. Analisis PSA pada mikroenkapsulat 1:3



HORIBA SZ-100 for Windows [Z Type] Ver2.00

## SZ-100

082.P.PSA.IV.2018 R1.nsz

### Measurement Results

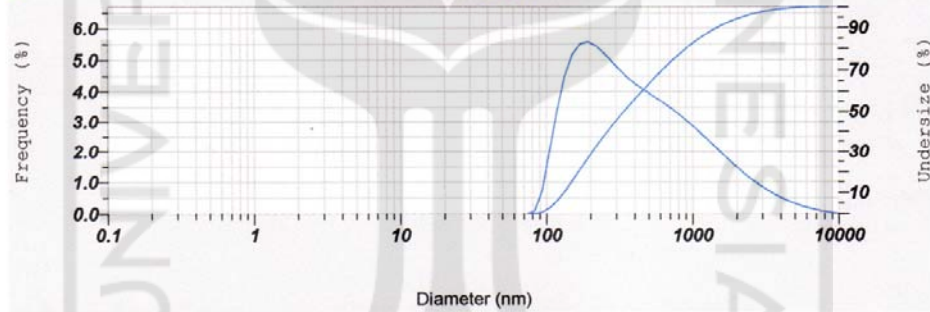
Date : Tuesday, May 15, 2018 1:08:16 PM  
 Measurement Type : Particle Size  
 Sample Name : 1:3  
 Scattering Angle : 90  
 Temperature of the Holder : 25.0 °C  
 Dispersion Medium Viscosity : 0.896 mPa·s  
 Transmission Intensity before Meas. : 30830  
 Distribution Form : Standard  
 Distribution Form(Dispersity) : Monodisperse  
 Representation of Result : Scattering Light Intensity  
 Count Rate : 1120 KCPS

### Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	644.9 nm	831.3 nm	181.9 nm
2	---	--- nm	--- nm	--- nm
3	---	--- nm	--- nm	--- nm
<b>Total</b>	<b>1.00</b>	<b>644.9 nm</b>	<b>831.3 nm</b>	<b>181.9 nm</b>

### Cumulant Operations

Z-Average : 445.6 nm  
 PI : 0.607



No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation
1	0.34	0.000	0.000	23	4.97	0.000	0.000	45	72.87	0.000	0.000	67	1068.52	2.738	83.736
2	0.38	0.000	0.000	24	5.61	0.000	0.000	46	82.33	0.000	0.000	68	1207.24	2.492	86.227
3	0.43	0.000	0.000	25	6.34	0.000	0.000	47	93.02	0.701	0.701	69	1363.97	2.242	88.469
4	0.49	0.000	0.000	26	7.17	0.000	0.000	48	105.10	2.054	2.845	70	1541.04	1.992	90.461
5	0.55	0.000	0.000	27	8.10	0.000	0.000	49	118.74	3.435	6.380	71	1741.10	1.748	92.209
6	0.62	0.000	0.000	28	9.15	0.000	0.000	50	134.16	4.907	10.787	72	1967.14	1.515	93.725
7	0.70	0.000	0.000	29	10.34	0.000	0.000	51	151.97	5.187	15.973	73	2222.51	1.295	95.019
8	0.80	0.000	0.000	30	11.68	0.000	0.000	52	171.25	5.513	21.487	74	2511.05	1.094	96.114
9	0.90	0.000	0.000	31	13.20	0.000	0.000	53	193.48	5.569	27.055	75	2837.24	0.911	97.025
10	1.02	0.000	0.000	32	14.81	0.000	0.000	54	219.90	5.444	32.499	76	3205.35	0.748	97.773
11	1.15	0.000	0.000	33	16.54	0.000	0.000	55	246.98	5.221	37.720	77	3621.48	0.603	98.376
12	1.30	0.000	0.000	34	18.53	0.000	0.000	56	279.04	4.959	42.679	78	4091.63	0.477	98.853
13	1.47	0.000	0.000	35	21.50	0.000	0.000	57	315.57	4.701	47.380	79	4622.81	0.370	99.223
14	1.66	0.000	0.000	36	24.29	0.000	0.000	58	356.20	4.466	51.846	80	5222.96	0.278	99.501
15	1.87	0.000	0.000	37	27.48	0.000	0.000	59	402.44	4.261	56.107	81	5901.02	0.202	99.702
16	2.11	0.000	0.000	38	31.01	0.000	0.000	60	454.69	4.080	60.187	82	6661.10	0.139	99.841
17	2.39	0.000	0.000	39	35.03	0.000	0.000	61	513.71	3.914	64.101	83	7502.66	0.088	99.929
18	2.70	0.000	0.000	40	39.58	0.000	0.000	62	580.41	3.751	67.853	84	8510.56	0.049	99.978
19	3.05	0.000	0.000	41	44.72	0.000	0.000	63	655.76	3.581	71.433	85	9615.42	0.022	100.000
20	3.45	0.000	0.000	42	50.53	0.000	0.000	64	740.89	3.386	74.830	86	10863.72	0.000	100.000
21	3.89	0.000	0.000	43	57.69	0.000	0.000	65	833.07	3.194	78.023				
22	4.40	0.000	0.000	44	64.50	0.000	0.000	66	945.74	2.974	80.997				

