Lampiran 1

Tabel Potensial Reduksi Standar pada 25 °C

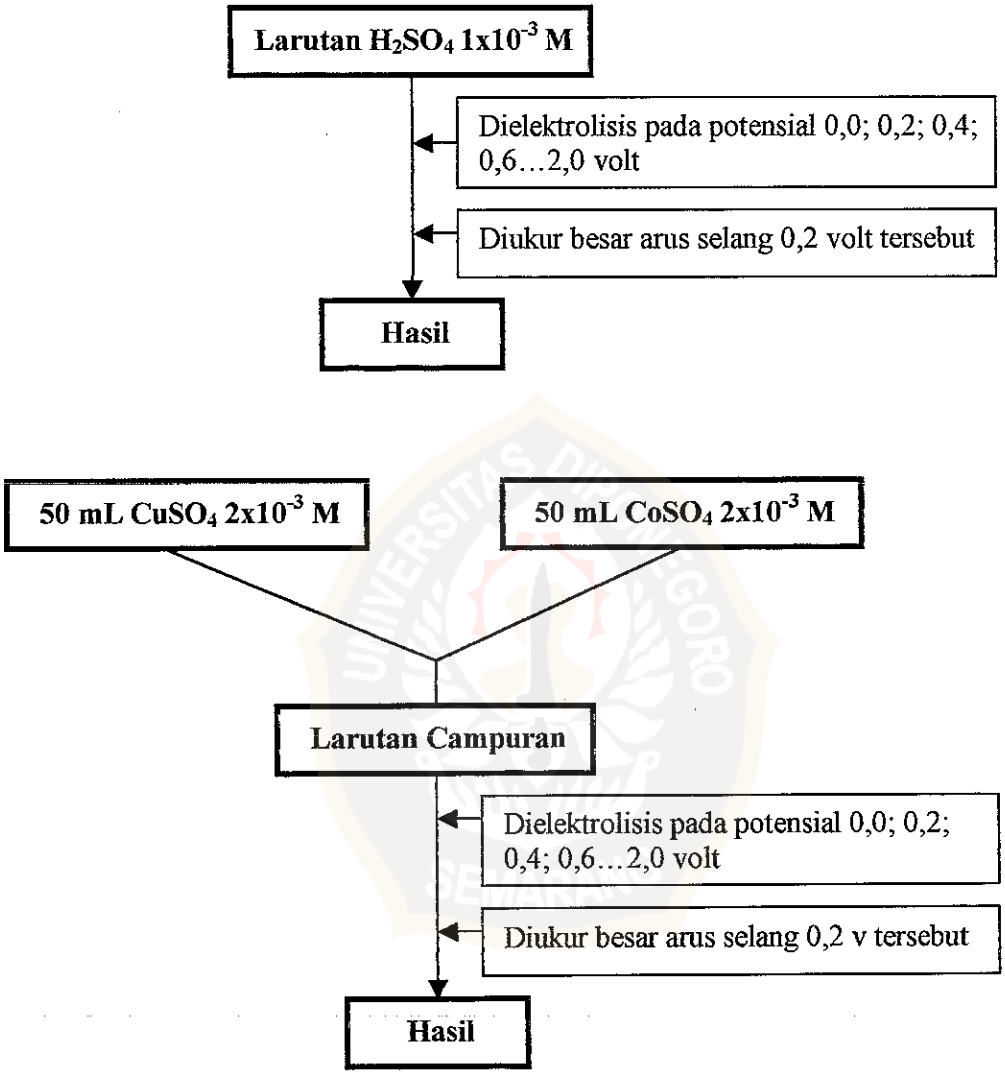
Setengah Reaksi	E^o (V)
$F_2(g) + 2e^{-1} \Leftrightarrow 2F$	+2.87
$PbO_2(s) + SO_4^{2+}(aq) + 4H^+ + 2e^- \Leftrightarrow PbSO_4(s) + H_2O$	+1.69
$2HOCl(aq) + 2H^+(aq) + 2e^- \Leftrightarrow Cl_2(g) + 2H_2O$	+1.63
$MnO_4^{4-}(aq) + 8H^+(aq) + 5e^- \Leftrightarrow Mn^{2+}(aq) + 4H_2O$	+1.51
$PbO_2(s) + 4H^+(aq) + 2e^- \Leftrightarrow Pb^{2+}(aq) + 2H_2O$	+1.46
$BrO_3^-(aq) + 6H^+(aq) + 6e^- \Leftrightarrow Br^-(aq) + 3H_2O$	+1.44
$Au^{3+}(aq) + 3e^- \Leftrightarrow Au(s)$	+1.42
$Cl_2(g) + + 2e \Leftrightarrow Cl^-(aq)$	+1.36
$O_2(g) + 4H^+ + 4e^- \Leftrightarrow 2H_2O$	+1.23
$Br_2(aq) + 2e^- \Leftrightarrow 2Br^-(aq)$	+1.07
$NO^{3-}(aq) + 4H^+(aq) + 3e^- \Leftrightarrow NO(g) + 2H_2O$	+0.96
$Ag^+(aq) + e^- \Leftrightarrow Ag(s)$	+0.80
$Fe^{3+}(aq) + e^- \Leftrightarrow Fe^{2+}(aq)$	+0.77
$I_2(s) + 2e^- \Leftrightarrow 2I^-(aq)$	+0.54
$NiO_2(aq) + 4H^+(aq) + 3e^- \Leftrightarrow Ni(OH)_2(s) + 2OH^-(aq)$	+0.49
$Cu^{2+} + 2e^- \Leftrightarrow Cu(s)$	+0.34
$SO_4^{2-} + 4H^+(aq) + 2e^- \Leftrightarrow H_2SO_3(aq) + H_2O$	+0.17
$2H^+(aq) + 2e^- \Leftrightarrow H_2(g)$	0.00

