

LAMPIRAN A
CONTOH PERHITUNGAN

Lampiran A. Contoh Perhitungan

A.1 Perhitungan Pembuatan Larutan H₂SO₄

1) Diketahui:

Konsentrasi bahan baku asam sulfat (H₂SO₄) = 98%

Berat jenis asam sulfat (H₂SO₄) = 1,83 g/ml

Berat molekul = 98 g/mol

2) Perhitungan

$$\begin{aligned} \text{➤ Konsentrasi asam sulfat (H}_2\text{SO}_4\text{) (M)} &= \frac{10 \times 98\% \times \text{Berat Jenis}}{\text{BM}} \\ &= \frac{10 \times 98\% \times 1,83}{98} \\ &= 18,3 \text{ M} \approx 18 \text{ M} \end{aligned}$$

➤ Pengenceran konsentrasi menjadi 5 M dan 10 M dengan volume 100 ml

- Untuk 5 M

$$M_1 \times V_1 = M_2 \times V_2$$

$$18 \times V_1 = 5 \text{ M} \times 100 \text{ ml}$$

$$V_1 = 27,77 \text{ ml}$$

Kebutuhan aquades = 72,23 ml

- Untuk 10 M

$$M_1 \times V_1 = M_2 \times V_2$$

$$18 \times V_1 = 10 \text{ M} \times 100 \text{ ml}$$

$$V_1 = 55,55 \text{ ml}$$

Kebutuhan aquades = 44,45 ml

A.2 Perhitungan Pembuatan Larutan NaOH 1 M dan 10 M

➤ Untuk NaOH 1 M

$$M = \frac{\text{Massa}}{\text{Mr}} \times \frac{1000}{V(\text{ml})}$$

$$1 \text{ M} = \frac{\text{Massa}}{40} \times \frac{1000}{100 \text{ ml}}$$

$$\text{Massa} = \frac{4.000}{1000}$$

$$= 4 \text{ g}$$

➤ Untuk NaOH 10 M

$$M = \frac{\text{Massa}}{\text{Mr}} \times \frac{1000}{V(\text{ml})}$$

$$10 \text{ M} = \frac{\text{Massa}}{40} \times \frac{1000}{100 \text{ ml}}$$

$$\text{Massa} = \frac{40.000}{1000}$$

$$= 40 \text{ g}$$

A.3 Perhitungan Larutan Pelindian *Monosodium Glutamate* (MSG)

1) Diketahui:

$$\text{Perbandingan S:L} = 1:8$$

$$\text{Massa molekul relatif MSG} = 187,127 \text{ g/mol}$$

$$\text{Oksidator hidrogen peroksida} = 1\%$$

$$\text{NaOH} = 10 \text{ M}$$

$$\text{Kebutuhan MSG} = 1 \text{ M}$$

2) Perhitungan

➤ Konsentrasi MSG untuk 1 M

$$\text{Molaritas} = \frac{\text{Massa}}{187,127 \text{ g/mol}} \times \frac{1000}{V(\text{ml})}$$

$$1 \text{ M} = \frac{\text{Massa}}{187,127 \text{ g/mol}} \times \frac{1000}{128 \text{ ml}}$$

$$\text{Massa} = \frac{187,127 \text{ g/mol} \times 128}{1000}$$

$$\text{Massa} = 23,95 \text{ g}$$

➤ Kebutuhan aquades

$$\text{Aquades} = 128 \text{ ml} - \text{Massa MSG}$$

$$\text{Aquades} = 128 \text{ ml} - 23,95$$

$$\text{Aquades} = 104,05 \text{ ml}$$

➤ Oksidator hidrogen peroksida 1% (dalam 128 ml)

$$\text{Oksidator H}_2\text{O}_2 \text{ 1\%} = 1\% \times 128 \text{ ml}$$

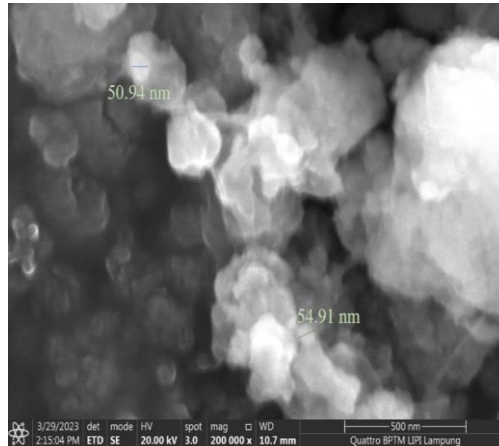
$$\text{Oksidator H}_2\text{O}_2 \text{ 1\%} = \frac{1}{100} \times 128 \text{ ml}$$

