LAMPIRAN A

CONTOH PERHITUNGAN

Lampiran A. Contoh Perhitungan

1. Perhitungan Nilai Ms

Ms (°C) = 1302–42(%Cr) – 61(%Ni) – 33(%Mn) – 28(%Si) – 1667(%C + %N)

a. Paduan A

Ms (°C) = 1302 – 42(0,08) – 33(13,86) – 28(4,88) – 1667(0,21)

= 372,91 °C

b. Paduan B

Ms (°C) = 1302 – 42(0,09) – 33(13,8) – 28(4,9) – 1667(0,2)

= 372,64 °C

c. Paduan C

Ms (°C) = 1302 – 42(0,09) – 61(8,04) - 33(13,94) – 28(4,97) – 1667(0,22)

= -151,56°C

d. Paduan.D

Ms (°C) = 1302 – 42(10,23) - 61(8,06) – 33(5,03) – 28(4,9) – 1667(0,19)

= -527,9°C

LAMPIRAN B

DATA PENELITIAN

Lampiran B. Data Penelitian

1. Data Komposisi Material

Tabel B.1 Komposisi Kimia *Shape memory alloy*

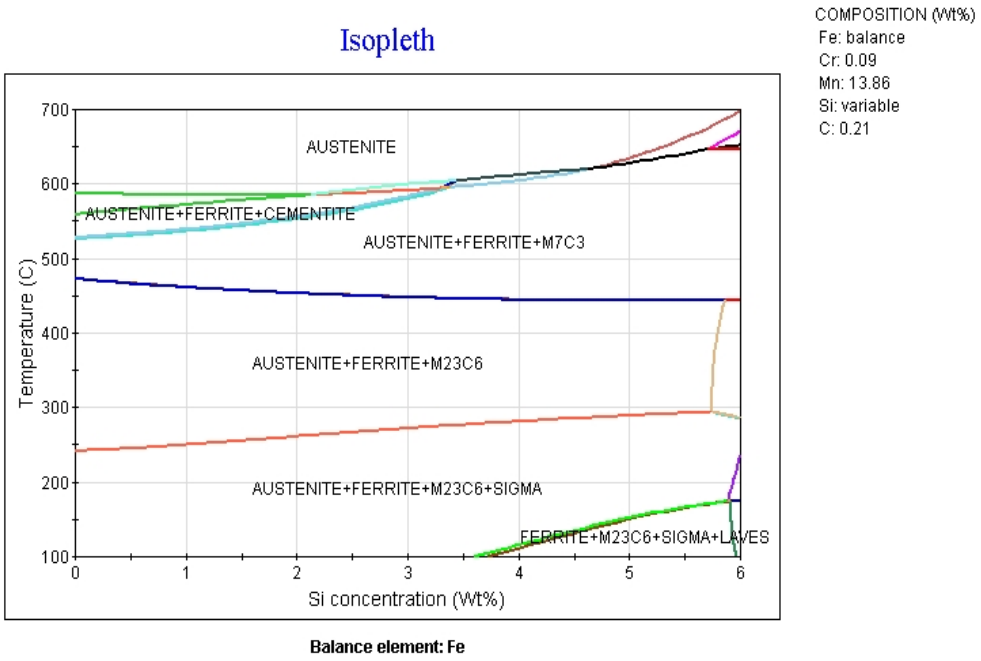
Alloy	Elements (wt %)						
	Fe	**Mn**	**Si**	**Mo**	**Ni**	**Cr**	**C**
A	80,97	13,86	4,88	0	0	0,08	0,21
B	78,97	13,8	4,9	2,04	0	0,09	0,2
C	70,64	13,94	4,97	2,1	8,04	0,09	0,22
D	60,96	13,5	5,03	2,03	8,06	10,23	0,19

2. Data Ukuran Butir

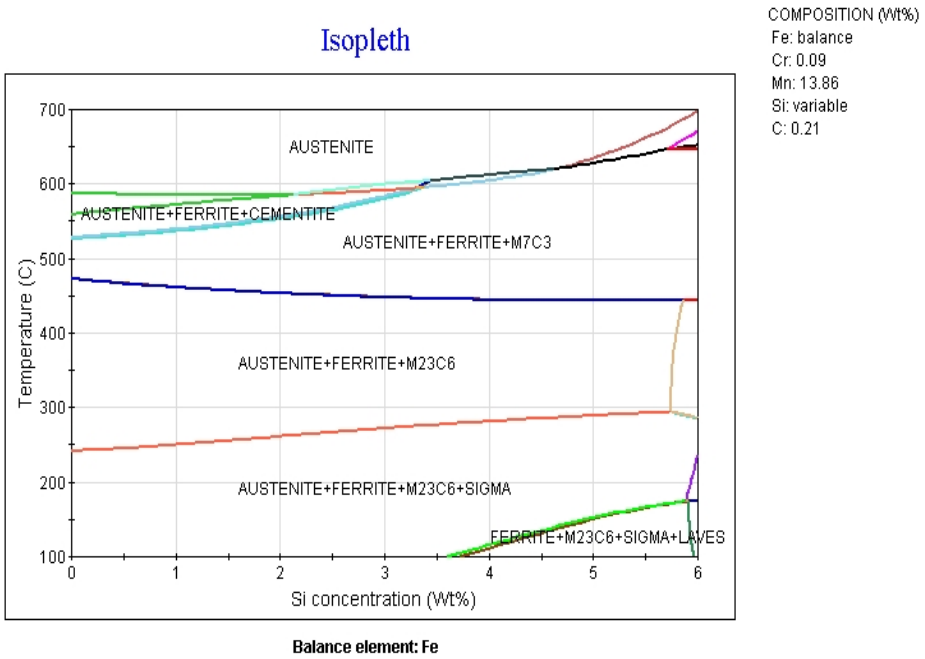
Tabel B.2 Data Hasil Ukuran Butir Reduksi 50% dan 80%

Sampel	Ukuran Butir Rata-Rata (µm)
50.A	41,44
50.B	26
50.C	16,31
50.D	13,60
80.A	31,36
80.B	17,11
80.C	16,27
80.D	13,46

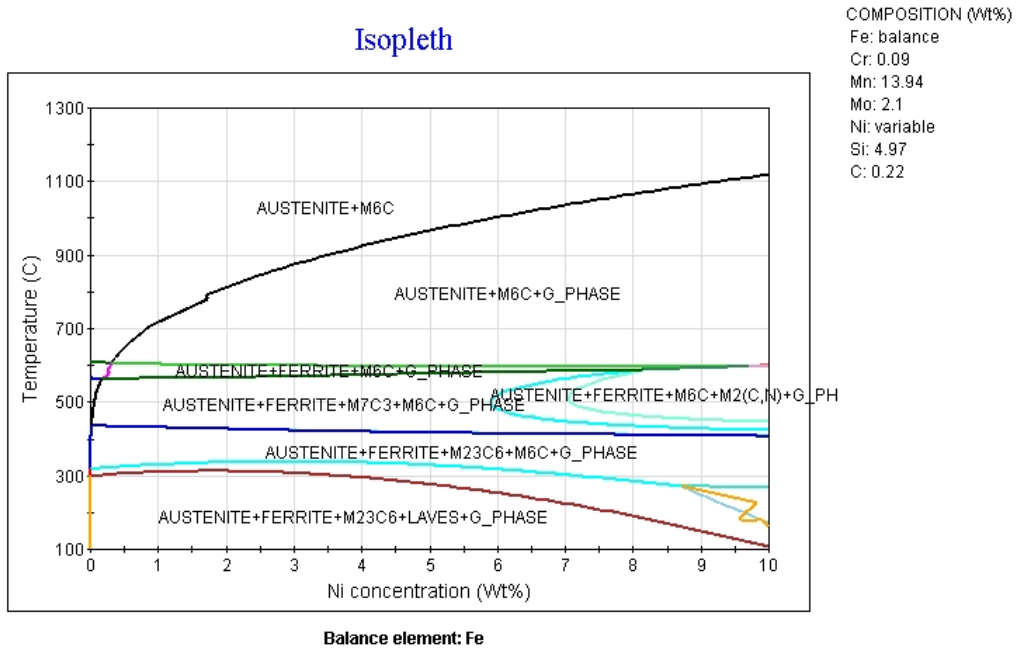
3. Data Diagram Fasa Menggunakan Jmatpro



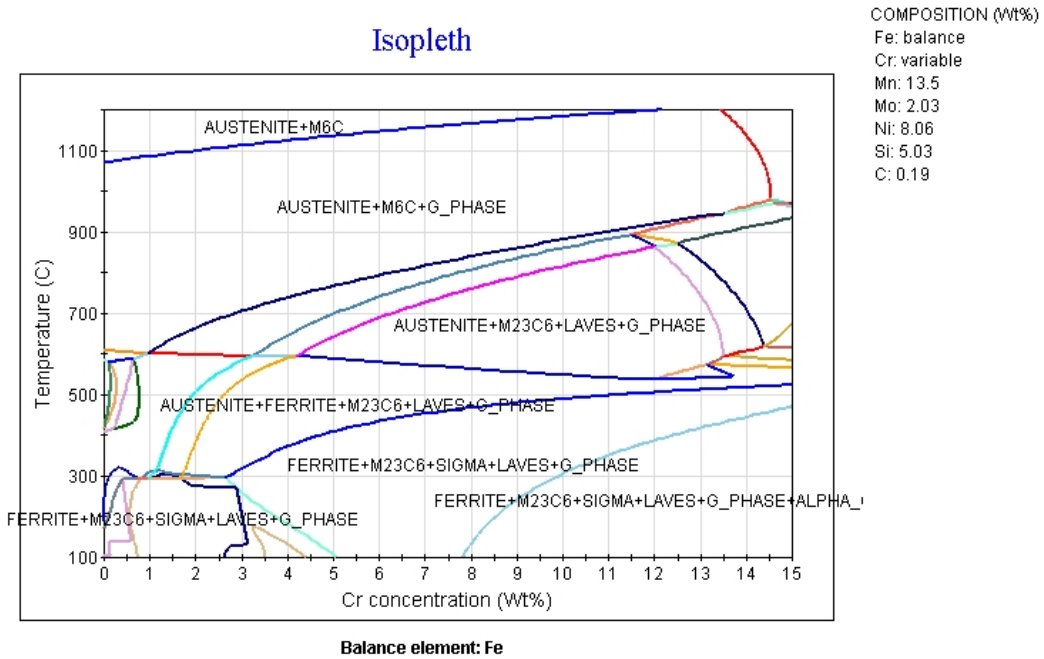
Gambar B.1 Prediksi Diagram Fasa Paduan Fe-Mn-Si



