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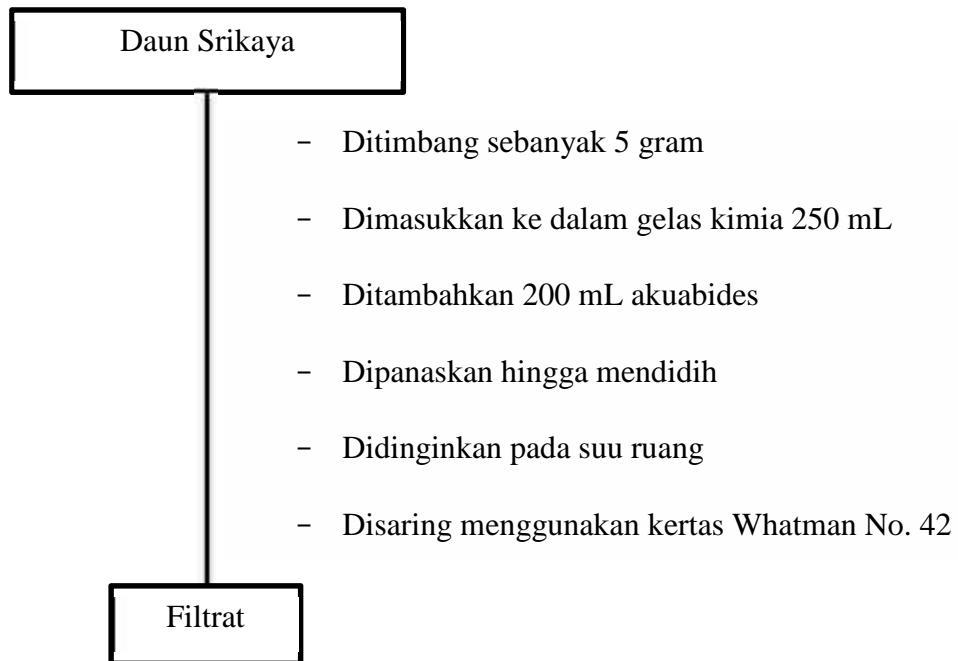
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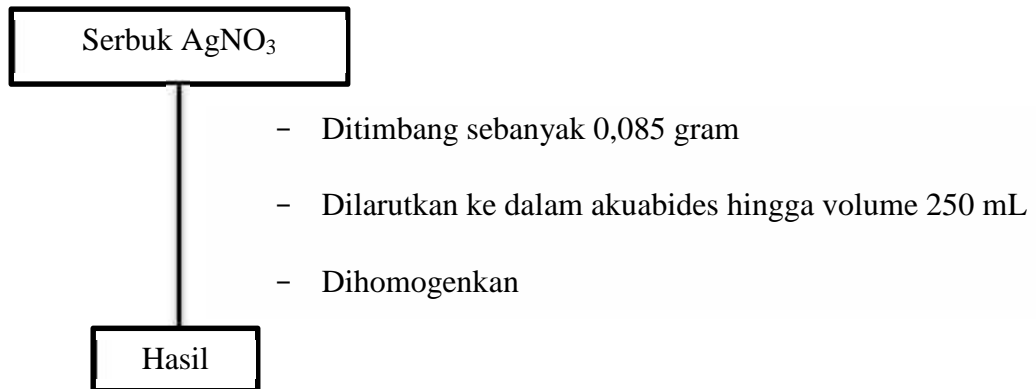


Lampiran 1. Pembuatan Ekstrak Daun Srikaya

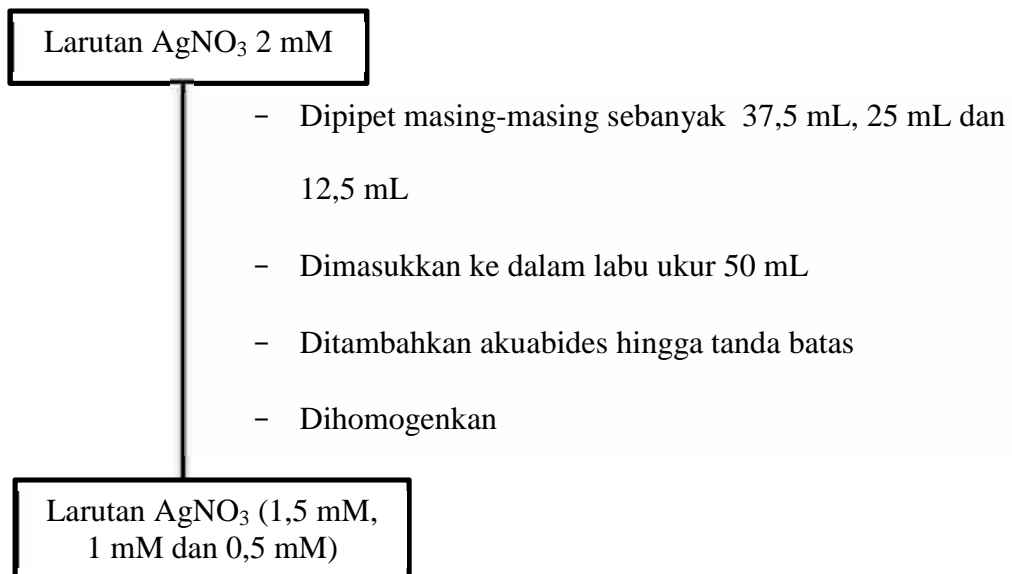


Lampiran 2. Pembuatan Larutan AgNO_3 konsentrasi 2 mM, 1,5 mM 1 mM dan 0,5 mM

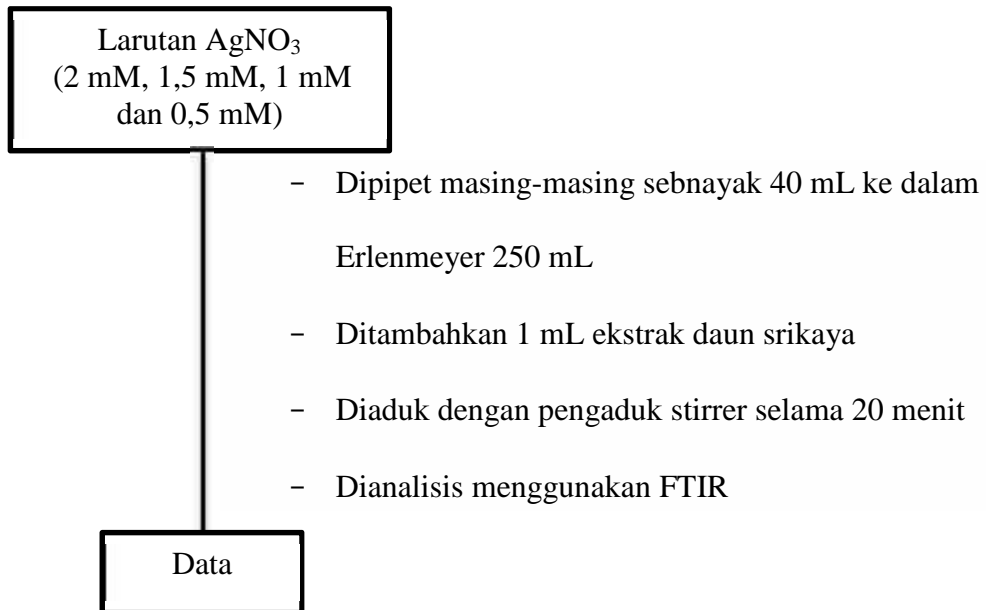
a. Pembuatan Larutan AgNO_3 2 mM



b. Pembuatan Larutan AgNO_3 1,5 mM, 1 mM dan 0,5 mM



Lampiran 3. Optimasi Konsentrasi Larutan AgNO₃



Lampiran 4. Sintesis Nanopartikel Perak



Lampran 5. Persamaan Debye-Scherer

$$D = \frac{K \cdot \lambda}{B \cos \theta}$$

Keterangan:

D : Ukuran Kristal (Å)

λ : Panjang gelombang X-Ray (0,154056 Å)

B : FWHM (*Full Width at Half Maximum*)

θ : Sudut Difraksi (°)