$$\text{Oksidator H}_2\text{O}_2 \text{ 1\%} = 1,28 \text{ ml}$$

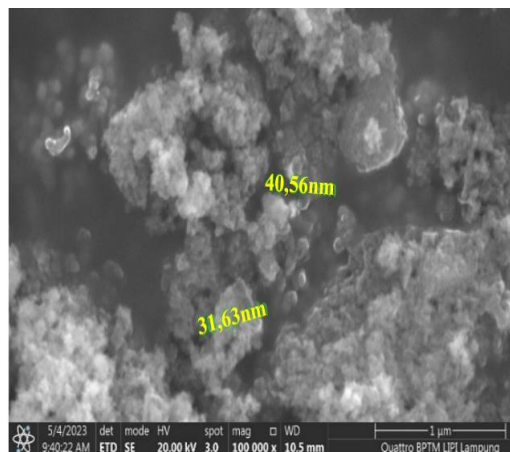
LAMPIRAN B
DATA PENELITIAN

Lampiran B. Data Penelitian

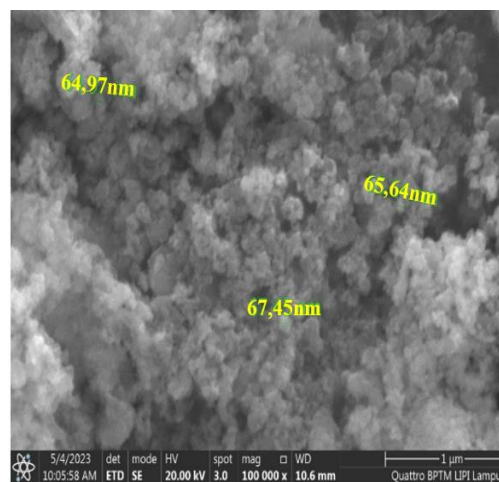
B.1 Data SEM Sintesis Nanopartikel Nikel Kondisi Basa



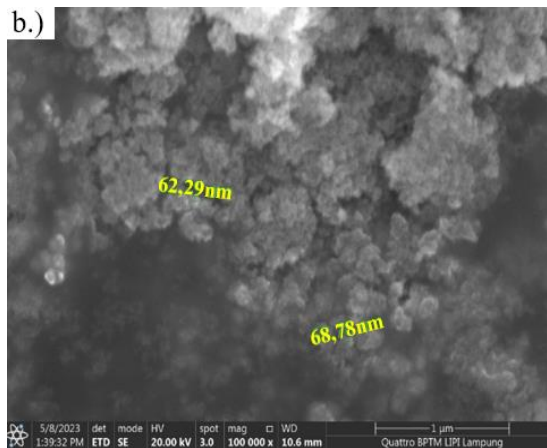
Gambar B.1 Hasil SEM Sintesis Kondisi Basa Selama 24 Jam



Gambar B.2 Hasil SEM Sintesis Kondisi Basa Selama 48 Jam (Ultrasonik)

