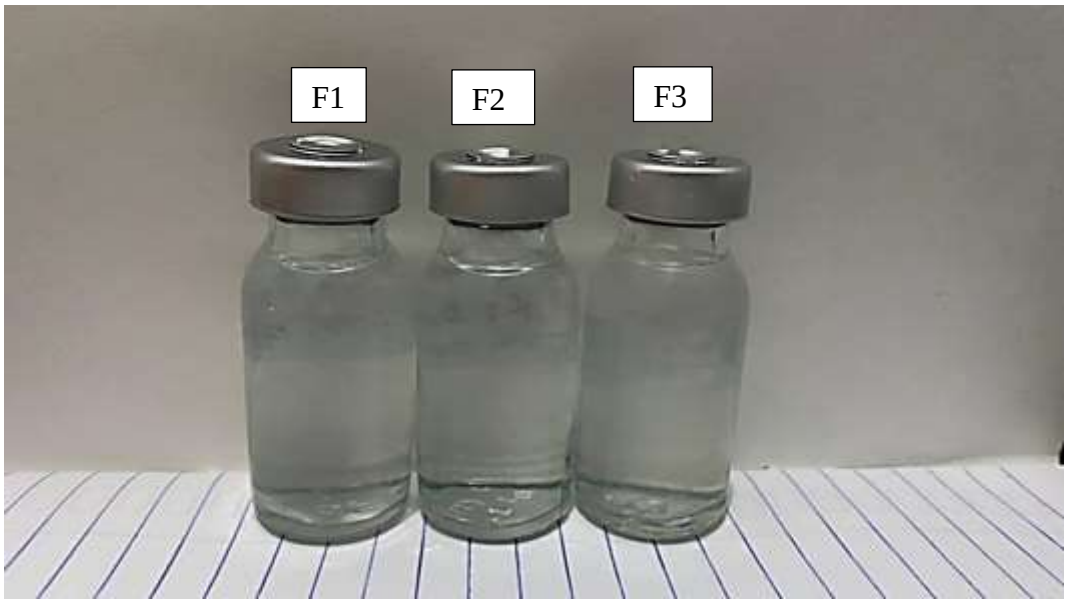
L A M P I R A N

Lampiran 1. Sediaan Nanopartikel Allantoin



Lampiran 2. Sediaan Nanogel Allantoin

(saat pembuatan)

(sesudah *cycling test*)

Lampiran 3. Karakteristik Nanopartikel

1. Ukuran Partikel

1.1 Formula 1

1.1.1 Percobaan 1

Size Distribution Report by Intensity
v2.2

Malvern

Sample Details

Sample Name:	F1 1		
SOP Name:	mansettings.nano		
General Notes:	original		
File Name:	Rahma_080321.dts	Dispersant Name:	Water
Record Number:	1	Dispersant RI:	1,330
Material RI:	1,52	Viscosity (cP):	0,8872
Material Absorbtion:	0,100	Measurement Date and Time:	08 March 2021 14:54:36

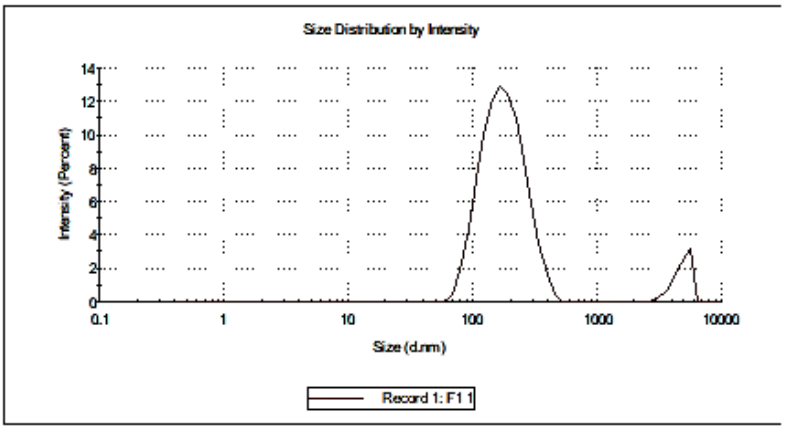
System

Temperature (°C):	25,0	Duration Used (s):	60
Count Rate (kcps):	315,0	Measurement Position (mm):	4,65
Cell Description:	Disposable sizing cuvette	Attenuator:	6

Results

			Size (d.n...	% Intensity:	St Dev (d....
Z-Average (d.nm):	168,1	Peak 1:	185,3	92,4	73,18
PdI:	0,462	Peak 2:	4844	7,6	708,9
Intercept:	0,936	Peak 3:	0,000	0,0	0,000

Result Good



1.1.2 Percobaan 2

Size Distribution Report by Intensity

v2.2

Malvern

Sample Details

Sample Name:	F1 2
SOP Name:	mansettings.nano
General Notes:	original

File Name:	Rahma_080321.dts	**Dispersant Name:**	Water
Record Number:	2	**Dispersant RI:**	1,330
Material RI:	1,52	**Viscosity (cP):**	0,8872
Material Absorbtion:	0,100	**Measurement Date and Time:**	08 March 2021 14:56:55

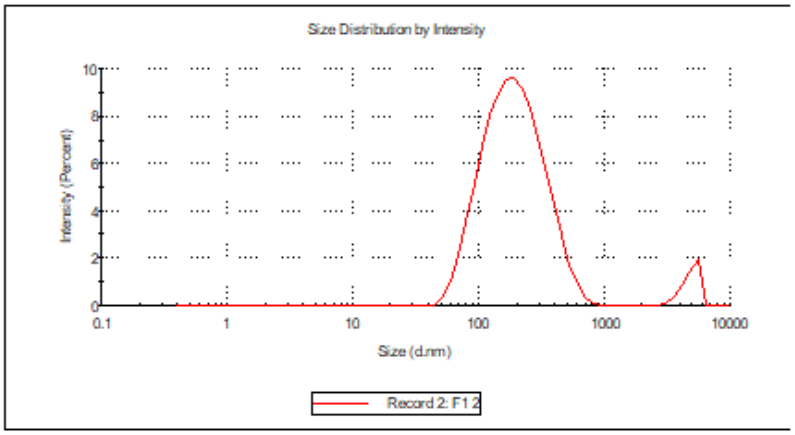
System

Temperature (°C):	25,0	**Duration Used (s):**	60
Count Rate (kcps):	310,9	**Measurement Position (mm):**	4,65
Cell Description:	Disposable sizing cuvette	**Attenuator:**	6

Results

			Size (d.n...	% Intensity:	St Dev (d....
Z-Average (d.nm):	168,7	**Peak 1:**	212,1	95,4	116,8
PdI:	0,358	**Peak 2:**	4873	4,6	691,5
Intercept:	0,929	**Peak 3:**	0,000	0,0	0,000

Result Good



1.1.3 Percobaan 3

Size Distribution Report by Intensity

v2.2

Malvern

Sample Details

Sample Name:	F1 3
SOP Name:	mansettings.nano
General Notes:	original

File Name:	Rahma_080321.dts	**Dispersant Name:**	Water
Record Number:	3	**Dispersant RI:**	1,330
Material RI:	1,52	**Viscosity (cP):**	0,8872
Material Absorbtion:	0,100	**Measurement Date and Time:**	08 March 2021 14:59:12

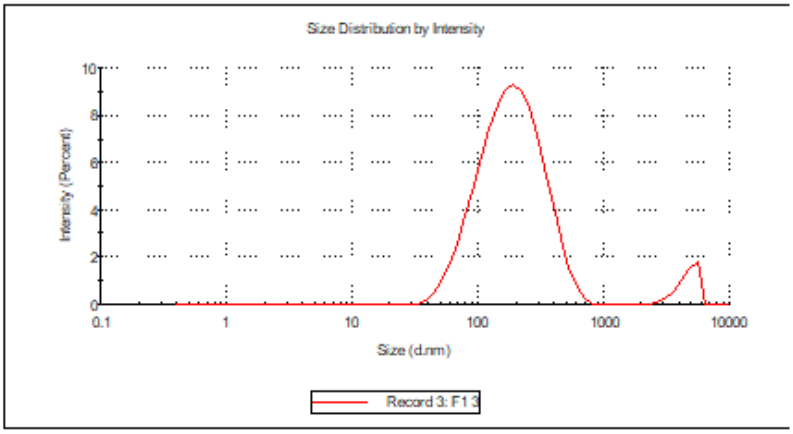
System

Temperature (°C):	25,0	**Duration Used (s):**	60
Count Rate (kcps):	324,5	**Measurement Position (mm):**	4,65
Cell Description:	Disposable sizing cuvette	**Attenuator:**	6

Results

			Size (d.n...	% Intensity:	St Dev (d....
Z-Average (d.nm):	163,9	**Peak 1:**	207,4	94,8	115,3
PdI:	0,378	**Peak 2:**	4707	5,2	781,4
Intercept:	0,928	**Peak 3:**	0,000	0,0	0,000