K : Konstanta bentuk kristal (0,89)

a. Untuk $2\theta = 37,40^\circ$

$$2\theta = \frac{37,4000}{2}$$

$$= 18,7$$

$$(\text{FWHM}) = \frac{0,2080/2}{180 \text{ rad}} \times 3,14$$

$$(\text{FWHM}) = 0,0018 \text{ rad}$$

$$D = \frac{0,89 \times 0,154056}{0,0018 \times 0,9472}$$

$$D = \frac{0,1371}{0,0017}$$

$$D = 80,6471 \text{ nm}$$

b. Untuk $2\theta = 44,0168^\circ$



$$= \frac{44,0168}{2}$$

$$= 22,0084$$

$$(\text{FWHM}) = \frac{0,2006/2}{180 \text{ rad}} \times 3,14$$

$$(\text{FWHM}) = 0,0017 \text{ rad}$$

$$D = \frac{0,89 \times 0,154056}{0,0017 \times 0,9271}$$

$$D = \frac{0,1371}{0,0015}$$

$$D = 91,4 \text{ nm}$$

c. Untuk $2\theta = 64,3765^\circ$

$$2\theta = \frac{64,3765}{2}$$

$$= 32,1882$$

$$(\text{FWHM}) = \frac{0,2298/2}{180 \text{ rad}} \times 3,14$$

$$(\text{FWHM}) = 0,0020 \text{ rad}$$

$$D = \frac{0,89 \times 0,154056}{0,0020 \times 0,8463}$$

$$D = \frac{0,1371}{0,0016}$$

$$D = 85,6875 \text{ nm}$$

d. Untuk $2\theta = 77,4858^\circ$

$$2\theta = \frac{77,4858}{2}$$

$$= 38,7429$$

$$(\text{FWHM}) = \frac{0,2652/2}{180 \text{ rad}} \times 3,14$$

$$(\text{FWHM}) = 0,0023 \text{ rad}$$



$$D = \frac{0,89 \times 0,154056}{0,0023 \times 0,7799}$$

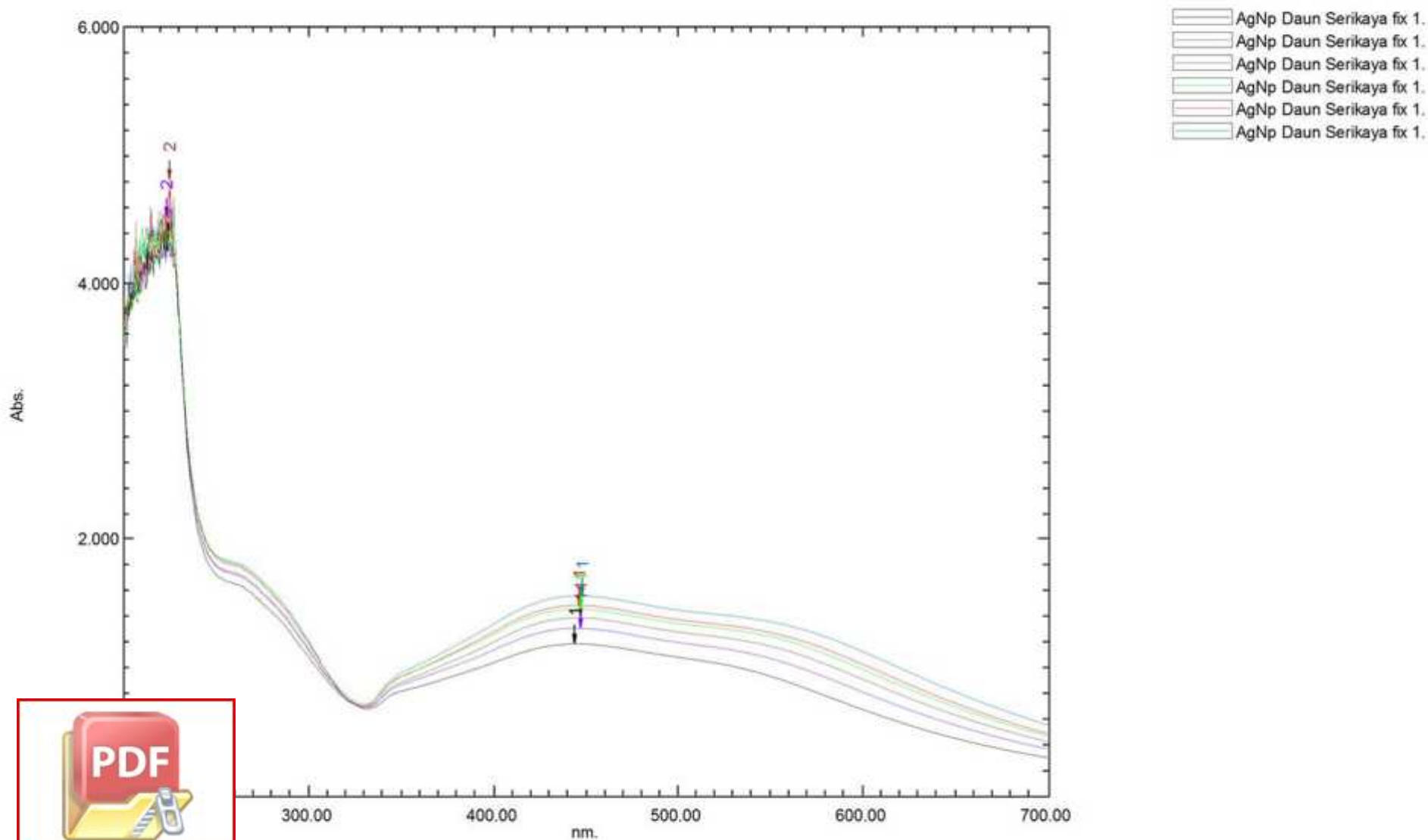
$$D = \frac{0,1371}{0,0017}$$

$$D = 80,6471 \text{ nm}$$



Overlay Spectrum Graph Report

10/04/2019 10:25:40 AM

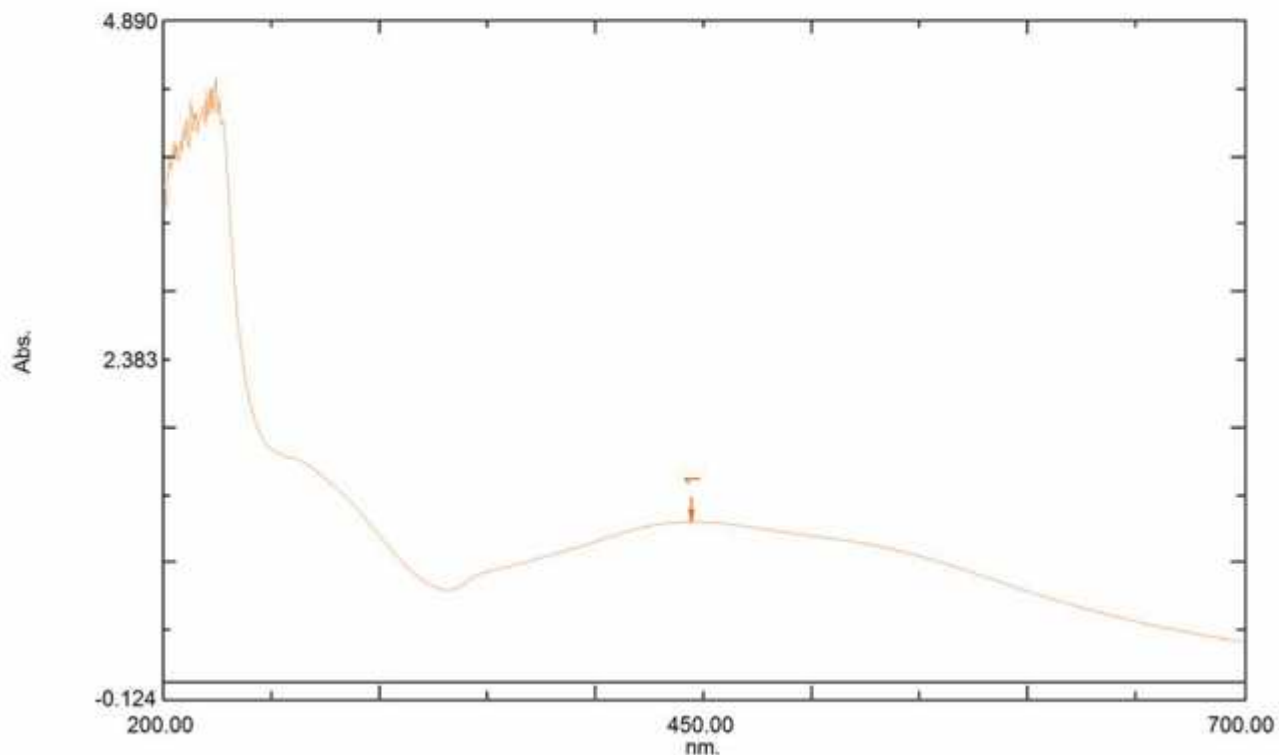


Optimization Software:
www.balesio.com

Spectrum Peak Pick Report

10/04/2019 10:17:00 AM

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[Measurement Properties]
Wavelength Range (nm.): 200.00 to 700.00
Scan Speed: Medium
Sampling Interval: 0.5
Smplng Interval: Enabled
Mode: Single