Gambar B.2 Prediksi Diagram Fasa Paduan Fe-Mn-Si-Mo



Gambar B.3 Prediksi Diagram Fasa Paduan Fe-Mn-Si-Mo-Ni



Gambar B.4 Prediksi Diagram Fasa Paduan Fe-Mn-Si-Mo-Ni-Cr

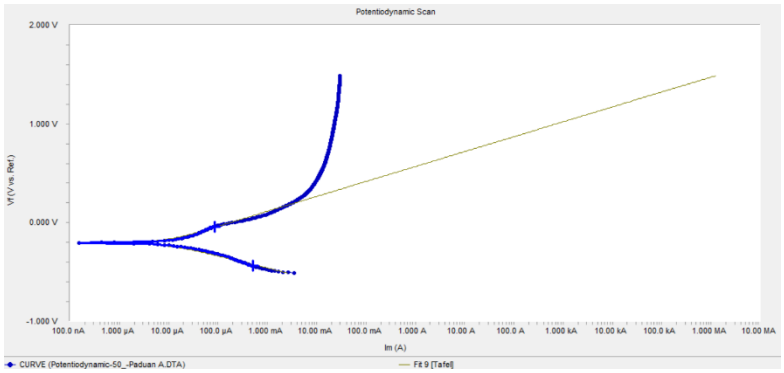
4. Data Uji Kekerasan

Tabel B.3 Hasil Uji Kekerasan

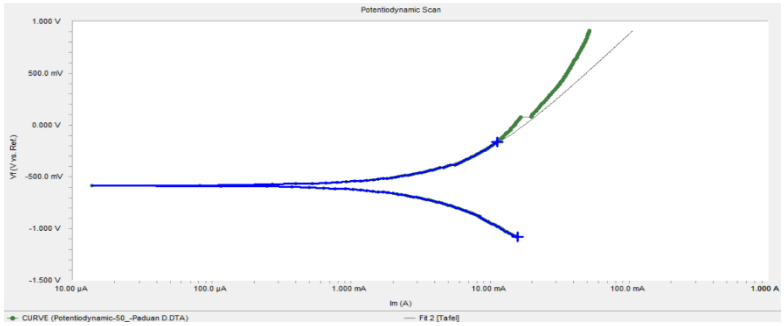
Tritik	50A	50B	50C	50D	80A	80B	80C	80D
Diagonal 1	56,63	52,61	58,5	52,78	54,2	53,58	55,9	52,64
Diagonal 1	56,72	54,44	57,54	54,25	54,57	55,19	56,9	53,15
Diagonal 1	54,9	55	59,34	54,84	54,84	53,58	58,1	53,26
Diagonal 1	55,04	54,09	57,65	53,51	55,88	53,45	57,3	53,58
Diagonal 1	53,16	55,6	60,8	54,91	54,91	53,62	57,9	53,3
Diagonal 1	56,78	53,3	57,17	54,12	55,29	53,55	55,3	53,16
Diagonal 1	57,47	53,44	59,41	53,65	55,38	53,86	58,4	54,45
Diagonal 1	54,4	54,77	57,56	53,93	53,38	52,88	55	54,06
Diagonal 1	53,02	54,31	60,01	53,79	54,34	53,52	58,3	53,3
Hv	288,4	330,7	277,2	330,1	316,1	311,9	300	330,5
Hv	284,5	318,7	269,8	318,6	307,3	323,2	279	328,2
Hv	310,4	307,8	271,4	313,4	305,3	327,2	290	319,7
Hv	317,6	315,6	267,9	305,3	305,3	324,1	278	320,1
Hv	315,3	310,8	255	306,9	308,2	322,5	276	324,63
Rata-Rata Hv	303,2	316,7	268,3	321,08	322,5	322,2	285	324,63

5. Data Uji Korosi

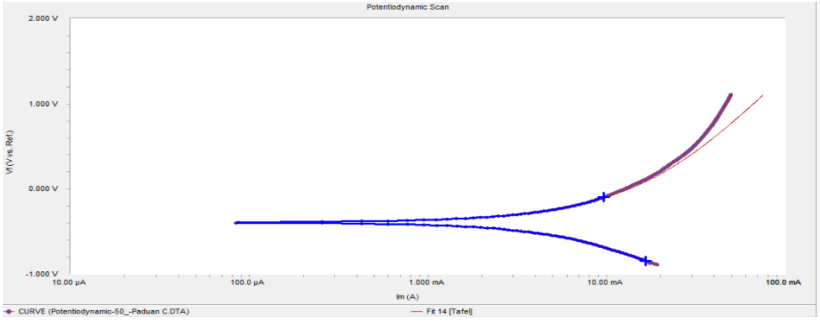
a. Menggunakan Larutan H_2SO_4



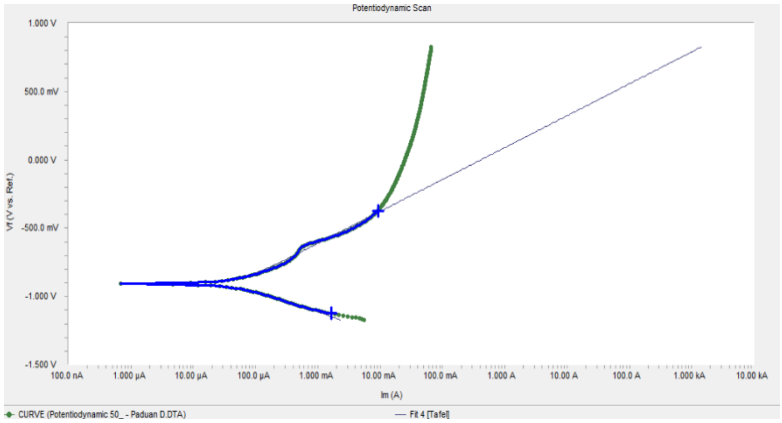
Gambar B.5 Data Pengujian Korosi Potensiodinamik Sampel 50.A pada Larutan H_2SO_4.



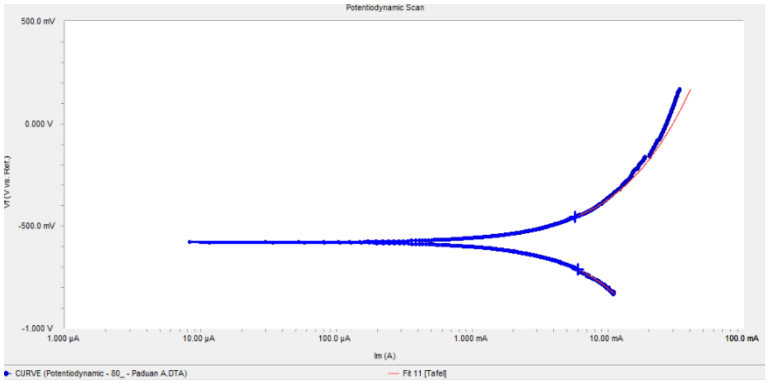
Gambar B.6 Data Pengujian Korosi Potensiodinamik Sampel 50.B pada Larutan H_2SO_4.



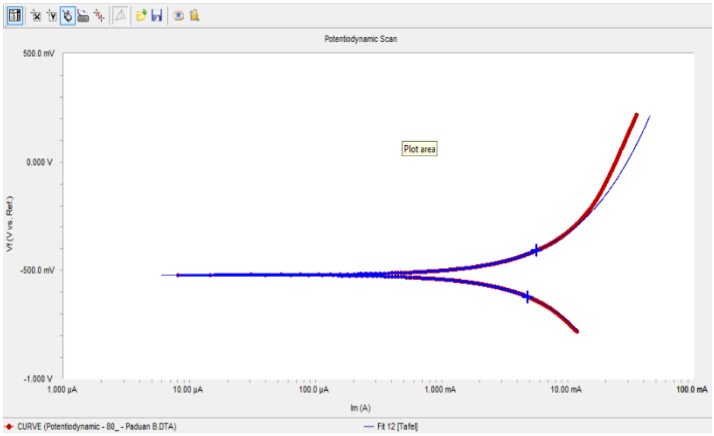
Gambar B.7 Data Pengujian Korosi Potensiodinamik Sampel 50.C pada Larutan H_2SO_4.



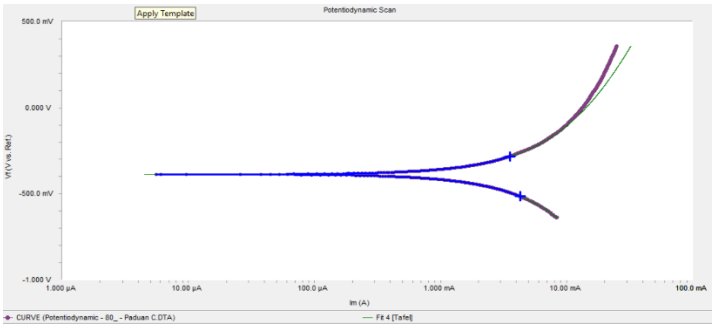
Gambar B.8 Data Pengujian Korosi Potensiodinamik Sampel 50.D pada Larutan H_2SO_4.



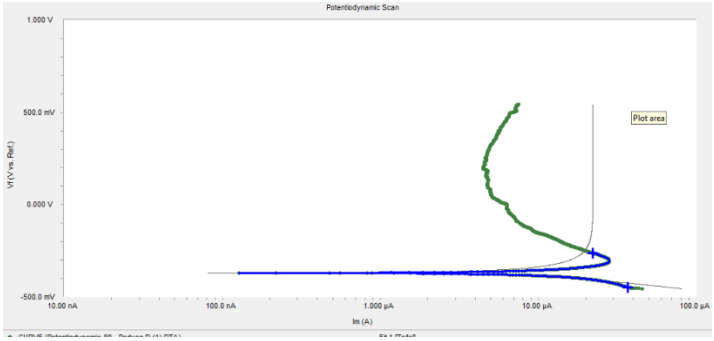
Gambar B.9 Data Pengujian Korosi Potensiodinamik Sampel 80.A pada Larutan H_2SO_4.