Setengah Reaksi	E^o (V)
$Sn^{2+}(aq) \Leftrightarrow Ni$	-0.14
$Ni^{2+}(aq) + 2e^- \Leftrightarrow Ni(s)$	-0.25
$CO^{2+}(aq) + 2e^- \Leftrightarrow CO(s)$	-0.28
$PbSO_4(s) + 2e^- \Leftrightarrow Pb(s) + SO_4^{2-}(aq)$	-0.36
$Cd^{2+}(aq) + 2e^- \Leftrightarrow Cd(s)$	-0.40
$Fe^{2+}(aq) + 2e^- \Leftrightarrow Fe(s)$	-0.44
$Cr^{3+}(aq) + 3e^- \Leftrightarrow Cr(s)$	-0.74
$Zn^{2+}(aq) + 2e^- \Leftrightarrow Zn(s)$	-0.83
$H_2O(aq) + 2e^- \Leftrightarrow H_2(g) + 2OH^-$	-1.66
$Mg^{2+} + 2e^- \Leftrightarrow Mg(s)$	-2.37
$Na^+(aq) + e^- \Leftrightarrow Na(s)$	-2.71
$Ca^{2+}(aq) + 2e^- \Leftrightarrow Ca(s)$	-2.76
$K^+(aq) + e^- \Leftrightarrow K(s)$	-2.92
$Li^+(aq) + 2e^- \Leftrightarrow Li(s)$	-3.05