No.	P/V	Wavelength	Abs.	Description
1	●	444.00	1.183	

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Instrument Type: UV-2600 Series
Meas Mode: Absorbance
Cuvette Path: 0.2
Integration time: 0.1 sec.
Source Change Wavelength: 323.0 nm
Filter Unit: Direct
Change: Normal
Correction: OFF



Optimization Software:
www.balesio.com

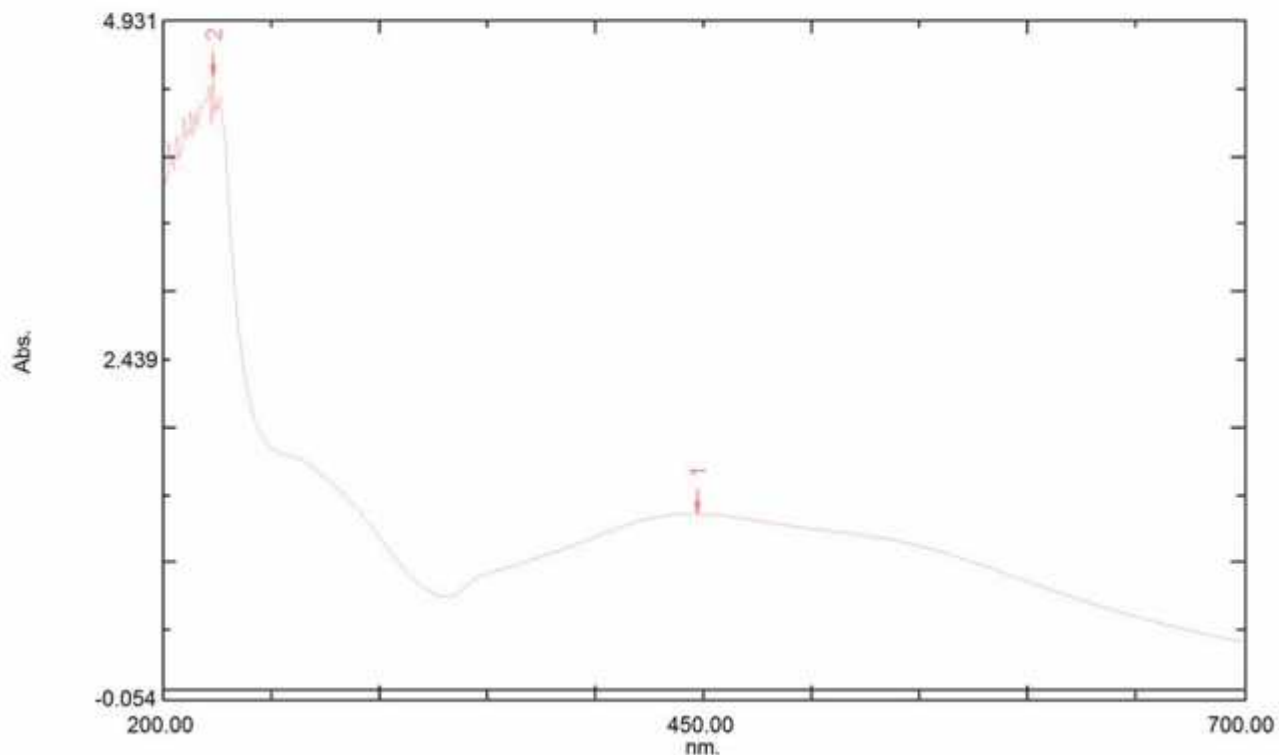
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Scan Speed: Medium
Sampling Interval: 0.5
Smplng Interval: Enabled
Mode: Single

No.	P/V	Wavelength	Abs.	Description
1	☑	447.50	1.305	
2	☑	223.00	4.516	

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Slit Width: 0.2
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Filter Unit: Direct
Change: Normal
Correction: OFF



Optimization Software:
www.balesio.com

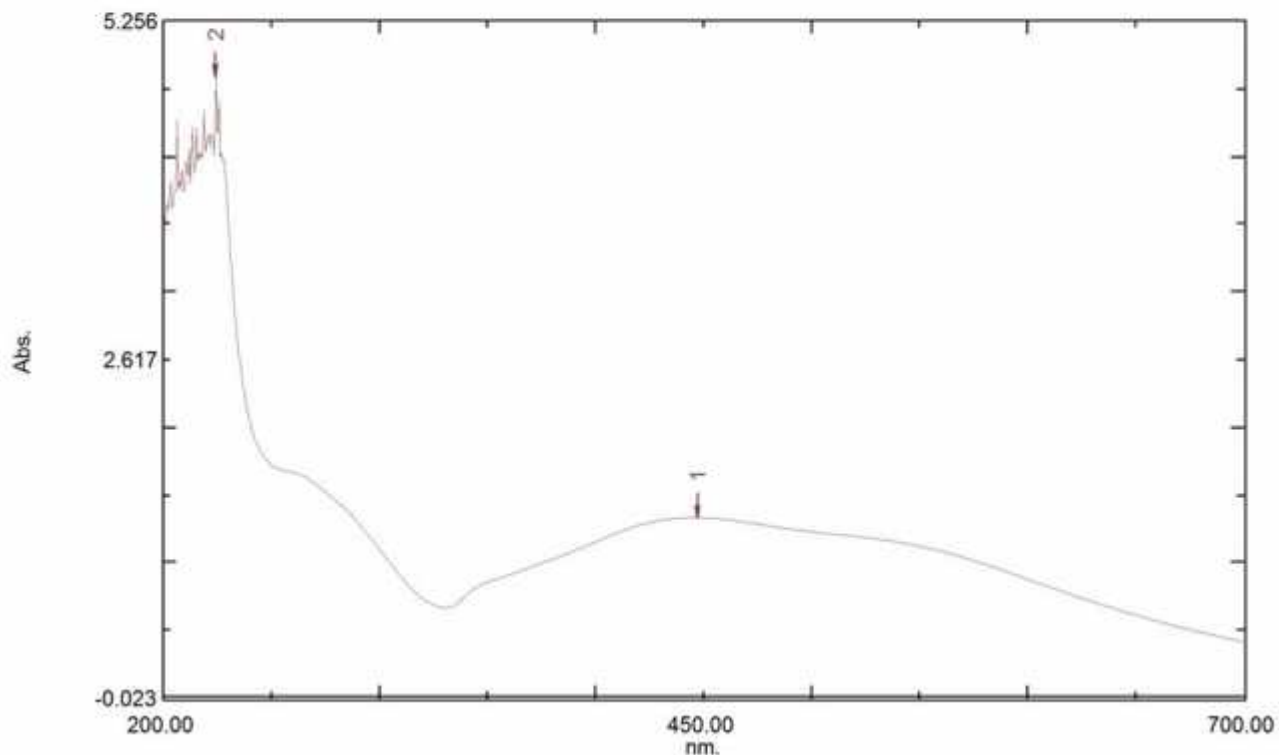
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10/04/2019 10:19:19 AM

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[Measurement Properties]
Wavelength Range (nm.): 200.00 to 700.00
Scan Speed: Medium
Sampling Interval: 0.5
Smoothing Interval: Enabled
Mode: Single

No.	P/V	Wavelength	Abs.	Description
1	☑	447.50	1.387	
2	☑	224.50	4.816	

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Measuring Mode: Absorbance
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Polarization Unit: Direct
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Optimization Software:
www.balesio.com