Gambar B.10 Data Pengujian Korosi Potensiodinamik Sampel 80.B pada Larutan H_2SO_4.



Gambar B.11 Data Pengujian Korosi Potensiodinamik Sampel 80.C H_2SO_4.

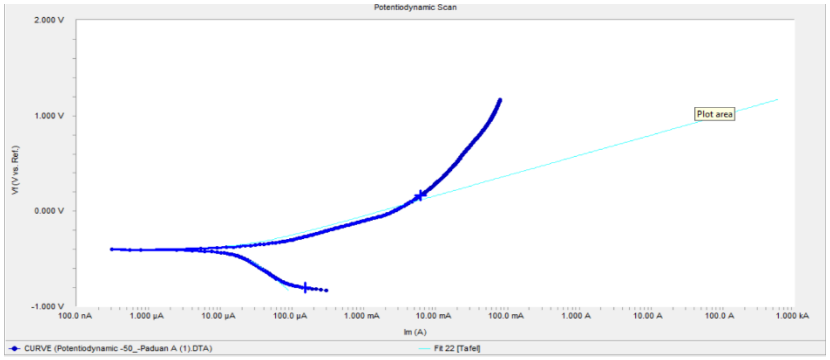


Gambar B.12 Data Pengujian Korosi Potensiodinamik Sampel 80.D H_2SO_4.

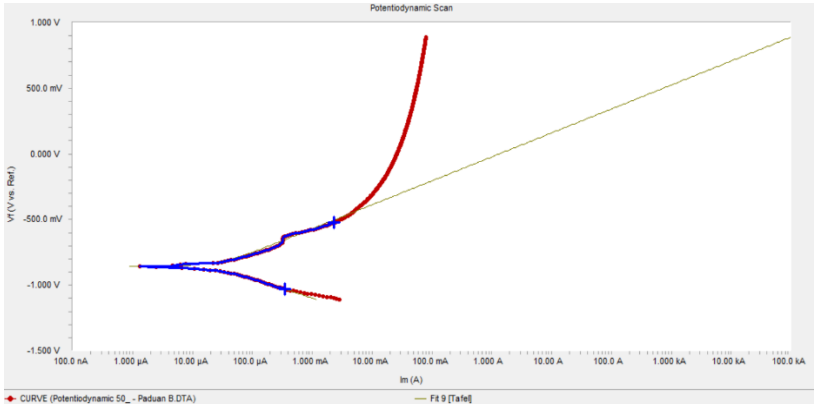
Tabel B.4 Data Laju Korosi menggunakan H2S04

Sampel	*Corrosion Rate* (mpy)	*Icorr* (A/cm²)	Ecorr (mV)
50.A	46,44	48,80 E-03	-203
50.B	26,58	29,10E-03	-530
50.C	15,13	14,60E-03	-393
50.D	6,113	6,690E-03	-393
80.A	26,28	34,50E-03	-578
80.B	17,83	23,40E-03	-520
80.C	8,611	12,20E-03	-387
80.D	5,174	9,620E-06	-370

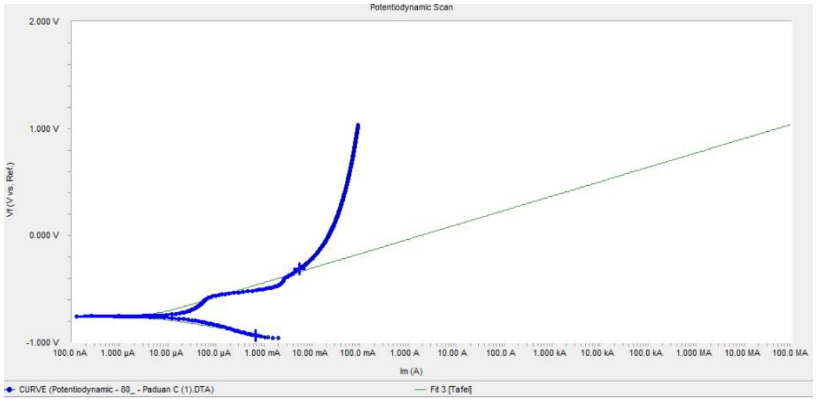
b. Menggunakan Larutan NaCl



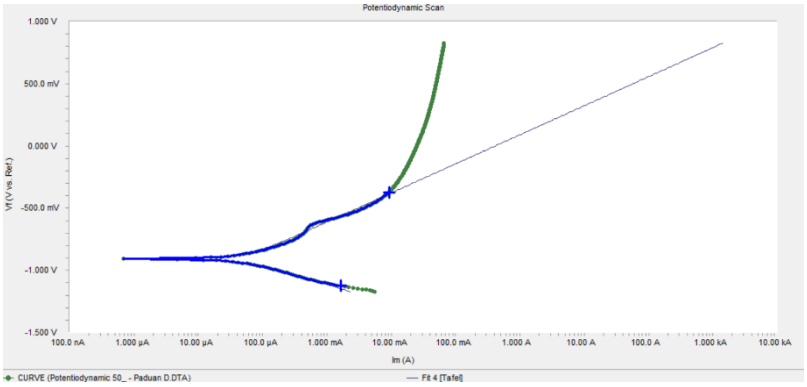
Gambar B.13 Data Pengujian Korosi Potensiodinamik Sampel 50.A pada Larutan NaCl



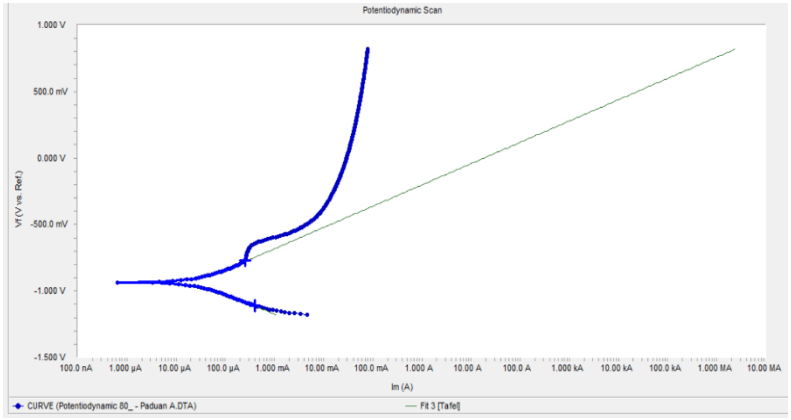
Gambar B.14 Data Pengujian Korosi Potensiodinamik Sampel 50.B pada Larutan NaCl



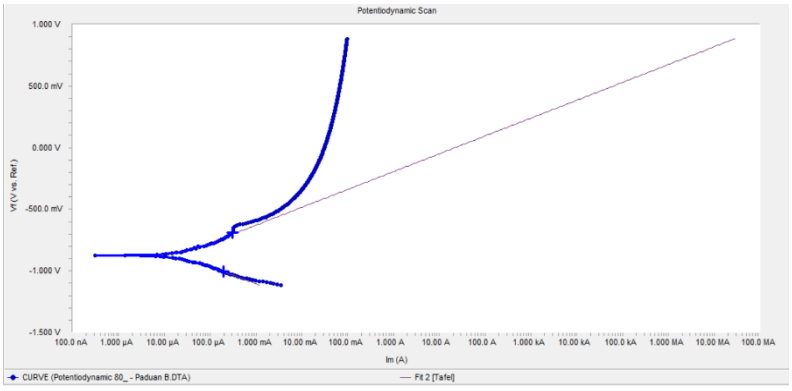
Gambar B.15 Data Pengujian Korosi Potensiodinamik Sampel 50.C pada Larutan NaCl



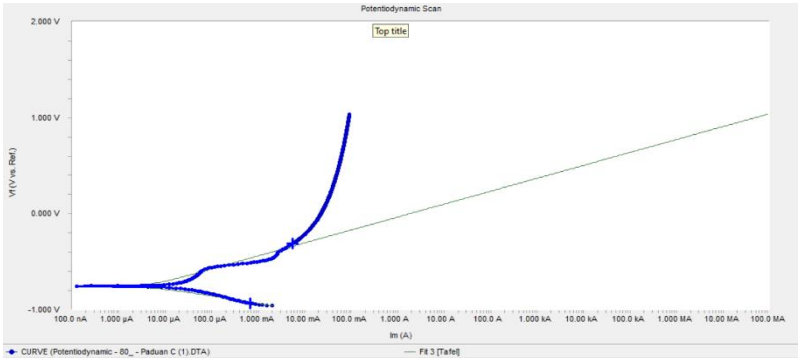
Gambar B.16 Data Pengujian Korosi Potensiodinamik Sampel 50.D pada Larutan NaCl



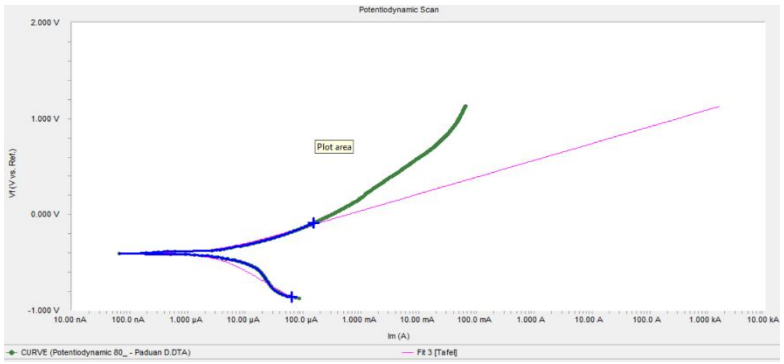
Gambar B.17 Data Pengujian Korosi Potensiodinamik Sampel 80.A pada Larutan NaCl