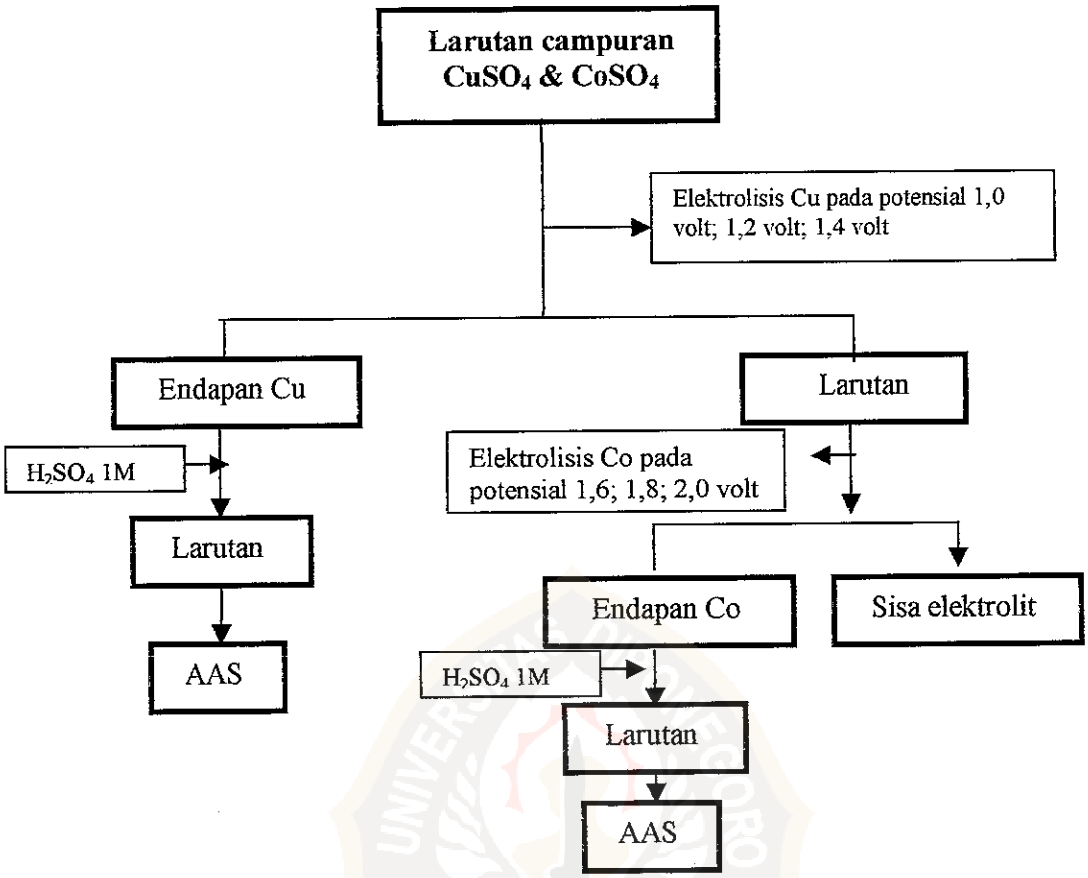
Lampiran 2

Skema Kerja

A.Penentuan Potensial Dekomposisi

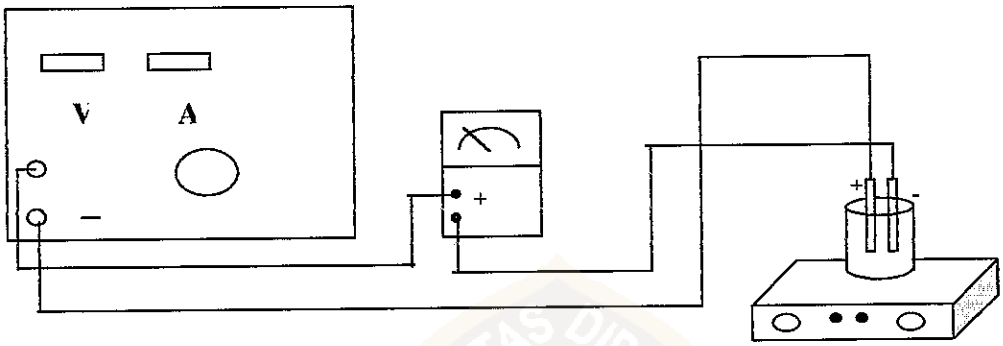


B. Elektrolisis



Lampiran 3

Gambar Rangkaian Alat



Keterangan :

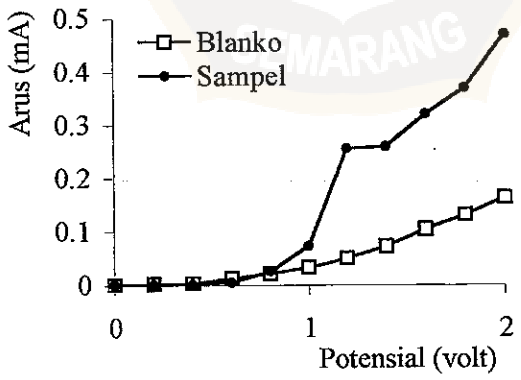
Elektroda (–) = Platina
Elektroda (+)= Karbon
Elektrolit = Larutan $CuSO_4$ dan $CoSO_4$ 0,001M

Lampiran 4

Hasil Penelitian Penentuan Potensial Dekomposisi

A. Data Potensial terhadap arus pada penentuan potensial dekomposisi.

Potensial (volt)	Arus (mA)	
	Blanko	Sampel
0	0,001	0,001
0,2	0,003	0,002
0,4	0,004	0,002
0,6	0,013	0,006
0,8	0,022	0,026
1,0	0,033	0,073
1,2	0,050	0,255
1,4	0,072	0,260
1,6	0,104	0,320
1,8	0,131	0,370
2,0	0,163	0,470



