

Progress Report

22/3 (1), 27/3 (2)

Reza

Sintesis AuNP

AuNP-CA

- Sitrat : 150 mg dalam 10 mL air
- Au : 87 mL + 3 mL air
- Au+Air dipanaskan hingga suhu 85°, lalu sitrat dimasukkan dengan syringe
- AuNP terbentuk, dipanaskan selama 50 menit

AuNP-MPA

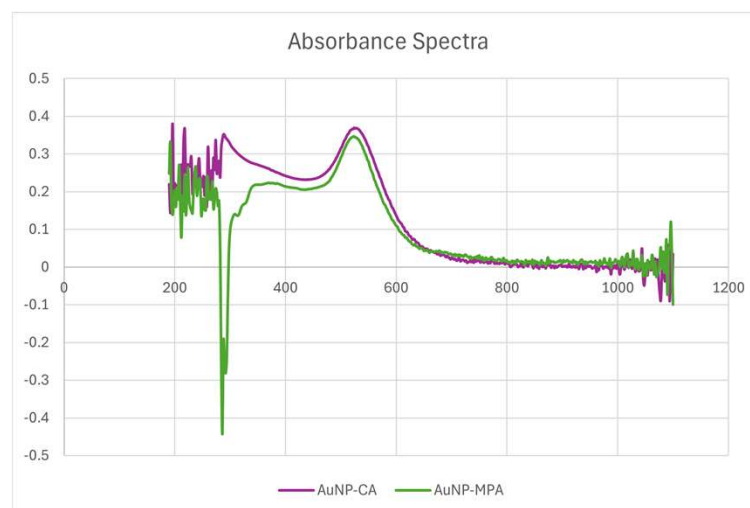
- Sitrat : 150 mg dalam 10 mL 3-MPA 2 mM
- Au : 87 mL + 3 mL air
- Au+Air dipanaskan hingga suhu 85° derajat, lalu sitrat+ MPA dimasukkan dengan syringe
- AuNP terbentuk, dipanaskan selama 50 menit

Hasil sintesis AuNP



Spektrum Absorbansi

$$\lambda_{peak-CA} = 524 \text{ nm}$$
$$\lambda_{peak-MPA} = 524 \text{ nm}$$



Purifikasi

1st purification

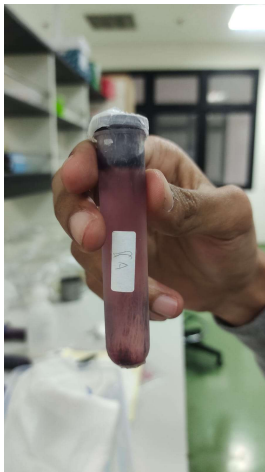
- +/- 10 mL dari stok
- 10.000 rpm, 30 menit, 10°C
- 8 mL *top-solution* dibuang.
- Tambahkan 5 mL amidis

2nd purification

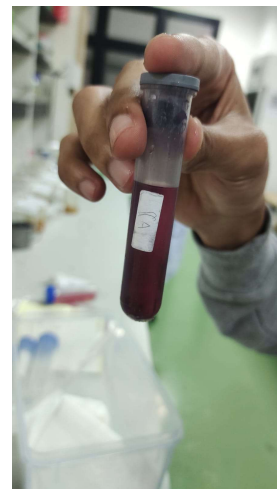
- Dari 1st purification, lakukan centrifuge 10.000 rpm, 30 menit, 10°C
- 5 mL *top-solution* dibuang.
- Tambahkan 5 mL amidis

