LAMPIRAN

Lampiran 1. Dokumen Penelitian

1.1 Ekstraksi Daun Sawo Duren

Pengeringan

Serbuk daun sawo duren

Stirrer

Centrifuge

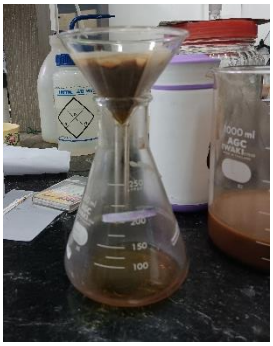
Hasil Ekstrak

1.2 Sintesis $ZnFe_2O_4$

Ekstrak

Stirrer

proses dekantasi



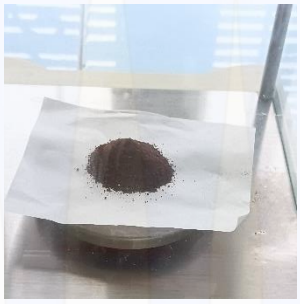
Penyari

Furnace

Serbuk $ZnFe_2O_4$

1.3 Proses Degradasi Zat Metilen Biru

MB 20 ppm



Serbuk $ZnFe_2O_4$

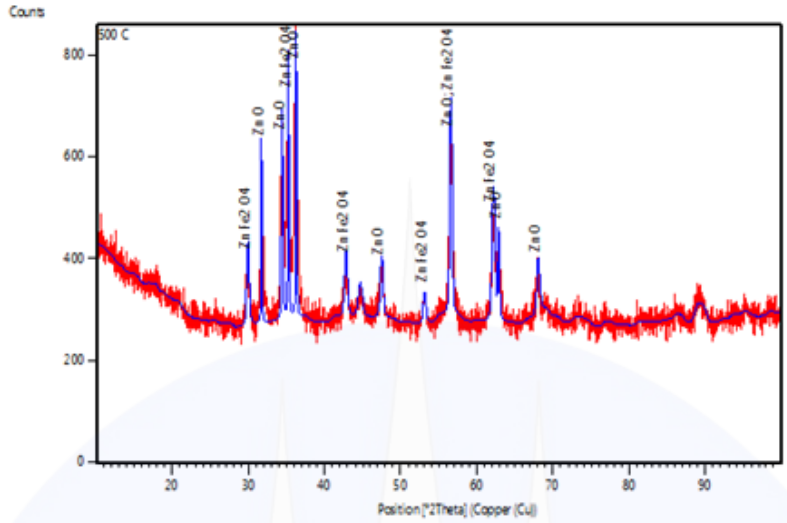
Proses UV-C

Larutan kurva standart

Hasil degradasi 1,2,3,4,5 jam

Lampiran 2. Hasil XRD

2.1 Suhu 500°C



Peak List

Pos.[°2Th.]	Height [cts]	FWHMLeft[°2Th.]	d-spacing [Å]	Rel. Int. [%]
29.9339	114.79	0.3582	2.98510	21.20
31.6912	333.68	0.1023	2.82347	61.62
34.4148	338.01	0.1535	2.60600	62.42
35.2243	461.55	0.1279	2.54795	85.24
36.2636	541.49	0.1023	2.47727	100.00
42.7746	92.34	0.4093	2.11406	17.05
44.6668	47.16	0.6140	2.02881	8.71
47.4765	87.38	0.4093	1.91509	16.14
53.0870	44.31	0.4093	1.72517	8.18
56.5499	337.24	0.3070	1.62747	62.28
62.1437	199.07	0.4093	1.49374	36.76
62.8356	167.01	0.1535	1.47895	30.84
68.0193	85.03	0.4093	1.37832	15.70

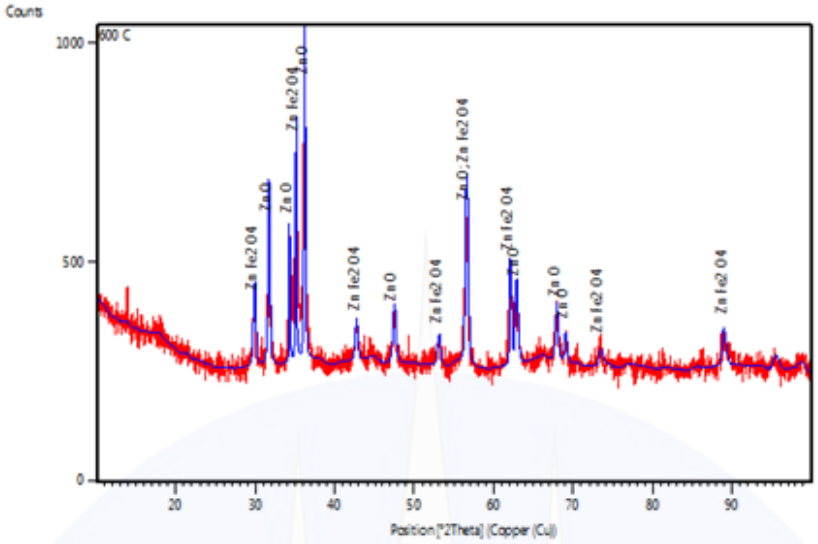
Pattern List

Visible	Ref.Code	Score	Compound Name	Displ.[°2Th]	Scale Fac.	Chem. Formula
	01-089-1397	79	Zinc Oxide	0.000	0.979	Zn O
	01-079-1150	69	Zinc Iron Oxide	0.000	0.911	Zn Fe2 O4