Gambar B.18 Data Pengujian Korosi Potensiodinamik Sampel 80.B pada Larutan NaCl



Gambar B.19 Data Pengujian Korosi Potensiodinamik Sampel 80.C NaCl

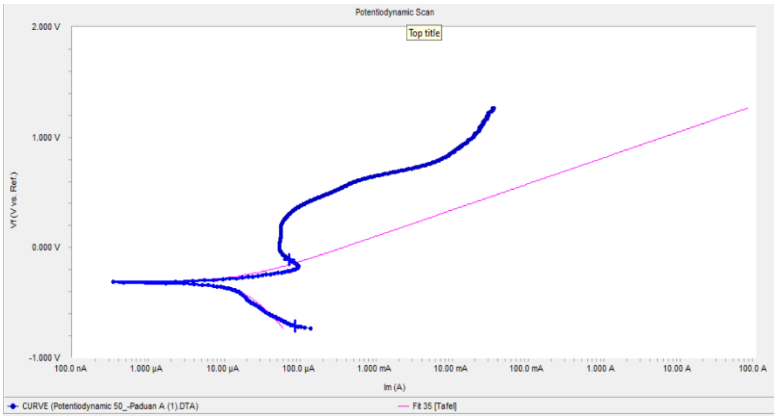


Gambar B.20 Data Pengujian Korosi Potensiodinamik Sampel 80.D NaCl

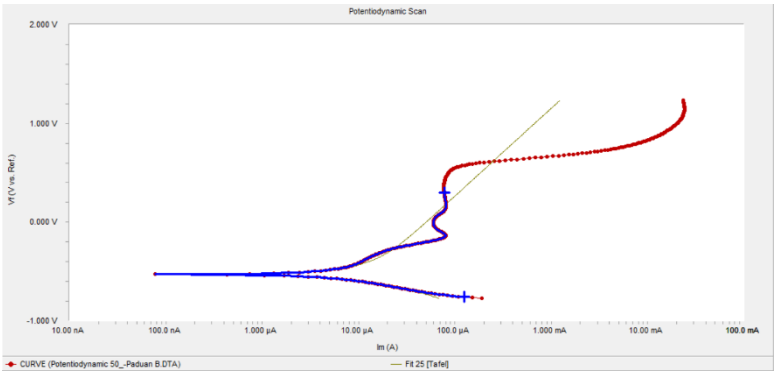
Tabel B.5 Data Laju Korosi menggunakan NaCl

Sampel	*Corrosion Rate* (mpy)	*Icorr* (A/cm²)	Ecorr (mV)	$E_{pasivasi}$ (mV)	
				Awal	Akhir
50.A	20,52	21,60 E-06	-401		
50.B	18,23	20,00 E-06	-861	-683,2	-627,5
50.C	5,407	5,210 E-06	-757	-685,9	-599,0
50.D	2,046	1,815 E-06	-405.1	-695,5	-652,5
80.A	20,48	26,90 E-06	-935	-745,4	-674,8
80.B	15,80	20,70 E-06	-873	-701,7	-646,0
80.C	3,180	4,520 E-06	-754	-443,1	-413,4
80.D	2,008	2,860E-06	-403		

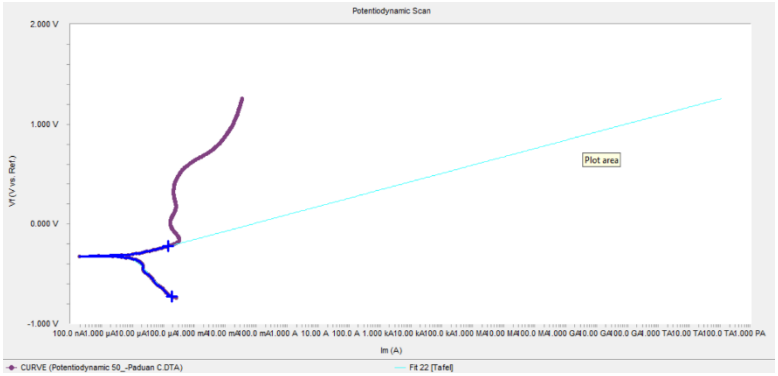
c. Menggunakan Larutan SCP



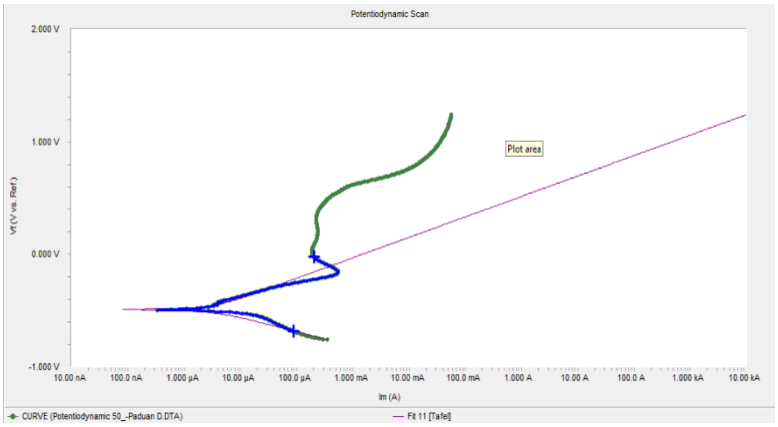
Gambar B.21 Data Pengujian Korosi Potensiodinamik Sampel 50.A pada Larutan SCP



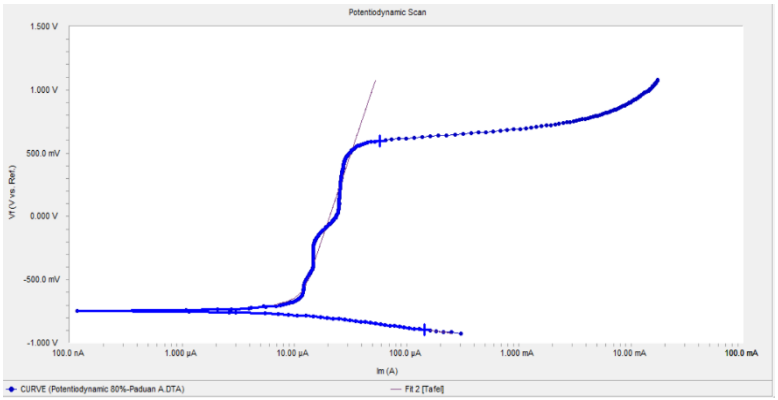
Gambar B.22 Data Pengujian Korosi Potensiodinamik Sampel 50.B pada Larutan SCP



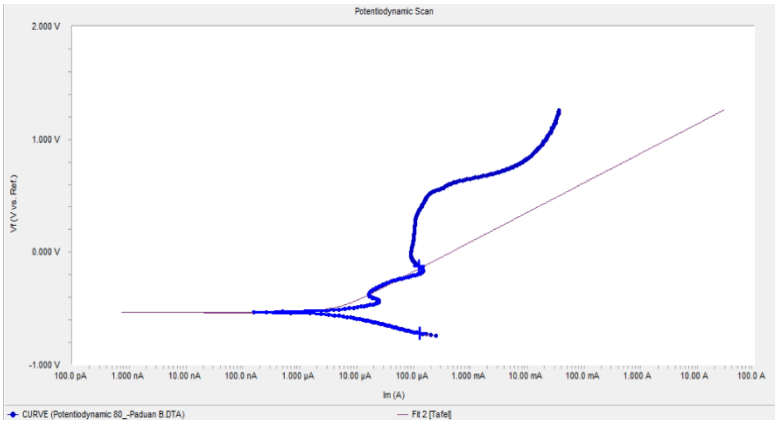
Gambar B.23 Data Pengujian Korosi Potensiodinamik Sampel 50.C pada Larutan SCP



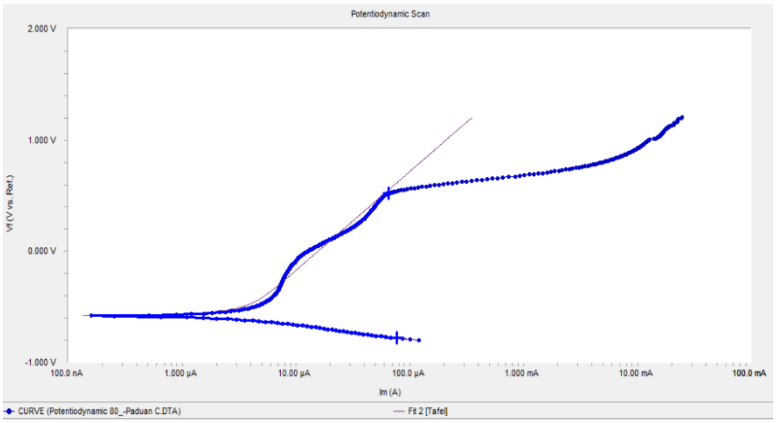
Gambar B.24 Data Pengujian Korosi Potensiodinamik Sampel 50.D pada Larutan SCP



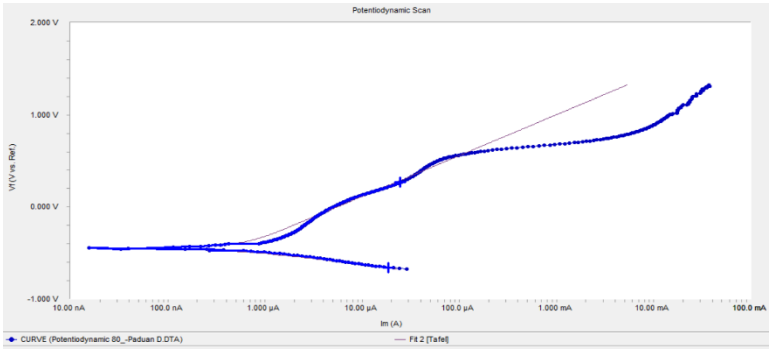
Gambar B.25 Data Pengujian Korosi Potensiodinamik Sampel 80.A pada Larutan SCP