Result Good



1.2 Formula 2

1.2.1 Percobaan 1

Size Distribution Report by Intensity
v2.2

Malvern

Sample Details

Sample Name:	F2 3
SOP Name:	mansettings.nano
General Notes:	original

File Name:	Rahma_080321.dts	Dispersant Name:	Water
Record Number:	9	Dispersant RI:	1,330
Material RI:	1,52	Viscosity (cP):	0,8872
Material Absorbtion:	0,100	Measurement Date and Time:	08 March 2021 15:16:04

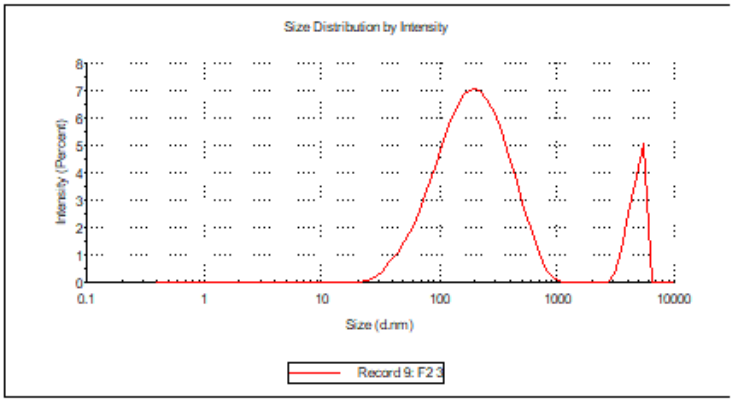
System

Temperature (°C):	25,0	Duration Used (s):	70
Count Rate (kcps):	252,4	Measurement Position (mm):	4,65
Cell Description:	Disposable sizing cuvette	Attenuator:	7

Results

			Size (d.n...	% Intensity:	St Dev (d....
Z-Average (d.nm):	189,9	Peak 1:	229,8	87,1	154,0
PdI:	0,593	Peak 2:	4814	12,9	721,8
Intercept:	0,924	Peak 3:	0,000	0,0	0,000

Result Refer to quality report



1.2.2 Percobaan 2

Size Distribution Report by Intensity
v2.2

Malvern

Sample Details

Sample Name:	F2 2		
SOP Name:	mansettings.nano		
General Notes:	original		
File Name:	Rahma_080321.dts	**Dispersant Name:**	Water
Record Number:	8	**Dispersant RI:**	1,330
Material RI:	1,52	**Viscosity (cP):**	0,8872
Material Absorbtion:	0,100	**Measurement Date and Time:**	08 March 2021 15:13:37

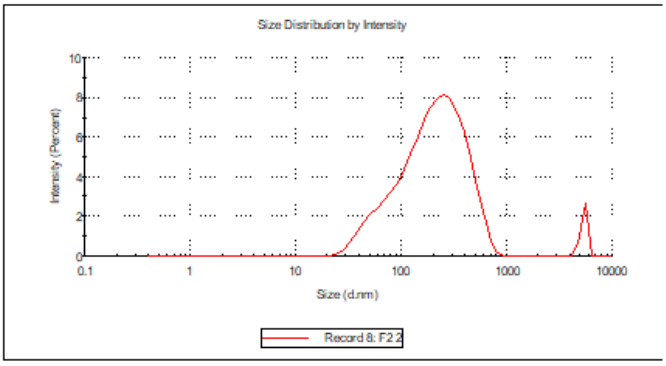
System

Temperature (°C):	25,0	**Duration Used (s):**	70
Count Rate (kcps):	248,9	**Measurement Position (mm):**	4,65
Cell Description:	Disposable sizing cuvette	**Attenuator:**	7

Results

			Size (d.n...	**% Intensity:**	**St Dev (d....**
Z-Average (d.nm):	198,4	**Peak 1:**	234,8	96,8	147,2
PdI:	0,541	**Peak 2:**	5421	3,2	293,6
Intercept:	0,929	**Peak 3:**	0,000	0,0	0,000

Result Refer to quality report



1.2.3 Percobaan 3

Size Distribution Report by Intensity
v2.2

Malvern

Sample Details

Sample Name:	F2 3
SOP Name:	mansettings.nano
General Notes:	original

File Name:	Rahma_080321.dts	**Dispersant Name:**	Water
Record Number:	9	**Dispersant RI:**	1,330
Material RI:	1,52	**Viscosity (cP):**	0,8872
Material Absorbtion:	0,100	**Measurement Date and Time:**	08 March 2021 15:16:04

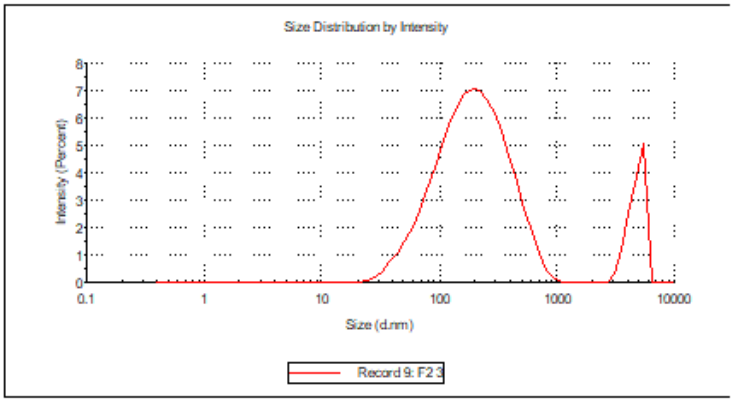
System

Temperature (°C):	25,0	**Duration Used (s):**	70
Count Rate (kcps):	252,4	**Measurement Position (mm):**	4,65
Cell Description:	Disposable sizing cuvette	**Attenuator:**	7

Results

			Size (d.n...	% Intensity:	St Dev (d....
Z-Average (d.nm):	189,9	**Peak 1:**	229,8	87,1	154,0
PdI:	0,593	**Peak 2:**	4814	12,9	721,8
Intercept:	0,924	**Peak 3:**	0,000	0,0	0,000

Result Refer to quality report



1.3 Formula 3

1.3.1. Percobaan 1

Size Distribution Report by Intensity
v2.2

Malvern

Sample Details

Sample Name:	F3 1		
SOP Name:	mansettings.nano		
General Notes:	original		
File Name:	Rahma_080321.dts	**Dispersant Name:**	Water
Record Number:	13	**Dispersant RI:**	1,330
Material RI:	1,52	**Viscosity (cP):**	0,8872
Material Absorbtion:	0,100	**Measurement Date and Time:**	08 March 2021 15:26:34

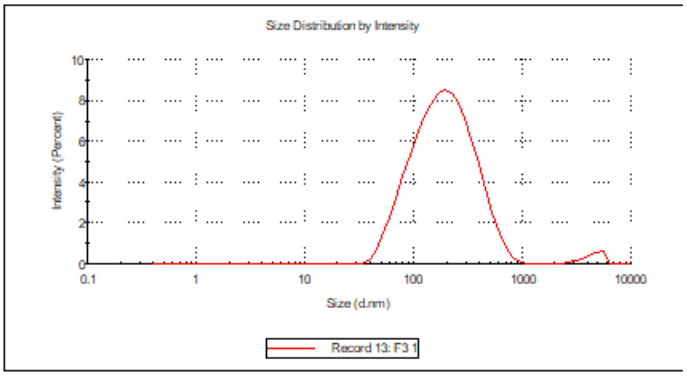
System

Temperature (°C):	25,0	**Duration Used (s):**	60
Count Rate (kcps):	256,8	**Measurement Position (mm):**	4,65
Cell Description:	Disposable sizing cuvette	**Attenuator:**	5

Results

			Size (d.n...	% Intensity:	St Dev (d....
Z-Average (d.nm):	161,7	**Peak 1:**	219,7	98,2	137,9
PdI:	0,271	**Peak 2:**	4635	1,8	813,8
Intercept:	0,935	**Peak 3:**	0,000	0,0	0,000

Result Good



1.3.2. Percobaan 2

Size Distribution Report by Intensity

v2.2

Malvern

Sample Details

Sample Name:	F3 2
SOP Name:	mansettings.nano
General Notes:	original

File Name:	Rahma_080321.dts	**Dispersant Name:**	Water
Record Number:	14	**Dispersant RI:**	1,330
Material RI:	1,52	**Viscosity (cP):**	0,8872
Material Absorbtion:	0,100	**Measurement Date and Time:**	08 March 2021 15:28:52

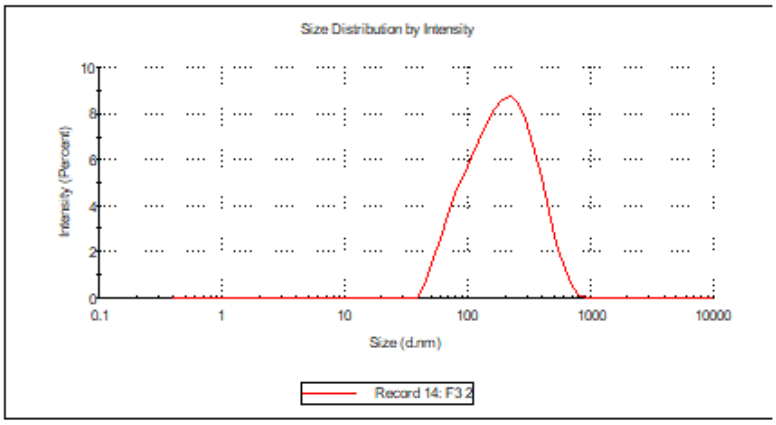
System

Temperature (°C):	25,0	**Duration Used (s):**	60
Count Rate (kcps):	247,1	**Measurement Position (mm):**	4,65
Cell Description:	Disposable sizing cuvette	**Attenuator:**	5