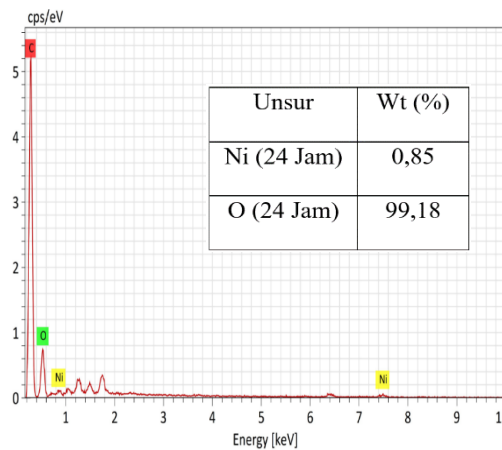


Gambar B.3 Hasil SEM Sintesis Kondisi Basa Selama 72 Jam

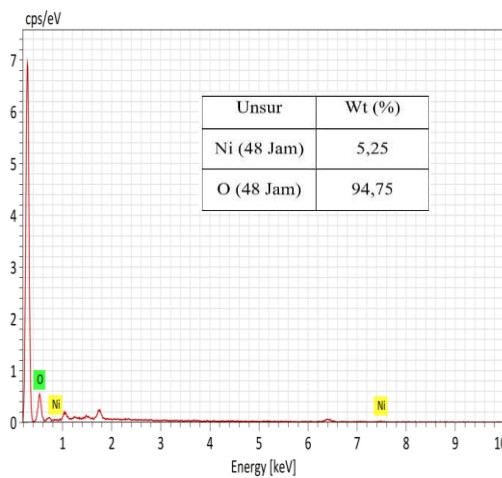


Gambar B.4 Hasil SEM Sintesis Kondisi Basa Selama 48 Jam (Tanpa Ultrasonik)

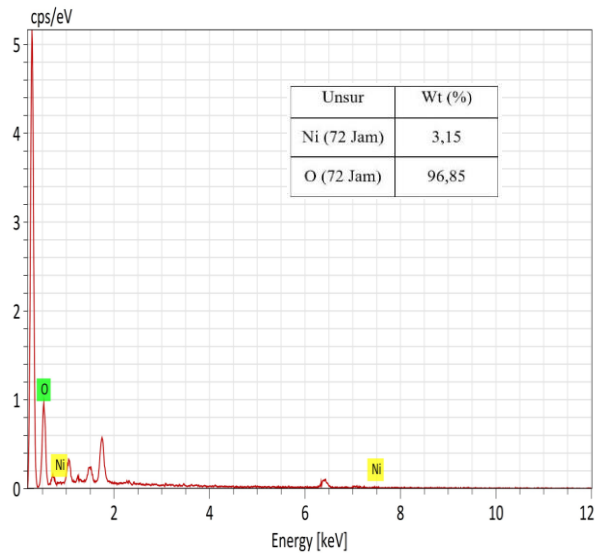
B.2 Data EDS Sintesis Nanopartikel Nikel Kondisi Basa



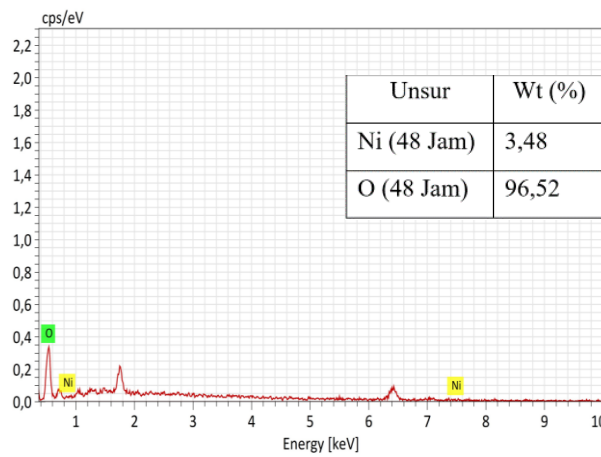
Gambar B.5 Hasil EDS Sintesis Kondisi Basa Selama 24 Jam



Gambar B.6 Hasil EDS Sintesis Kondisi Basa Selama 48 Jam (Ultrasonik)



Gambar B.7 Hasil EDS Sintesis Kondisi Basa Selama 72 Jam



Gambar B.8 Hasil EDS Sintesis Kondisi Basa Selama 48 Jam (Tanpa Ultrasonik)

B.3 Data PSA Sintesis Nanopartikel Nikel Kondisi Basa

Tabel B.1 Data PSA Sintesis Basa 24 Jam

<i>Peak</i>	<i>S.P Area Ratio</i>	<i>Mean</i>	<i>S.D</i>	<i>Mode</i>
1	0,43	38,0 nm	6,3 nm	36,9 nm
2	0,57	136,1 nm	33,2 nm	127,2 nm
3	-	-	-	-
Total	1,00	94,3 nm	54,8 nm	36,9 nm

Tabel B.2 Data PSA Sintesis Basa 48 Jam (Ultrasonik)

<i>Peak</i>	<i>S.P Area Ratio</i>	<i>Mean</i>	<i>S.D</i>	<i>Mode</i>
1	0,64	47,3 nm	12,9 nm	42,0 nm
2	0,36	177,2 nm	56,0 nm	181,3 nm
3	-	-	-	-
Total	1,00	94,3 nm	71,7 nm	42,0 nm