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# Lampiran 9. Analisis PSA pada mikroenkapsulat 1:4

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HORIBA SZ-100 for Windows [Z Type] Ver2.00

## SZ-100

081.P.PSA.IV.2018 R1.nsz

### Measurement Results

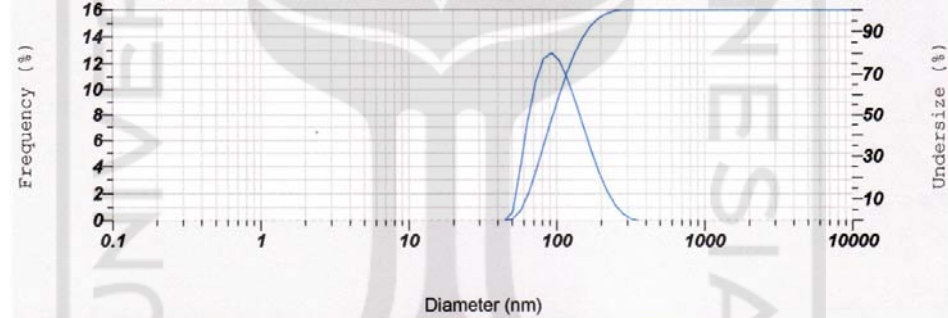
Date : Tuesday, May 15, 2018 11:38:54 AM  
 Measurement Type : Particle Size  
 Sample Name : 1:4  
 Scattering Angle : 90  
 Temperature of the Holder : 24.9 °C  
 Dispersion Medium Viscosity : 0.897 mPa·s  
 Transmission Intensity before Meas. : 29598  
 Distribution Form : Standard  
 Distribution Form(Dispersity) : Monodisperse  
 Representation of Result : Scattering Light Intensity  
 Count Rate : 1529 kCPS

### Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	104.5 nm	40.6 nm	87.4 nm
2	---	--- nm	--- nm	--- nm
3	---	--- nm	--- nm	--- nm
Total	1.00	104.5 nm	40.6 nm	87.4 nm

### Cumulant Operations

Z-Average : 202.1 nm  
 PI : 0.412



No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation
1	0.34	0.000	0.000	23	4.97	0.000	0.000	45	72.87	10.685	22.994	67	1068.52	0.000	100.000
2	0.38	0.000	0.000	24	5.61	0.000	0.000	46	82.33	12.372	35.366	68	1207.24	0.000	100.000
3	0.43	0.000	0.000	25	6.34	0.000	0.000	47	93.02	12.799	48.165	69	1363.97	0.000	100.000
4	0.46	0.000	0.000	26	7.17	0.000	0.000	48	105.10	12.194	60.349	70	1541.04	0.000	100.000
5	0.55	0.000	0.000	27	8.10	0.000	0.000	49	118.74	10.827	71.176	71	1741.10	0.000	100.000
6	0.62	0.000	0.000	28	9.15	0.000	0.000	50	134.16	9.036	80.211	72	1967.14	0.000	100.000
7	0.70	0.000	0.000	29	10.34	0.000	0.000	51	151.57	7.686	87.299	73	2222.51	0.000	100.000
8	0.80	0.000	0.000	30	11.68	0.000	0.000	52	171.25	5.204	92.504	74	2511.05	0.000	100.000
9	0.90	0.000	0.000	31	13.20	0.000	0.000	53	193.48	3.539	96.043	75	2837.04	0.000	100.000
10	1.02	0.000	0.000	32	14.91	0.000	0.000	54	218.50	2.181	98.224	76	3206.25	0.000	100.000
11	1.15	0.000	0.000	33	16.84	0.000	0.000	55	246.98	1.167	99.290	77	3621.46	0.000	100.000
12	1.30	0.000	0.000	34	19.03	0.000	0.000	56	279.04	0.489	99.880	78	4091.63	0.000	100.000
13	1.47	0.000	0.000	35	21.50	0.000	0.000	57	315.27	0.170	100.000	79	4622.81	0.000	100.000
14	1.66	0.000	0.000	36	24.29	0.000	0.000	58	356.20	0.000	100.000	80	5222.96	0.000	100.000
15	1.87	0.000	0.000	37	27.45	0.000	0.000	59	402.44	0.000	100.000	81	5901.02	0.000	100.000
16	2.11	0.000	0.000	38	31.01	0.000	0.000	60	464.69	0.000	100.000	82	6667.10	0.000	100.000
17	2.39	0.000	0.000	39	35.03	0.000	0.000	61	513.71	0.000	100.000	83	7532.65	0.000	100.000
18	2.70	0.000	0.000	40	39.58	0.000	0.000	62	560.41	0.000	100.000	84	8510.56	0.000	100.000
19	3.05	0.000	0.000	41	44.72	0.000	0.000	63	655.76	0.000	100.000	85	9615.42	0.000	100.000
20	3.45	0.000	0.000	42	50.53	0.634	0.634	64	740.89	0.000	100.000	86	10863.72	0.000	100.000
21	3.89	0.000	0.000	43	57.99	2.946	4.580	65	837.67	0.000	100.000				
22	4.40	0.000	0.000	44	64.50	7.730	12.309	66	945.74	0.000	100.000				