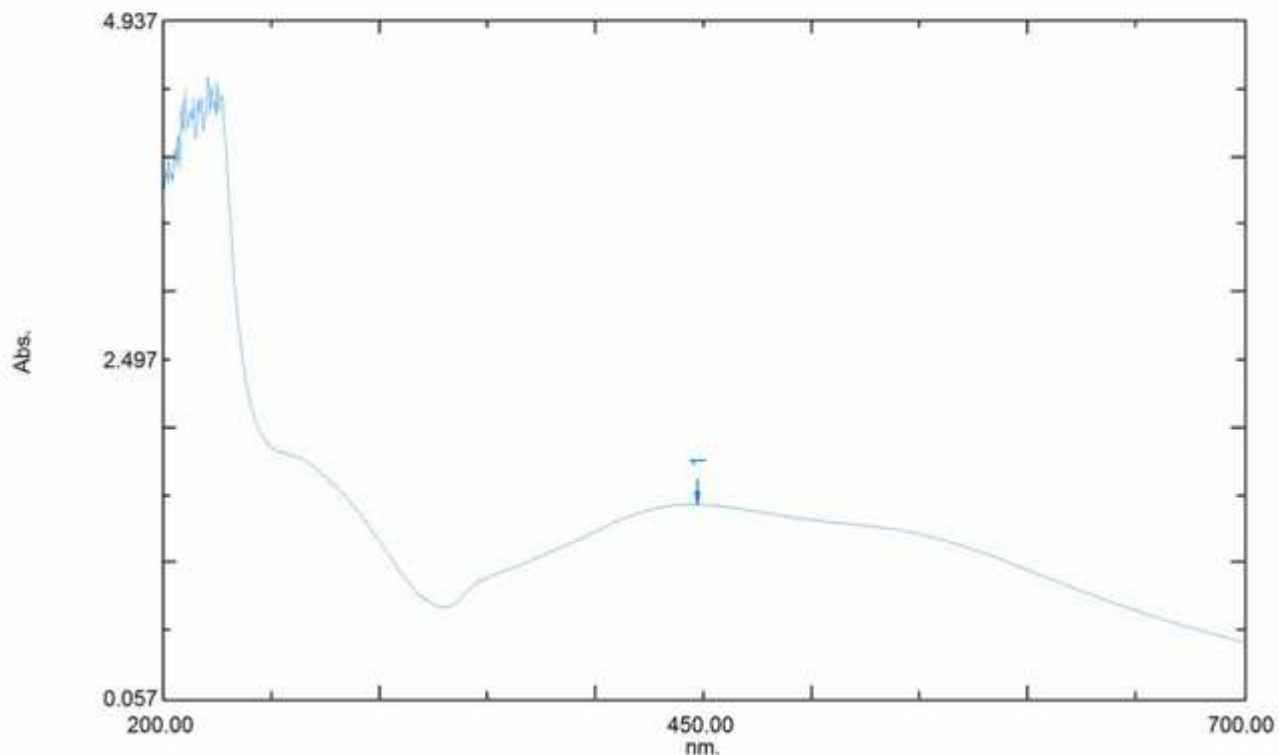
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Sampling Interval: 0.5
Smoothing Interval: Enabled
Mode: Single

No.	P/V	Wavelength	Abs.	Description
1	●	447.50	1.454	



Optimization Software:
www.balesio.com

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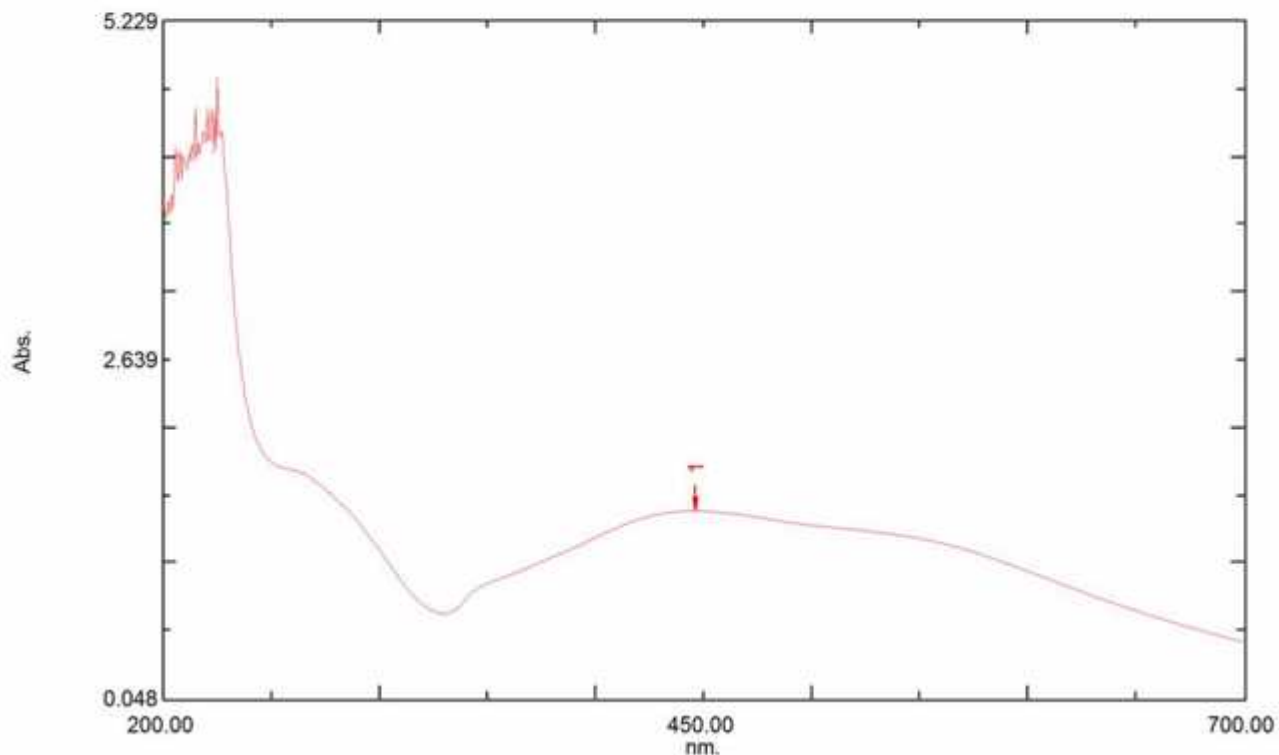
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Smoothing Interval: Enabled
Mode: Single

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Polarization Unit: Direct
Change Mode: Normal
Correction: OFF



Optimization Software:
www.balesio.com

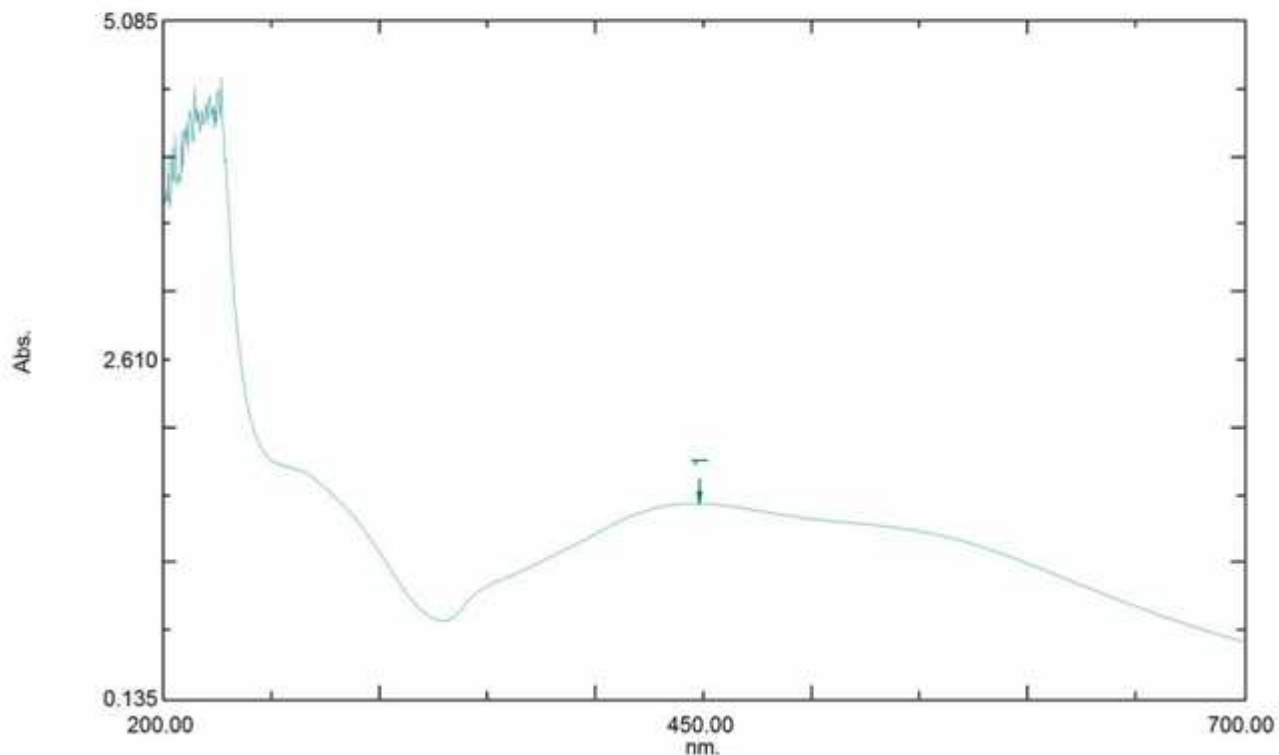
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Smoothing Interval: Enabled
Mode: Single