Hasil Purifikasi : 1st purification CA

Sebelum *top-solution* dibuang



Setelah *top-solution* dibuang dan ditambahkan Amidis

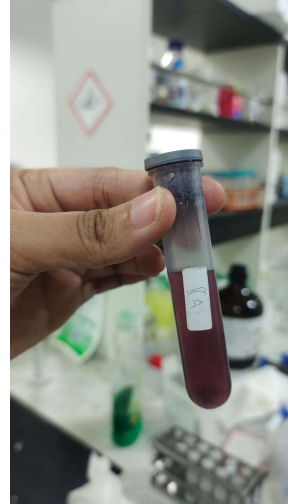


Hasil Purifikasi : 2nd purification CA

Sebelum *top-solution* dibuang

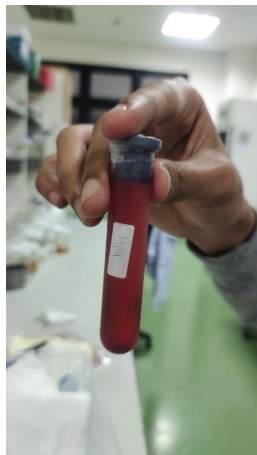


Setelah *top-solution* dibuang dan ditambahkan Amidis

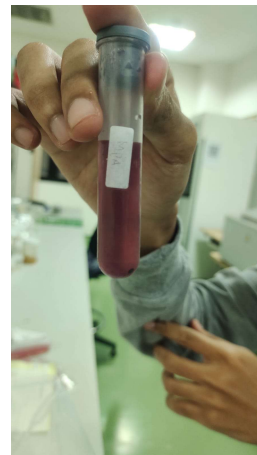


Hasil Purifikasi : 1st purification MPA

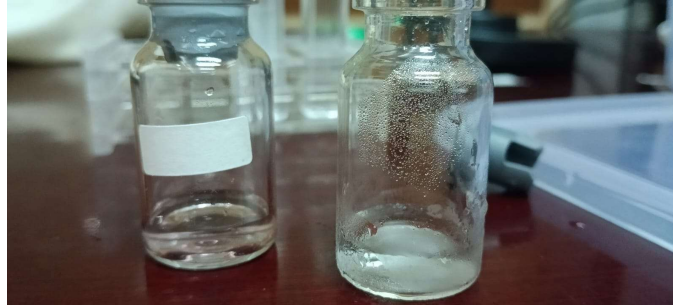
Sebelum *top-solution* dibuang



Setelah *top-solution* dibuang dan ditambahkan Amidis



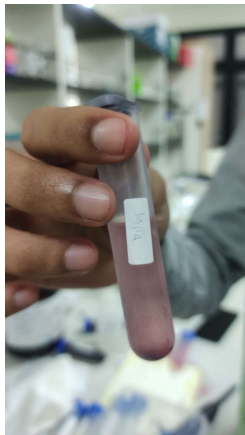
Hasil Purifikasi setelah 20 jam



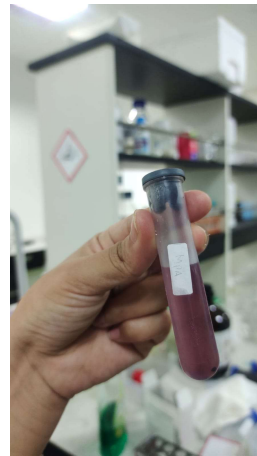
Kiri : Au-MPA; Kanan : Au-CA

Hasil Purifikasi : 2nd purification MPA

Sebelum *top-solution* dibuang

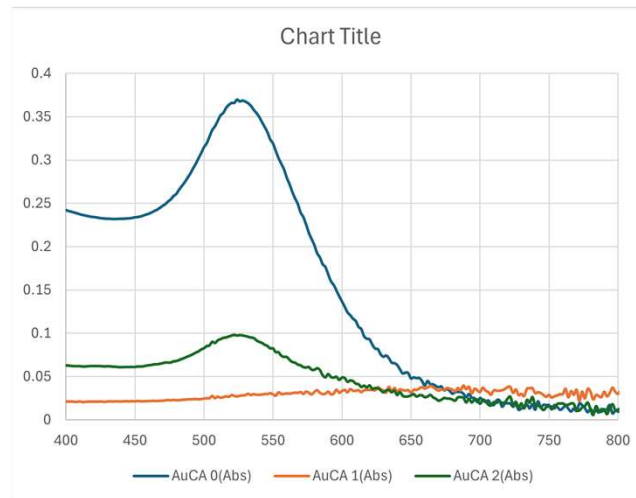


Setelah *top-solution* dibuang dan ditambahkan Amidis



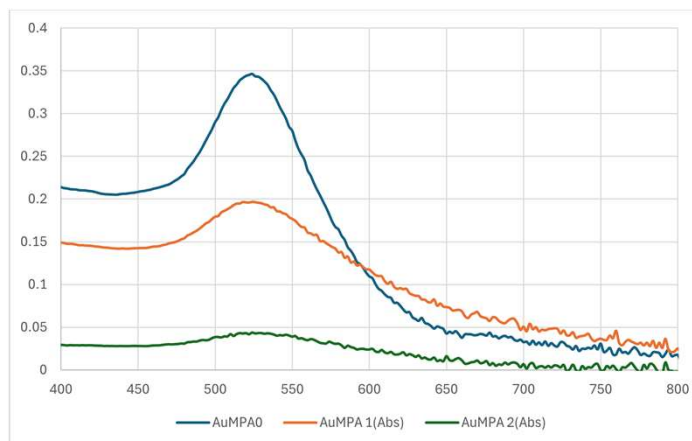
Spektrum Absorbansi : CA

$$\lambda_{ref} = 524 \text{ nm}$$
$$\lambda_1 = -$$
$$\lambda_2 = 522 \text{ nm}$$



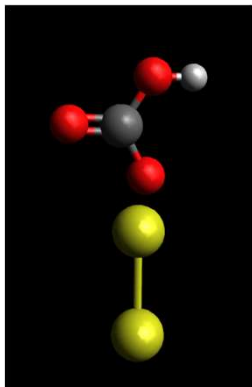
Spektrum Absorbansi : MPA

$$\lambda_{ref} = 524 \text{ nm}$$
$$\lambda_1 = 524 \text{ nm}$$
$$\lambda_2 = 524 \text{ nm}$$



