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Lampiran 1 Skema Bagan Kerja

1. Pembuatan Larutan HAuCl4 0,5 mM

0,0098 gr Logam Emas

- Dilarutkan dengan akuaregia ($HCl:HNO_3$) perbandingan 3:1.
- Dipanaskan sampai terbentuk warna merah kecoklatan pada dasar gelas kimia.
- Diencerkan dalam labu takar 100 mL.
- Dihomogenkan.

Larutan $HauCl_4$

2. Sintesis Nanopartikel Emas (AuNP)

50 mL Larutan $HauCl_4$ 0.5 mM

- Dipanaskan hingga suhu 37^0C.
- Ditambahkan asam askorbat sebanyak 0,25 mL.
- Dihomogenkan.

Larutan AuNP

- Dikarakterisasi menggunakan spektrofotometer UV-Vis dengan panjang gelombang 400 – 800 nm.

Larutan AuNP

3. Optimasi konsentrasi asam glutamat terhadap pembentukan Glu - AuNP

5 mL larutan AuNP

- Dimasukkan masing – masing ke dalam 6 botol vial
- Ditambahkan asam glutamat dengan beberapa variasi konsentrasi 1, 2, 3, 4, dan 5 mM lalu dihomogenkan.
- Karakterisasi dengan spektrofotometer UV – Vis pada panjag gelombang 400 – 800 nm.

Konsentrasi Optimum Glu – AuNP

4. Optimasi pH Asam Glutamat terhadap pembentukan Glu-AuNP

5 mL Larutan AuNP

- Dimasukkan ke dalam botol vial.
- Ditambahkan 1 mL asam glutamat dengan beberapa variasi pH 9 – 12 lalu dihomogenkan.
- Dikarakterisasi dengan spektrofotometer UV-Vis pada panjang gelombang 400 – 800 nm.

pH Optimum Glu – AuNP

5. Optimasi waktu reaksi terhadap pembentukan Glu-AuNP

5 mL Larutan AuNP

- Dimasukkan ke dalam botol vial.
- Ditambahkan 1 mL asam glutamat (konsentrasi dan pH optimum).
- Direaksikan selama 90 menit dengan interval waktu tiap 15 menit (0, 15, 30, 45, 60, 75, dan 90).
- Dikarakterisasi dengan spektrofotometer UV-Vis pada panjang gelombang 400 – 800 nm.

Waktu reaksi optimum Glu - AuNP

6. Uji kestabilan Glu - AuNP

5 mL Larutan AuNP

- Dimasukkan ke dalam botol vial.
- Direaksikan dengan 1 mL asam glutamat (konsentrasi dan pH optimum).
- Dikarakterisasi dengan spektrofotometer UV-Vis pada panjang gelombang 400 – 800 nm pada minggu ke 1, 2, dan 3 minggu.

Kestabilan larutan Glu - AuNP

7. Karakterisasi Asam glutamat dan Nanopartikel emas (Glu – AuNP)

a. Karakterisasi TEM dan PSA

Glu – AuNP
dan
AuNP

- Dimasukkan ke dalam 2 botol vial masing – masing 1 mL.
- Dikarakterisasi menggunakan PSA dan TEM.

Data PSA dan TEM
Glu – AuNP
dan AuNP

b. Karakterisasi FTIR

Glu – AuNPs, AuNP, Asam Glutamat, dan
AuNP – Glu – *Salmonella* sp

- Dimasukkan ke dalam 2 botol vial masing – masing 1 mL.
- Dikarakterisasi menggunakan PSA dan TEM.

Data FTIR
Glu – AuNP, AuNP, Asam Glutamat, dan
AuNP – Glu – *Salmonella* sp

8. Uji sensor AuNP dan Glu-AuNP terhadap bakteri *Salmonella* sp

a. Nanopartikel emas (AuNP)

Nanopartikel emas (AuNP)

- Dimasukkan ke dalam 6 botol vial yang berisi sediaan cair *Salmonella* sp konsentrasi 10^{-6} – 10^{-1} CFU/mL dengan perbandingan 1:1 dalam 5 mL.
- Dihomogenkan dan dikarakterisasi dengan spektrofotometer UV-Vis pada panjang gelombang 400 – 800 nm.

Data uji sensor AuNP

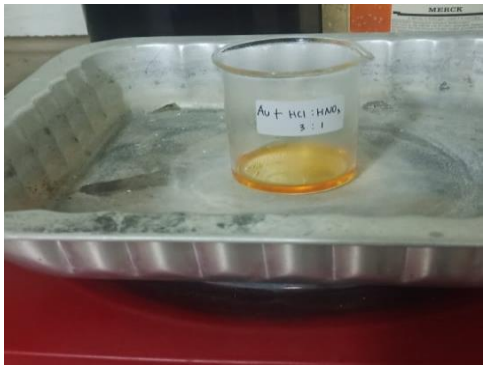
b. Asam glutamat dan Nanopartikel emas (Glu – AuNP)

Asam glutamat dan Nanopartikel emas (Glu – AuNP)

- Dimasukkan ke dalam 6 botol vial yang berisi sediaan cair *Salmonella* sp konsentrasi 10^{-6} – 10^{-1} CFU/mL dengan perbandingan 1:1 dalam 5 mL.
- Dihomogenkan dan dikarakterisasi dengan spektrofotometer UV-Vis pada panjang gelombang 400 – 800 nm.

Data uji sensor Glu - AuNP

Lampiran 2 Dokumentasi Penelitian

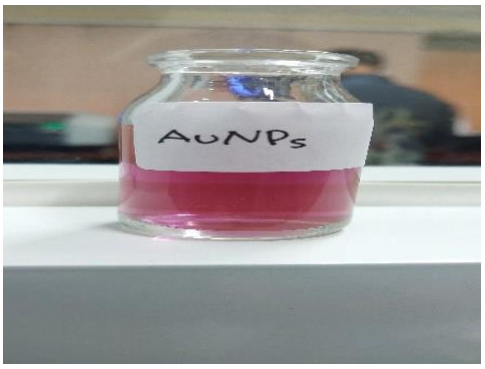


Emas + Akuaregia
($HCl : HNO_3$)

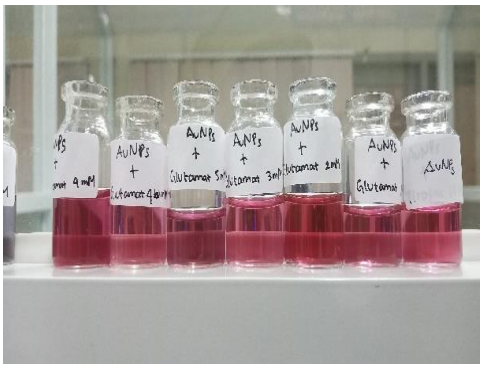
Proses Reduksi
Larutan Emas

Larutan $HAuCl_4$
0,5 mM

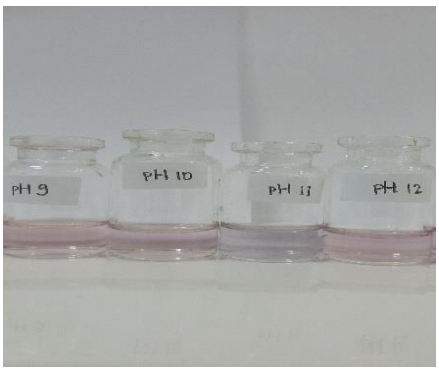
Asam Askorbat
0,0264 g



Nanopartikel Emas (AuNP)

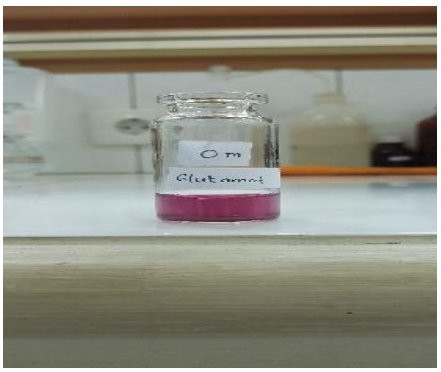


Nanopartikel Emas (AuNP) + Asam Glutamat dengan beberapa variasi konsentrasi 1 mM, 2 mM, 3 mM, 4 mM, dan 5 mM.



Nanopartikel Emas (AuNP) + Glu dengan variasi pH 9 -12

Uji Kestabilan Pekan 1 hingga Pekan 3



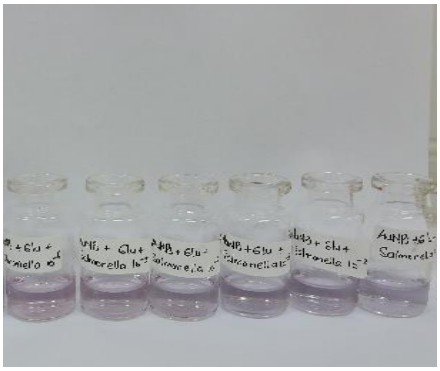
Optimasi Waktu Reaksi Menit Ke 0

Optimasi Waktu Reaksi Menit Ke 15

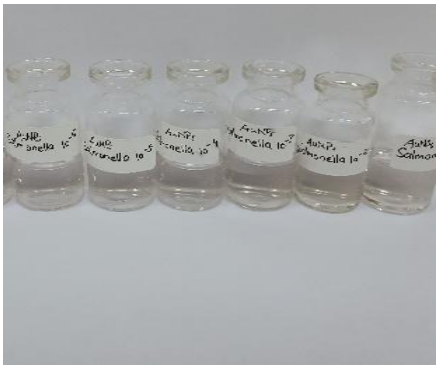
Optimasi Waktu Reaksi Menit Ke 60

Optimasi Waktu Reaksi Menit Ke 75

Optimasi Waktu Reaksi
Menit Ke 90



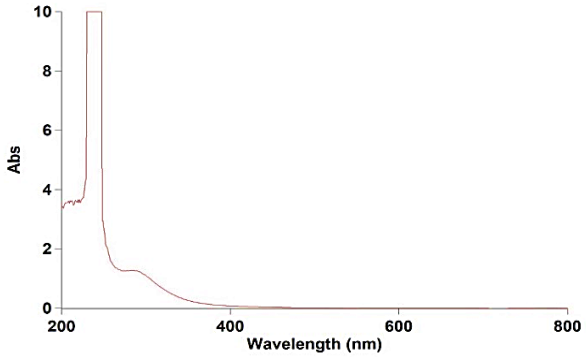
Nanopartikel Emas
(AuNP) + Glu +
Salmonella 10^{-6} – 10^{-1}



Nanopartikel Emas
(AuNP) + Salmonella
10^{-6} – 10^{-1}

Lampiran 3 Karakterisasi dengan Spektrofotometer UV-Vis

1. **Spektrum spektrofotometer UV-Vis larutan asam tetrakloroaurat ($HAuCl_4$)**



Scan Analysis Report

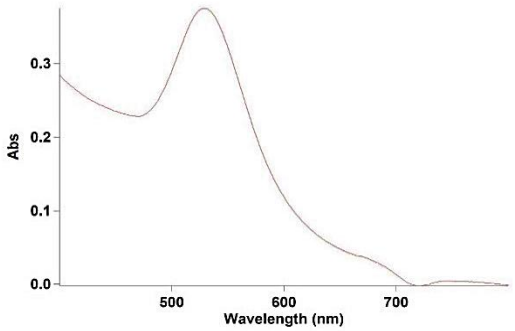
Report Time : Thu 28 Oct 02:14:23 PM 2021
Method:
Batch:
Software version: 3.00(339)
Operator:

Sample Name: larutan HAuCl4
Collection Time 1/26/2021 2:50:08 PM

Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.1nm to 200.0nm

Wavelength (nm)	Abs
282.0	1.280
278.0	1.273
275.1	1.267
247.1	10.000
221.0	3.669
219.0	3.670
216.0	3.648
212.1	3.628
210.0	3.633
208.0	3.616

2. **Spektrum spektrofotometer UV-Vis nanopartikel emas (AuNP)**



Scan Analysis Report

Report Time : Thu 28 Oct 01:46:59 PM 2021
Method:
Batch:
Software version: 3.00(339)
Operator:

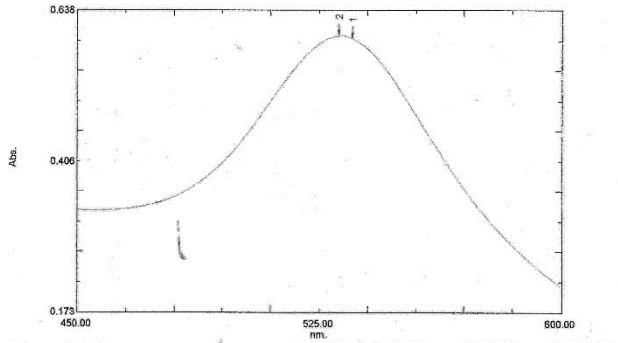
Sample Name: Nanopartikel Emas (AuNPs)
Collection Time 1/26/2021 3:04:30 PM

Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

Wavelength (nm)	Abs
528.1	0.375

3. Spektrum spektrofotometer UV-Vis Konsentrasi Optimum Asam Glutamat terhadap pembentukan Glu – AuNP

a. Konsentrasi 1 mM



No.	P/V	Wavelength	Abs.	Description
1		535.20	0.596	
2		531.10	0.599	

[Measurement Properties]
Wavelength Range (nm.): 450.00 to 600.00
Scan Speed: Medium
Sampling Interval: 0.1
Auto Sampling Interval: Enabled
Scan Mode: Single

[Instrument Properties]
Instrument Type: UV-2600 Series
Measuring Mode: Absorbance
Slit Width: 0.2
Accumulation time: 0.1 sec.
Light Source Change Wavelength: 323.0 nm
Detector Unit: Direct
S/R Exchange: Normal
Stair Correction: OFF

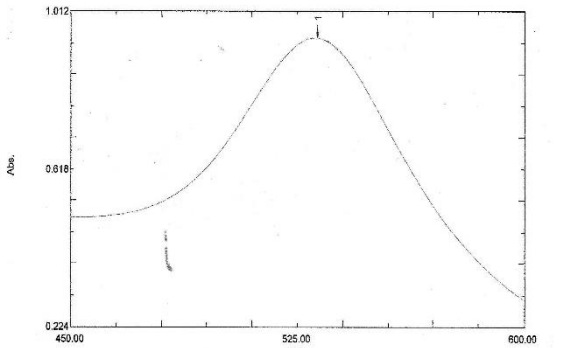
[Attachment Properties]
Attachment: None

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

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

b. Konsentrasi 2 mM

Data Set: Glutamat 2 mM.spc - RawData



No.	P/V	Wavelength	Abs.	Description
1		531.60	0.946	

[Measurement Properties]
Wavelength Range (nm.): 450.00 to 600.00
Scan Speed: Medium
Sampling Interval: 0.1
Auto Sampling Interval: Enabled
Scan Mode: Single

[Instrument Properties]
Instrument Type: UV-2600 Series
Measuring Mode: Absorbance
Slit Width: 0.2
Accumulation time: 0.1 sec.
Light Source Change Wavelength: 323.0 nm
Detector Unit: Direct
S/R Exchange: Normal
Stair Correction: OFF

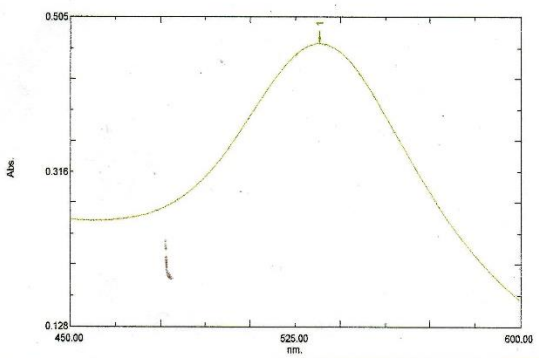
[Attachment Properties]
Attachment: None

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

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

c. Konsentrasi 3 mM

Data Set: Glutamat 3 mM.spc - RawData



No.	P/V	Wavelength	Abs.	Description
1		533.20	0.473	

[Measurement Properties]
Wavelength Range (nm.): 450.00 to 600.00
Scan Speed: Medium
Sampling Interval: 0.1
Auto Sampling Interval: Enabled
Scan Mode: Single

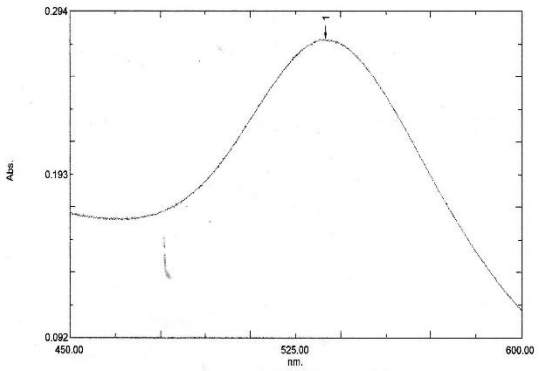
[Instrument Properties]
Instrument Type: UV-2600 Series
Measuring Mode: Absorbance
Slit Width: 0.2
Accumulation time: 0.1 sec.
Light Source Change Wavelength: 323.0 nm
Detector Unit: Direct
S/R Exchange: Normal
Stair Correction: OFF

[Attachment Properties]
Attachment: None

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

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

d. Konsentrasi 4 mM



No.	P/V	Wavelength	Abs.	Description
1		535.00	0.277	

[Measurement Properties]
Wavelength Range (nm.): 450.00 to 600.00
Scan Speed: Medium
Sampling Interval: 0.1
Auto Sampling Interval: Enabled
Scan Mode: Single

[Instrument Properties]
Instrument Type: UV-2600 Series
Measuring Mode: Absorbance
Slit Width: 0.2
Accumulation time: 0.1 sec.
Light Source Change Wavelength: 323.0 nm
Detector Unit: Direct
S/R Exchange: Normal
Stair Correction: OFF

[Attachment Properties]
Attachment: None

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

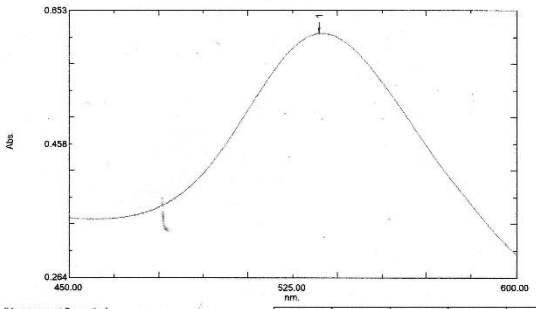
[Sample Preparation Properties]
Weight:
Volume:
Dilution:
Path Length:
Additional Information:

e. Konsentrasi 5 mM

Spectrum Peak Pick Report

09/10/2020 02:33:55 PM

Data Set: Glutamat 5 mM.spc - RawData



No.	P/V	Wavelength	Abs.	Description
1	●	533.80	0.621	

[Measurement Properties]
Wavelength Range (nm.): 450.00 to 600.00
Scan Speed: Medium
Sampling Interval: 0.1
Auto Sampling Interval: Enabled
Scan Mode: Single

[Instrument Properties]
Instrument Type: UV-2600 Series
Measuring Mode: Absorbance
Slit Width: 0.2
Accumulation time: 0.1 sec.
Light Source Change Wavelength: 323.0 nm
Detector Unit: Direct
S/R Exchange: Normal
Stair Correction: OFF

[Attachment Properties]
Attachment: None

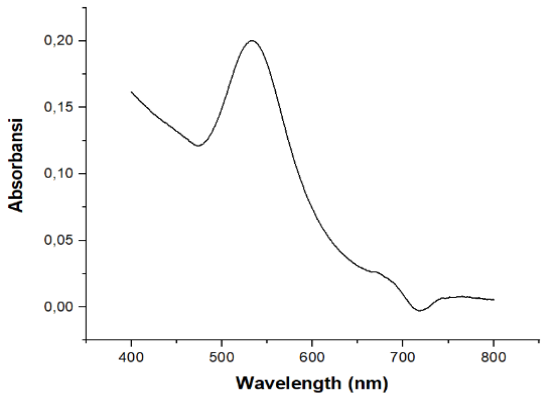
[Operation]
Threshold: 0.0010000
Points: 4
InterPolate: Disabled
Average: Disabled

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

Page 1 / 1

4. Spektrum spektrofotometer UV-Vis pH Optimum Asam Glutamat terhadap pembentukan Glu – AuNP

a. Asam Glutamat pH 9



Scan Analysis Report

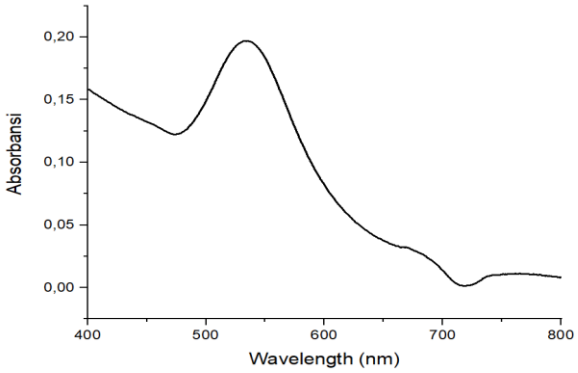
Report Time : Fri 04 Jun 02:45:26 PM 2021
Method:
Batch:
Software version: 3.00(339)
Operator:

Sample Name: pH 9 GluAuNPs
Collection Time 5/28/2021 3:23:33 PM

Peak Table
Peak Style Peaks
Peak Threshold 0.00000
Range 800.0nm to 400.0nm

Wavelength (nm)	Abs
532.0	0.200

b. Asam Glutamat pH 10



Scan Analysis Report

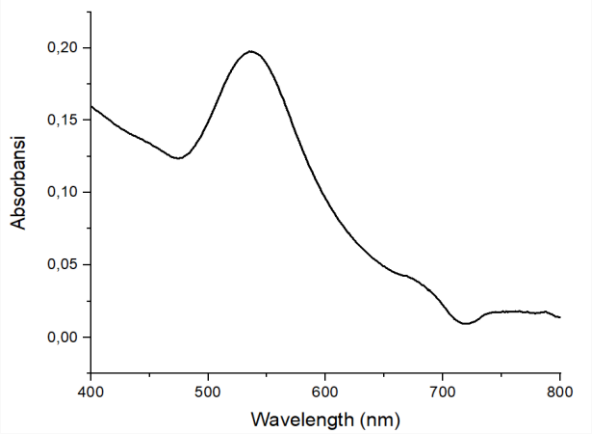
Report Time : Fri 04 Jun 02:45:56 PM 2021
Method:
Batch:
Software version: 3.00(339)
Operator:

Sample Name: pH 10 GluAuNPs

Collection Time	5/28/2021 3:26:26 PM
Peak Table	
Peak Style	Peaks
Peak Threshold	0.0100
Range	800.0nm to 400.0nm

Wavelength (nm)	Abs
535.0	0.197

c. Asam Glutamat pH 11



Scan Analysis Report

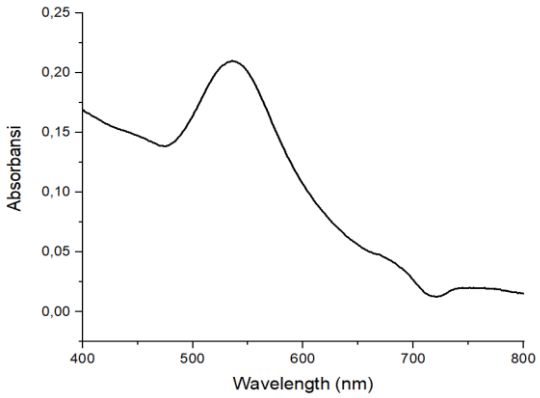
Report Time : Fri 04 Jun 02:46:22 PM 2021
Method:
Batch:
Software version: 3.00(339)
Operator:

Sample Name: pH 11 GluAuNPs

Collection Time	5/28/2021 3:28:53 PM
Peak Table	
Peak Style	Peaks
Peak Threshold	0.0100
Range	800.0nm to 400.0nm

Wavelength (nm)	Abs
535.0	0.198

d. Asam Glutamat pH 12



Scan Analysis Report

Report Time : Fri 04 Jun 02:46:49 PM 2021
Method:
Batch:
Software version: 3.00(339)
Operator:

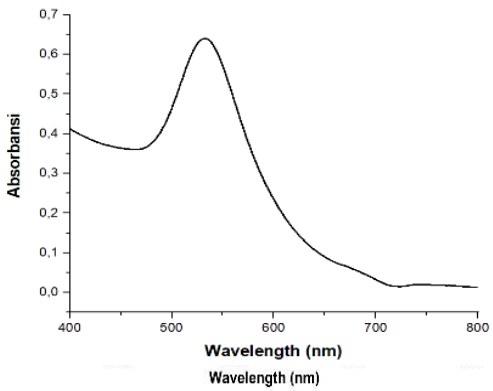
Sample Name: pH 12 GluAuNPs
Collection Time 5/20/2021 9:31:18 AM

Peak Table
Peak Style Peaks
Peak Threshold 0.3000
Range 803.0nm to 400.0nm

Wavelength (nm) Abs
538.0 0.210

5. Spektrum spektrofotometer UV-Vis Waktu Reaksi Optimum Asam Glutamat terhadap pembentukan Glu – AuNP

a. Waktu reaksi 0 menit



Wavelength (nm)

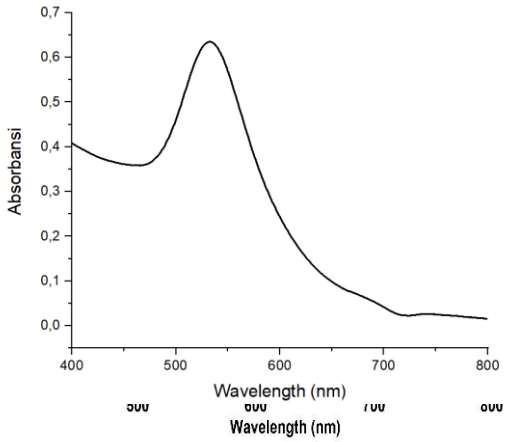
Scan Analysis Report

Report Time : Thu 17 Dec 07:49:04 PM 2020
Method:
Batch:
Software version: 3.00(339)
Operator:

Sample Name: 0 menit glutamat
Collection Time 12/17/2020 2:03:35 PM

Peak Table
Peak Style Peaks
Peak Threshold 0.6000
Range 800.0nm to 430.1nm

b. Waktu reaksi 15 menit



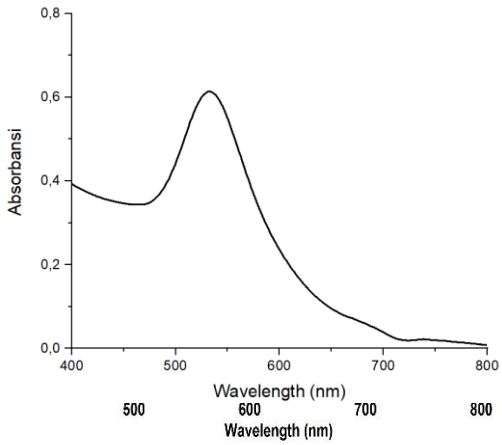
Scan Analysis Report

Report Time : Thu 17 Dec 02:50:25 PM 2020
Method:
Batch:
Software version: 3.00(339)
Operator:

Sample Name: 15 menit glutamat
Collection Time 12/17/2020 2:24:24 PM

Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 900.0nm to 450.1nm

c. Waktu reaksi 30 menit



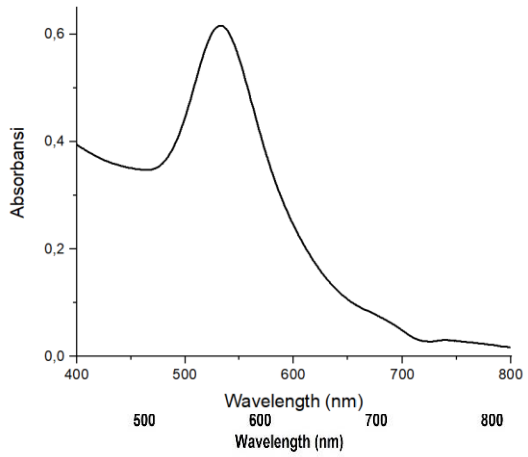
Scan Analysis Report

Report Time : Thu 17 Dec 02:57:26 PM 2020
Method:
Batch:
Software version: 3.00(339)
Operator:

Sample Name: 30 menit glutamat
Collection Time 12/17/2020 2:44:04 PM

Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 900.0nm to 450.1nm

d. Waktu reaksi 45 menit



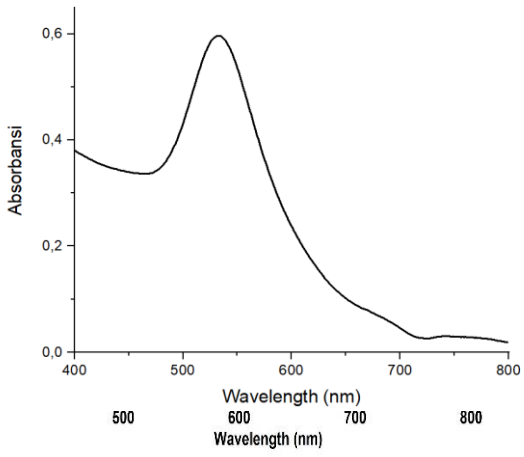
Scan Analysis Report

Report Time : Thu 17 Dec 03:01:58 PM 2020
Method:
Batch: C:\Varian\Cary Winuv\45 menit Glutamat.SUM
Software version: 3.00(339)
Operator:

Sample Name: 45 menit Glutamat
Collection Time 12/17/2020 3:05:35 PM

Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 300.0nm to 450.1nm

e. Waktu reaksi 60 menit



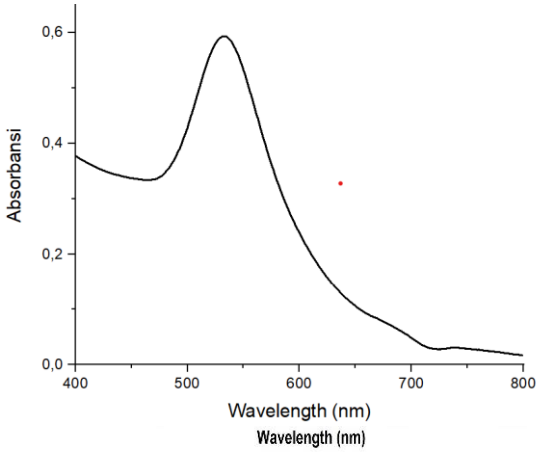
Scan Analysis Report

Report Time : Thu 17 Dec 03:25:26 PM 2020
Method:
Batch:
Software version: 3.00(339)
Operator:

Sample Name: 60 menit Glutamat
Collection Time 12/17/2020 3:21:16 PM

Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 300.0nm to 450.1nm

f. Waktu reaksi 75 menit



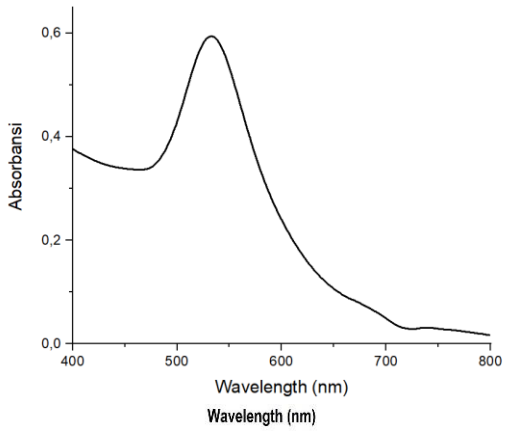
Scan Analysis Report

Report Time : Thu 17 Dec 03:46:05 PM 2020
Method:
Batch:
Software version: 3.00(339)
Operator:

Sample Name: 75 menit Glutamat mae

Collection Time	12/17/2020 3:38:10 PM
Peak Tuple	
Peak Style	Peaks
Peak Threshold	0.0100
Range	800.0nm to 450.0nm

g. Waktu reaksi 90 menit



Scan Analysis Report

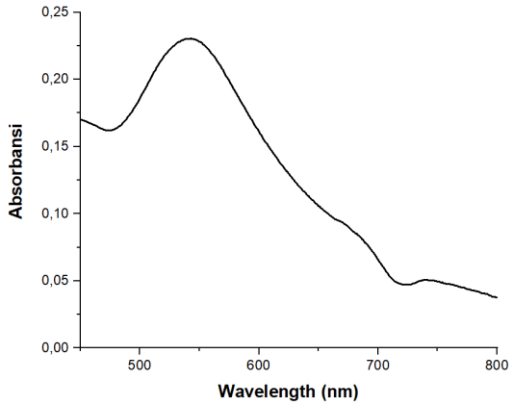
Report Time : Thu 17 Dec 03:54:13 PM 2020
Method:
Batch: C:\Varian\Cary Win\90 menit Glutamat .DSW
Software version: 3.00(339)
Operator:

Sample Name: 90 menit Glutamat

Collection Time	12/17/2020 3:54:31 PM
Peak Tuple	
Peak Style	Peaks
Peak Threshold	0.0100
Range	800.0nm to 450.0nm

6. Spektrum Spektrofotometer UV-Vis uji kestabilan Asam Glutamat terhadap pembentukan Glu – AuNP

a. Minggu ke 1



Scan Analysis Report

Report Time : Fri 04 Jun 02:46:49 PM 2021
Method:
Batch:
Software version: 3.00(339)
Operator:

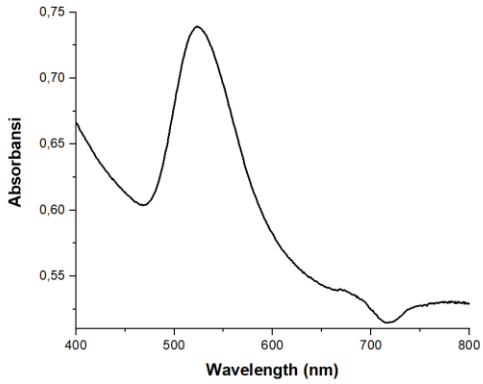
Sample Name: pH 12 GluAuNPs
Collection Time 5/20/2021 3:31:10 PM

Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

Wavelength (nm) Abs

556.0 0.210

b. Minggu ke 2



Scan Analysis Report

Report Time : Fri 12 Nov 09:15:15 PM 2021
Method:
Batch:
Software version: 3.00(339)
Operator:

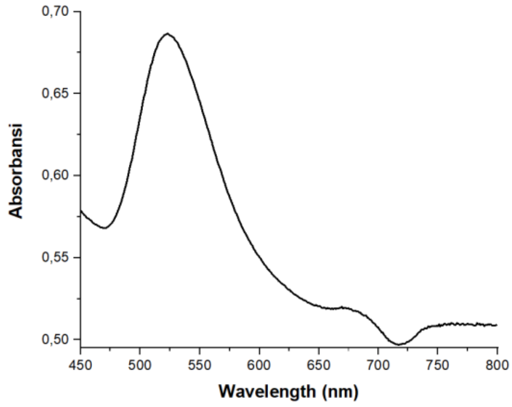
Sample Name: pH 12 AuNPs-Glu minggu ke 2
Collection Time 7/27/2021 9:53:14 AM

Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

Wavelength (nm) Abs

563.0 0.159

c. **Minggu ke 3**



Scan Analysis Report

Report Time : Fri 12 Nov 02:21:46 PM 2021
Method:
Batch:
Software version: 3.00(339)
Operator:

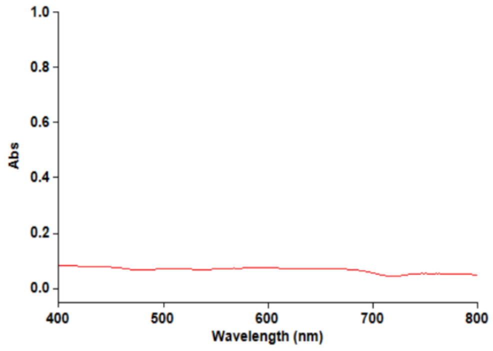
Sample Name: pH 12 AuNPs-Glu minggu ke 3

Collection Time	8/3/2021 10:56:20 AM
Peak Table	
Peak Style	Peaks
Peak Threshold	0.0100
Range	800.0nm to 450.0nm

Wavelength (nm)	Abs
523.1	0.687

7. **Spektrum Spektrofotometer UV-Vis uji sensor terhadap bakteri *Salmonella* sp**

a. **Nanopartikel emas-Asam Glutamat-*Salmonella* sp10^{-1}**



Scan Analysis Report

Report Time : Thu 15 Jul 03:07:25 PM 2021
Method:
Batch: C:\Varian\Cary WinUV\AuNPsGluSalmo10.1
Software version: 3.00(339)
Operator:

Sample Name: AuNPsGluSalmo10.1

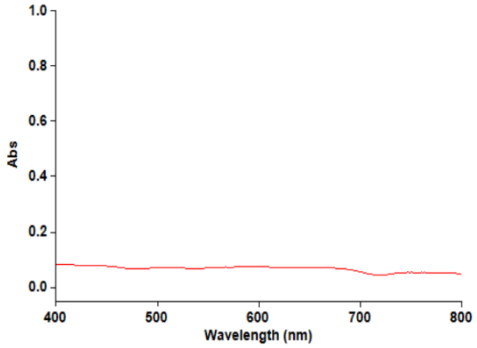
Collection Time	7/15/2021 3:07:47 PM
Peak Table	
Peak Style	Peaks
Peak Threshold	0.0100
Range	800.0nm to 400.0nm

No peak found above threshold

Scan Analysis Report

Report Time : Wed 19 Jan 03:09:58 PM 2022
Method:
Batch: C:\Varian\Cary WinUV\AuNPsGluSalmo10.1
Software version: 3.00(339)
Operator:

b. Nanopartikel emas-Asam Glutamat-*Salmonella* sp10^{-2}



Scan Analysis Report

Report Time : Wed 19 Jan 03:21:43 PM 2022
Method:
Batch: C:\Varian\Cary WinUV\AuNPsGluSalmo10.2(2).BA1
Software version: 3.00(339)
Operator:

Sample Name: AuNPsGluSalmo10.2(2)
Collection Time 1/19/2022 3:21:43 PM

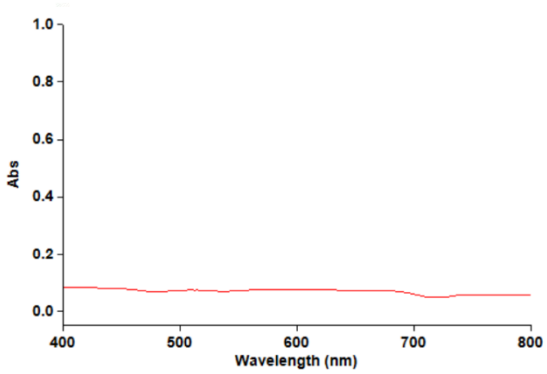
Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

No peak found above threshold

Scan Analysis Report

Report Time : Wed 19 Jan 03:21:43 PM 2022
Method:
Batch: C:\Varian\Cary WinUV\AuNPsGluSalmo10.2(2).BA1
Software version: 3.00(339)
Operator:

c. Nanopartikel emas-Asam Glutamat-*Salmonella* sp10^{-3}



Scan Analysis Report

Report Time : Wed 19 Jan 03:21:50 PM 2022
Method:
Batch: C:\Varian\Cary WinUV\AuNPsGluSalmo10.3
Software version: 3.00(339)
Operator:

Sample Name: AuNPsGluSalmo10.3
Collection Time 1/19/2022 3:21:50 PM

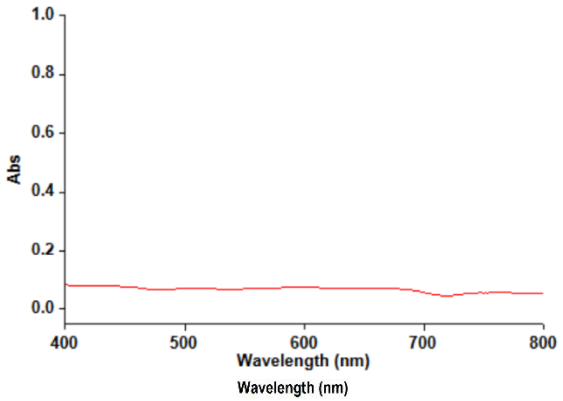
Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

No peak found above threshold

Scan Analysis Report

Report Time : Wed 19 Jan 03:21:50 PM 2022
Method:
Batch: C:\Varian\Cary WinUV\AuNPsGluSalmo10.3
Software version: 3.00(339)
Operator:

d. Nanopartikel emas-Asam Glutamat-*Salmonella* sp10^{-4}



Scan Analysis Report

Report Time : Thu 15 Jul 03:34:53 PM 2021
Method:
Batch: C:\Varian\Cary Winuv\AuNPsGluSalmo10.4
Software version: 5.00(339)
Operator:

Sample Name: AuNPsGluSalmo10.4
Collection Time 7/15/2021 3:30:31 PM

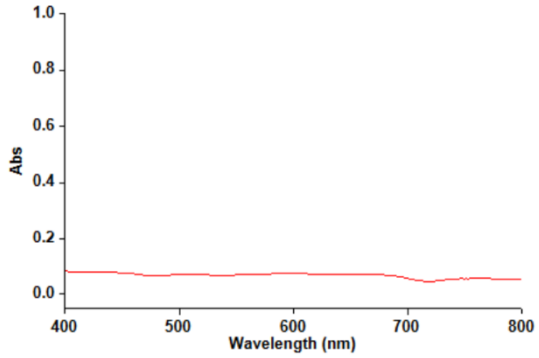
Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

No peak found above threshold

Scan Analysis Report

Report Time : Wed 15 Jun 05:12:56 PM 2022
Method:
Batch: C:\Varian\Cary Winuv\AuNPsGluSalmo10.4
Software version: 5.00(339)
Operator:

e. Nanopartikel emas-Asam Glutamat-*Salmonella* sp10^{-5}



Scan Analysis Report

Report Time : Thu 15 Jul 03:37:28 PM 2021
Method:
Batch: C:\Varian\Cary Winuv\AuNPsGluSalmo10.5
Software version: 5.00(339)
Operator:

Sample Name: AuNPsGluSalmo10.5
Collection Time 7/15/2021 3:37:03 PM

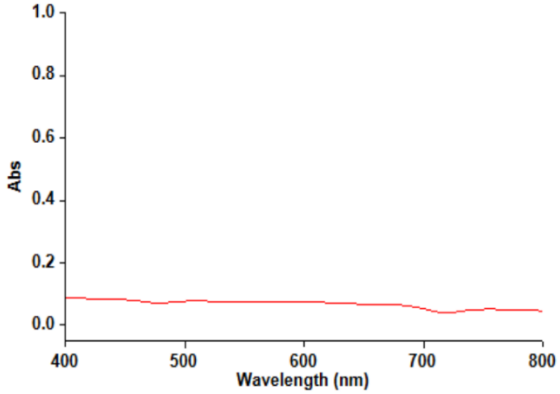
Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

No peak found above threshold

Scan Analysis Report

Report Time : Wed 15 Jun 05:11:09 PM 2022
Method:
Batch: C:\Varian\Cary Winuv\AuNPsGluSalmo10.5
Software version: 5.00(339)
Operator:

f. Nanopartikel emas-Asam Glutamat-*Salmonella* sp10^{-6}



Scan Analysis Report

Report Time : Thu 15 Jul 03:36:53 PM 2021
Method:
Batch: C:\Varian\Cary Winuv\AuNPsGluSalmo10.6
Software version: 3.00(339)
Operator:

Sample Name: AuNPsGluSalmo10.6
Collection Time 7/15/2021 3:35:54 PM

Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

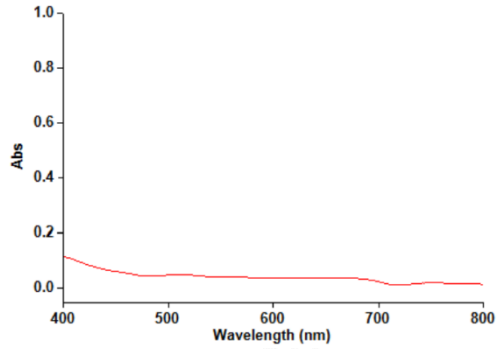
No peak found above threshold

Scan Analysis Report

Report Time : Wed 19 Jan 05:11:29 PM 2022
Method:
Batch: C:\Varian\Cary Winuv\AuNPsGluSalmo10.6
Software version: 3.00(339)
Operator:

8. **Spektrum Spektrofotometer UV-Vis uji nanopartikel emas terhadap bakteri *Salmonella* sp**

a. Nanopartikel Emas – *Salmonella* 10^{-1}



Scan Analysis Report

Report Time : Thu 15 Jul 02:43:47 PM 2021
Method:
Batch: C:\Varian\Cary Winuv\AuNPsSalmonella10.1
Software version: 3.00(339)
Operator:

Sample Name: AuNPsSalmonella10.1
Collection Time 7/15/2021 2:43:48 PM

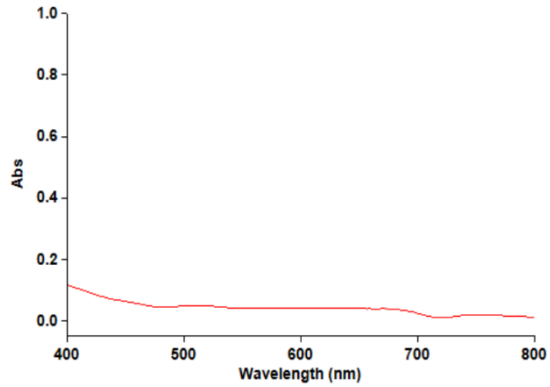
Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

No peak found above threshold

Scan Analysis Report

Report Time : Wed 19 Jan 05:12:15 PM 2022
Method:
Batch: C:\Varian\Cary Winuv\AuNPsSalmonella10.1
Software version: 3.00(339)
Operator:

b. Nanopartikel Emas – *Salmonella* 10^{-2}



Scan Analysis Report

Report Time : Thu 15 Jul 02:49:43 PM 2021
Method:
Batch: C:\Varian\Cary WinUV\AuNPsSalmonella 10.2
Software version: 3.00(339)
Operator:

Sample Name: AuNPsSalmonella 10.2
Collection Time 7/15/2021 9:48:50 PM

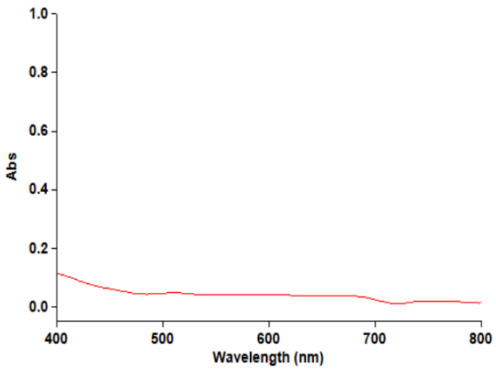
Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

No peak found above threshold

Scan Analysis Report

Report Time : Wed 19 Jan 03:05:24 PM 2022
Method:
Batch: C:\Varian\Cary WinUV\AuNPsSalmonella 10.2
Software version: 3.00(339)
Operator:

c. Nanopartikel Emas – *Salmonella* 10^{-3}



Scan Analysis Report

Report Time : Thu 15 Jul 02:56:43 PM 2021
Method:
Batch: C:\Varian\Cary WinUV\AuNPsSalmonella 10.3
Software version: 3.00(339)
Operator:

Scan Analysis Report

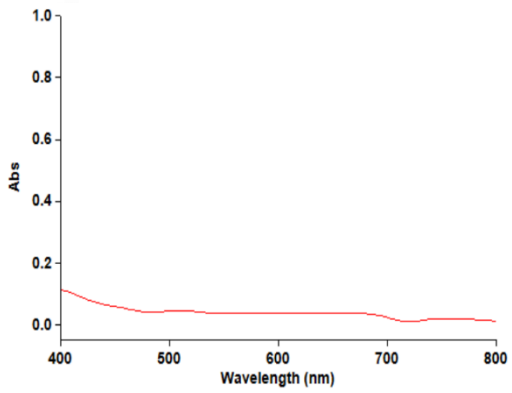
Report Time : Thu 15 Jul 02:01:33 PM 2021
Method:
Batch: C:\Varian\Cary WinUV\AuNPsSalmonella 10.3(2)
Software version: 3.00(339)
Operator:

Sample Name: AuNPsSalmonella 10.3(2)
Collection Time 7/15/2021 2:55:14 PM

Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

No peak found above threshold

d. Nanopartikel Emas – *Salmonella* 10^{-4}



Scan Analysis Report

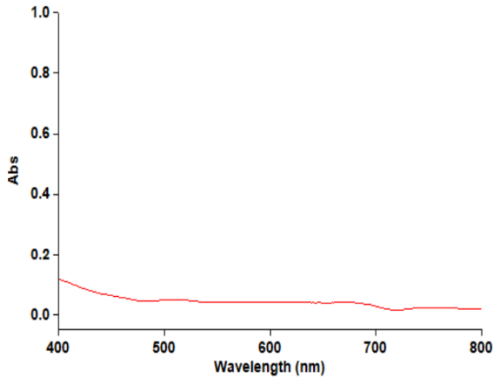
Report Time : Thu 7/1/2021 2:54:53 PM
Method:
Batch: C:\Varian\Cary WinUV\AuNPsSalmonella 10.4
Software version: 3.00(339)
Operator:

Sample Name: AuNPsSalmonella 10.4
Collection Time 7/1/2021 2:54:53 PM

Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

No peak found above threshold

e. Nanopartikel Emas – *Salmonella* 10^{-5}



Scan Analysis Report

Report Time : Thu 7/1/2021 2:56:35 PM
Method:
Batch: C:\Varian\Cary WinUV\AuNPsSalmonella 10.5
Software version: 3.00(339)
Operator:

Sample Name: AuNPsSalmonella 10.5
Collection Time 7/1/2021 2:56:35 PM

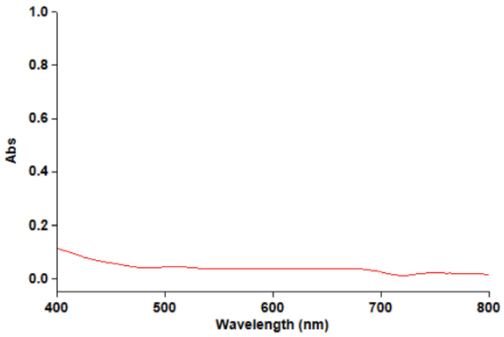
Peak Table
Peak Style Peaks
Peak Threshold 0.0100
Range 800.0nm to 400.0nm

No peak found above threshold

Scan Analysis Report

Report Time : Wed 5 Jan 03:08:56 PM 2022
Method:
Batch: C:\Varian\Cary WinUV\AuNPsSalmonella 10.6
Software version: 3.00(339)
Operator:

f. Nanopartikel Emas – *Salmonella* 10^{-6}



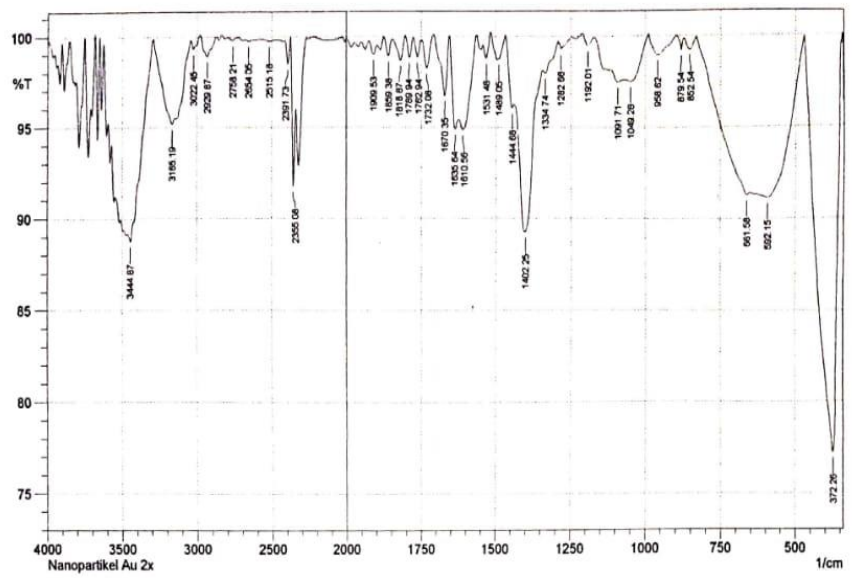
Scan Analysis Report

Sample Name: AuNPsSalmonella 10.6

Scan Analysis Report

Lampiran 4. Karakterisasi Spektrofotometer FTIR

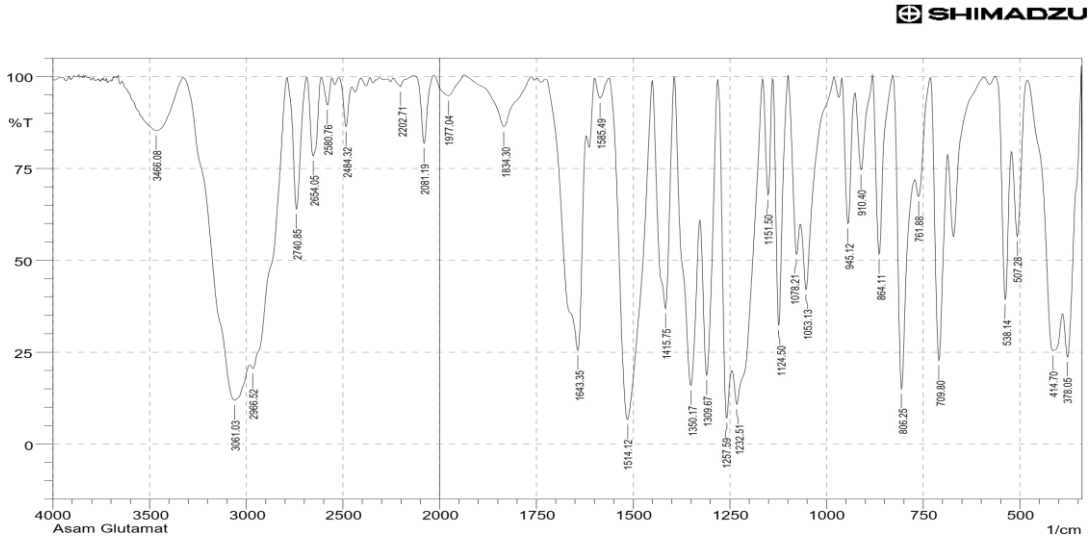
a. Spektrum FTIR Nanopartikel emas



	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	372.26	77.219	22.814	470.63	343.33	7.641	7.636
2	592.15	91.13	2.076	626.87	472.56	4.417	1.325
3	661.58	91.274	0.583	829.39	651.94	4.073	0.513
4	852.54	99.229	0.662	871.82	831.32	0.087	0.069
5	879.54	99.198	0.707	896.9	871.82	0.033	0.026
6	958.62	98.936	1.123	989.48	896.9	0.249	0.268
7	1049.28	97.491	0.727	1068.56	989.48	0.584	0.184
8	1091.71	97.464	0.407	1116.78	1068.56	0.489	0.041
9	1192.01	99.49	0.527	1211.3	1170.79	0.046	0.048
10	1282.66	99.3	0.466	1292.31	1246.02	0.079	0.045
11	1334.74	97.968	0.444	1344.38	1292.31	0.317	0.07
12	1402.25	89.255	7.688	1436.97	1344.38	2.675	1.53
13	1444.68	96.075	0.948	1467.83	1438.9	0.301	0.067
14	1489.05	98.745	0.132	1490.97	1467.83	0.072	0.014
15	1531.48	98.784	1.058	1543.05	1517.98	0.079	0.064
16	1610.56	94.844	1.734	1625.99	1564.27	0.945	0.324
17	1635.64	94.882	2.069	1654.92	1625.99	0.46	0.167
18	1670.35	96.739	3.307	1708.93	1654.92	0.341	0.356
19	1732.08	98.256	1.671	1749.44	1708.93	0.148	0.139
20	1762.94	98.85	1.016	1776.44	1749.44	0.072	0.057
21	1789.94	98.841	1.151	1803.44	1776.44	0.068	0.067
22	1818.87	98.673	1.305	1847.81	1803.44	0.126	0.116
23	1859.38	98.932	0.968	1874.81	1847.81	0.067	0.057
24	1909.53	99.003	0.596	1924.96	1897.95	0.079	0.034
25	2355.08	91.771	6.107	2374.37	2337.72	0.809	0.482
26	2391.73	98.468	1.411	2412.95	2374.37	0.138	0.116
27	2515.18	99.743	0.096	2574.97	2474.67	0.087	0.019
28	2654.05	99.731	0.098	2675.27	2627.05	0.046	0.011
29	2758.21	99.758	0.189	2792.93	2740.85	0.03	0.019
30	2929.87	98.904	1.158	2978.09	2868.15	0.276	0.302
31	3022.45	99.312	0.332	3039.81	3007.02	0.073	0.024
32	3165.19	95.179	0.966	3290.56	3143.97	2.007	0.493
33	3444.87	88.762	0.703	3462.22	3423.65	1.921	0.066