No.	P/V	Wavelength	Abs.	Description
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Optimization Software:
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Measuring Mode: Absorbance
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Source Change Wavelength: 323.0 nm
Polarization Unit: Direct
Polarization Change: Normal
Polarization Correction: OFF

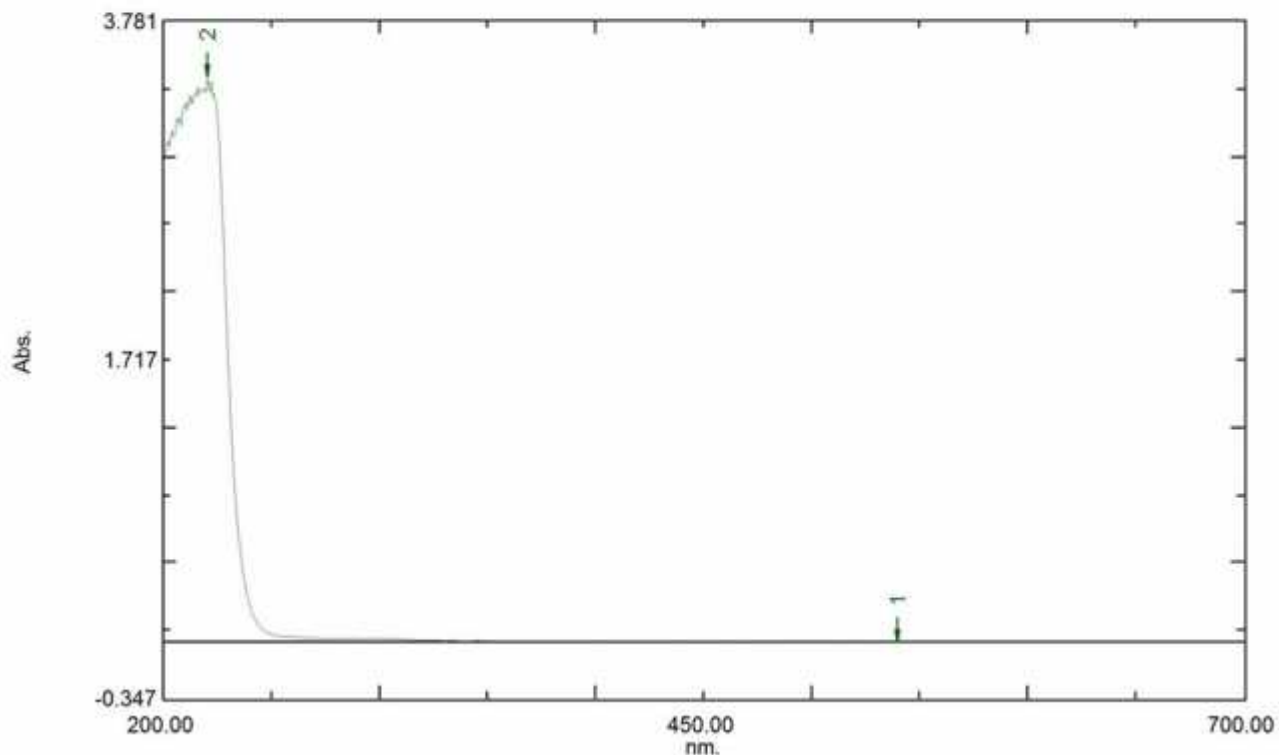
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Smoothing Interval: Enabled
Mode: Single

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1	☑	540.00	-0.001	
2	☑	220.50	3.437	

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Measurement Mode: Absorbance
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Source Change Wavelength: 323.0 nm
Polarization Unit: Direct
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[Operation]



Optimization Software:
www.balesio.com

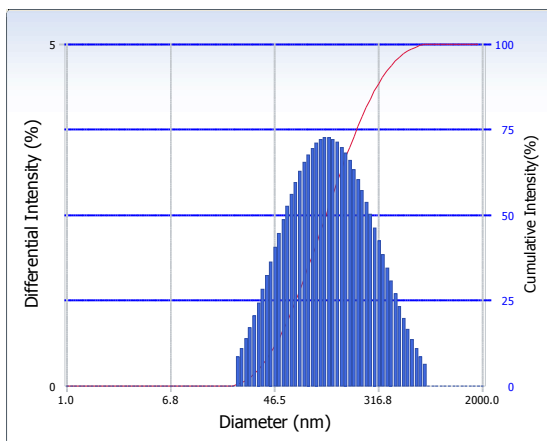
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S/N : 123909

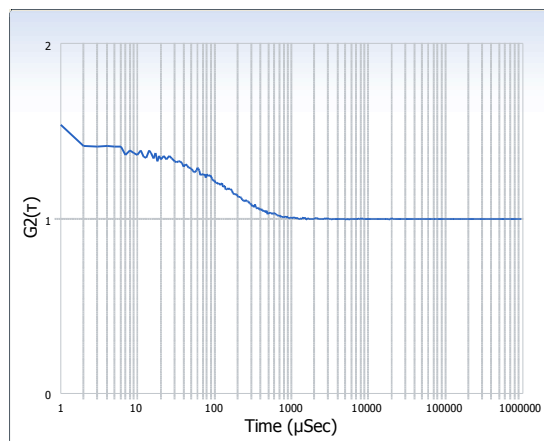
User : Common	Group :	Repetition : 1/1
Date : 9/13/2019	File Name : AgNP C_20190913_131911	
Time : 13:19:11	Sample Information :	
SOP Name : Sampel Uji PSA	Security : No Security	

Version 2.31 / 2.03

Intensity Distribution



ACF



Distribution Results (Contin)

Peak	Diameter (nm)	Std. Dev.
1	166.1	131.7
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
Average	166.1	131.7
Residual :	8.399e-003	(O.K)

Cumulants Results

Diameter (d)	: 99.3	(nm)
Polydispersity Index (P.I.)	: 0.304	
Diffusion Const. (D)	: 4.956e-008	(cm ² /sec)
Measurement Condition		
Temperature	: 25.0	(°C)
Diluent Name	: WATER	
Refractive Index	: 1.3328	
Viscosity	: 0.8878	(cP)
Scattering Intensity	: 9958	(cps)



Number Distribution Table

d (nm)	f(%)	f(cum.%)	d (nm)	f(%)	f(cum.%)	d (nm)	f(%)	f(cum.%)	d (nm)	f(%)	f(cum.%)
4.6	0.0	0.0	31.7	8.9	77.1	215.8	0.0	100.0	1471.1	0.0	100.0
5.0	0.0	0.0	34.2	6.6	83.7	233.0	0.0	100.0	1588.5	0.0	100.0
5.4	0.0	0.0	36.9	4.8	88.6	251.6	0.0	100.0	1715.3	0.0	100.0
5.8	0.0	0.0	39.9	3.5	92.1	271.7	0.0	100.0	1852.2	0.0	100.0
6.3	0.0	0.0	43.0	2.5	94.5	293.4	0.0	100.0	2000.0	0.0	100.0



D (10%) :	22.3 (nm)	D (50%) :	26.2 (nm)	D (90%) :	38.1 (nm)
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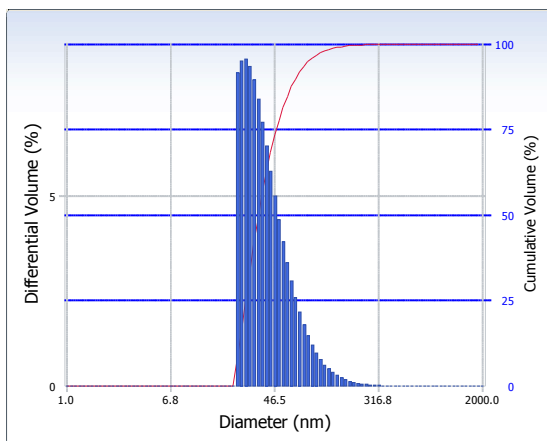
Volume Distribution