Tabel B.3 Data *Particle Size Analyzer* (PSA) Sintesis Basa 72 Jam

<i>Peak</i>	<i>S.P Area Ratio</i>	<i>Mean</i>	<i>S.D</i>	<i>Mode</i>
1	0,37	36,1 nm	5,0 nm	33,9 nm
2	0,63	148,3 nm	32,3 nm	142,9 nm
3	-	-	-	-
Total	1,00	106,7 nm	60,0 nm	142,9 nm

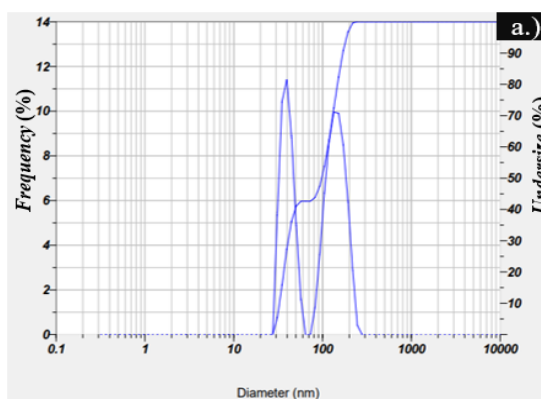
Tabel B.4 Data *Particle Size Analyzer* (PSA) Sintesis Basa 48 Jam (Tanpa Ultrasonik)

<i>Peak</i>	<i>S.P Area Ratio</i>	<i>Mean</i>	<i>S.D</i>	<i>Mode</i>
1	0,45	36,3 nm	5,3 nm	33,8 nm
2	0,55	141,5 nm	30,0 nm	142,1 nm
3	-	-	-	-
Total	1,00	94,3 nm	57,0 nm	33,8 nm

Cumulant Operations

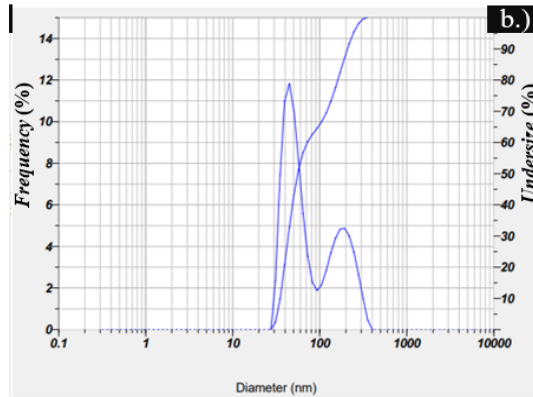
Z-Average : 68,9 nm

PI : 0,407



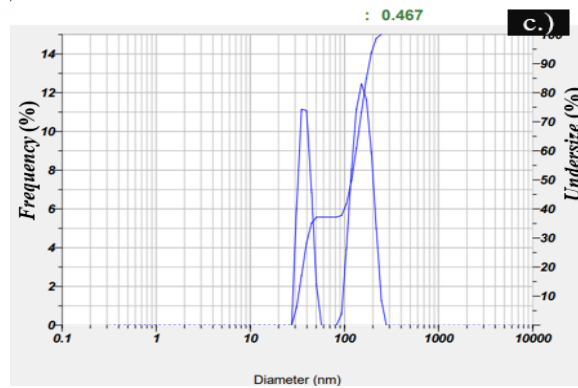
Gambar B.9 Grafik PSA Sintesis Kondisi Basa Selama 24 Jam

Cumulant Operations
Z-Average : 63,7 nm
PI : 0,335



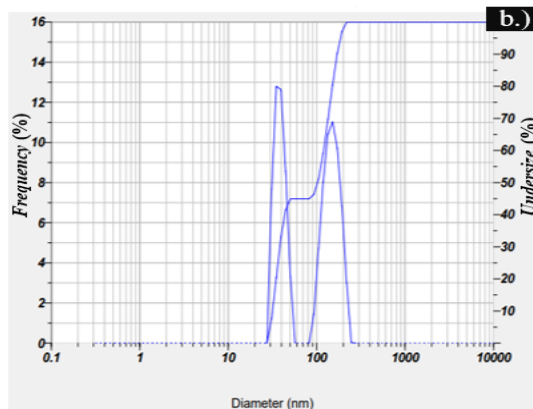
Gambar B.10 Grafik PSA Sintesis Kondisi Basa Selama 48 Jam (Ultrasonik)