Document History

Insert Measurement:

2.2 Suhu 600°C



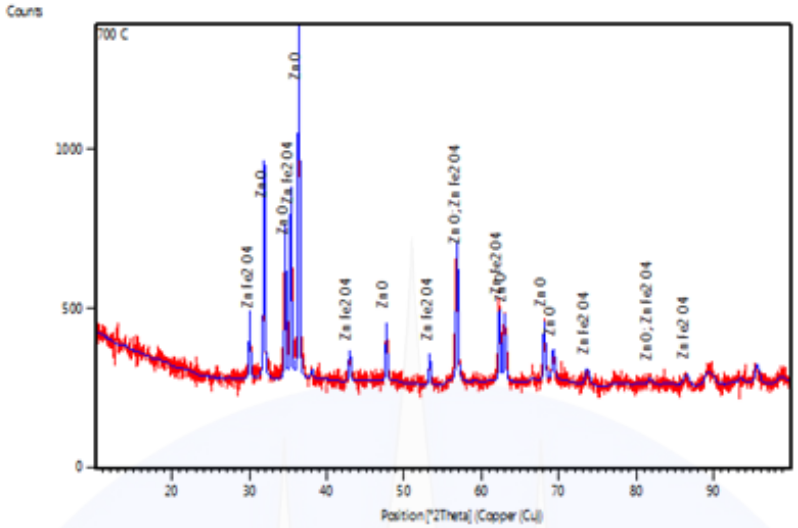
Peak List

Pos.[°2Th.]	Height [cts]	FWHMLeft[°2Th.]	d-spacing [Å]	Rel. Int. [%]
29.9049	133.11	0.3582	2.98793	21.83
31.6872	307.61	0.2558	2.82381	50.46
34.2925	299.90	0.1023	2.61502	49.19
35.1138	485.11	0.1279	2.55571	79.57
36.1957	609.66	0.1791	2.48176	100.00
42.7013	70.16	0.3070	2.11752	11.51
47.4577	97.16	0.4093	1.91581	15.94
53.0844	52.89	0.4093	1.72525	8.67
56.5660	333.25	0.3582	1.62704	54.66
62.0839	218.11	0.2047	1.49503	35.78
62.8570	157.41	0.3070	1.47849	25.82
67.8863	104.21	0.3582	1.38069	17.09
69.0467	58.32	0.3070	1.36030	9.57
73.4233	29.94	0.4093	1.28965	4.91
88.9166	74.66	0.4093	1.10073	12.25
95.4016	24.89	0.7164	1.04231	4.08

Pattern List

Visible	Ref.Code	Score	Compound Name	Displ.[°2Th]	Scale Fac.	Chem. Formula
	01-079-0207	75	Zinc Oxide	0.000	0.958	Zn O
	01-079-1150	57	Zinc Iron Oxide	0.000	0.790	Zn Fe2 O4