Gambar B.26 Data Pengujian Korosi Potensiodinamik Sampel 80.B pada Larutan SCP



Gambar B.27 Data Pengujian Korosi Potensiodinamik Sampel 80.C SCP



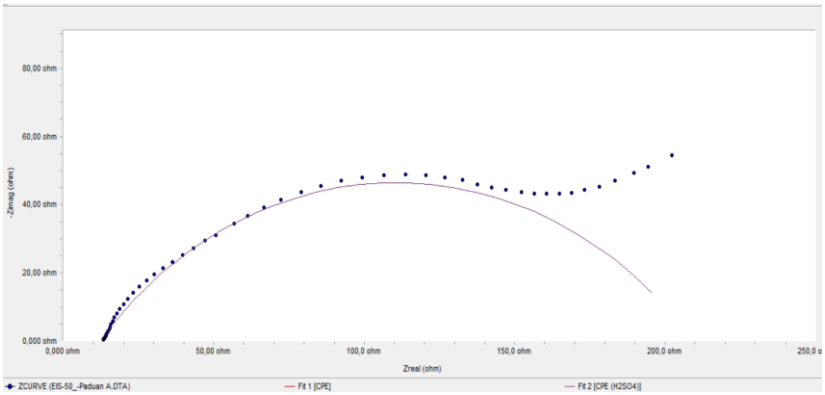
Gambar B.28 Data Pengujian Korosi Potensiodinamik Sampel 80.D SCP

Tabel B.6 Data Laju Korosi menggunakan SCP

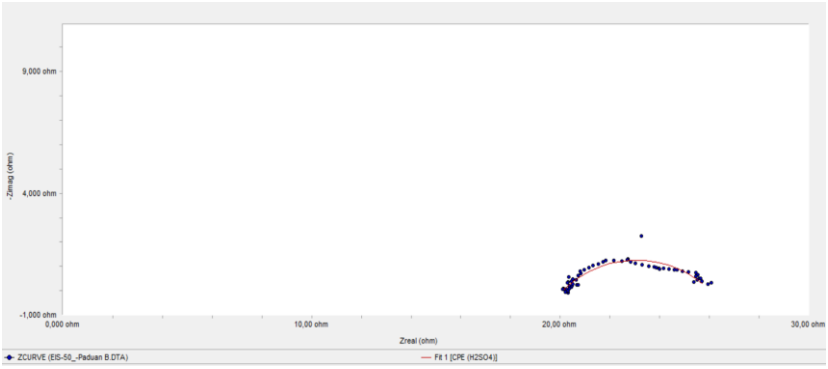
Sampel	*Corrosion Rate* (mpy)	*Icorr* (A/cm²)	Ecorr (mV)	$E_{pasivasi}$ (mV)	
				Awal	Akhir
50.A	16,84	17,70 E-06	-313	-175,7	255,0
50.B	11,75	12,90 E-06	-527	-108,9	514,9
50.C	10,69	10,30 E-06	-320	-146,0	351,5
50.D	2,029	2,220 E-06	-489	-131,5	321,8
80.A	8,196	10,80 E-06	-746	-628,7	479,0
80.B	3,222	4,230E-06	-533	-168,6	277,2
80.C	2,424	3,450E-06	-582	-420,8	522,3
80.D	0,289	5,8E-07	-450	-242,6	1.317

6. **Data Hasil Pengujian EIS (*Electrochemical Impedance Spectroscopy*)**

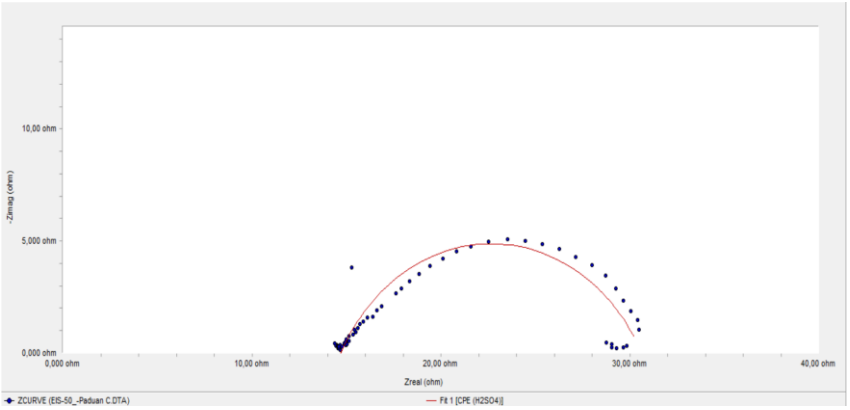
a. Menggunakan Larutan H_2SO_4



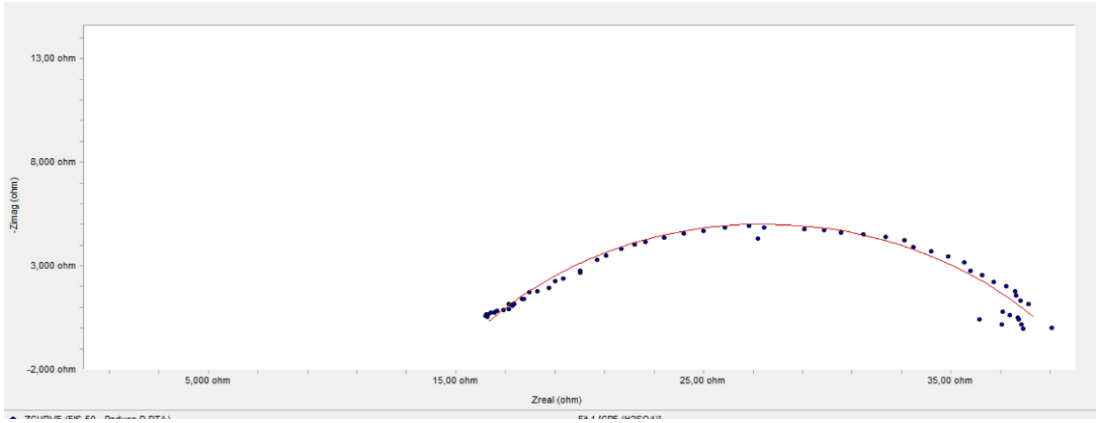
Gambar B.29 Kurva *Nyquist* Sampel 50.A pada Larutan H_2SO_4**.**



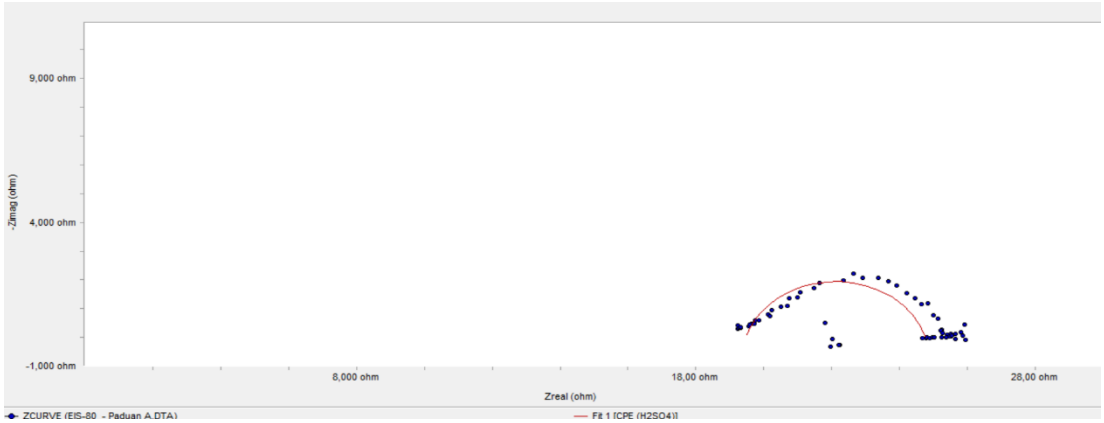
Gambar B.30 Kurva *Nyquist* Sampel 50.B pada Larutan H_2SO_4**.**



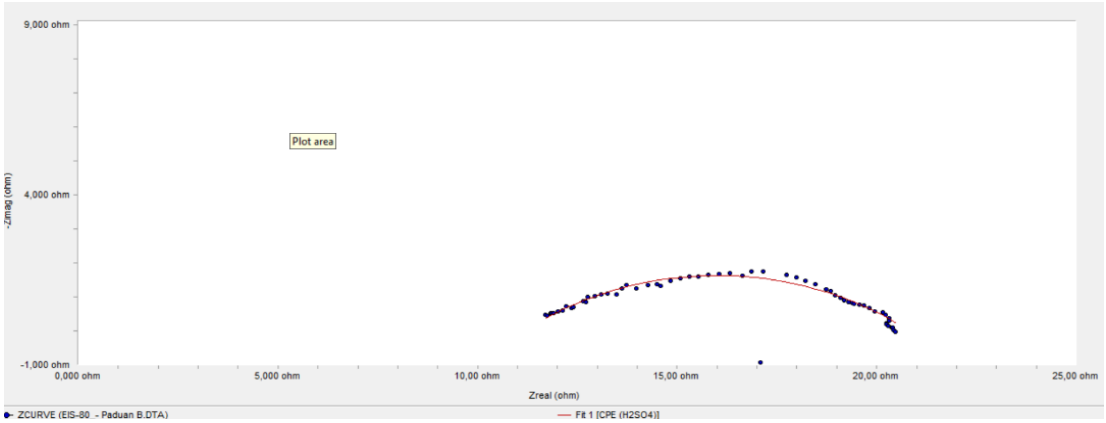
Gambar B.31 Kurva *Nyquist* Sampel 50.C pada Larutan H_2SO_4**.**



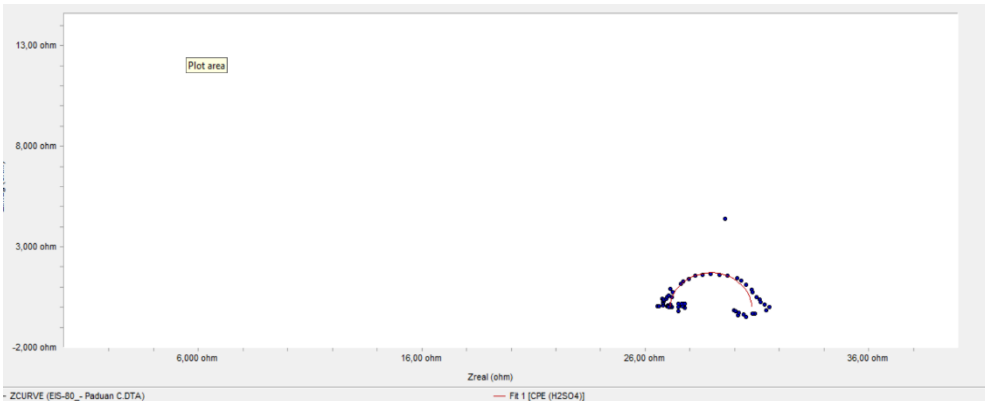
Gambar B.32 Kurva *Nyquist* Sampel 50.D pada Larutan H_2SO_4.