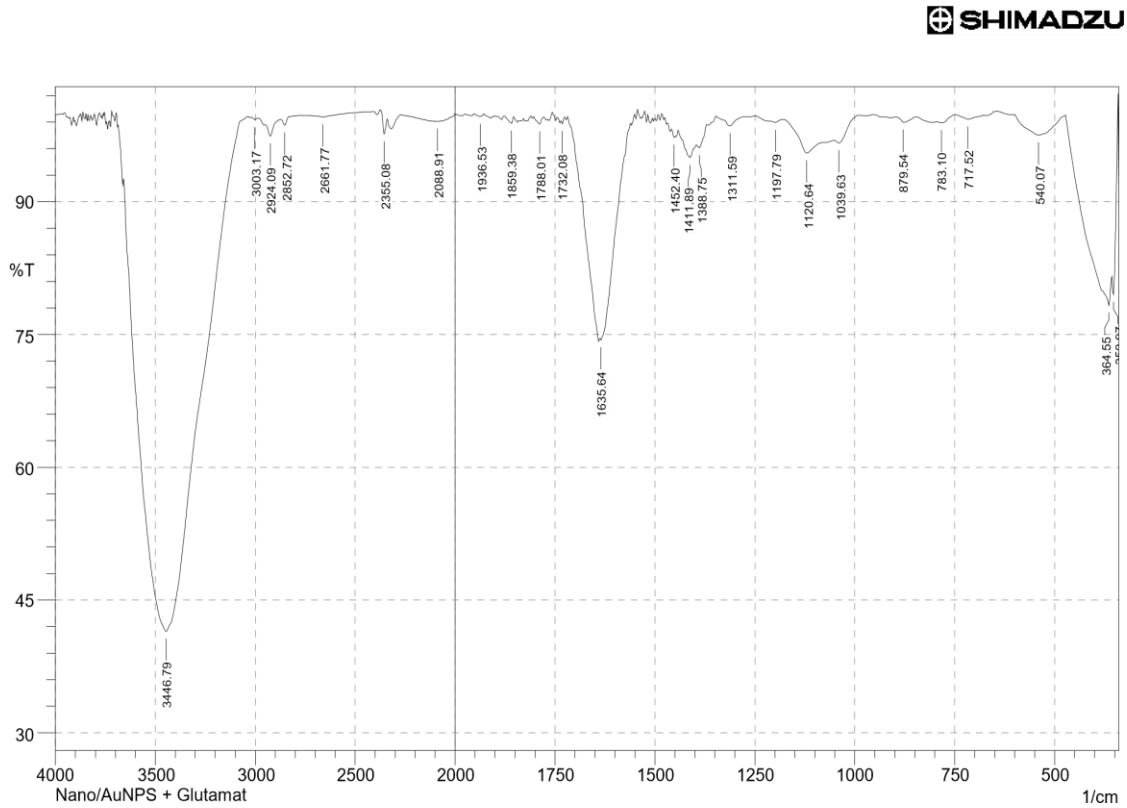
Date/Time; 8/20/2021 11:48:20 AM
No. of Scans;

b. Spektrum FTIR Asam Glutamat



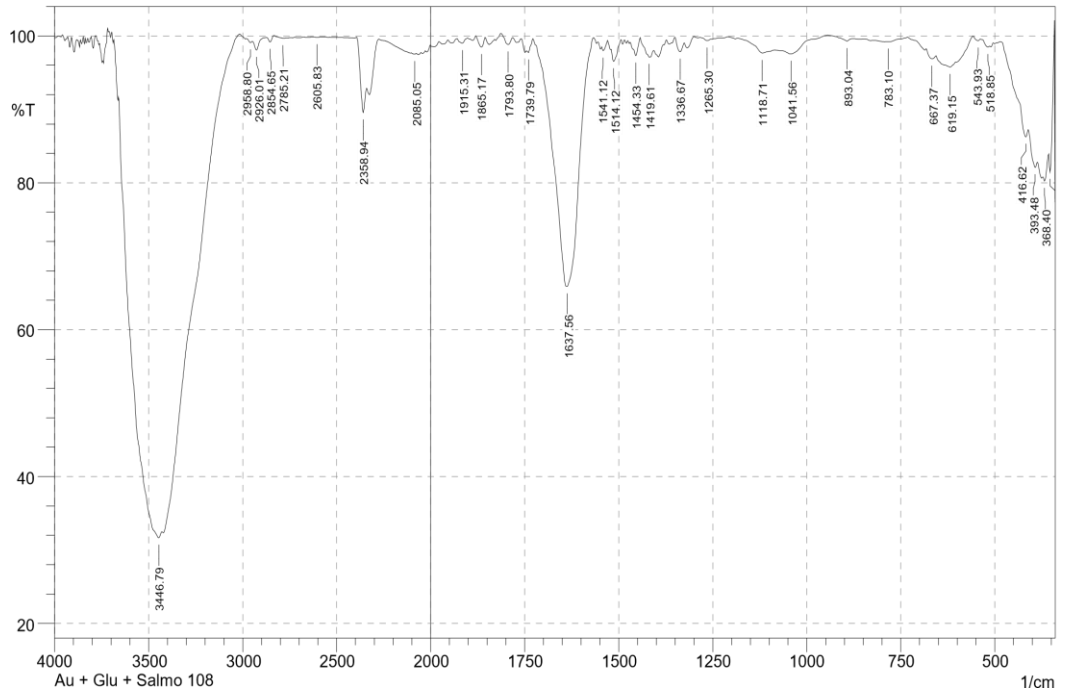
No.	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	378.05	23.695	26.993	389.62	343.33	15.889	5.513
2	414.7	25.354	26.561	480.28	391.55	25.727	6.862
3	507.28	56.521	29.536	520.78	482.2	4.968	3.025
4	538.14	39.338	48.106	563.21	522.71	7.075	5.032
5	709.8	22.719	66.083	731.02	688.59	13.075	10.642
6	761.88	67.366	11.509	771.53	732.95	3.574	0.982
7	806.25	15.015	73.94	827.46	773.46	17.794	13.773
8	1124.5	32.337	66.275	1138	1101.35	7.591	7.37
9	1232.51	10.809	20.781	1244.09	1165	39.595	12.574
10	1257.59	7.093	39.309	1280.73	1246.02	20.92	8.343
11	1309.67	18.693	56.704	1327.03	1282.66	16.553	11.775
12	1350.17	15.929	57.494	1392.61	1328.95	25.95	18.7
13	1415.75	36.892	62.673	1450.47	1394.53	12.714	12.584
14	1514.12	6.671	92.079	1560.41	1452.4	48.182	47.516
15	1643.35	25.474	61.568	1726.29	1622.13	27.06	22.878
16	1834.3	86.383	13.765	1936.53	1764.87	4.051	4.198
17	1977.04	94.79	5.628	2029.11	1938.46	1.029	1.192
18	2081.19	81.817	18.509	2129.41	2031.04	2.882	3.022
19	2484.32	86.36	11.964	2519.03	2455.38	1.978	1.53
20	2654.05	78.448	21.419	2686.84	2613.55	4.186	4.144
21	2740.85	63.939	35.876	2789.07	2688.77	7.918	7.839
22	2966.52	20.525	6.531	2980.02	2791	68.689	6.435
23	3061.03	11.913	27.51	3327.21	2981.95	149.533	40.11
24	3466.08	85.287	0.526	3606.89	3460.3	7.428	0.977

c. Spektrum FTIR Nanopartikel emas-Asam Glutamat



No	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	364.55	78.301	3.939	472.56	358.76	7.414	2.154
2	540.07	97.532	2.281	599.86	472.56	0.87	0.765
3	783.1	98.902	0.358	794.67	750.31	0.142	0.038
4	879.54	98.988	0.575	896.9	846.75	0.156	0.062
5	1039.63	96.659	0.877	1053.13	989.48	0.533	0.071
6	1120.64	95.495	2.309	1178.51	1078.21	1.299	0.408
7	1197.79	98.962	0.445	1251.8	1178.51	0.239	0.078
8	1388.75	96.103	1.025	1396.46	1371.39	0.344	0.075
9	1411.89	94.991	1.986	1442.75	1396.46	0.776	0.215
10	1452.4	97.258	0.503	1458.18	1448.54	0.103	0.012
11	1635.64	74.374	0.809	1637.56	1562.34	4.938	0.265
12	1732.08	98.789	0.516	1735.93	1726.29	0.036	0.009
13	1788.01	98.776	0.83	1803.44	1778.37	0.09	0.047
14	1859.38	98.852	0.779	1878.67	1853.59	0.079	0.041
15	1936.53	99.618	0.106	1951.96	1934.6	0.019	0.006
16	2088.91	99.06	0.013	2100.48	2083.12	0.07	0.001
17	2355.08	97.651	2.164	2374.37	2339.65	0.162	0.143
18	2661.77	99.561	0.133	2681.05	2465.03	0.121	0.019
19	2852.72	98.646	0.811	2873.94	2829.57	0.17	0.066
20	2924.09	97.421	1.485	2951.09	2873.94	0.505	0.168
21	3003.17	99.264	0.23	3016.67	2987.74	0.076	0.012
22	3446.79	41.463	53.535	3658.96	3041.74	115.254	104.437

d. Spektrum FTIR Nanopartikel emas-Asam Glutamat-*Salmonella* sp



No.	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	352.97	81.487	7.007	356.83	341.4	0.878	0.362
2	368.4	80.228	1.406	372.26	358.76	1.203	0.071
3	393.48	82.103	1.812	410.84	387.69	1.794	0.138
4	416.62	86.251	1.403	486.06	412.77	2.392	0.103
5	518.85	98.459	0.352	532.35	514.99	0.09	0.018
6	543.93	99.352	0.334	557.43	538.14	0.039	0.019
7	619.15	95.771	0.438	630.72	603.72	0.48	0.031
8	667.37	96.887	0.826	682.8	655.8	0.327	0.064
9	783.1	99.207	0.024	785.03	732.95	0.115	0.006
10	893.04	99.268	0.483	945.12	877.61	0.077	0.041
11	1041.56	97.556	1.141	1083.99	945.12	0.767	0.214
12	1118.71	97.672	0.963	1182.36	1083.99	0.621	0.133
13	1265.3	99.371	0.362	1282.66	1246.02	0.07	0.027
14	1336.67	97.843	1.553	1350.17	1325.1	0.165	0.102
15	1419.61	97.145	0.202	1442.75	1417.68	0.199	0.029
16	1454.33	97.311	2.189	1469.76	1442.75	0.196	0.132
17	1514.12	96.52	1.954	1519.91	1494.83	0.255	0.126
18	1541.12	97.991	0.728	1544.98	1529.55	0.103	0.031
19	1637.56	65.873	33.828	1728.22	1568.13	12.433	12.22
20	1865.17	98.48	1.409	1880.6	1855.52	0.099	0.09
21	1915.31	99.003	0.668	1930.74	1901.81	0.085	0.043
22	2085.05	97.519	0.128	2102.41	2077.33	0.268	0.01
23	2358.94	89.571	5.62	2393.66	2341.58	1.503	0.624
24	3446.79	31.658	4.797	3658.96	3431.36	77.122	16.607