Hasil simulasi perhitungan frekuensi vibrasi Au-CA dengan ORCA

Struktur

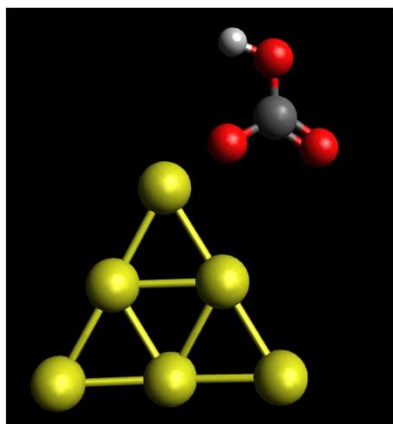


Perhitungan frekuensi vibrasi

0:	0.00 cm ⁻¹	11:	251.61 cm ⁻¹
1:	0.00 cm ⁻¹	12:	529.10 cm ⁻¹
2:	0.00 cm ⁻¹	13:	567.40 cm ⁻¹
3:	0.00 cm ⁻¹	14:	636.31 cm ⁻¹
4:	0.00 cm ⁻¹	15:	731.00 cm ⁻¹
5:	0.00 cm ⁻¹	16:	912.33 cm ⁻¹
6:	35.13 cm ⁻¹	17:	1172.15 cm ⁻¹
7:	40.39 cm ⁻¹	18:	1233.98 cm ⁻¹
8:	111.38 cm ⁻¹	19:	1703.01 cm ⁻¹
9:	114.47 cm ⁻¹	20:	3666.36 cm ⁻¹
10:	148.97 cm ⁻¹		

Hasil simulasi perhitungan frekuensi vibrasi Au-CA dengan ORCA

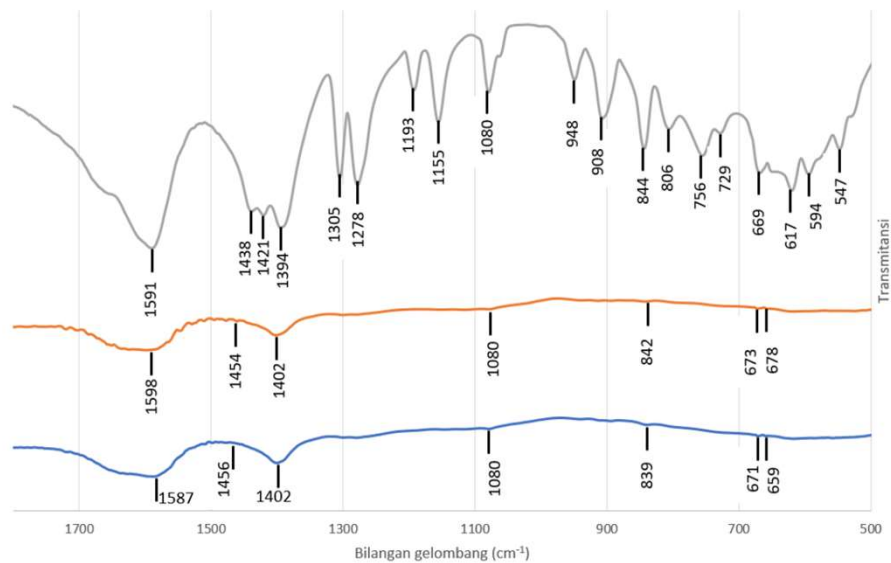
Struktur



Perhitungan frekuensi vibrasi

0:	0.00 cm ⁻¹	17:	96.75 cm ⁻¹
1:	0.00 cm ⁻¹	18:	109.83 cm ⁻¹
2:	0.00 cm ⁻¹	19:	112.94 cm ⁻¹
3:	0.00 cm ⁻¹	20:	115.06 cm ⁻¹
4:	0.00 cm ⁻¹	21:	155.83 cm ⁻¹
5:	0.00 cm ⁻¹	22:	160.50 cm ⁻¹
6:	16.48 cm ⁻¹	23:	246.09 cm ⁻¹
7:	21.34 cm ⁻¹	24:	531.46 cm ⁻¹
8:	30.90 cm ⁻¹	25:	566.68 cm ⁻¹
9:	32.48 cm ⁻¹	26:	632.12 cm ⁻¹
10:	33.60 cm ⁻¹	27:	733.97 cm ⁻¹
11:	45.82 cm ⁻¹	28:	917.67 cm ⁻¹
12:	49.89 cm ⁻¹	29:	1166.99 cm ⁻¹
13:	54.03 cm ⁻¹	30:	1232.53 cm ⁻¹
14:	65.97 cm ⁻¹	31:	1695.97 cm ⁻¹
15:	68.19 cm ⁻¹	32:	3670.48 cm ⁻¹
16:	90.81 cm ⁻¹		

Referensi FTIR



Referensi FTIR

Bilangan Gelombang (cm^{-1})			<i>Band Assignment</i>
Sitrat	AuNP-Sitrat		
	1x purifikasi	2x purifikasi	
1591	1587	1598	$\nu_{as}(\text{COO})$
1438-1421	1454	1456	$\delta(\text{O-H})$
1394	1402	1402	$\nu_s(\text{COO})$
1305-1080	1080	1080	$\nu(\text{C-O})$
948-756	839	842	$\delta(\text{C-H})$

Simulasi Absorbansi dari monolayer