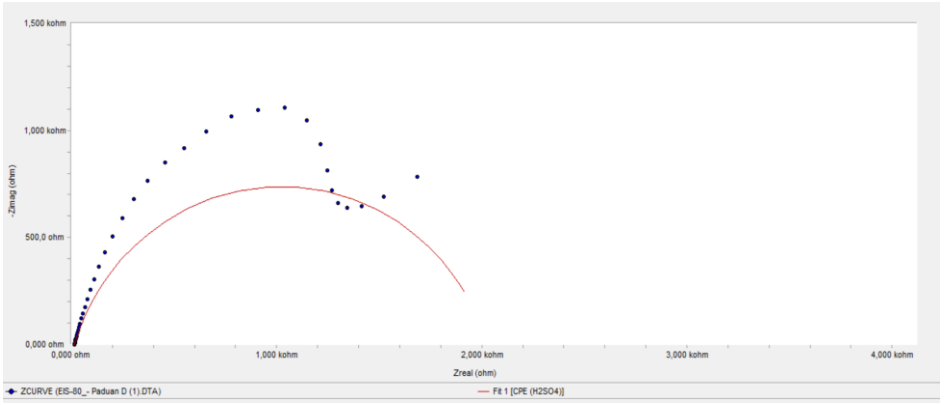
Gambar B.33 Kurva *Nyquist* Sampel 80.A pada Larutan H_2SO_4.



Gambar B.34 Kurva *Nyquist* Sampel 80.B pada Larutan H_2SO_4.

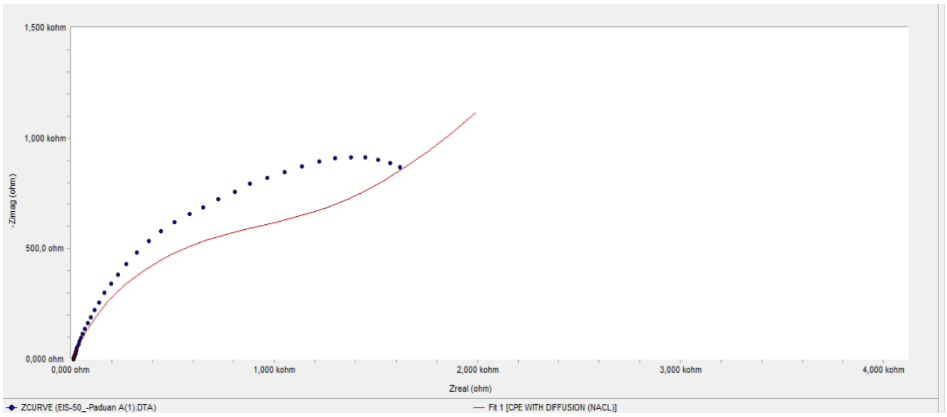


Gambar B.35 Kurva *Nyquist* Sampel 80.C pada Larutan H_2SO_4**.**

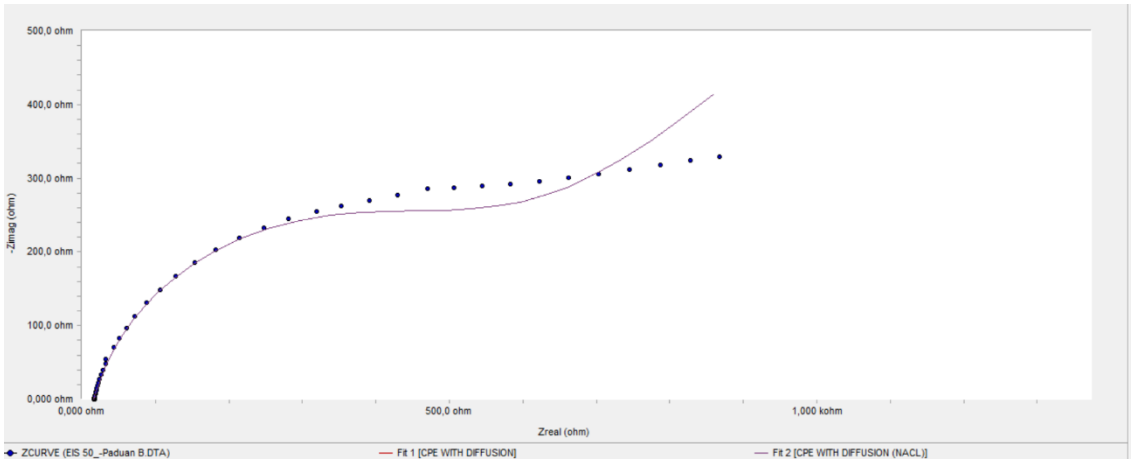


Gambar B.36 Kurva *Nyquist* Sampel 80.D pada Larutan H_2SO_4**.**

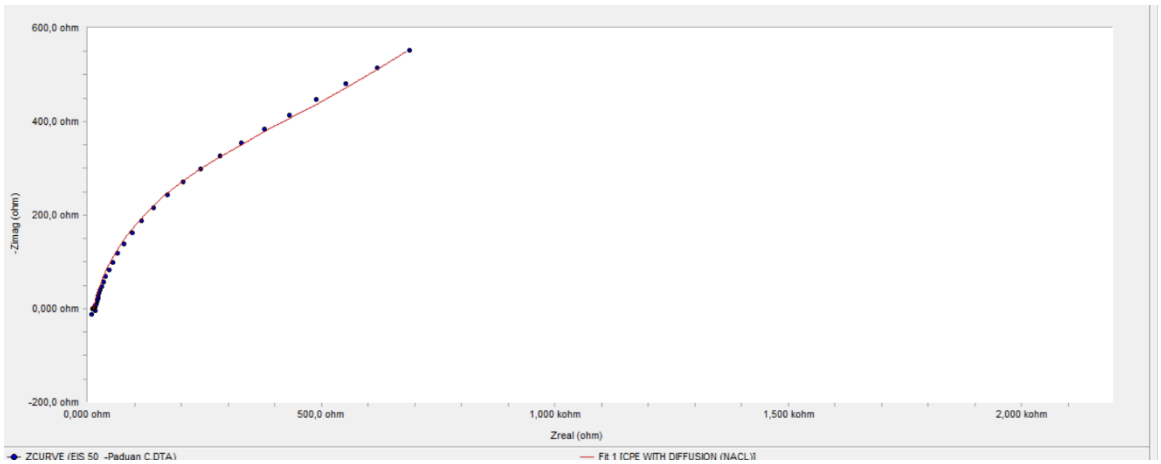
b. Menggunakan Larutan NaCl



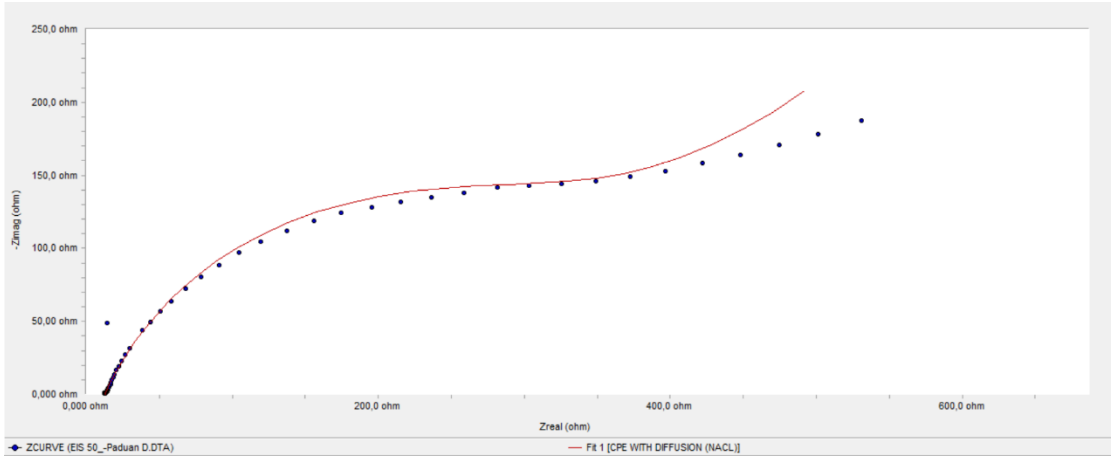
Gambar B.37 Kurva *Nyquist* Sampel 50.A pada Larutan NaCl



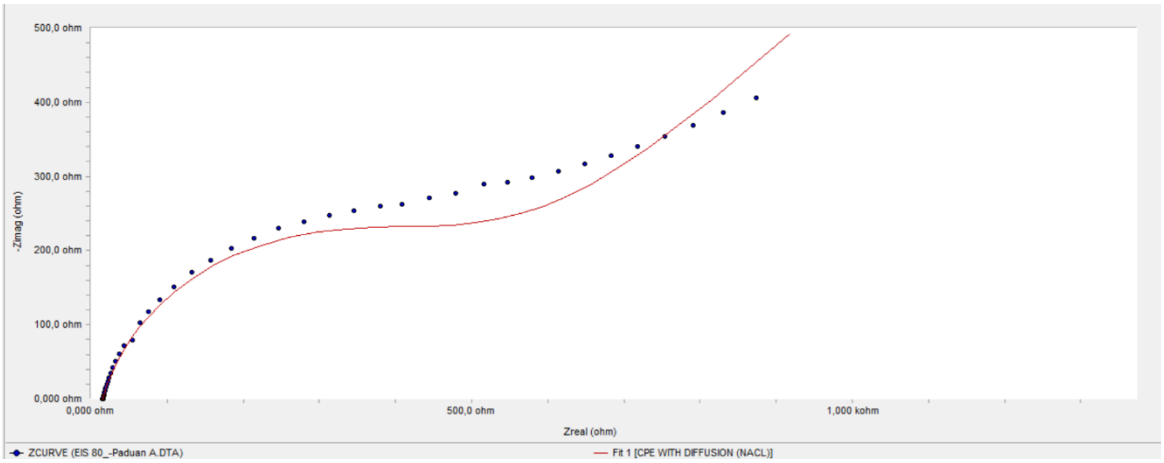
Gambar B.38 Kurva *Nyquist* Sampel 50.B pada Larutan NaCl



