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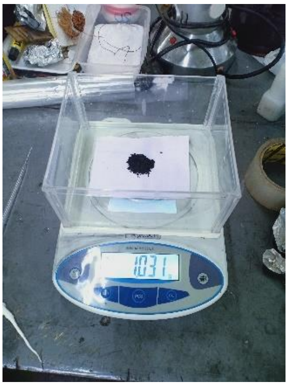
Lampiran

Lampiran 1 proses penelitian

1. Proses penelitian

Persiapan bahan karbon aktif



proses plasma karbon aktif dan elektrolit NaOH

Proses kompaksi karbon

Hasil dari kompasi

Pengujian XRD

Pengujian SEM

Mempersiapkan komponen superkapasitor

superkapasitor

superkapasitor

pengujian voltametric siklik dan GCD

Lampiran 2 pengujian voltametric siklik

2. Hasil pengujian voltametric siklik

- Karbon aktif

1 molar

karbon aktif						
sampel	AREA I dV	scan rate V/s	ΔV (V)	massa (g	Csel (F)	Csp (F/g)
tanpa plasma	0.0003	0.01	1.2	0.5	0.01	0.03
plasma 1 menit	0.0090	0.01	1.2	0.5	0.38	0.75
plasma 2 menit	0.0010	0.01	1.2	0.5	0.04	0.08
plasma 3 menit	0.0020	0.01	1.2	0.5	0.08	0.17

2 molar

karbon aktif						
sampel	AREA I dV	scan rate V/s	ΔV (V)	massa (g	Csel (F)	Csp (F/g)
tanpa plasma	0.0011	0.01	1.2	0.5	0.05	0.09
plasma 1 menit	0.0007	0.01	1.2	0.5	0.03	0.06
plasma 2 menit	0.0010	0.01	1.2	0.5	0.04	0.08
plasma 3 menit	0.0021	0.01	1.2	0.5	0.09	0.18

3 molar

karbon aktif						
sampel	AREA I dV	scan rate V/s	ΔV (V)	massa (g	Csel (F)	Csp (F/g)
tanpa plasma	0.00044	0.01	1.2	0.5	0.0183	0.0732
plasma 1 menit	0.00121	0.01	1.2	0.5	0.0504	0.2018
plasma 2 menit	0.00062	0.01	1.2	0.5	0.0259	0.1035
plasma 3 menit	0.00056	0.01	1.2	0.5	0.0235	0.0938

- Grafit

1 molar

Grafit						
sampel	AREA I dV	scan rate V/s	ΔV (V)	massa (g)	Csel (F)	Csp (F/g)
tanpa plasma	0.0211	0.01	1.2	0.6	0.88	2.93
plasma 1 menit	0.0116	0.01	1.2	0.6	0.48	1.61
plasma 2 menit	0.0095	0.01	1.2	0.6	0.40	1.32
plasma 3 menit	0.0082	0.01	1.2	0.6	0.57	1.90

2 molar

Grafit						
sampel	AREA I dV	scan rate V/s	ΔV (V)	massa (g)	Csel (F)	Csp (F/g)
tanpa plasma	0.25	0.01	1.2	0.6	10.58	35.28
plasma 1 menit	0.34	0.01	1.2	0.6	14.13	47.12
plasma 2 menit	0.02	0.01	1.2	0.6	0.83	2.77
plasma 3 menit	0.46	0.01	1.2	0.6	19.17	63.89

3 molar

Grafit						
sampel	AREA I dV	scan rate V/s	ΔV (V)	massa (g)	Csel (F)	Csp (F/g)
tanpa plasma	0.0170	0.01	1.2	0.6	0.71	2.36
plasma 1 menit	0.0099	0.01	1.2	0.6	0.41	1.38
plasma 2 menit	0.0148	0.01	1.2	0.6	0.62	2.06
plasma 3 menit	0.0124	0.01	1.2	0.6	0.86	2.87

Lampiran 3 Hasil pengujian galvanostatic charge/discharge

3. Hasil pengujian galvanostatic charge/discharge

- Karbon aktif

1 molar

densitas energi dan daya karbon aktif					
sampel	Csp (F/g)	Voltage (V)	waktu (s)	energi density (Wh/kg)	power density (w/kg)
tanpa plasma	0.027	1.4	0.31	0.007	86
plasma 1 menit	0.750	0.9	3.48	0.084	87
plasma 2 menit	0.083	1.4	0.01	0.023	8167
plasma 3 menit	0.167	1.4	0.01	0.045	16333