S/N : 123909

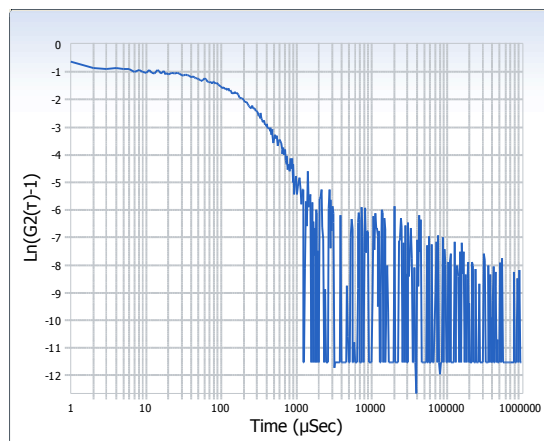
User : Common	Group :	Repetition : 1/1
Date : 9/13/2019	File Name : AgNP C_20190913_131911	
Time : 13:19:11	Sample Information :	
SOP Name : Sampel Uji PSA	Security : No Security	

Version 2.31 / 2.03

Volume Distribution



Ln(G2(τ)-1) vs τ



Distribution Results (Contin)

Peak	Diameter (nm)	Std. Dev.
1	43.8	26.3
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
Average	43.8	26.3
Residual :	8.399e-003	(O.K)

Cumulants Results

Diameter (d)	: 99.3	(nm)
Polydispersity Index (P.I.)	: 0.304	
Diffusion Const. (D)	: 4.956e-008	(cm ² /sec)
Measurement Condition		
Temperature	: 25.0	(°C)
Diluent Name	: WATER	
Refractive Index	: 1.3328	
Viscosity	: 0.8878	(cP)
Scattering Intensity	: 9958	(cps)



*** Basic Data Process ***

Group : Standard
 Data : nanoAg#Sept#b

Strongest 3 peaks

no.	peak no.	2Theta (deg)	d (Å)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	14	44.0168	2.05554	100	0.20060	1125	12241
2	21	64.3765	1.44602	81	0.22980	916	11399
3	29	77.4858	1.23085	75	0.26520	840	13433

Peak Data List

peak no.	2Theta (deg)	d (Å)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	27.3800	3.25476	3	0.53600	34	883
2	27.6400	3.22473	4	0.30660	49	639
3	31.6200	2.82733	5	0.33000	53	847
4	31.9533	2.79859	10	0.49330	115	1815
5	32.2200	2.77603	5	0.18860	58	623
6	33.9498	2.63844	8	0.23170	91	1679
7	37.4000	2.40259	6	0.20800	66	1357
8	37.5400	2.39395	12	0.00000	130	0
9	37.7862	2.37891	36	0.30580	406	6641
10	38.0400	2.36362	14	0.00000	157	0
11	38.2000	2.35409	7	0.21340	84	1707
12	39.4925	2.27997	26	0.16670	291	2848
13	43.7200	2.06881	9	0.21500	98	2028
14	44.0168	2.05554	100	0.20060	1125	12241
15	45.8600	1.97712	7	0.48000	78	1439
16	46.0800	1.96820	6	0.25200	66	914
17	57.1600	1.61021	5	0.38000	56	1362
18	57.4556	1.60262	24	0.19440	267	2450
19	57.8193	1.59341	4	0.10300	45	262
20	63.9600	1.45443	7	0.19200	74	1502
21	64.3765	1.44602	81	0.22980	916	11399
22	64.7000	1.43957	4	0.09000	48	594
23	68.4800	1.36903	3	0.16800	38	586
24	68.7798	1.36379	21	0.20760	237	2459
25	69.2107	1.35635	4	0.12310	47	283
26	76.5400	1.24369	4	0.31000	47	1375
27	76.8600	1.23931	6	0.00000	67	0
28	77.0600	1.23659	12	0.00000	132	0
29	77.4858	1.23085	75	0.26520	840	13433
30	77.9200	1.22508	4	0.11640	44	592



*** Basic Data Process ***

Data Infomation

Group : Standard
Data : nanoAg#Sept#b
Sample Nmae : serbuk
Comment :
Date & Time : 09-03-19 12:06:32

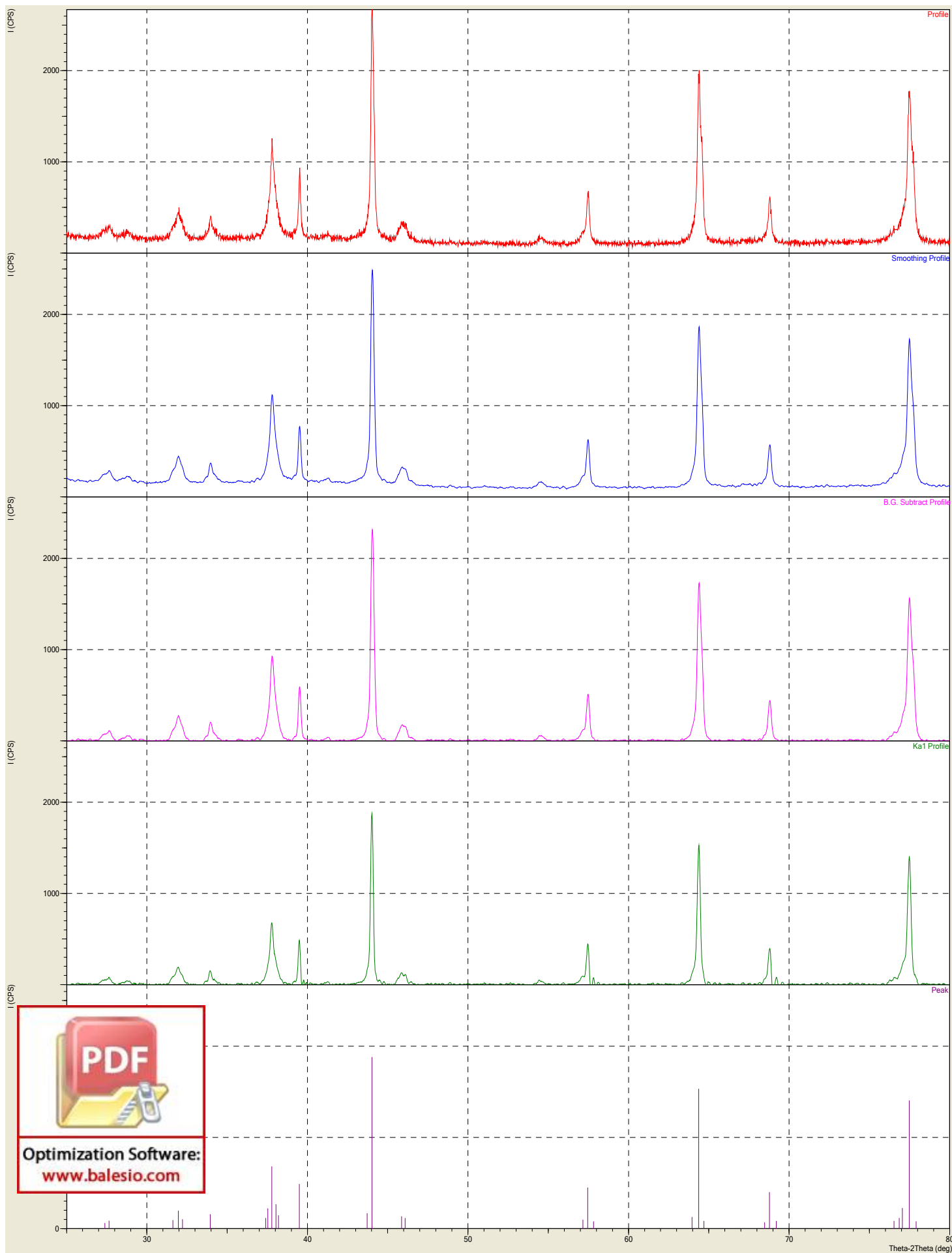
Measurement Condition

X-ray tube
target : Cu
voltage : 40.0 (kV)
current : 30.0 (mA)
Slits
Auto Slit : not Used
divergence slit : 1.00000 (deg)
scatter slit : 1.00000 (deg)
receiving slit : 0.30000(mm)
Scanning
drive axis : Theta-2Theta
scan range : 25.0200 - 80.0000 (deg)
scan mode : Continuous Scan
scan speed : 2.0000 (deg/min)
sampling pitch : 0.0200 (deg)
preset time : 0.60 (sec)