Cumulant Operations
Z-Average : 76,4 nm
PI : 0,467



Gambar B.11 Grafik PSA Sintesis Kondisi Basa Selama 72 Jam

Cumulant Operations
Z-Average : 67,2 nm
PI : 0,427



Gambar B.12 Grafik PSA Sintesis Kondisi Basa Selama 48 Jam (Tanpa Ultrasonik)

LAMPIRAN C
GAMBAR ALAT DAN BAHAN

Lampiran C. Gambar Alat dan Bahan



Gambar C.1 Batang Pengaduk



Gambar C.2 Beaker 50 ml dan 250 ml



Gambar C.3 Botol *Centrifuge*



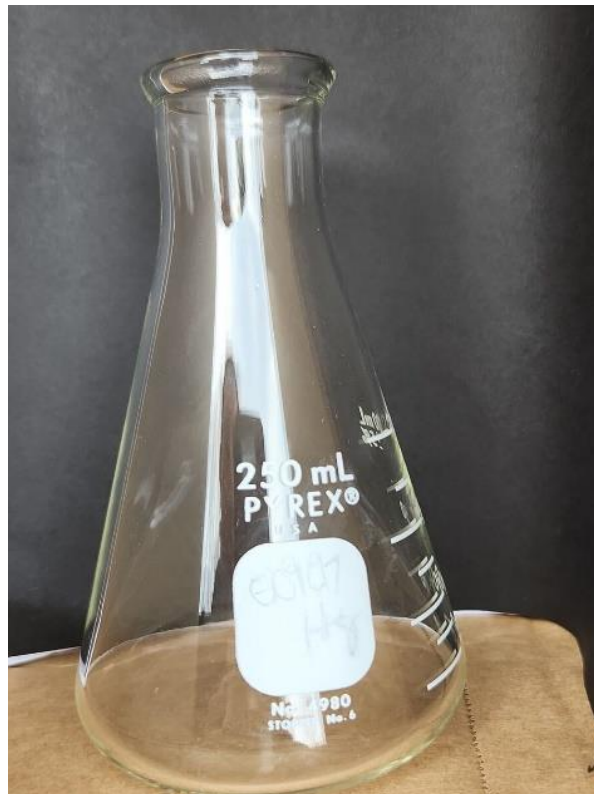
Gambar C.4 *Bulb*



Gambar C.5 Corong



Gambar C.6 Centrifuge



Gambar C.7 Erlenmeyer 250 ml



Gambar C.8 Gelas Ukur 100 ml



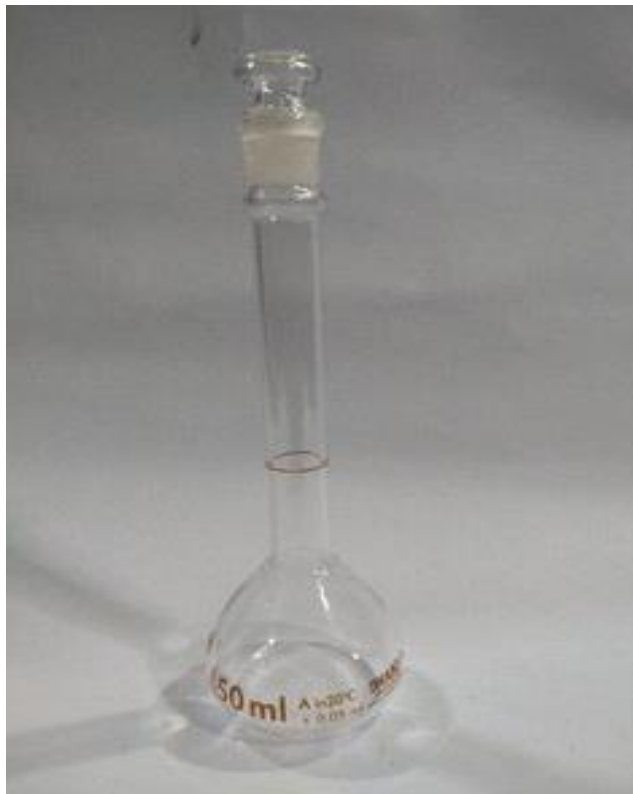
Gambar C.9 Hotplate



Gambar C.10 Kertas pH meter



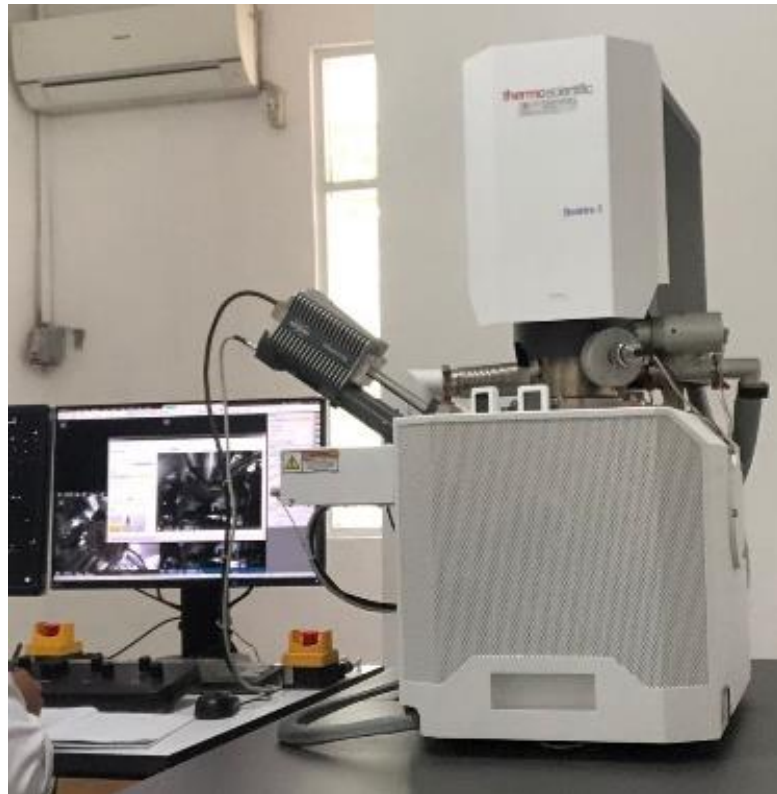