Results

			Size (d.n...	% Intensity:	St Dev (d....
Z-Average (d.nm):	158,0	**Peak 1:**	217,2	100,0	130,3
PdI:	0,267	**Peak 2:**	0,000	0,0	0,000
Intercept:	0,937	**Peak 3:**	0,000	0,0	0,000

Result Good



1.3.3. Percobaan 3

Size Distribution Report by Intensity
v2.2

Malvern

Sample Details

Sample Name:	F3 3
SOP Name:	mansettings.nano
General Notes:	original

File Name:	Rahma_080321.dts	**Dispersant Name:**	Water
Record Number:	15	**Dispersant RI:**	1,330
Material RI:	1,52	**Viscosity (cP):**	0,8872
Material Absorbtion:	0,100	**Measurement Date and Time:**	08 March 2021 15:31:09

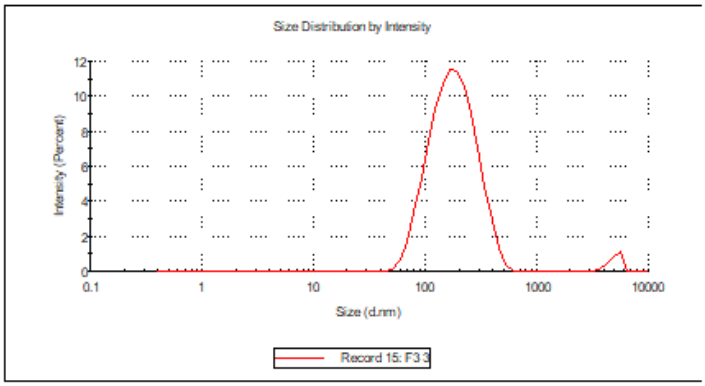
System

Temperature (°C):	25,0	**Duration Used (s):**	60
Count Rate (kcps):	238,0	**Measurement Position (mm):**	4,65
Cell Description:	Disposable sizing cuvette	**Attenuator:**	5

Results

			Size (d.n...	% Intensity:	St Dev (d....
Z-Average (d.nm):	182,5	**Peak 1:**	191,7	97,6	87,90
PdI:	0,254	**Peak 2:**	5011	2,4	602,7
Intercept:	0,937	**Peak 3:**	0,000	0,0	0,000

Result Good



2. Potensial Zeta

2.1 Formula 1

2.1.1 Percobaan 1

Zeta Potential Report
v2.3

Malvern

Sample Details

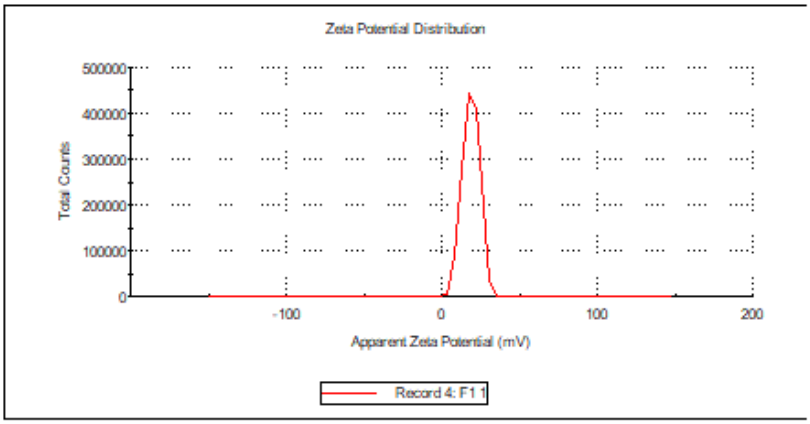
Sample Name:	F1 1		
SOP Name:	mansettings.nano		
General Notes:	original		
File Name:	Rahma_080321.dts	**Dispersant Na...**	Water
Record Number:	4	**Dispersant RI:**	1,330
Date and Time:	08 March 2021 15:00:51	**Viscosity (cP):**	0,8872
		Dispersant Dielectric Consta...	78,5

System

Temperature (°C):	25,0	**Zeta Runs:**	12
Count Rate (kcps):	1906,6	**Measurement Position (mm):**	4,50
Cell Description:	Zeta dip cell	**Attenuator:**	5

Results

		Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV):	18,8	**Peak 1:** 18,8	100,0	5,38
Zeta Deviation (mV):	5,38	**Peak 2:** 0,00	0,0	0,00
Conductivity (mS/c...	1,15	**Peak 3:** 0,00	0,0	0,00
Result quality	Good			



2.1.2 Percobaan 2

Zeta Potential Report

v2.3

Malvern

Sample Details

Sample Name:	F1 2
SOP Name:	mansettings.nano
General Notes:	original

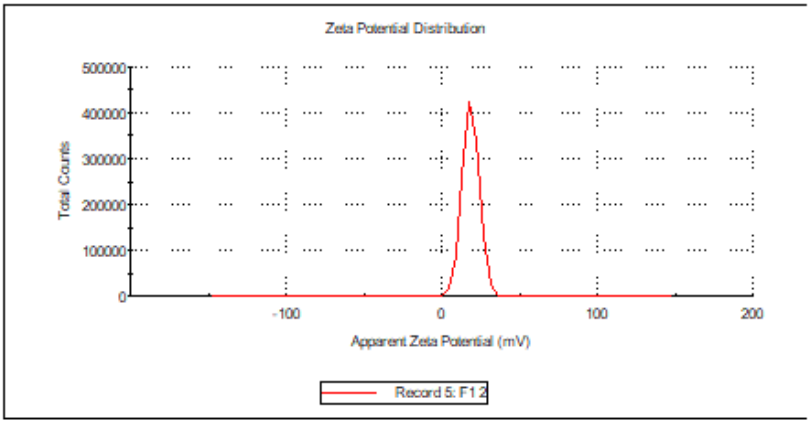
File Name:	Rahma_080321.dts	**Dispersant Na...**	Water
Record Number:	5	**Dispersant RI:**	1,330
Date and Time:	08 March 2021 15:03:51	**Viscosity (cP):**	0,8872
		Dispersant Dielectric Consta...	78,5

System

Temperature (°C):	25,0	**Zeta Runs:**	12
Count Rate (kcps):	497,6	**Measurement Position (mm):**	4,50
Cell Description:	Zeta dip cell	**Attenuator:**	5

Results

			Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV):	19,0	**Peak 1:**	19,0	100,0	5,34
Zeta Deviation (mV):	5,34	**Peak 2:**	0,00	0,0	0,00
Conductivity (mS/c...	1,17	**Peak 3:**	0,00	0,0	0,00
Result quality	Good				



2.1.3 Percobaan 3

Zeta Potential Report

v2.3

Malvern

Sample Details

Sample Name:	F1 3
SOP Name:	mansettings.nano
General Notes:	original

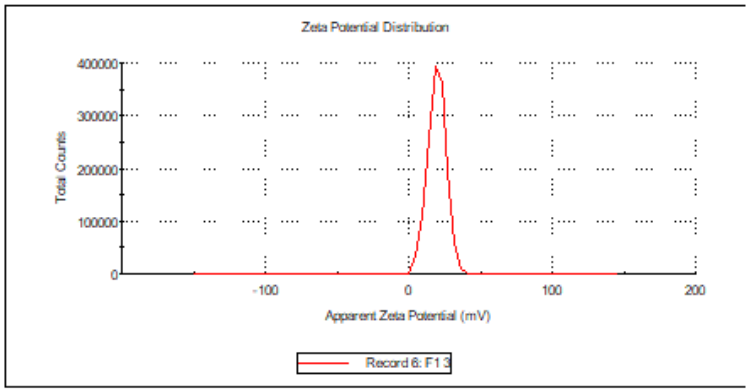
File Name:	Rahma_080321.dts	**Dispersant Na...**	Water
Record Number:	6	**Dispersant RI:**	1,330
Date and Time:	08 March 2021 15:04:37	**Viscosity (cP):**	0,8872
		Dispersant Dielectric Consta...	78,5

System

Temperature (°C):	25,0	**Zeta Runs:**	12
Count Rate (kcps):	374,2	**Measurement Position (mm):**	4,50
Cell Description:	Zeta dip cell	**Attenuator:**	5

Results

			Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV):	19,9	**Peak 1:**	19,9	100,0	6,36
Zeta Deviation (mV):	6,36	**Peak 2:**	0,00	0,0	0,00
Conductivity (mS/c...	1,18	**Peak 3:**	0,00	0,0	0,00
Result quality	Good				