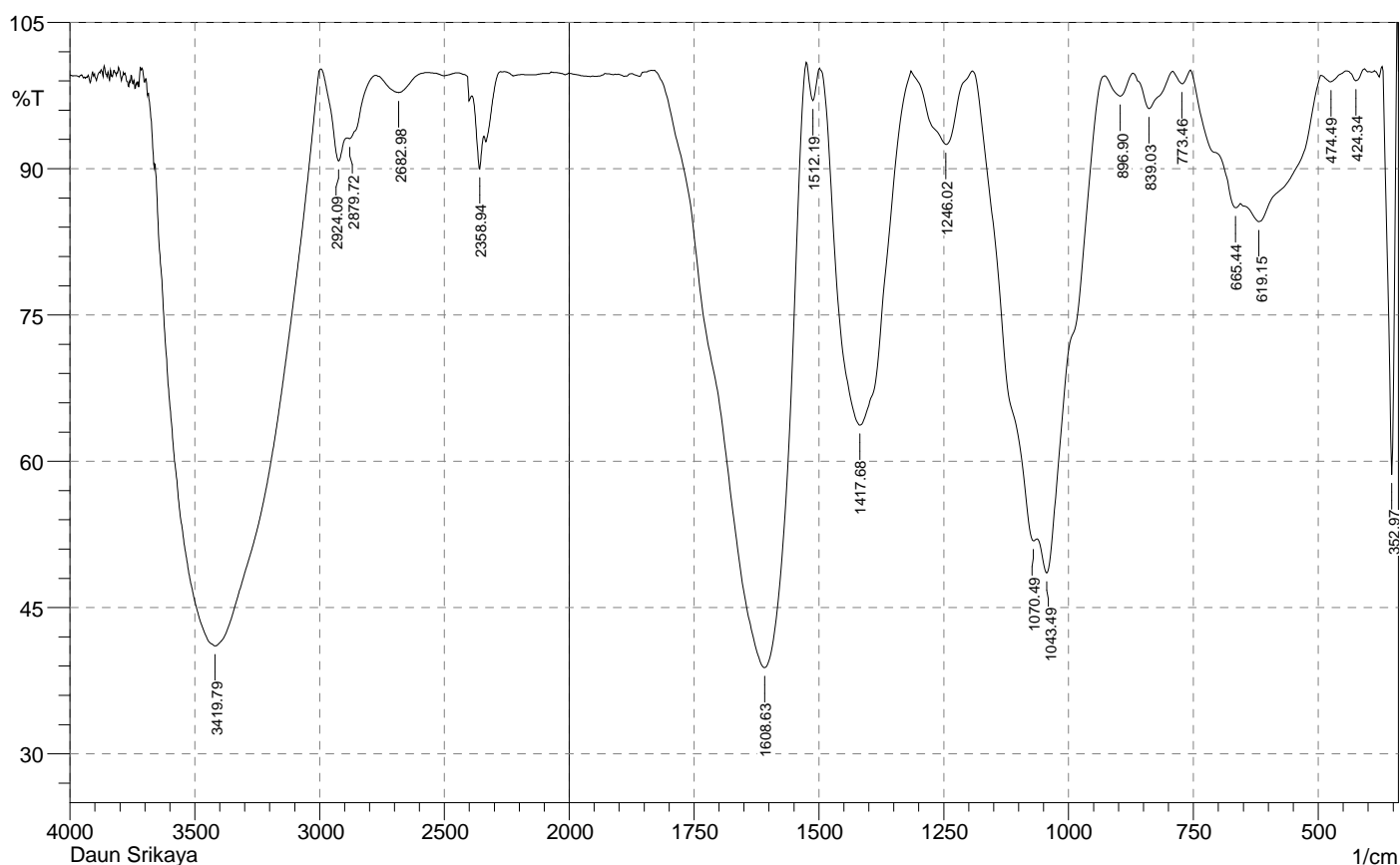
Data Process Condition

Smoothing [AUTO]
smoothing points : 15
B.G.Subtruction [AUTO]
sampling points : 13
repeat times : 30
Kal-a2 Separate [MANUAL]
Kal a2 ratio : 50 (%)
Peak Search [AUTO]
differential points : 11
FWHM threshold : 0.050 (deg)
intensity threshold : 30 (par mil)
FWHM ratio (n-1)/n : 2
System error Correction [NO]
Precise peak Correction [NO]