2 molar

data dari gcd					
densitas energi dan daya karbon aktif					
sampel	Csp (F/g)	Voltage (V)	waktu (s)	energi density (Wh/kg)	power density (w/kg)
tanpa plasma	0.09	1.4	2.8	0.025	32
plasma 1 menit	0.06	1.4	2.1	0.015	26
plasma 2 menit	0.08	1.6	1.8	0.030	59
plasma 3 menit	0.18	1.2	2.9	0.036	44

3 molar

data dari gcd					
densitas energi dan daya karbon aktif					
sampel	Csp (F/g)	Voltage (V)	waktu (s)	energi density (Wh/kg)	power density (w/kg)
tanpa plasma	0.07	1.6	2.34	0.337	519
plasma 1 menit	0.20	1.6	0.28	0.930	11955
plasma 2 menit	0.10	1.6	0.1	0.477	17166
plasma 3 menit	0.09	1.6	0.19	0.432	8193

- Grafit

1 molar

densitas energi dan daya grafit					
sampel	Csp (F/g)	Voltage (V)	waktu (s)	energi density (Wh/kg)	power density (w/kg)
tanpa plasma	2.93	0.9	41.89	0.330	28
plasma 1 menit	1.61	0.9	42.29	0.181	15
plasma 2 menit	1.32	0.9	23.7	0.148	23
plasma 3 menit	1.90	0.9	16.36	0.214	47

2 molar

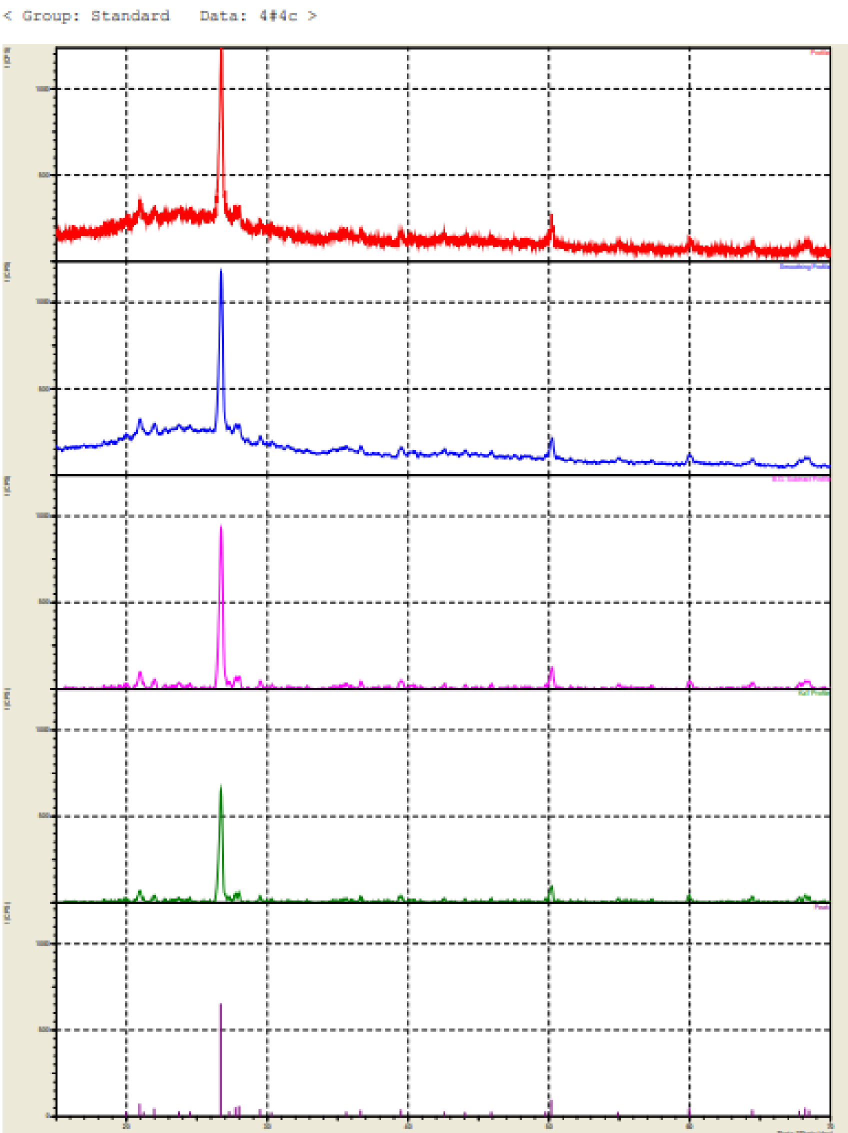
densitas energi dan daya grafit					
sampel	Csp (F/g)	Voltage (V)	waktu (s)	energi density (Wh/kg)	power density (w/kg)
tanpa plasma	35.28	0.6	64	1.764	99
plasma 1 menit	47.12	0.6	42	2.356	202
plasma 2 menit	2.77	0.6	30	0.139	17
plasma 3 menit	63.89	0.6	51	3.194	225