2.2 Formula 2

2.2.1 Percobaan 1

Zeta Potential Report
v2.3

Malvern

Sample Details

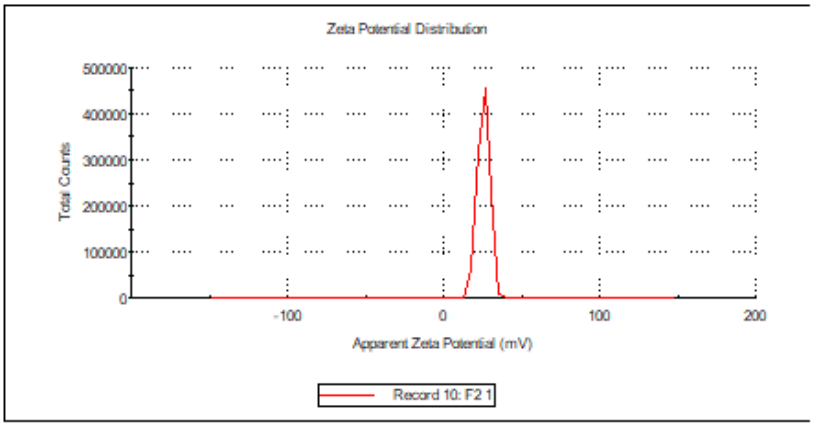
Sample Name:	F2 1		
SOP Name:	mansettings.nano		
General Notes:	original		
File Name:	Rahma_080321.dts	**Dispersant Na...**	Water
Record Number:	10	**Dispersant RI:**	1,330
Date and Time:	08 March 2021 15:17:02	**Viscosity (cP):**	0,8872
		Dispersant Dielectric Consta...	78,5

System

Temperature (°C):	25,0	**Zeta Runs:**	12
Count Rate (kcps):	136,9	**Measurement Position (mm):**	4,50
Cell Description:	Zeta dip cell	**Attenuator:**	5

Results

			Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV):	26,0	**Peak 1:**	26,0	100,0	3,87
Zeta Deviation (mV):	3,87	**Peak 2:**	0,00	0,0	0,00
Conductivity (mS/c...	0,987	**Peak 3:**	0,00	0,0	0,00
Result quality	Good				



2.2.2 Percobaan 2

Zeta Potential Report

v2.3

Malvern

Sample Details

Sample Name:	F2 2
SOP Name:	mansettings.nano
General Notes:	original

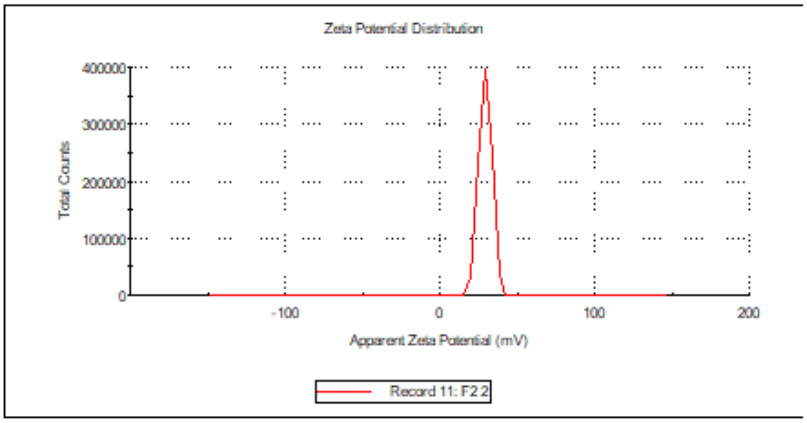
File Name:	Rahma_080321.dts	**Dispersant Na...**	Water
Record Number:	11	**Dispersant RI:**	1,330
Date and Time:	08 March 2021 15:19:36	**Viscosity (cP):**	0,8872
		Dispersant Dielectric Consta...	78,5

System

Temperature (°C):	25,0	**Zeta Runs:**	12
Count Rate (kcps):	681,7	**Measurement Position (mm):**	4,50
Cell Description:	Zeta dip cell	**Attenuator:**	5

Results

			Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV):	29,2	**Peak 1:**	29,2	100,0	4,04
Zeta Deviation (mV):	4,04	**Peak 2:**	0,00	0,0	0,00
Conductivity (mS/c...	1,03	**Peak 3:**	0,00	0,0	0,00
Result quality	Good				



2.2.3 Percobaan 3

Zeta Potential Report

v2.3

Malvern

Sample Details

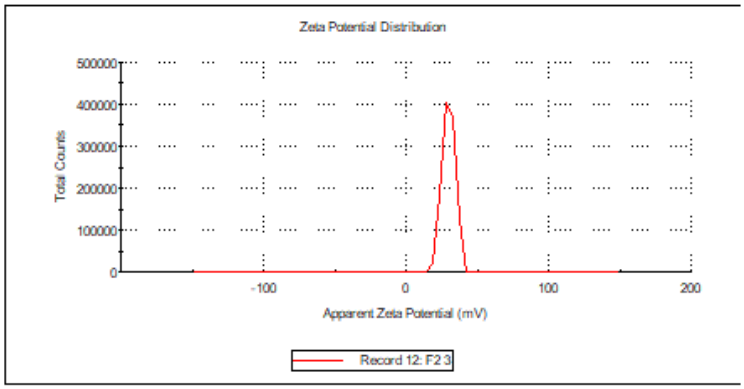
Sample Name:	F2 3		
SOP Name:	mansettings.nano		
General Notes:	original		
File Name:	Rahma_080321.dts	**Dispersant Na...**	Water
Record Number:	12	**Dispersant RI:**	1,330
Date and Time:	08 March 2021 15:20:17	**Viscosity (cP):**	0,8872
		Dispersant Dielectric Consta...	78,5

System

Temperature (°C):	25,0	**Zeta Runs:**	12
Count Rate (kcps):	139,7	**Measurement Position (mm):**	4,50
Cell Description:	Zeta dip cell	**Attenuator:**	5

Results

			Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV):	30,2	**Peak 1:**	30,2	100,0	4,45
Zeta Deviation (mV):	4,45	**Peak 2:**	0,00	0,0	0,00
Conductivity (mS/c...	1,08	**Peak 3:**	0,00	0,0	0,00
Result quality	Good				



2.3 Formula 3

2.3.1. Percobaan 1

Zeta Potential Report
v2.3

Malvern

Sample Details

Sample Name: F3 1
SOP Name: mansettings.nano
General Notes: original

File Name: Rahma_080321.dts
Record Number: 19
Date and Time: 08 March 2021 15:32:45
Dispersant Name: Water
Dispersant RI: 1,330
Viscosity (cP): 0,8872
Dispersant Dielectric Constant: 78,5

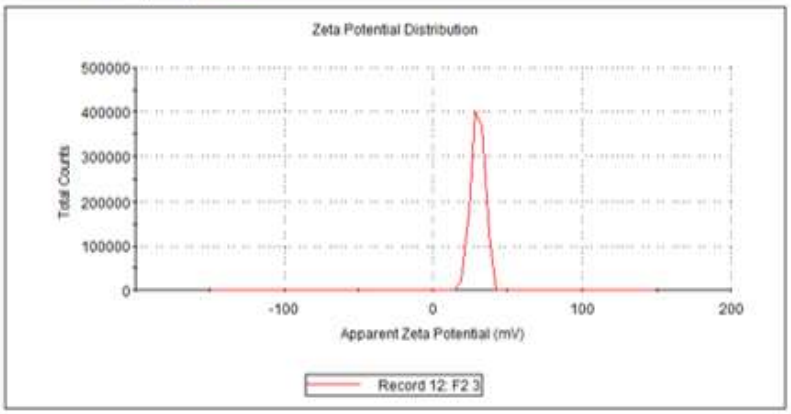
System

Temperature (°C): 25,0
Count Rate (kcps): 139,7
Cell Description: Zeta dip cell
Zeta Runs: 12
Measurement Position (mm): 4,50
Attenuator: 5

Results

		Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV): 30,2	**Peak 1:**	30,2	100,0	4,45
Zeta Deviation (mV): 4,45	**Peak 2:**	0,00	0,0	0,00
Conductivity (mS/cm): 1,08	**Peak 3:**	0,00	0,0	0,00

Result quality Good



2.3.2. Percobaan 2

Zeta Potential Report
v2.3

Malvern

Sample Details

Sample Name: F3.2
SOP Name: mansettings.nano
General Notes: original

File Name: Rahma_080321.dts
Record Number: 20
Date and Time: 08 March 2021 15:35:15
Dispersant Name: Water
Dispersant RI: 1,330
Viscosity (cP): 0,8872
Dispersant Dielectric Constant: 78,5