Lampiran 5. Karakterisasi PSA

a. Karakterisasi PSA nanopartikel emas

HORIBA Scientific

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

SZ-100

092.C.PSA.VIII.2021 R1.nsz

Measurement Results

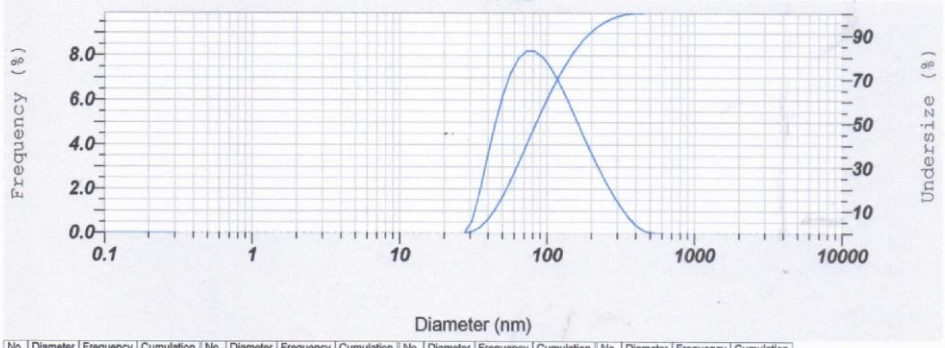
Date	: Tuesday, August 24, 2021 10:28:26 AM
Measurement Type	: Particle Size
Sample Name	: AuNPs (1)
Scattering Angle	: 90
Temperature of the Holder	: 24.8 °C
Dispersion Medium Viscosity	: 0.898 mPa·s
Transmission Intensity before Meas.	: 19804
Distribution Form	: Standard
Distribution Form(Dispersity)	: Monodisperse
Representation of Result	: Scattering Light Intensity
Count Rate	: 1413 kCPS

Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	103.3 nm	63.1 nm	77.3 nm
2	---	--- nm	--- nm	--- nm
3	---	--- nm	--- nm	--- nm
Total	1.00	103.3 nm	63.1 nm	77.3 nm

Cumulant Operations

Z-Average	: 82.6 nm
PI	: 0.182



No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation
1	0.34	0.000	0.000	22	4.40	0.000	0.000	43	57.09	7.221	24.144	64	740.89	0.000	100.000
2	0.38	0.000	0.000	23	4.97	0.000	0.000	44	64.50	7.863	32.007	65	837.07	0.000	100.000
3	0.43	0.000	0.000	24	5.61	0.000	0.000	45	72.87	8.172	40.179	66	945.74	0.000	100.000
4	0.49	0.000	0.000	25	6.34	0.000	0.000	46	82.33	8.178	48.357	67	1068.52	0.000	100.000
5	0.55	0.000	0.000	26	7.17	0.000	0.000	47	93.02	7.927	56.284	68	1207.24	0.000	100.000
6	0.62	0.000	0.000	27	8.10	0.000	0.000	48	105.10	7.470	63.754	69	1363.97	0.000	100.000
7	0.70	0.000	0.000	28	9.15	0.000	0.000	49	118.74	6.859	70.613	70	1541.04	0.000	100.000
8	0.80	0.000	0.000	29	10.34	0.000	0.000	50	134.16	6.145	76.759	71	1741.10	0.000	100.000
9	0.90	0.000	0.000	30	11.68	0.000	0.000	51	151.57	5.373	82.132	72	1967.14	0.000	100.000
10	1.02	0.000	0.000	31	13.20	0.000	0.000	52	171.25	4.582	86.714	73	2222.51	0.000	100.000
11	1.15	0.000	0.000	32	14.91	0.000	0.000	53	193.48	3.802	90.516	74	2511.05	0.000	100.000
12	1.30	0.000	0.000	33	16.84	0.000	0.000	54	218.60	3.057	93.573	75	2837.04	0.000	100.000
13	1.47	0.000	0.000	34	19.03	0.000	0.000	55	246.98	2.365	95.938	76	3205.35	0.000	100.000
14	1.66	0.000	0.000	35	21.50	0.000	0.000	56	279.04	1.738	97.676	77	3621.48	0.000	100.000
15	1.87	0.000	0.000	36	24.29	0.000	0.000	57	315.27	1.184	98.861	78	4091.83	0.000	100.000
16	2.11	0.000	0.000	37	27.45	0.000	0.000	58	356.20	0.713	99.574	79	4622.81	0.000	100.000
17	2.39	0.000	0.000	38	31.01	0.539	0.539	59	402.44	0.338	99.912	80	5222.96	0.000	100.000
18	2.70	0.000	0.000	39	35.03	1.814	2.353	60	454.69	0.086	99.998	81	5901.02	0.000	100.000
19	3.05	0.000	0.000	40	39.58	3.399	5.752	61	513.71	0.002	100.000	82	6667.10	0.000	100.000
20	3.45	0.000	0.000	41	44.72	4.935	10.687	62	580.41	0.000	100.000	83	7532.65	0.000	100.000
21	3.89	0.000	0.000	42	50.53	6.236	16.923	63	655.76	0.000	100.000	84	8510.56	0.000	100.000

b. Karakterisasi PSA nanopartikel emas-Asam Glutamat

HORIBA Scientific

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

SZ-100

095.C.PSA.VIII.2021 R1.nsz

Measurement Results

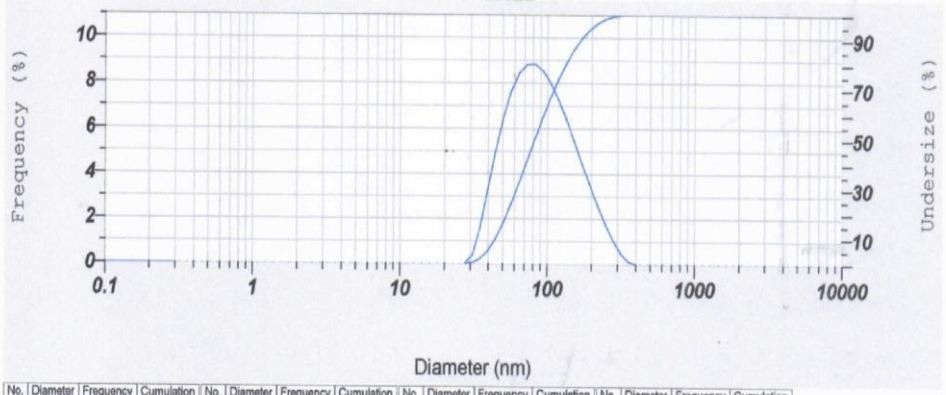
Date	: Tuesday, August 24, 2021 11:21:27 AM
Measurement Type	: Particle Size
Sample Name	: AuNPs + Glutamat pH 12
Scattering Angle	: 90
Temperature of the Holder	: 24.8 °C
Dispersion Medium Viscosity	: 0.898 mPa·s
Transmission Intensity before Meas.	: 26184
Distribution Form	: Standard
Distribution Form(Dispersity)	: Monodisperse
Representation of Result	: Scattering Light Intensity
Count Rate	: 485 kCPS

Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	96.1 nm	51.6 nm	77.3 nm
2	---	--- nm	--- nm	--- nm
3	---	--- nm	--- nm	--- nm
Total	1.00	96.1 nm	51.6 nm	77.3 nm