Gambar C.11 Kertas Saring



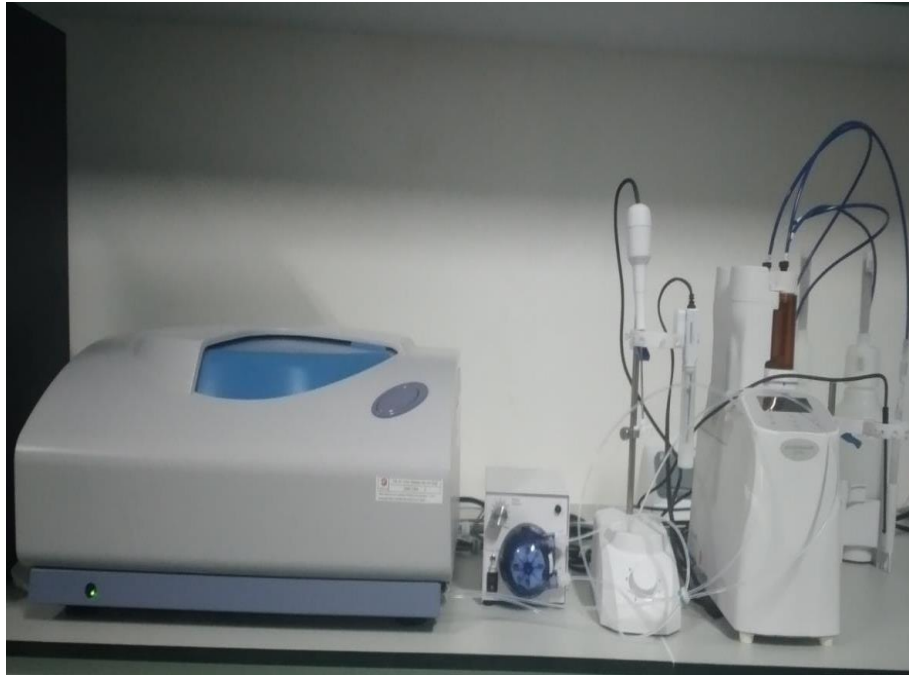
Gambar C.12 Labu Ukur



Gambar C.13 *Magnetic Stirrer*



Gambar C.14 *Mesin SEM-EDS*



Gambar C.15 Mesin PSA



Gambar C.16 Neraca Digital



Gambar C.17 Oven



Gambar C.18 Plastik Wrap



Gambar C.19 Plastik Sampel



Gambar C.20 Pipet Tetes



Gambar C.21 Pipet Ukur