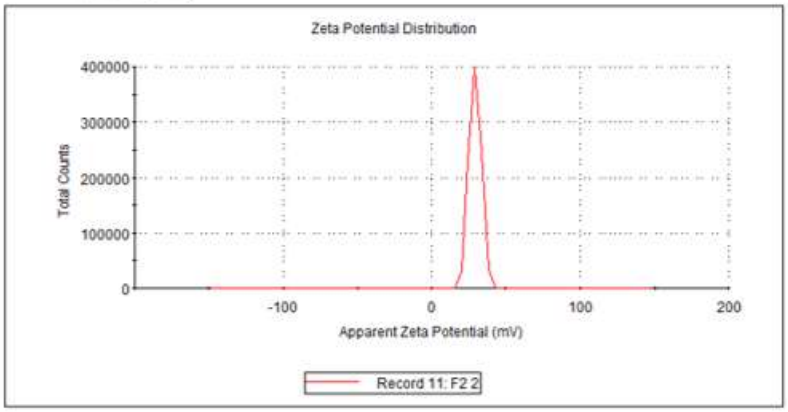
System

Temperature (°C): 25,0
Count Rate (kcps): 681,7
Cell Description: Zeta dip cell
Zeta Runs: 12
Measurement Position (mm): 4,50
Attenuator: 5

Results

		Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV): 29,2	**Peak 1:**	29,2	100,0	4,04
Zeta Deviation (mV): 4,04	**Peak 2:**	0,00	0,0	0,00
Conductivity (mS/cm): 1,03	**Peak 3:**	0,00	0,0	0,00

Result quality Good



2.3.3. Percobaan 3

Zeta Potential Report

v2.3

Malvern

Sample Details

Sample Name: F3 3
SOP Name: mansettings.nano
General Notes: original

File Name: Rahma_080321.dts
Record Number: 21
Date and Time: 08 March 2021 15:35:56
Dispersant Name: Water
Dispersant RI: 1,330
Viscosity (cP): 0,8872
Dispersant Dielectric Constant: 78,5

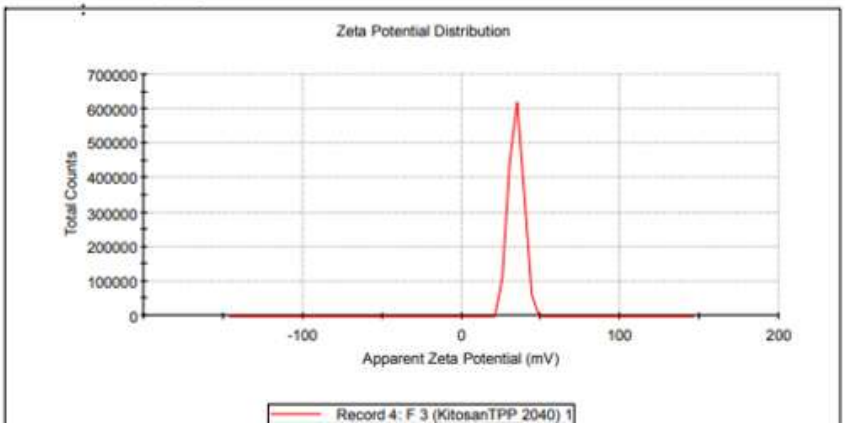
System

Temperature (°C): 25,0
Count Rate (kcps): 33,1
Cell Description: Zeta dip cell
Zeta Runs: 13
Measurement Position (mm): 4,50
Attenuator: 9

Results

		Mean (mV)	Area (%)	St Dev (mV)
Zeta Potential (mV): 34,4	**Peak 1:**	34,4	100,0	4,46
Zeta Deviation (mV): 4,46	**Peak 2:**	0,00	0,0	0,00
Conductivity (mS/cm): 0,651	**Peak 3:**	0,00	0,0	0,00

Result quality Good



3. Efisiensi Penjerapan

Formula	Absorbansi	Kadar (ppm)	%EP	Rata-rata±SD
Formula 1	0,712	1604	55,08	**54,82±0,33**
	0,714	1609	54,94	
	0,722	1627	54,44	
Formula 2	0,689	1551	56,57	**56,47±0,1**
	0,69	1554	56,48	
	0,692	1558	56,37	
Formula 3	0,644	1448	59,45	**60,01±0,5**
	0,635	1427	60,04	
	0,627	1409	60,54	

Contoh perhitungan % EP

Zat aktif:

500 mg = 140 mL
3751 mg = 1000 mL
FP = 100
a = 0,0142
b = 0,0435

$x = \frac{y-a}{b}$

$x = \frac{0,627-0,0142}{0,0435}$

x = 14,09 x FP

x = 14,09 x 100

x = 1409 ppm (kadar obat yang tidak terjerap)

% EP = $\frac{TD-TF}{TD}\ x\ 100\%$

= $\frac{3571-1409}{3571}\ x\ 100\%$

= 60,54%

Keterangan:

TD : Total obat

TF : Total obat tidak terjerap

Perhitungan nanopartikel allantoin yang diambil (100mg)

EP F3 = 60,01%

Obat yang terjerap = $\frac{60,01}{100}\ x\ 500$mg

= 300,05 mg/ 140mL

= 2,14 mg/1mL

Volume nanopartikel yang diambil = $\frac{100\text{mg}}{2,14\ \text{mg}}\ x\ 1$ml

= 46,73 mL

= 47 mL

Lampiran 4. Uji Normalitas, Homogenitas, dan ANOVA Satu Jalur

1. Ukuran Partikel

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	FORMULA	Statistic	df	Sig.	Statistic	df	Sig.
UKURAN PARTIKEL	formula 1	.343	3	.	.842	3	.220
	formula 2	.354	3	.	.821	3	.166
	formula 3	.323	3	.	.878	3	.320

a. Lilliefors Significance Correction

➔ **Oneway**

Descriptives

UKURAN PARTIKEL

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
formula 1	3	166.90	2.615	1.510	160.40	173.40	164	169
formula 2	3	192.43	5.187	2.995	179.55	205.32	189	198
formula 3	3	160.73	2.401	1.386	154.77	166.70	158	163
Total	9	173.36	14.891	4.964	161.91	184.80	158	198

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
UKURAN PARTIKEL	Based on Mean	2.689	2	6	.147
	Based on Median	.245	2	6	.790
	Based on Median and with adjusted df	.245	2	3.663	.794
	Based on trimmed mean	2.234	2	6	.188

ANOVA

UKURAN PARTIKEL

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1694.869	2	847.434	64.351	.000
Within Groups	79.013	6	13.169		
Total	1773.882	8			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: UKURAN PARTIKEL

Tukey HSD

(I) FORMULA	(J) FORMULA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
formula 1	formula 2	-25.533*	2.963	.000	-34.62	-16.44
	formula 3	6.167	2.963	.174	-2.92	15.26
formula 2	formula 1	25.533*	2.963	.000	16.44	34.62
	formula 3	31.700*	2.963	.000	22.61	40.79
formula 3	formula 1	-6.167	2.963	.174	-15.26	2.92
	formula 2	-31.700*	2.963	.000	-40.79	-22.61

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

UKURAN PARTIKEL

Tukey HSD[a]

FORMULA	N	Subset for alpha = 0.05	
		1	2
formula 3	3	160.73	
formula 1	3	166.90	
formula 2	3		192.43
Sig.		.174	1.000

Means for groups in homogeneous subsets are displayed.

2. Potensial Zeta

Tests of Normality

	FORMULA	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
potensial zeta	formula 1	.321	3	.	.881	3	.328
	formula 2	.298	3	.	.916	3	.439
	formula 3	.317	3	.	.888	3	.348

a. Lilliefors Significance Correction

Oneway

Descriptives

potensial zeta

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
formula 1	3	19.23	.586	.338	17.78	20.69	19	20
formula 2	3	28.47	2.194	1.267	23.02	33.92	26	30
formula 3	3	31.27	2.759	1.593	24.41	38.12	29	34
Total	9	26.32	5.738	1.913	21.91	30.73	19	34

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
potensial zeta	Based on Mean	3.479	2	6	.099
	Based on Median	.592	2	6	.582
	Based on Median and with adjusted df	.592	2	3.918	.596
	Based on trimmed mean	3.081	2	6	.120

ANOVA

potensial zeta

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	237.896	2	118.948	27.944	.001
Within Groups	25.540	6	4.257		
Total	263.436	8			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: potensial zeta

Tukey HSD

(I) formula	(J) formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
formula 1	formula 2	-9.500*	1.721	.004	-14.78	-4.22
	formula 3	-12.300*	1.721	.001	-17.58	-7.02
formula 2	formula 1	9.500*	1.721	.004	4.22	14.78
	formula 3	-2.800	1.721	.306	-8.08	2.48
formula 3	formula 1	12.300*	1.721	.001	7.02	17.58
	formula 2	2.800	1.721	.306	-2.48	8.08

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

potensial zeta

Tukey HSD[a]

formula	N	Subset for alpha = 0.05	
		1	2
formula 1	3	18.97	
formula 2	3		28.47
formula 3	3		31.27
Sig.		1.000	.306

Means for groups in homogeneous subsets are displayed.