3 molar

densitas energi dan daya grafit					
sampel	Csp (F/g)	Voltage (V)	waktu (s)	energi density (Wh/kg)	power density (w/kg)
tanpa plasma	2.36	0.9	132	3.443	94
plasma 1 menit	1.38	0.9	49	2.005	147
plasma 2 menit	2.06	0.9	51	2.997	212
plasma 3 menit	2.87	0.9	53	4.185	284

Lampiran 3 hasil analisis XRD

4. Hasil pengujian XRD
    - Karbon aktif
      Sebelum plasma



Setelah plasma

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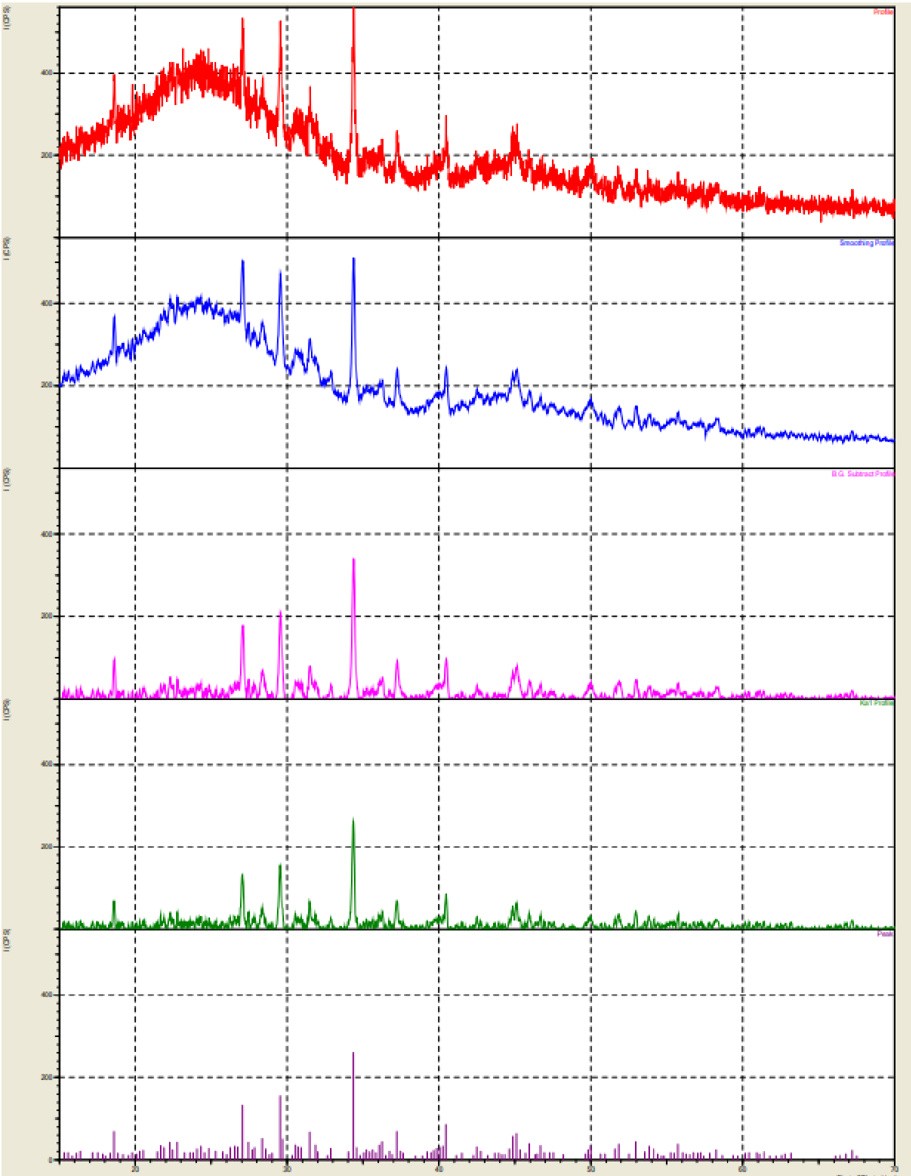