B. Grafik Penentuan Potensial Dekomposisi

Lampiran 5

Perhitungan

A. Perhitungan Berat Tembaga Hasil Elektrolisis

1. Elektrolisis Cu 1,0 volt

   Hasil analisis AAS = 3,535 ppm

   Dalam 1 L larutan mengandung 3,535 mg Cu

   Dalam 20 ml sampel $= \frac{20\ ml}{1000\ ml}\ x\ 3{,}535\ mg = 0{,}0707\ mg$

   $= 7{,}07 . 10^{-5}\ g\ Cu$

2. Elektrolisis Cu 1,2 volt

   Hasil analisis AAS = 1,516 ppm

   Dalam 1 L larutan mengandung 1,516 mg Cu

   Dalam 20 ml sampel $= \frac{20\ ml}{1000\ ml}\ x\ 1{,}516\ mg = 0{,}03032\ mg$

   $= 3{,}032 . 10^{-5}\ g\ Cu$

3. Elektrolisis Cu 1,4 volt

   Hasil analisis AAS = 0,685 ppm

   Dalam 1 L larutan mengandung 0,685 mg Cu

   Dalam 20 ml sampel $= \frac{20\ ml}{1000\ ml}\ x\ 0{,}685\ mg = 0{,}0137$ mg

   $= 1{,}37 . 10^{-5}\ g\ Cu$

B. Perhitungan Berat Kobalt Hasil Elektrolisis

1. Elektrolisis Co 1,6 volt

Hasil analisis AAS = 6,343 ppm

Dalam 1 L larutan mengandung 6,343 mg

Dalam 20 ml sampel $= \frac{20\ ml}{1000\ ml}\ x\ 6{,}343\ mg\ =\ 0{,}12686\ mg$

$= 1{,}2686\ .\ 10^{-4}\ g\ Co$

2. Elektrolisis Co 1,8 volt

Hasil analisis AAS = 4,019 ppm

Dalam 1 L larutan mengandung 4,019 mg Co

Dalam 20 ml sampel $= \frac{20\ ml}{1000\ ml}\ x\ 4{,}019\ mg\ =\ 0{,}08038$ mg

$= 0{,}8038\ .\ 10^{-4}\ g\ Co$

3. Elektrolisis Co 2,0 volt

Hasil analisis AAS = 3,112 ppm

Dalam 1 L larutan mengandung 3,112 mg Co

Dalam 20 ml sampel $= \frac{20\ ml}{1000\ ml}\ x\ 3{,}112\ mg\ =\ 0{,}06224$ mg

$= 0{,}6224\ .\ 10^{-4}\ g\ Co$

C. Perhitungan Rendemen Faraday

1. Elektrolisis Tembaga pada 1,0 volt

$Q_{teori} = i\ .\ t$

$= 0{,}039\ .10^{-3}\ A\ .\ 16200\ dt$

$= 0{,}6318\ C$

$$Q_{app} = \frac{W_{Cu} \,.\, n \,.\, 96500}{Ar_{Cu}}$$

$$= \frac{0{,}0707 \; x \; 10^{-3} \; g \,.\, 2 \,.\, 96500}{63{,}5}$$

$$= 0{,}21488 \; C$$

$$RF = \frac{Q_{app}}{Q_{teori}} \; x \; 100\%$$

$$= \frac{0{,}21488}{0{,}6318} \; x \; 100\% = 34{,}0102\%$$

2. Elektrolisis Tembaga pada 1,2 volt

$$Q_{teori} = 0{,}12996 \,.\, 10^{-3} \; A \;.\; 16200 \; dt$$

$$= 2{,}1053 \; C$$

$$Q_{app} = \frac{0{,}0303 \; x \; 10^{-3} \; g \,.\, 2 \,.\, 96500}{63{,}5}$$

$$= 0{,}09209 \; C$$

$$RF = \frac{0{,}09209}{2{,}1053} \; x \; 100\% = 4{,}3742\%$$

3. Elektrolisis Tembaga pada 1,4 volt

$$Q_{teori} = 0{,}315 \,.\, 10^{-3} \; A \;.\; 16200 \; dt$$

$$= 5{,}103 \; C$$

$$Q_{app} = \frac{0{,}0137 \; x \; 10^{-3} \; g \,.\, 2 \,.\, 96500}{63{,}5}$$

$$= 0{,}04164 \; C$$

$$RF = \frac{0{,}04164}{5{,}103} \; x \; 100\% = 0{,}81599\%$$

4. Elektrolisis Kobalt pada 1,6 volt

$$Q_{teori} = 0{,}598 \cdot 10^{-3}\ A\ .\ 16200\ dt$$
$$= 9{,}6876\ C$$
$$Q_{app} = \frac{0{,}12686\ x\ 10^{-3}\ g\ .\ 2\ .\ 96500}{58{,}9}$$
$$= 0{,}4157\ C$$
$$RF = \frac{0{,}4157}{9{,}6876}\ x\ 100\% = 4{,}2909\%$$

5. Elektrolisis Kobalt 1,8 volt

$$Q_{teori} = 0{,}9898 \cdot 10^{-3}\ A\ .\ 16200\ dt$$
$$= 16{,}0348\ C$$
$$Q_{app} = \frac{0{,}08038\ x\ 10^{-3}\ g\ .\ 2\ .\ 96500}{58{,}9}$$
$$= 0{,}2634\ C$$
$$RF = \frac{0{,}2634}{16{,}0348}\ x\ 100\% = 1{,}6427\%$$

6. Elektrolisis Kobalt pada 2,0 volt

$$Q_{teori} = 1{,}2025 \cdot 10^{-3}\ A\ .\ 16200\ dt$$
$$= 19{,}4805\ C$$
$$Q_{app} = \frac{0{,}06224\ x\ 10^{-3}\ g\ .\ 2\ .\ 96500}{58{,}9}$$
$$= 0{,}2039\ C$$
$$RF = \frac{0{,}2039}{19{,}4805}\ x\ 100\% = 1{,}0467\%$$