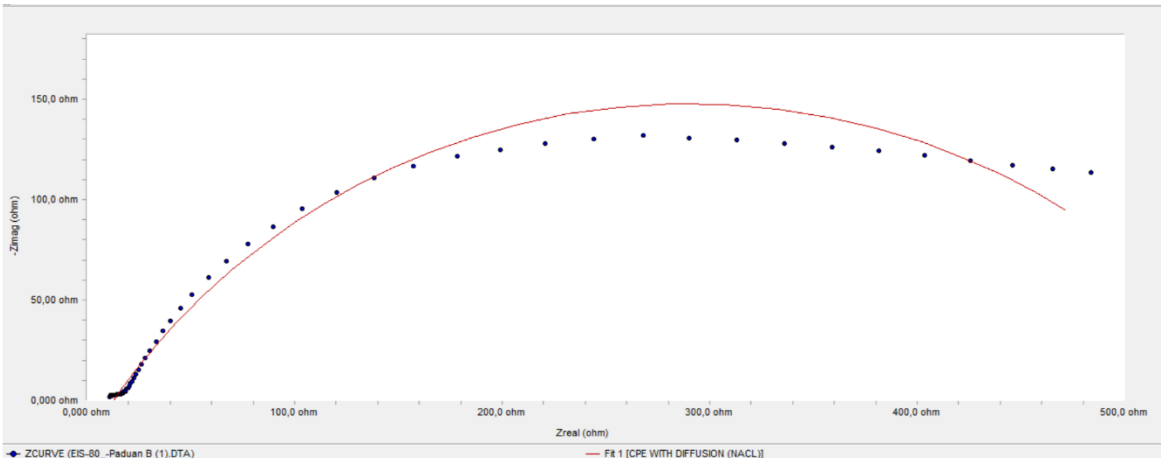
Gambar B.39 Kurva *Nyquist* Sampel 50.C pada Larutan NaCl



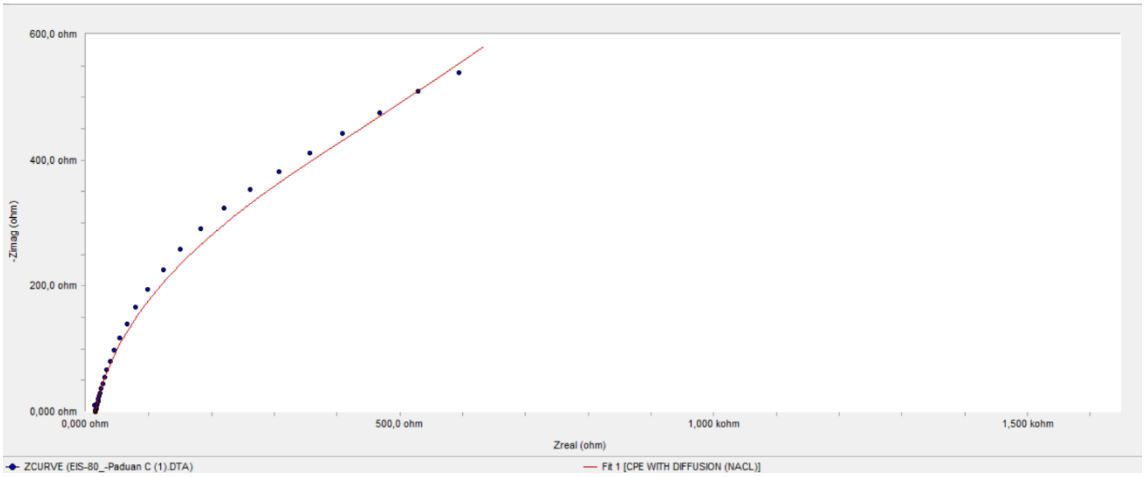
Gambar B.40 Kurva *Nyquist* Sampel 50.D pada Larutan NaCl



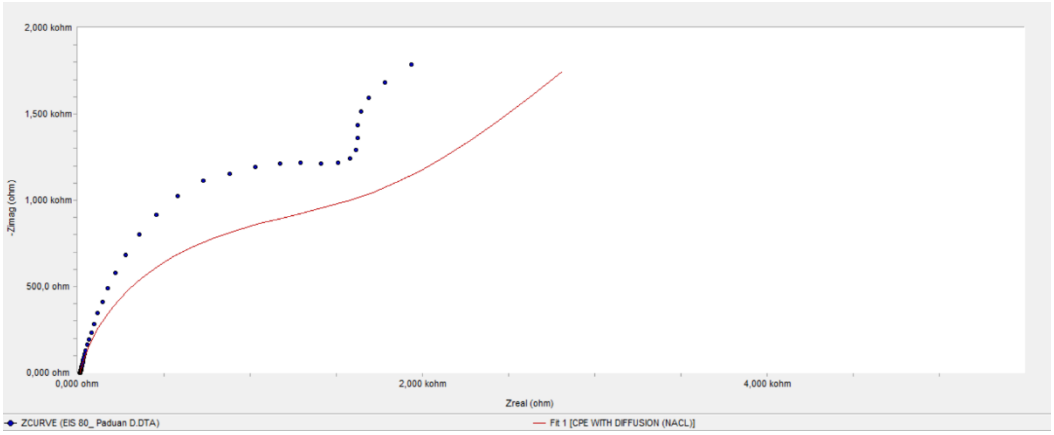
Gambar B.41 Kurva *Nyquist* Sampel 80.A pada Larutan NaCl