3. Efisiensi Penjerapan

Tests of Normality

	FORMULA	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
y	formula 1	.306	3	.	.905	3	.400
	formula 2	.193	3	.	.997	3	.890
	formula 3	.189	3	.	.998	3	.909

a. Lilliefors Significance Correction

Oneway

Descriptives

y

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
formula 1	3	54.82	.336	.194	53.98	55.66	54	55
formula 2	3	56.47	.100	.058	56.22	56.72	56	57
formula 3	3	60.01	.546	.315	58.65	61.37	59	61
Total	9	57.10	2.319	.773	55.32	58.88	54	61

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
y	Based on Mean	1.951	2	6	.222
	Based on Median	1.158	2	6	.376
	Based on Median and with adjusted df	1.158	2	3.993	.401
	Based on trimmed mean	1.900	2	6	.229

ANOVA

y

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	42.178	2	21.089	150.300	.000
Within Groups	.842	6	.140		
Total	43.019	8			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: efisiensi penjerapan

Tukey HSD

(I) FORMULA	(J) FORMULA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
formula 1	formula 2	-1.653*	.306	.004	-2.59	-.71
	formula 3	-5.190*	.306	.000	-6.13	-4.25
formula 2	formula 1	1.653*	.306	.004	.71	2.59
	formula 3	-3.537*	.306	.000	-4.48	-2.60
formula 3	formula 1	5.190*	.306	.000	4.25	6.13
	formula 2	3.537*	.306	.000	2.60	4.48

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

efisiensi penjerapan

Tukey HSD[a]

FORMULA	N	Subset for alpha = 0.05		
		1	2	3
formula 1	3	54.82		
formula 2	3		56.47	
formula 3	3			60.01
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3,000.

Lampiran 5. Uji Karakteristik Gel

1. Uji Daya Sebar

Daya sebar	Tanpa beban	50 g	100 g	150 g
Percobaan 1	3,1	3,4	3,5	4,1
Percobaan 2	3	3,5	3,9	4,3
Percobaan 3	3,3	3,4	3,6	4
Percobaan 4	3,2	3,3	3,5	3,9
Rata-rata±SD	**3,13±0,15**	**3,43±0,06**	**3,67±0,21**	**4,13±0,15**

2. Uji Daya Lekat

Uji daya lekat (detik)				
Percobaan 1	**Percobaan 2**	**Percobaan 3**	**Rata-rata**	**SD**
76	75	75	75,33	0,57

3. Uji Viskositas

Uji viskositas (dPa.s)				
Percobaan 1	**Percobaan 2**	**Percobaan 3**	**Rata-rata**	**SD**
400	400	400	400	0

Lampiran 6. Uji Normalitas dan *Paired Sample T-Test* Karakteristik Gel

1. Daya Sebar

1.1 Tanpa beban

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
awal pembuatans	.151	4	.	.993	4	.972
cycling test s	.250	4	.	.945	4	.683

a. Lilliefors Significance Correction

T-Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	awal pembuatans	3.150	4	.1291	.0645
	cycling test s	3.100	4	.0816	.0408

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	awal pembuatans & cycling test s	4	.632	.368

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	awal pembuatans - cycling test s	.0500	.1000	.0500	-.1091	.2091	1.000	3	.391

1.2 Beban 50 mg

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
awal pembuatans	.250	4	.	.945	4	.683
cycling test s	.192	4	.	.971	4	.850

a. Lilliefors Significance Correction

T-Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	awal pembuatans	3.400	4	.0816	.0408
	cycling test s	3.250	4	.1291	.0645

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	awal pembuatans & cycling test s	4	.316	.684

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	awal pembuatans - cycling test s	.1500	.1291	.0645	-.0554	.3554	2.324	3	.103

1.3 Beban 100 mg

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
awal pembuatans	.303	4	.	.791	4	.086
cycling test s	.283	4	.	.863	4	.272

a. Lilliefors Significance Correction

T-Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	awal pembuatans	3.625	4	.1893	.0946
	cycling test s	3.525	4	.0957	.0479

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	awal pembuatans & cycling test s	4	.506	.494

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	awal pembuatans - cycling test s	.1000	.1633	.0816	-.1598	.3598	1.225	3	.308

1.4 Beban 150 mg

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
awal pembuatans	.192	4	.	.971	4	.850
cycling test s	.329	4	.	.895	4	.406

a. Lilliefors Significance Correction

T-Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	awal pembuatans	4.075	4	.1708	.0854
	cycling test s	3.925	4	.1258	.0629

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	awal pembuatans & cycling test s	4	.814	.186

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	awal pembuatans - cycling test s	.1500	.1000	.0500	-.0091	.3091	3.000	3	.058

2. Daya Lekat

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
awal pembuatan l	.175	3	.	1.000	3	1.000
cycling test l	.253	3	.	.964	3	.637

a. Lilliefors Significance Correction

T-Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	awal pembuatan I	75.0000	3	1.00000	.57735
	cycling test I	78.3333	3	1.52753	.88192

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	awal pembuatan I & cycling test I	3	-.992	.121

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	awal pembuatan I - cycling test I	-3.33333	2.51661	1.45297	-9.58494	2.91828	-2.294	2	.149

Lampiran 7. Perhitungan Kurva Kalibrasi

1. Kurva baku allantoin

1.1 Pembuatan larutan NaOH 0,1 N

BM NaOH = 40

Valensi NaOH = 1

Berat NaOH =

$$\frac{\text{Volume yang dibuat}}{1000}\ x\ N\ x\ \frac{BM}{Val}$$

$$\frac{1000}{1000}\ x\ 0{,}1\ x\ \frac{40}{1}$$

= 4 gram NaOH ⟶ dilarutkan kedalam aquadest 1000 mL

1.2 Pembuatan larutan induk allantoin

Berat kertas kosong = 273,9 mg

Berat allantoin = 10 mg +

Berat kertas kosong + allantoin = 283,9 mg

Berat kertas kosong setelah penimbangan = 273,9 mg

Volume NaOH 0,1 N = 100 ml

Larutan stok = 10 mg/ 100 mL

= 100 mg/ 1000 mL

= 100 ppm

1.3 Perhitungan kurva baku

Larutan induk allantoin dibuat seri konsentrasi 6 ppm, 8 ppm, 10 ppm, 12 ppm, 14 ppm, 16 ppm, 18 ppm, dan 20 ppm dalam 10 ml. Dengan rumus pengambilan dari larutan induk sebagai berikut:

$$V_1 \times C_1 = V_2 \times C_2$$

- 6 ppm

  $V_1 \times C_1 = V_2 \times C_2$

  $V_1 \times 100 \text{ ppm} = 10 \text{ mL} \times 6 \text{ ppm}$

  $V_1 = 0{,}6 \text{ mL}$

- 8 ppm

  $V_1 \times C_1 = V_2 \times C_2$

  $V_1 \times 100 \text{ ppm} = 10 \text{ mL} \times 8 \text{ ppm}$

  $V_1 = 0{,}8 \text{ mL}$

- 10 ppm

  $V_1 \times C_1 = V_2 \times C_2$

  $V_1 \times 100 \text{ ppm} = 10 \text{ mL} \times 10 \text{ ppm}$

  $V_1 = 1 \text{ mL}$

- 12 ppm

  $V_1 \times C_1 = V_2 \times C_2$

  $V_1 \times 100 \text{ ppm} = 10 \text{ mL} \times 12 \text{ ppm}$

  $V_1 = 1{,}2 \text{ mL}$

- 14 ppm

  $V_1 \times C_1 = V_2 \times C_2$

  $V_1 \times 100 \text{ ppm} = 10 \text{ mL} \times 14 \text{ ppm}$

  $V_1 = 1{,}4 \text{ mL}$

- 16 ppm

  $V_1 \times C_1 = V_2 \times C_2$

  $V_1 \times 100 \text{ ppm} = 10 \text{ mL} \times 16 \text{ ppm}$

  $V_1 = 1{,}6 \text{ mL}$

- 18 ppm

  $V_1 \times C_1 = V_2 \times C_2$

V_1 x 100 ppm = 10 mL x 18 ppm

V_1 = 1,8 mL

- 20 ppm

  V_1 x C_1 = V_2 x C_2

  V_1 x 100 ppm = 10 mL x 20 ppm

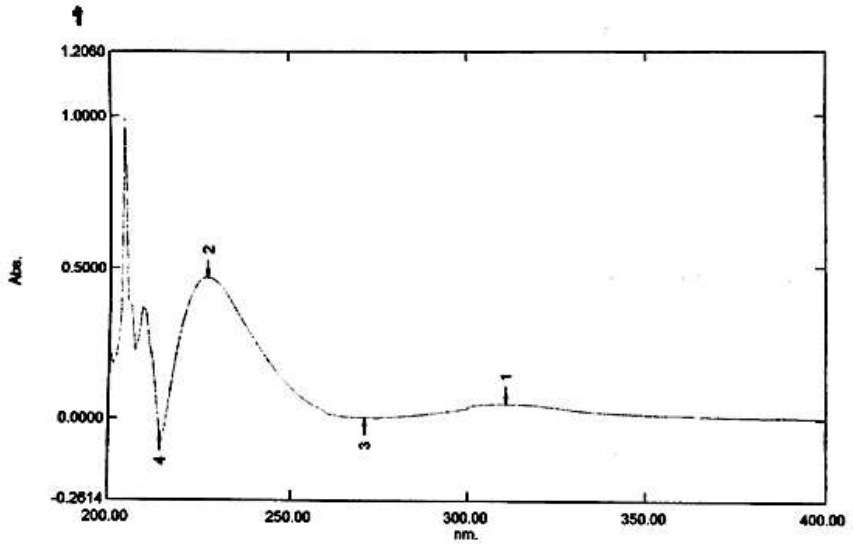
  V_1 = 2 mL

4. Penetapan Panjang Gelombang Maksimum

Spectrum Peak Pick Report

02/03/2021 12:44:14 PM

Data Set: File_210203_121626 - RawData



No.	P/V	Wavelength	Abs.	Description
1	●	311.00	0.0583	
2	●	227.00	0.4720	
3	▼	271.00	0.0094	
4	▲	214.00	-0.0451	