- Grafit

Sebelum plasma

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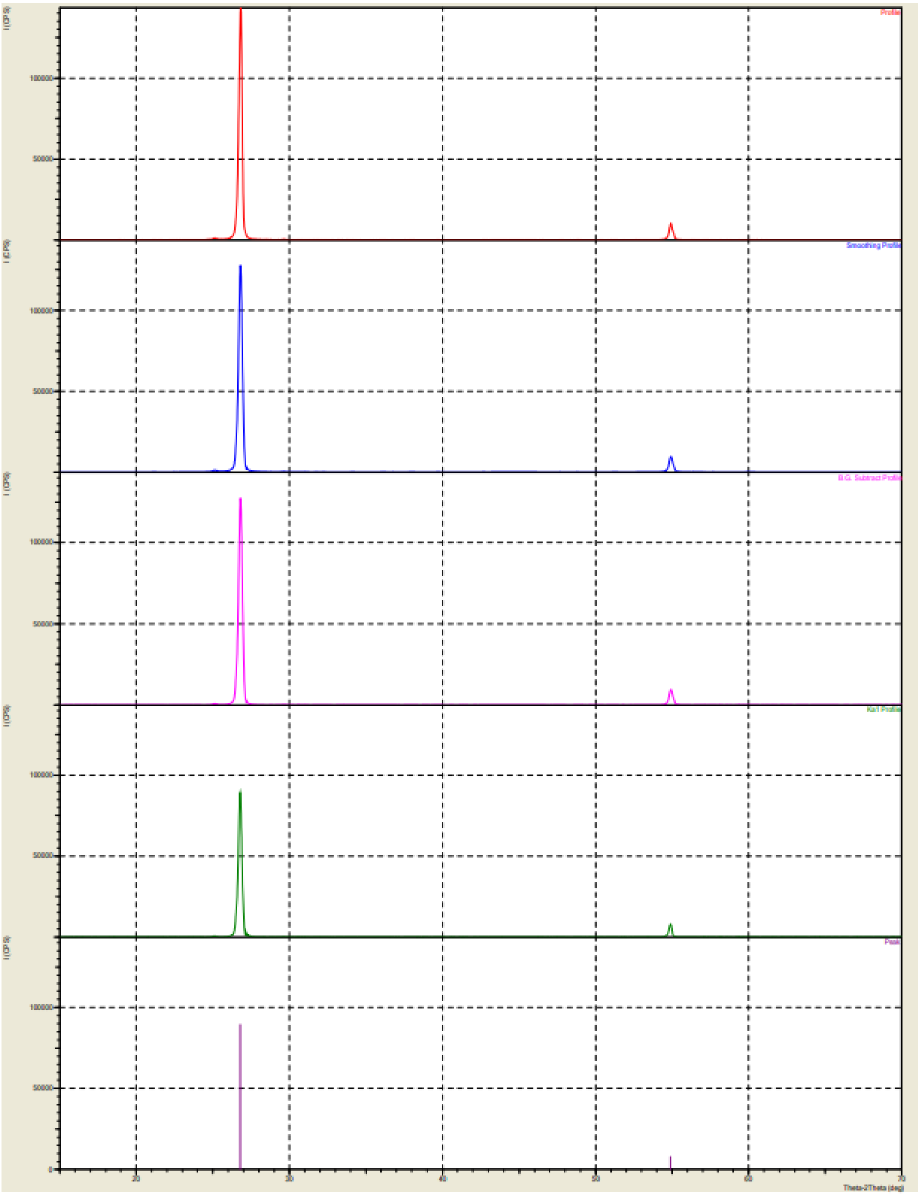

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