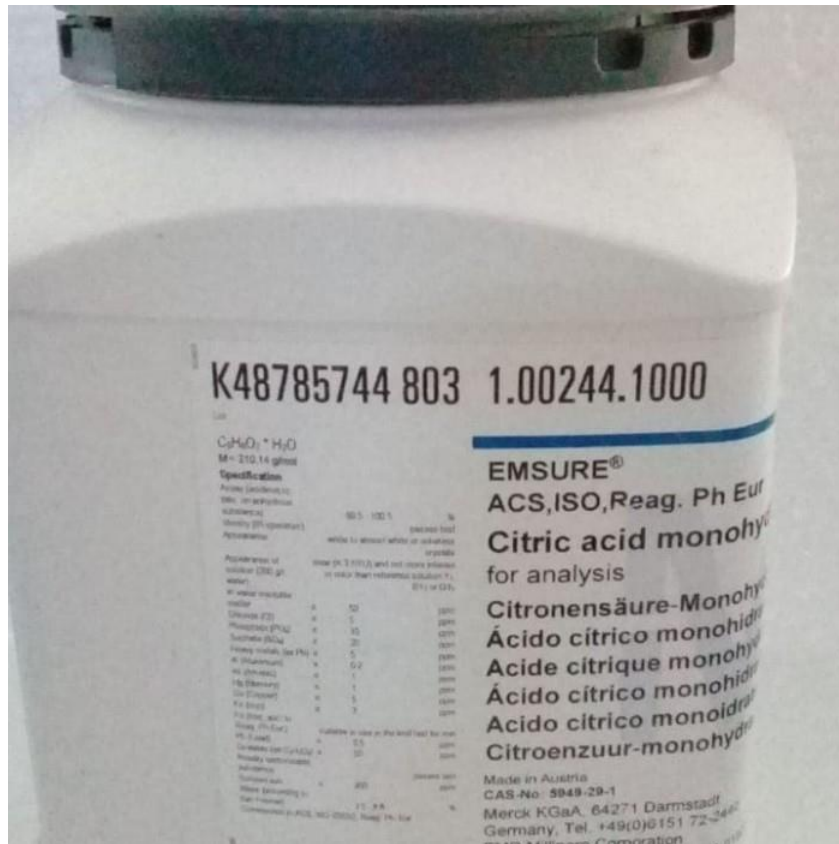
Gambar C.22 Sarung Tangan *Latex*



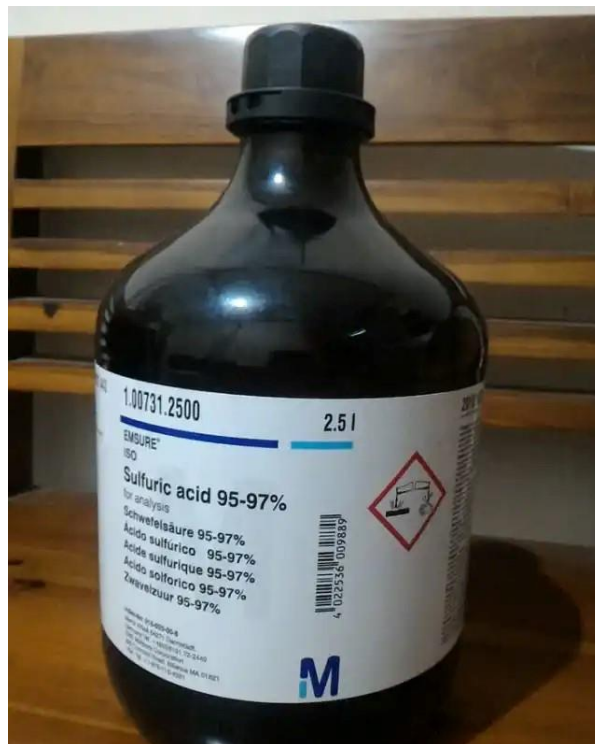
Gambar C.23 Sarung Tangan *Oven*



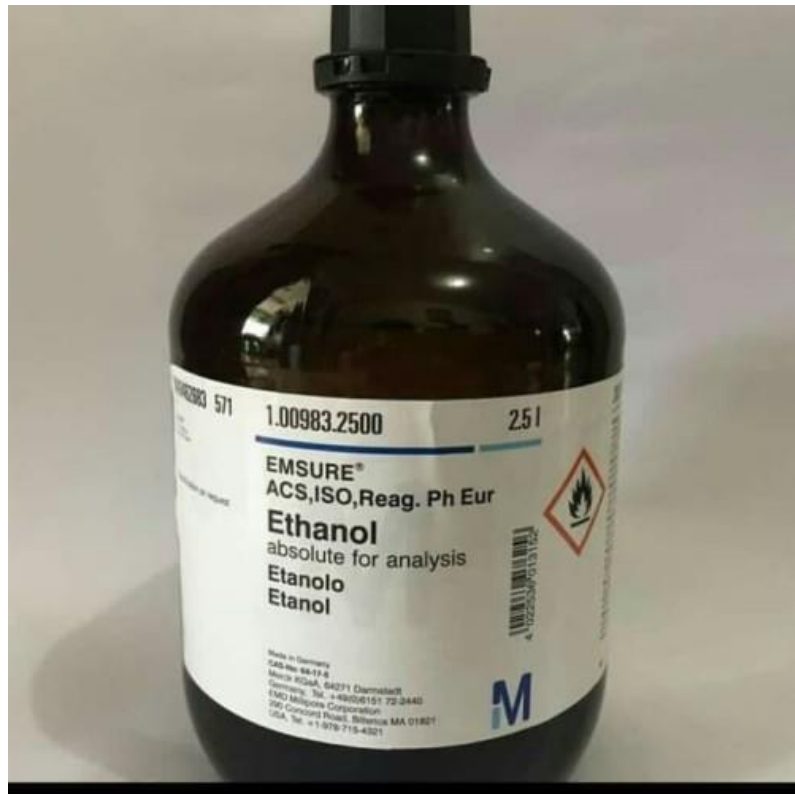
Gambar C.24 *Aquadest*



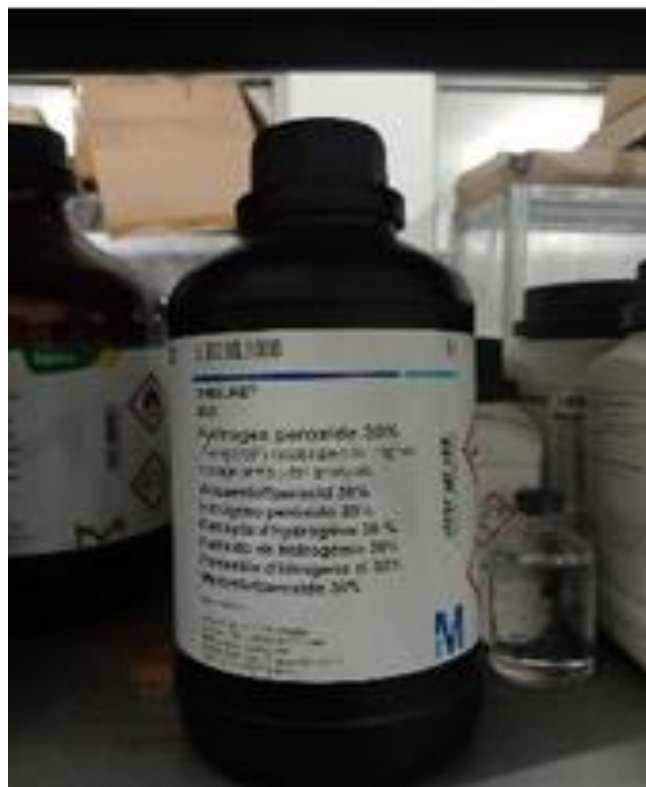
Gambar C.25 Asam Sitrat Monohidrat



Gambar C.26 Asam Sulfat



Gambar C.27 *Etanol*



Gambar C.28 Hidrogen Peroksida