[Measurement Properties]
Wavelength Range (nm.): 200.00 to 400.00
Scan Speed: Fast
Sampling Interval: 1.0
Auto Sampling Interval: Disabled
Scan Mode: Single

[Instrument Properties]
Instrument Type: UV-1800 Series
Measuring Mode: Absorbance
Slit Width: 1.0 nm
Light Source Change Wavelength: 340.0 nm
S/R Exchange: Normal

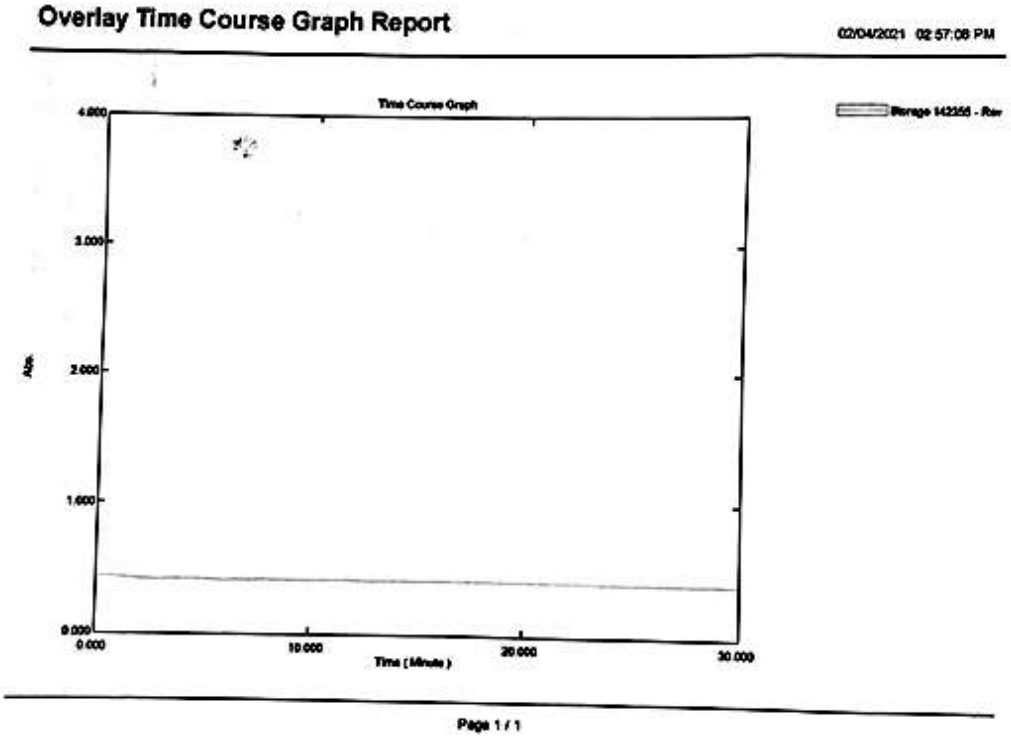
[Attachment Properties]
Attachment: None

[Operation]
Threshold: 0.0010000
Points: 4
InterPolate: Disabled
Average: Disabled

[Sample Preparation Properties]
Weight:
Volume:
Dilution:
Path Length:
Additional Information:

5. Penetapan *Operating Time* (OT)

Scanning operating time menunjukkan bahwa sampel larutan allantoin pada seri konsentrasi 10 ppm stabil, ditunjukkan dengan nilai serapan yang stabil pada menit ke 3-30.



Kinetics Data Print Report

Time (Minute)	RawData ...
0.000	0.434
1.000	0.427
2.000	0.415
3.000	0.410
4.000	0.416
5.000	0.416
6.000	0.406
7.000	0.407
8.000	0.410
9.000	0.406
10.000	0.405
11.000	0.405
12.000	0.405
13.000	0.399
14.000	0.401
15.000	0.400
16.000	0.404
17.000	0.403
18.000	0.403
19.000	0.402
20.000	0.402
21.000	0.401
22.000	0.400
23.000	0.399
24.000	0.398
25.000	0.395
26.000	0.395
27.000	0.395
28.000	0.393
29.000	0.395
30.000	0.392

6. Kurva kalibrasi

Konsentrasi (ppm)	Absorbansi
6	0,278
8	0,368
10	0,446
12	0,521
14	0,62
16	0,725
18	0,79
20	0,886

Persamaan regresi linier kurva baku antara konsentrasi (ppm) dan serapan diperoleh nilai:

a = 0,014214

b = 0,043464

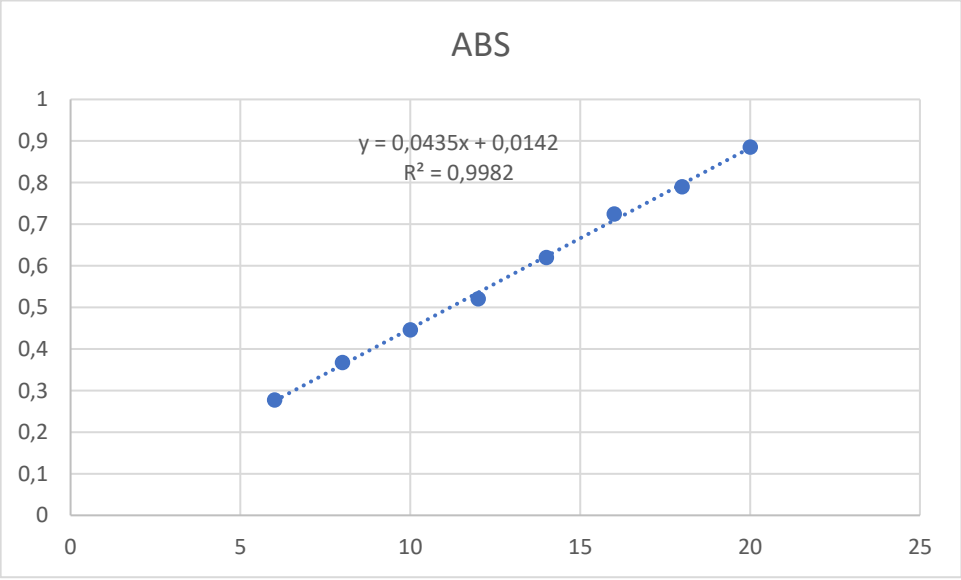
r = 0,9991

$y = a + bx$

$y = 0{,}014214 + 0{,}043464x$

Keterangan: x = konsentrasi (ppm)

y = serapan



7. Verifikasi metode analisis

5.1 Linieritas

Konsentrasi (ppm)	Absorbansi
6	0,278
8	0,368
10	0,446
12	0,521
14	0,62
16	0,725
18	0,79
20	0,886

Persamaan regresi linear kurva baku antara konsentrasi (ppm) dan serapan diperoleh nilai:

a = 0,014214

b = 0,043464

r = 0,9991

$y = a + bx$

$y = 0{,}014214 + 0{,}043464x$

Keterangan: x = konsentrasi (ppm)

y = serapan

5.2 Akurasi

KONSENTRASI	KONSENTRASI AWAL	REPLIKASI	ABS	KONSENTARI SEBENARNYA	%	RATA-RATA	% *RECOVERY*
80%	10	1	0,442	9,842	101,60	100,75	101,33
	10	2	0,443	9,865	101,37		
	10	3	0,452	10,072	99,28		
100%	12	1	0,529	11,844	101,32	101,45	
	12	2	0,528	11,821	101,52		
	12	3	0,528	11,821	101,52		
120%	14	1	0,612	13,753	101,79	101,79	
	14	2	0,613	13,776	101,62		
	14	3	0,611	13,730	101,96		

5.3 Presisi

REPLIKASI	REPLIKASI	ABS	KONSENTRASI
1	1	0,455	10,141
2	2	0,459	10,233
3	3	0,459	10,233
4	4	0,471	10,509
5	5	0,47	10,486
6	6	0,467	10,417
7	7	0,468	10,440
8	8	0,468	10,440
9	9	0,464	10,348
SD		0,129697	
RATA		10,36118	
CV		0,012518	

5.4 LOD dan LOQ

KONSENTRASI	ABS	Y'	Y-Y'	(Y-Y')^2
6	0,278	0,275	0,003	9E-06
8	0,368	0,361929	0,006071429	3,68622E-05
10	0,446	0,448857	-0,002857143	8,16327E-06
12	0,521	0,535786	-0,014785714	0,000218617
14	0,62	0,622714	-0,002714286	7,36735E-06
16	0,725	0,709643	0,015357143	0,000235842
18	0,79	0,796571	-0,006571429	4,31837E-05
20	0,886	0,8835	0,0025	6,25E-06
			SIGMA/JUMLAH	0,000565286

Lampiran 8. Sertifikat Analisis Allantoin

PT Clariant Indonesia
Graha Soboto Km.4, Jl. Kalisabi No.4
Kec. Setiawang - Tangerang 15138
Indonesia
Ph. 62-21-5538589
Fax. 62-21-5520390, 5520394

CLARIANT

Certificate of Analysis

Date: 12.03.2020
Page: 1 / 1

Our consignment
Material : Allantoin Premium box 0025
Material-no. : 30390230140
Batch No. : 5022000318
On the batch, of which the consignment is a part, the following values were determined.