Cumulant Operations

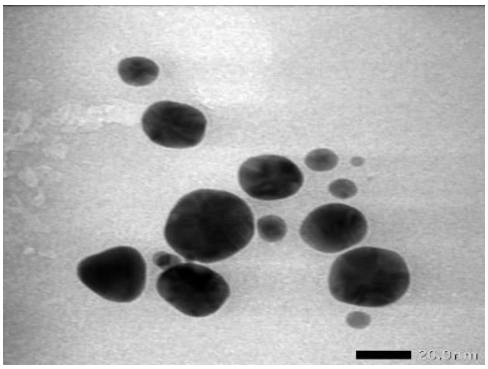
Z-Average	: 80.3 nm
PI	: 0.129



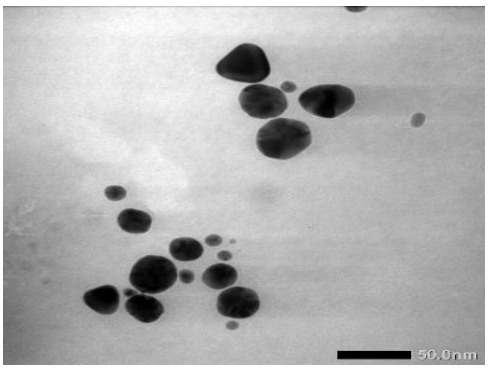
No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation	No.	Diameter	Frequency	Cumulation
1	0.34	0.000	0.000	22	4.40	0.000	0.000	43	57.09	7.660	24.271	64	740.89	0.000	100.000
2	0.38	0.000	0.000	23	4.97	0.000	0.000	44	64.50	8.428	32.699	65	837.07	0.000	100.000
3	0.43	0.000	0.000	24	5.61	0.000	0.000	45	72.87	8.805	41.504	66	945.74	0.000	100.000
4	0.49	0.000	0.000	25	6.34	0.000	0.000	46	82.33	8.824	50.327	67	1068.52	0.000	100.000
5	0.55	0.000	0.000	26	7.17	0.000	0.000	47	93.02	8.534	58.861	68	1207.24	0.000	100.000
6	0.62	0.000	0.000	27	8.10	0.000	0.000	48	105.10	7.992	66.853	69	1363.97	0.000	100.000
7	0.70	0.000	0.000	28	9.15	0.000	0.000	49	118.74	7.261	74.114	70	1541.04	0.000	100.000
8	0.80	0.000	0.000	29	10.34	0.000	0.000	50	134.16	6.398	80.512	71	1741.10	0.000	100.000
9	0.90	0.000	0.000	30	11.68	0.000	0.000	51	151.57	5.458	85.970	72	1967.14	0.000	100.000
10	1.02	0.000	0.000	31	13.20	0.000	0.000	52	171.25	4.489	90.459	73	2222.51	0.000	100.000
11	1.15	0.000	0.000	32	14.91	0.000	0.000	53	193.48	3.531	93.991	74	2511.05	0.000	100.000
12	1.30	0.000	0.000	33	16.84	0.000	0.000	54	218.60	2.618	96.608	75	2837.04	0.000	100.000
13	1.47	0.000	0.000	34	19.03	0.000	0.000	55	246.98	1.778	98.387	76	3205.35	0.000	100.000
14	1.66	0.000	0.000	35	21.50	0.000	0.000	56	279.04	1.045	99.431	77	3621.48	0.000	100.000
15	1.87	0.000	0.000	36	24.29	0.000	0.000	57	315.27	0.463	99.894	78	4091.63	0.000	100.000
16	2.11	0.000	0.000	37	27.45	0.000	0.000	58	356.20	0.106	100.000	79	4622.81	0.000	100.000
17	2.39	0.000	0.000	38	31.01	0.367	0.367	59	402.44	0.000	100.000	80	5222.96	0.000	100.000
18	2.70	0.000	0.000	39	35.03	1.530	1.897	60	454.69	0.000	100.000	81	5901.02	0.000	100.000
19	3.05	0.000	0.000	40	39.58	3.235	5.132	61	513.71	0.000	100.000	82	6667.10	0.000	100.000
20	3.45	0.000	0.000	41	44.72	4.982	10.114	62	580.41	0.000	100.000	83	7532.85	0.000	100.000
21	3.89	0.000	0.000	42	50.53	6.497	16.611	63	655.76	0.000	100.000	84	8510.56	0.000	100.000

Lampiran 6. Karakterisasi TEM

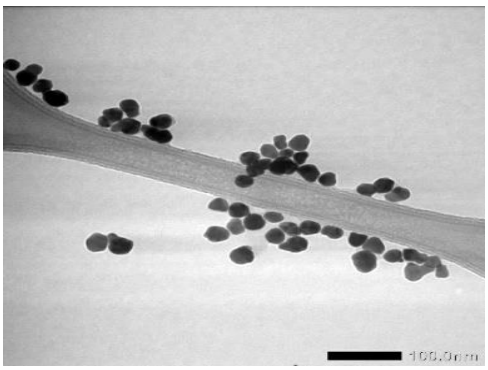
a. Karakterisasi TEM terhadap Nanopartikel Emas



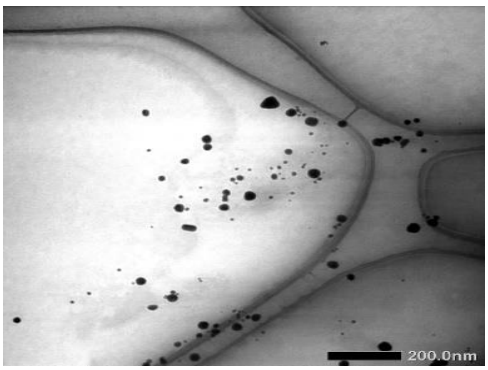
20 nm



50 nm

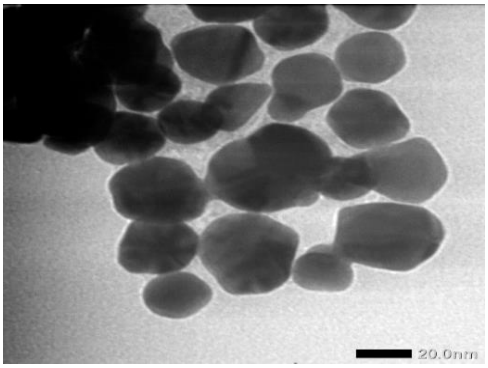


100 nm

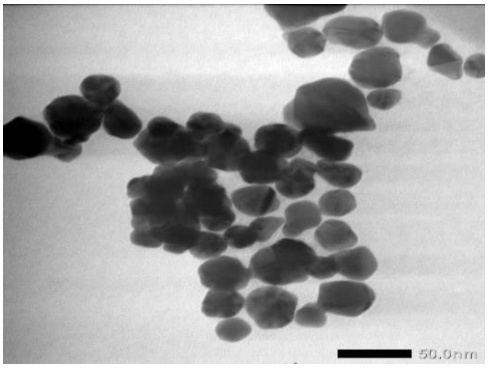


200 nm

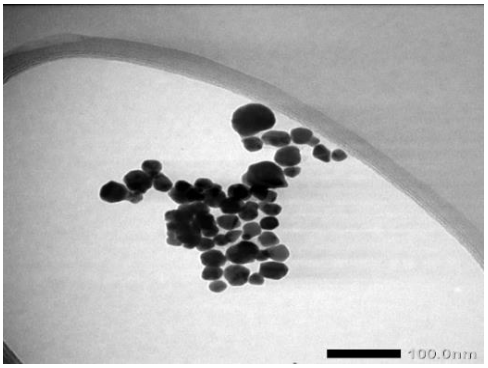
b. Karakterisasi TEM terhadap Nanopartikel Emas dengan Asam Glutamat



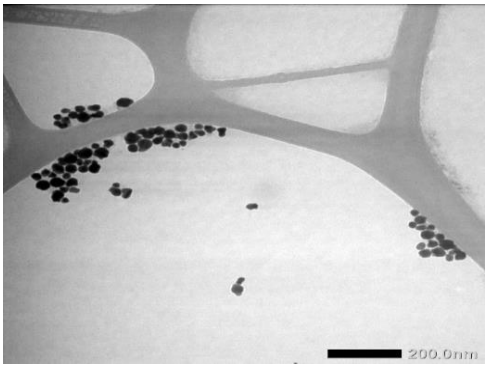
20 nm



50 nm



100 nm

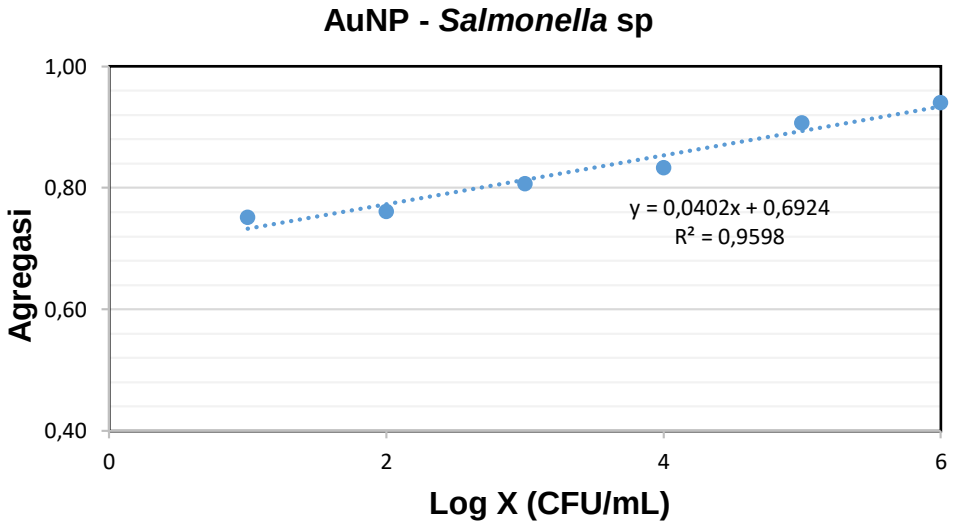


200 nm

Lampiran 7 Perhitungan Limit Deteksi

1. Deteksi bakteri *Salmonella* sp menggunakan nanopartikel emas

No	Log 10^x (X)	Pengukuran Konsentrasi (y)	Pengukuran Konsentrasi (y')	y-y'	$(y-y')^2$
1	1	0,75	0,73	0,0189	0,0004
2	2	0,76	0,77	-0,0120	0,0001
3	3	0,81	0,81	-0,0066	0,0000
4	4	0,83	0,85	-0,0205	0,0004
5	5	0,91	0,89	0,0134	0,0002
6	6	0,94	0,93	0,0063	0,0000



$$S_{\frac{x}{y}} = SD = \sqrt{\frac{\Sigma(yi-y')^2}{n-2}}$$

$$SD = \sqrt{\frac{0,0012}{4}}$$

$$SD = \sqrt{0,0003}$$

$$SD = 0,0172$$

Y_{LoD} = 3 x SD + a

= 3 (0,0172) + 0,6924

= 0,7440

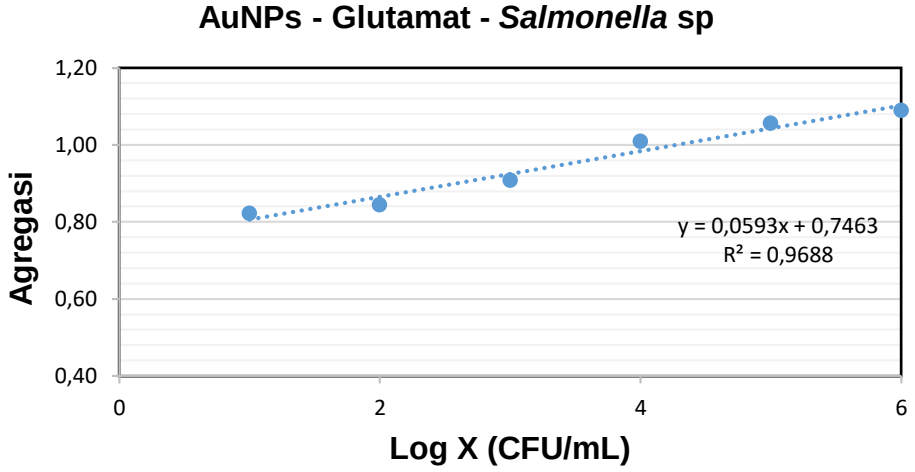
LoD = $\frac{Y_{LoD}-a}{b}$

= $\frac{0,7440 - 0,6924}{0,0402}$

= 1,28 CFU/mL

2. Deteksi bakteri *Salmonella* sp menggunakan nanopartikel emas dan asam glutamat.

No	Log 10^x (X)	Pengukuran Konsentrasi (y)	Pengukuran Konsentrasi (y')	y-y'	$(y-y')^2$
1	1	0,82	0,81	0,0155	0,0002
2	2	0,84	0,86	-0,0217	0,0005
3	3	0,91	0,92	-0,0177	0,0003
4	4	1,01	0,98	0,0245	0,0006
5	5	1,06	1,04	0,0129	0,0002
6	6	1,09	1,10	-0,0138	0,0002



$$S_{\frac{x}{y}} = SD = \sqrt{\frac{\Sigma(yi-y')^2}{n-2}}$$

$$SD = \sqrt{\frac{0,0020}{4}}$$

$$SD = \sqrt{0,0005}$$

$$SD = 0,0223$$

$$Y_{LoD} = 3 \times SD + a$$

$$= 3\ (0,0223) + 0,7463$$

$$= 0,8131$$

$$LoD = \frac{Y_{LoD}-a}{b}$$

$$= \frac{0,8131 - 0,7463}{0,0593}$$

$$= 1,13\ CFU/mL$$