Optimization Software:
www.balesio.com

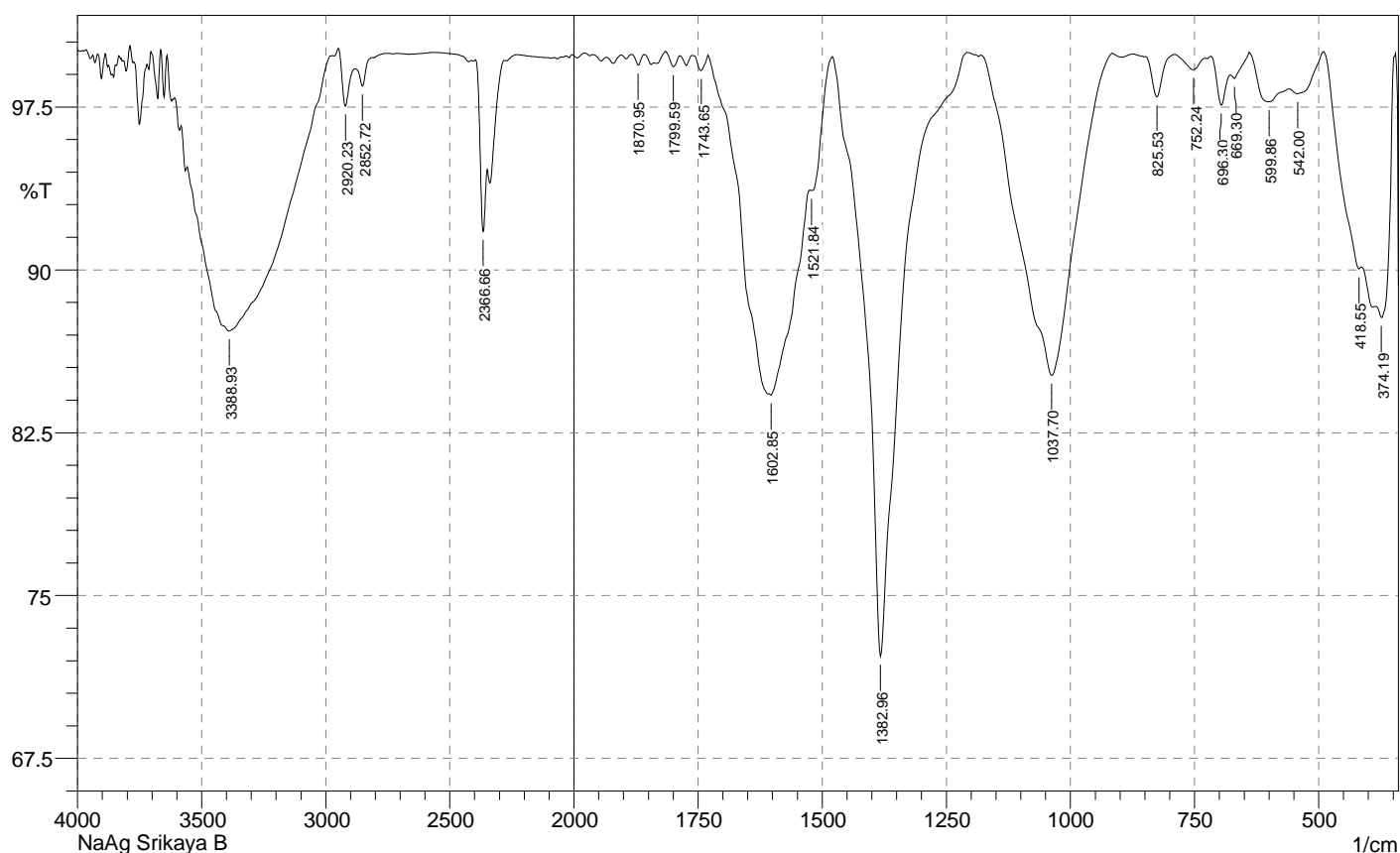


No.	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	352.97	58.62	41.99	370.33	343.33	3.01	3.07
2	424.34	99.02	1.11	441.7	406.98	0.06	0.08
3	474.49	98.9	0.85	495.71	441.7	0.14	0.09
4	619.15	84.58	4.69	653.87	495.71	7.99	2.87
5	665.44	85.99	1.76	756.1	655.8	3.81	0.6
6	773.46	98.72	1.34	790.81	756.1	0.1	0.11
7	839.03	96.16	3.7	871.82	790.81	0.7	0.66
8	896.9	97.44	2.23	927.76	871.82	0.38	0.3
9	1043.49	48.56	10.29	1062.78	927.76	20.64	2.27
10	1070.49	51.84	2.36	1192.01	1064.71	18.15	0.65
11	1246.02	92.5	7.53	1315.45	1192.01	2.04	2.05
12	1417.68	63.7	36.48	1498.69	1315.45	19.31	19.44
13	1512.19	96.97	3.65	1525.69	1498.69	0.15	0.22
14	1608.63	38.86	61.84	1828.52	1525.69	56.7	57.37
15	2358.94	89.96	4.78	2387.87	2343.51	1.37	0.44
16	2682.98	97.81	1.9	2775.57	2569.18	1.05	0.8
17	2879.72	93.09	0.72	2891.3	2775.57	1.94	0.05
18	2924.09	90.8	4.62	2993.52	2891.3	2.44	0.89
19	3419.79	41.08	52.85	3658.96	2995.45	156.07	141.86



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Date/Time; 9/30/2019 9:11:25 AM
 No. of Scans;
 Resolution;
 Apodization;



No.	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	374.19	87.804	3.538	383.83	347.19	1.485	0.542
2	418.55	90.045	0.591	489.92	414.7	1.964	0.251
3	542	98.109	0.654	559.36	489.92	0.395	0.149
4	599.86	97.738	1.438	640.37	559.36	0.586	0.294
5	669.3	98.816	0.381	677.01	640.37	0.114	0.034
6	696.3	97.577	1.811	717.52	677.01	0.245	0.141
7	752.24	99.217	0.597	790.81	727.16	0.124	0.078
8	825.53	97.961	1.904	848.68	790.81	0.219	0.188
9	1037.7	85.138	14.801	1178.51	916.19	8.602	8.528
10	1382.96	72.207	27.685	1479.4	1207.44	10.845	10.751
11	1521.84	93.646	0.539	1525.69	1479.4	0.728	0.053
12	1602.85	84.237	0.499	1606.7	1525.69	4.465	0.357
13	1743.65	99.174	0.714	1762.94	1730.15	0.065	0.049
14	1799.59	99.349	0.612	1815.02	1786.08	0.043	0.039
15	1870.95	99.425	0.495	1884.45	1859.38	0.032	0.024
16	2366.66	91.768	4.665	2397.52	2349.3	1.008	0.393
17	2852.72	98.468	1.009	2883.58	2810.28	0.256	0.102
18	2920.23	97.537	2.252	2949.16	2883.58	0.368	0.291
19	3388.93	87.187	9.017	3556.74	2981.95	22.131	15.169



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NaAg

Date/Time; 9/13/2019 10:18:26 AM
 No. of Scans;
 Resolution;
 Apodization;

Lampiran 8. Gambar Hasil Penelitian



Gambar 9. Daun Srikaya yang Dihaluskan



Gambar 10. Pembuatan Ekstrak Daun Srikaya



Gambar 11. Penyaringan Ekstrak Daun Srikaya



Gambar 12. Pengadukan Ekstrak Sampel dengan Larutan AgNO₃ dengan Variasi Konsentrasi





Gambar 13. Larutan AgNO₃ dan ekstrak daun srikaya

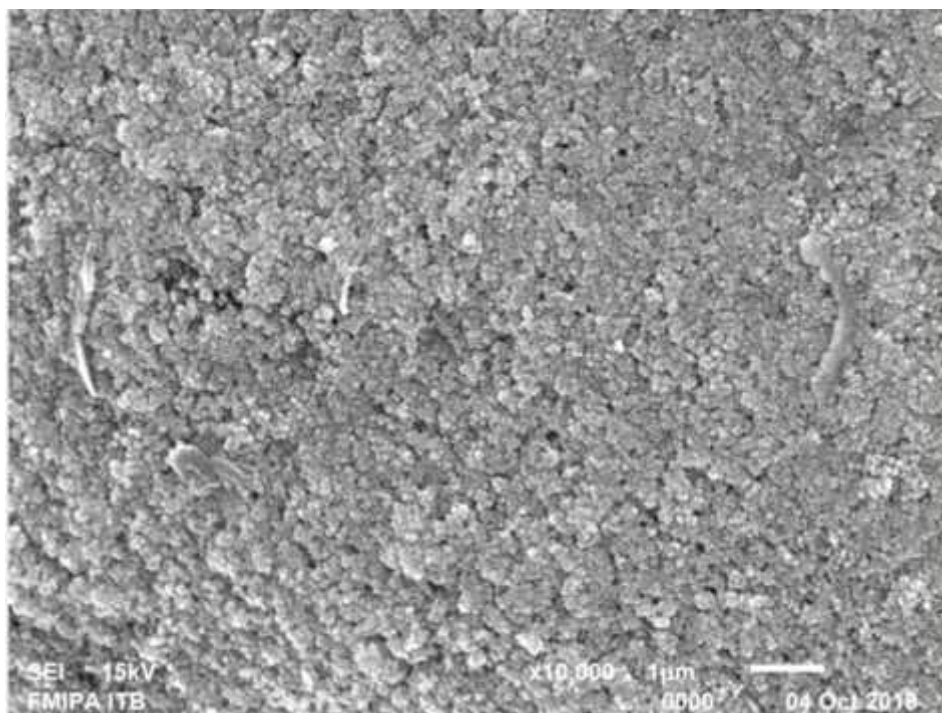


Gambar 14. Alat *Freeze Dryer*

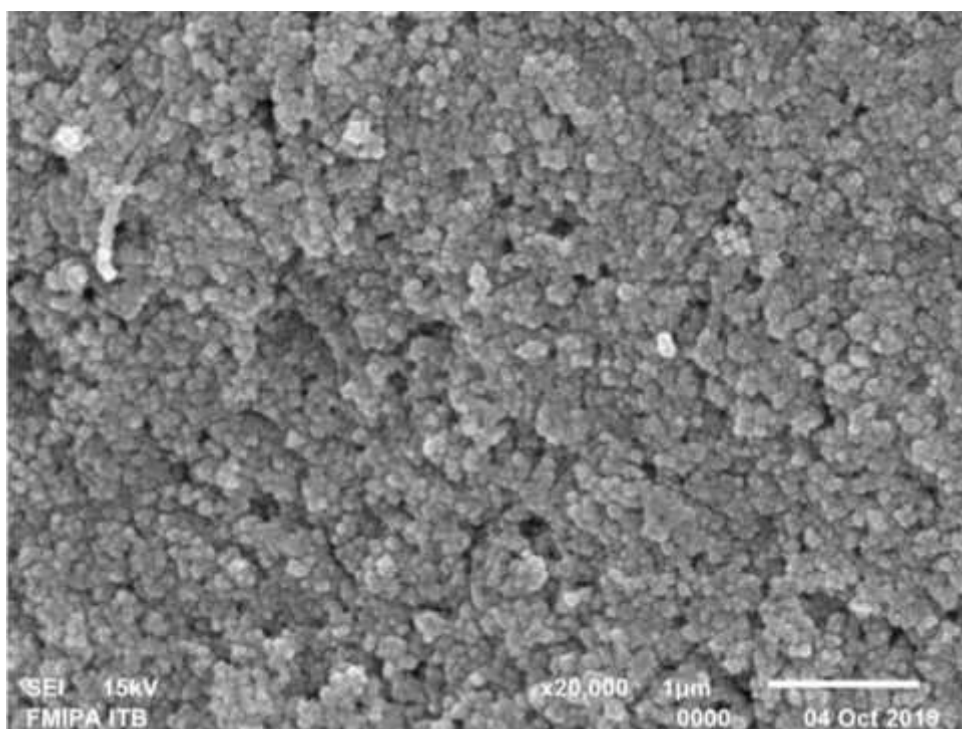


Gambar 15. Hasil sintesis nanopartikel perak





Gambar 16. Hasil analisis nanopartikel perak dengan SEM pada skala 10 μm



Gambar 17. Hasil analisis nanopartikel perak dengan SEM pada skala 20 μm