Inspection characteristic/-method	Specification	Result
Date of production		29.01.2020
Expiration date, shelf life		28.01.2023
Appearance consistence Clariant - LM-CA1-0078		Powder, crystalline
Appearance Colour Clariant - LM-CA1-0078		Equal to
Assay (potentiometric titration) Clariant - LM-CA1-0077	>= 99.0	100.0 %
Loss on drying (2g, 105°C,const. weight) Clariant - LM-CA1-0076	<= 0.10	0.10 %
pH value (0.5% in dist./purified H2O) Clariant - LM-CA1-0079	4.0 - 6.0	4.1

Country of Origin : Spain

The above particulars do not release the customer from the obligation to carry out an inspection of goods received.

This report does not require a signature.

Lampiran 9. Sertifikat Analisis Kitosan

Certificate of Analysis
CHITOSAN [Powder]

- Product Name : CHITOSAN . [Shrimp Shell]
- Raw Material : Black tiger
- Use : Food Grade dan Medical Grade

- The date of manufacture : 10 , MARET 2019
- Expiry Date : 10 , MARET 2021

- Analysis Date : 11 , MARET 2019

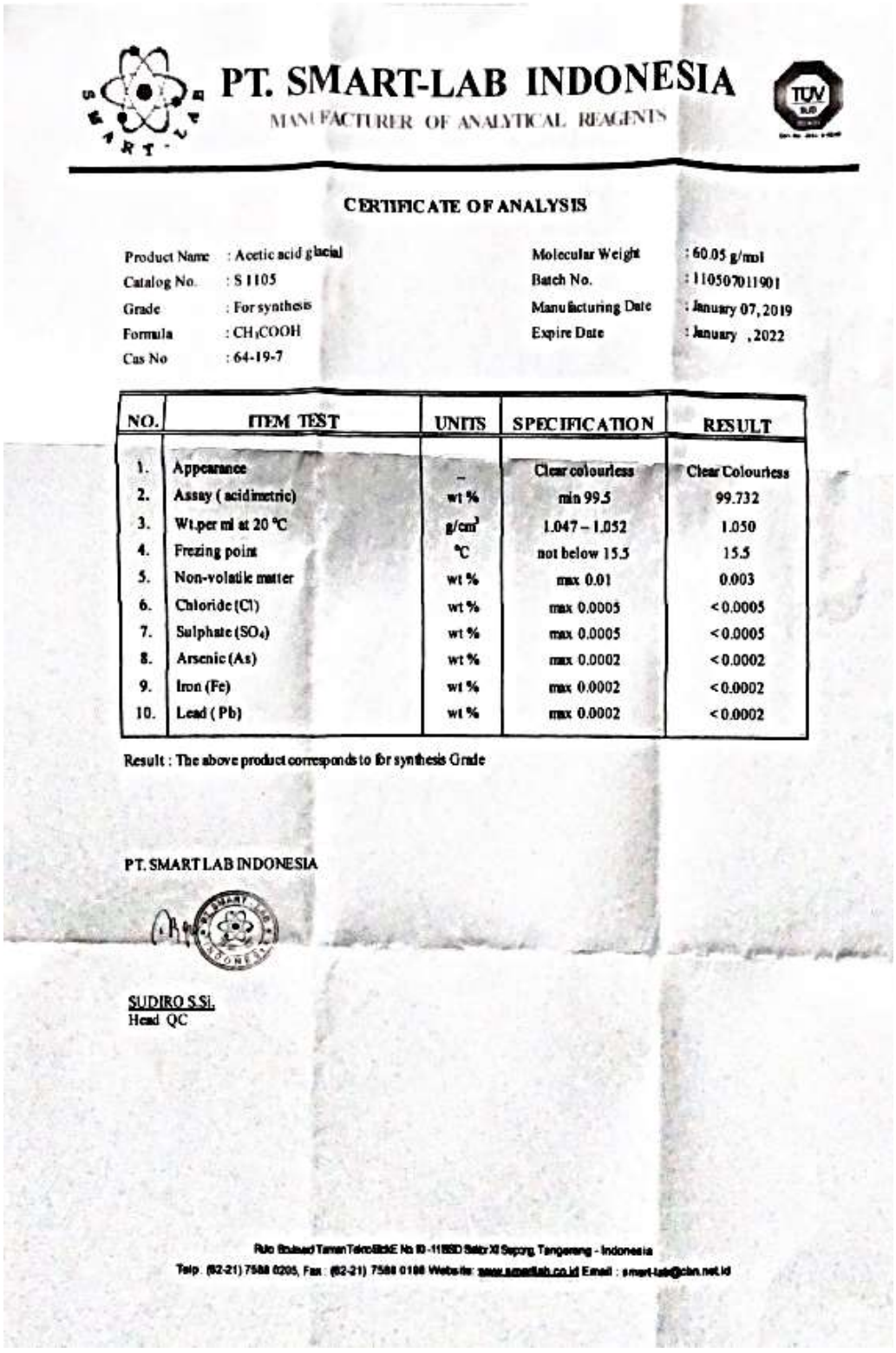
Items	Specification	Results	Method
Appearance	White Or Yellow	Pale Yellow	
Odor	Odorless	Complies	
Solution	99 % Min.	99 % UP	6 % Soln. in HCl 1.0 %
Moisture Content	12.0 % Max.	8.5 %	Infrared Moisture meter
Ash Content	1.0 % Max.	0.5 %	Ashing Method
Protein Content	1.0 % Max.	0.5 %	Lowry method
De-Acetylation (DAC)	70 % Min.	87,5 %	PVSK
Viscosity	50 cps Max.	20 cps	0.5 % Soln. in Acid
Transparency	30 Cm Min.	39 Cm	Transparency meter (JIS K)
pH (5 % dispersion)	6.5 ~ 7.5	7,1	pH meter
As	0.2 ppm Max.	Complies	ICP
Pb	1.0 ppm Max.	Complies	ICP
E-Coli	Negative	Negative	Flat Disk method
Salmonella	Negative	Negative	Flat Disk method
Particale size	Crushed	100 mesh	Mesh Method

- **Chitosan Berat Molekul : 50,000 – 80,000 M / W**

HACCP CERTIFIED

GMP

Lampiran 10. Sertifikat Analisis Asam Asetat Glasial



PT. SMART-LAB INDONESIA

MANUFACTURER OF ANALYTICAL REAGENTS

CERTIFICATE OF ANALYSIS

Product Name	: Acetic acid glacial	Molecular Weight	: 60.05 g/mol
Catalog No.	: S 1105	Batch No.	: 110507011901
Grade	: For synthesis	Manufacturing Date	: January 07, 2019
Formula	: CH_3COOH	Expire Date	: January , 2022
Cas No	: 64-19-7		

NO.	ITEM TEST	UNITS	SPECIFICATION	RESULT
1.	Appearance	–	Clear colourless	Clear Colourless
2.	Assay (acidimetric)	wt %	min 99.5	99.732
3.	Wt.per ml at 20 °C	g/cm^3	1.047 – 1.052	1.050
4.	Freezing point	°C	not below 15.5	15.5
5.	Non-volatile matter	wt %	max 0.01	0.003
6.	Chloride (Cl)	wt %	max 0.0005	< 0.0005
7.	Sulphate (SO_4)	wt %	max 0.0005	< 0.0005
8.	Arsenic (As)	wt %	max 0.0002	< 0.0002
9.	Iron (Fe)	wt %	max 0.0002	< 0.0002
10.	Lead (Pb)	wt %	max 0.0002	< 0.0002

Result : The above product corresponds to for synthesis Grade

PT. SMART LAB INDONESIA

SUDIRO S.Si.
Head QC

Ruko Boulevard Taman Tekno Blok E No 10 -11 BSD Sektor XI Serpong, Tangerang - Indonesia
Telp. (62-21) 7588 0205, Fax : (62-21) 7588 0188 Website: www.smartlab.co.id Email : smart-lab@cbn.net.id

Lampiran 11. Gambar Alat Penelitian

 Alat sentrifugasi	 *Homogenizer*	 Uji daya lekat
 Neraca analitik	 Mortir dan stamfer	 Uji daya sebar
 Spektrofotometer *UV-Vis*	 Viscometer *cup and bob*	 *pH* meter