Gambar B.42 Kurva *Nyquist* Sampel 80.B pada Larutan NaCl

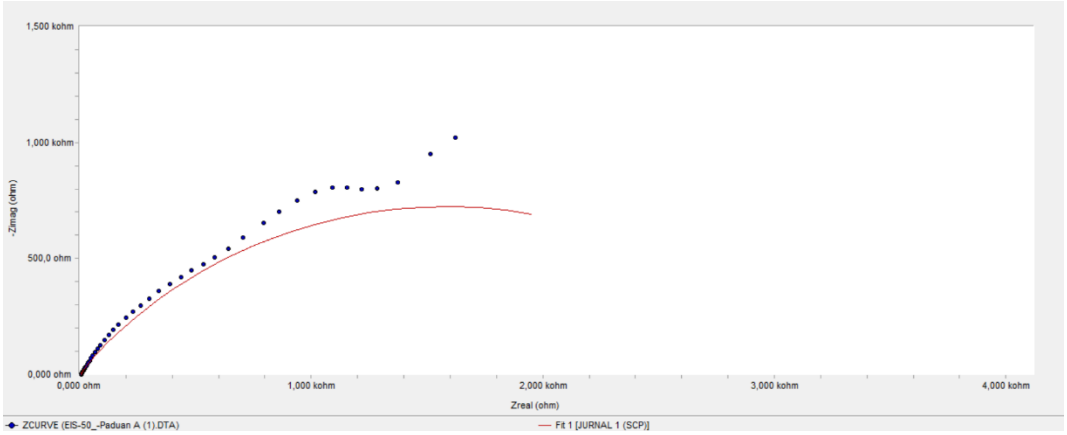


Gambar B.43 Kurva *Nyquist* Sampel 80.C pada Larutan NaCl

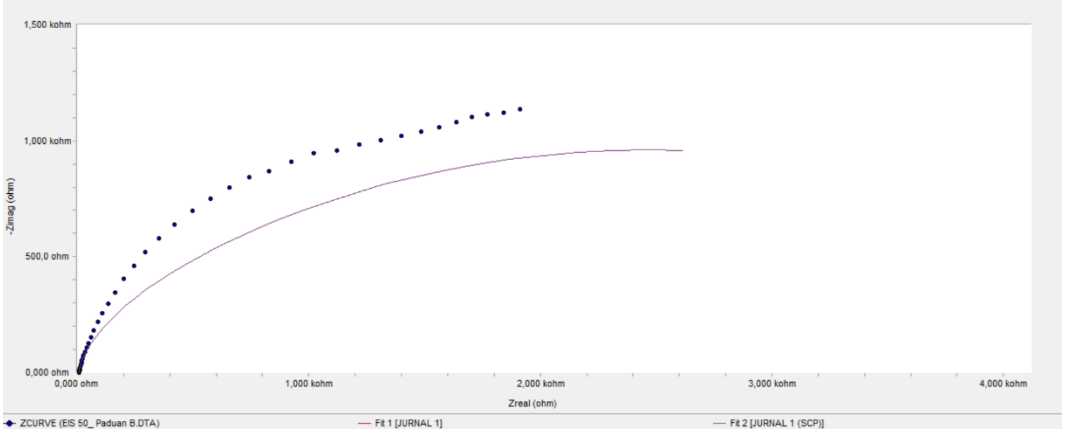


Gambar B.44 Kurva *Nyquist* Sampel 80.D pada Larutan NaCl

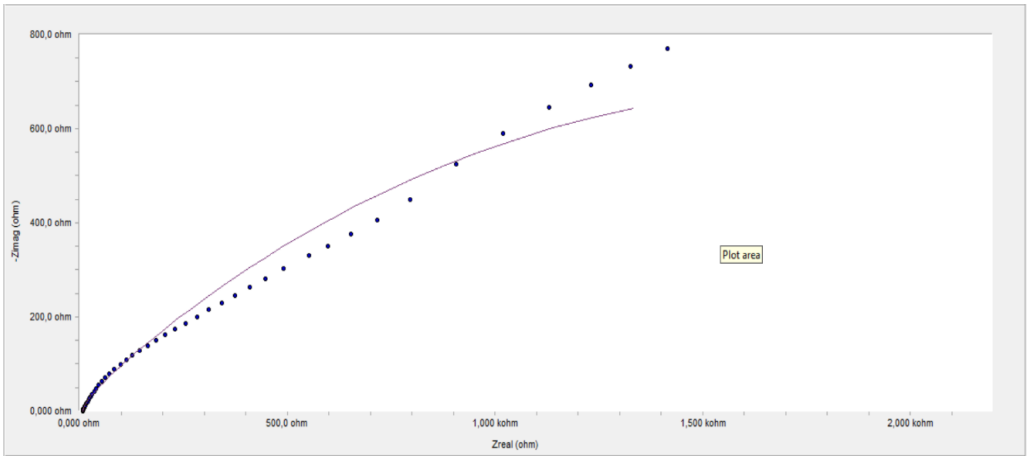
c. Menggunakan Larutan SCP



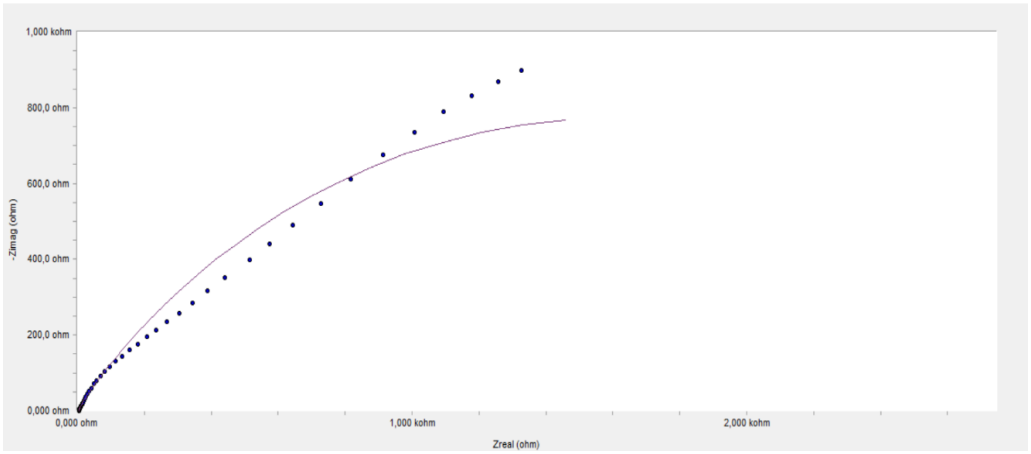
Gambar B.45 Kurva *Nyquist* Sampel 50.A pada Larutan SCP



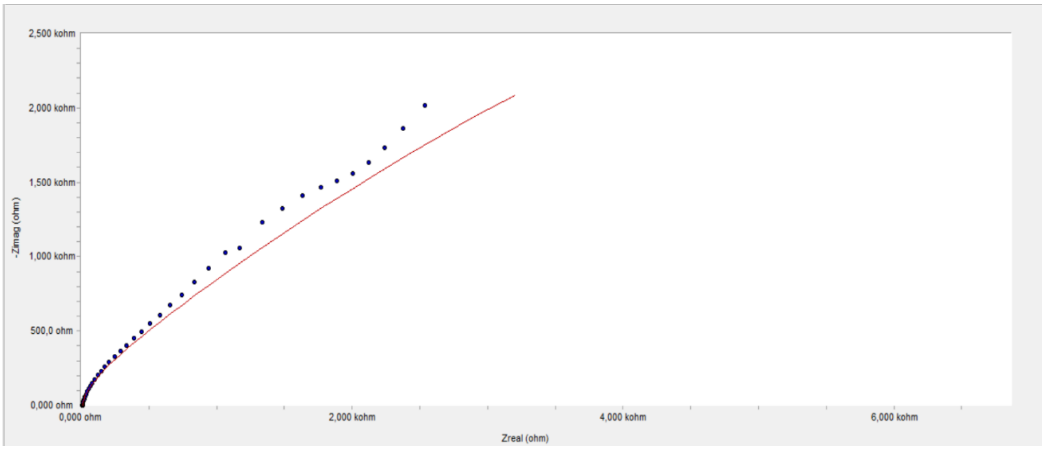
Gambar B.46 Kurva *Nyquist* Sampel 50.B pada Larutan SCP



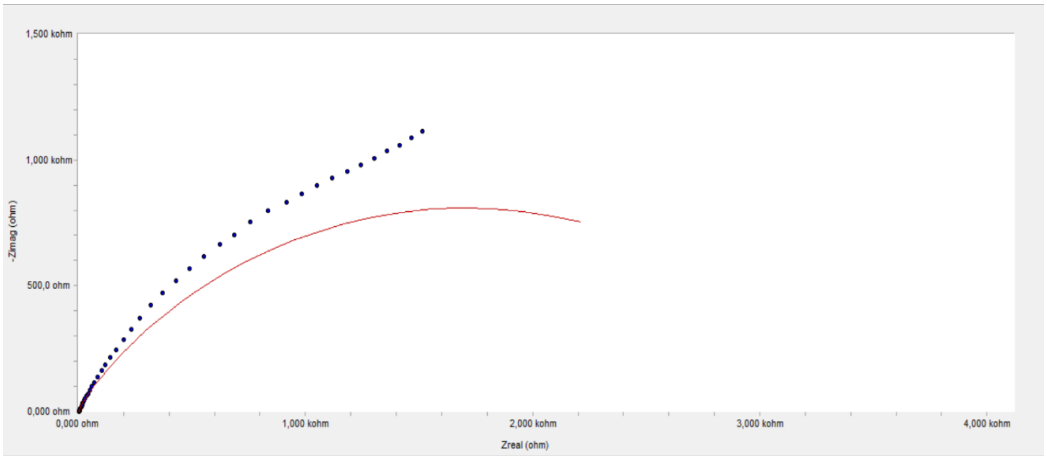
Gambar B.47 Kurva *Nyquist* Sampel 50.C pada Larutan SCP



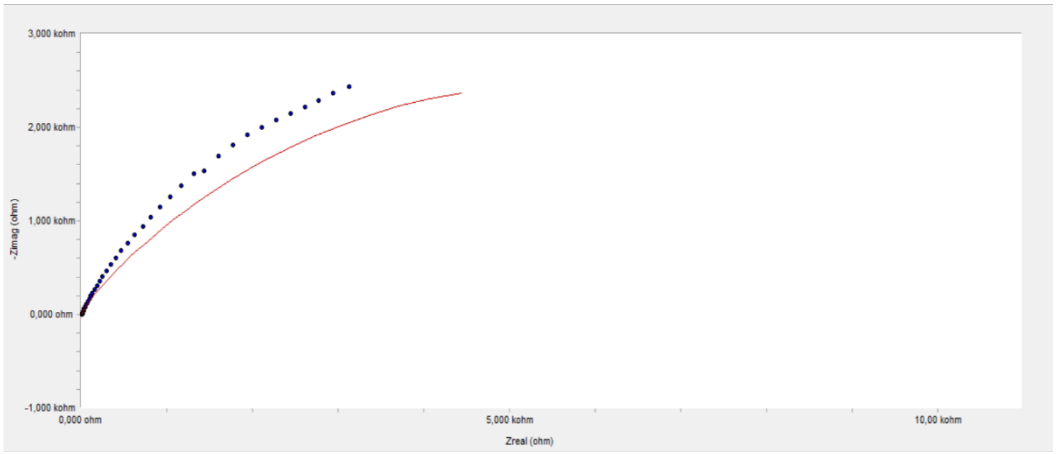
Gambar B.48 Kurva *Nyquist* Sampel 50 D pada Larutan SCP



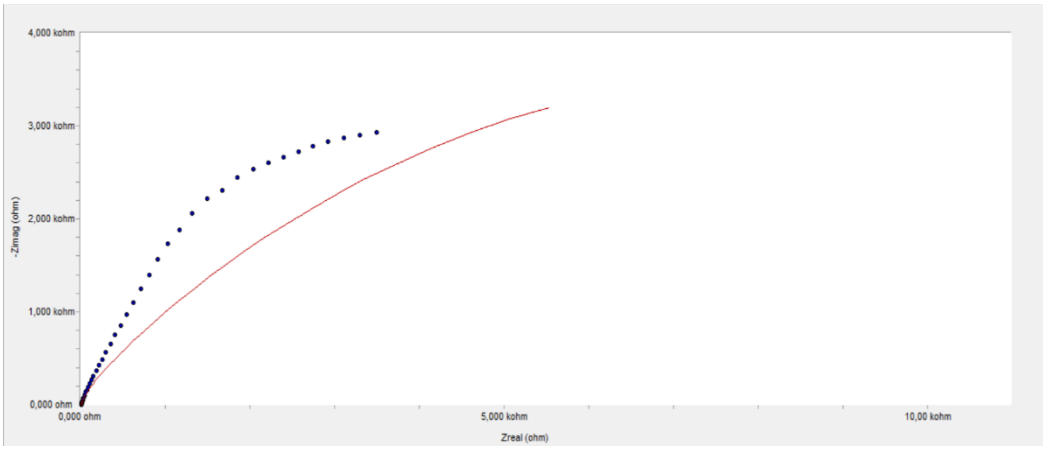
Gambar B.49 Kurva *Nyquist* Sampel 80.A pada Larutan SCP



Gambar B.50 Kurva *Nyquist* Sampel 80 B pada Larutan SCP



Gambar B.51 Kurva *Nyquist* Sampel 80 C pada Larutan SCP

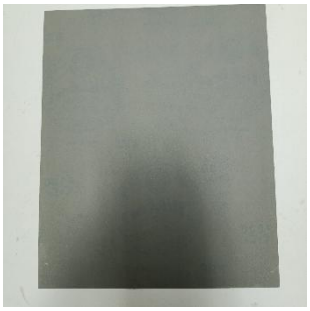


Gambar B.52 Kurva *Nyquist* Sampel 80 D pada Larutan SCP

LAMPIRAN C

GAMBAR ALAT DAN BAHAN

Lampiran C. Gambar Alat dan bahan

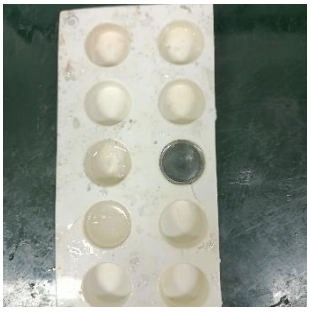


Gambar C.1 Ampelas

Gambar C.2 Aquades

Gambar C.3 Baja Paduan Fe-Mn-Si-Mo-Ni-Cr

Gambar C.4 Cairan *Polish*



Gambar C.5 Cetakan Resin

Gambar C.6 *Cutting Machine*

Gambar C.7 Gelas Beker

Gambar C.8 Larutan Etsa

Gambar C.9 Mesin *Grinding*

Gambar C.10 Neraca Digital

Gambar C.11 Resin *Hardener*

Gambar C.12 Sarung Tangan