2.3 Suhu 700°C



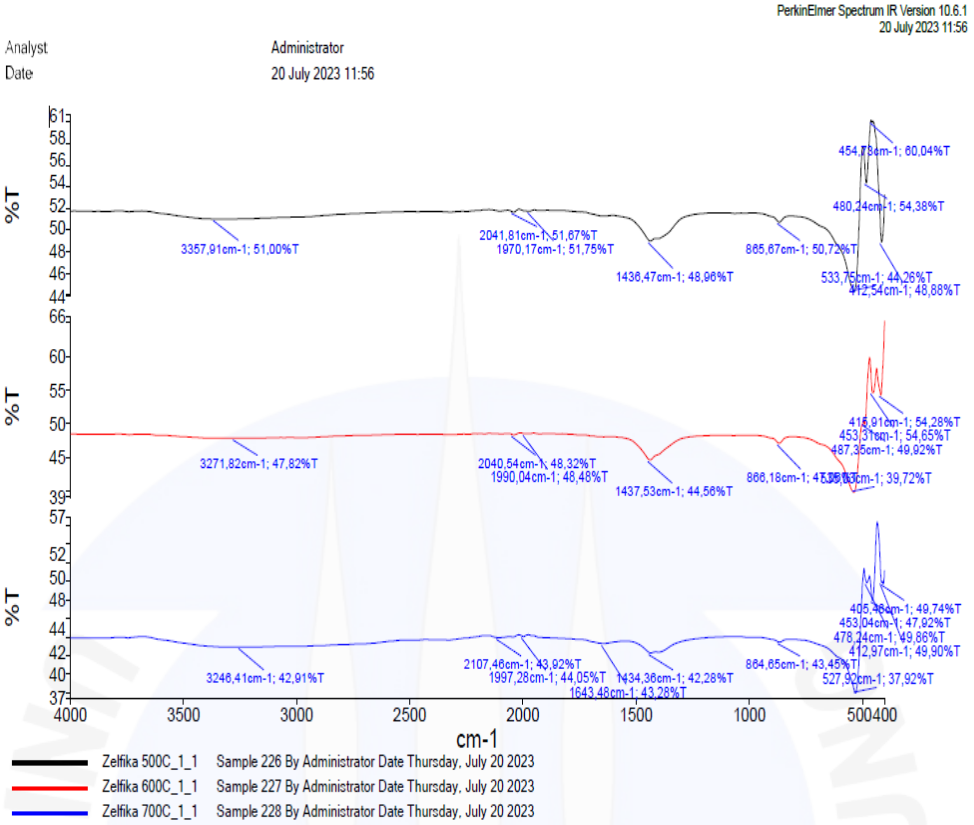
Peak List

Pos.[°2Th.]	Height [cts]	FWHMLeft[°2Th.]	d-spacing [Å]	Rel. Int. [%]
29.9986	162.43	0.1791	2.97881	18.37
31.8653	510.84	0.2047	2.80844	57.77
34.5988	399.23	0.1535	2.59257	45.15
35.3402	495.58	0.1535	2.53985	56.05
36.3555	884.20	0.1791	2.47122	100.00
38.0495	20.34	0.4093	2.36501	2.30
42.8940	74.72	0.2558	2.10846	8.45
47.6385	168.11	0.1535	1.90896	19.01
53.2348	85.38	0.2047	1.72072	9.66
56.8067	377.97	0.2303	1.62072	42.75
62.2734	215.44	0.1535	1.49094	24.37
62.9297	193.90	0.2047	1.47696	21.93
68.0810	177.93	0.2047	1.37722	20.12
69.2291	82.98	0.3070	1.35716	9.38
73.6086	37.61	0.6140	1.28686	4.25
81.6574	15.76	0.3582	1.17916	1.78
86.3765	26.43	0.8187	1.12645	2.99
95.5331	52.38	0.4093	1.04123	5.92

Pattern List

Visible	Ref.Code	Score	Compound Name	Displ.[°2Th]	Scale Fac.	Chem. Formula
	01-075-0576	72	Zinc Oxide	0.000	0.911	Zn O
	01-089-1010	58	Zinc Iron Oxide	0.000	0.563	Zn Fe2 O4

Lampiran 3. Hasil FTIR



Lampiran 4. Hasil UV-DRS

Energi celah pita komposit dapat diketahui melalui perhitungan persamaaan *Kubelka-Munk* sebagai berikut :

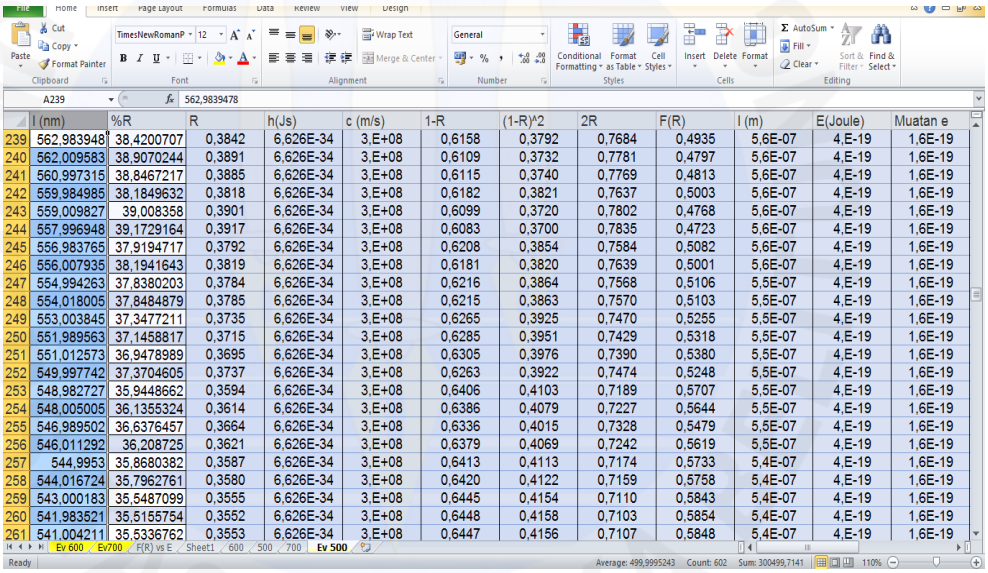
$$(F(R_\infty)\ hv)^{\gamma} = A\ (hv\text{-}Eg)$$

$$(F(R_\infty)) = \frac{k}{s}$$

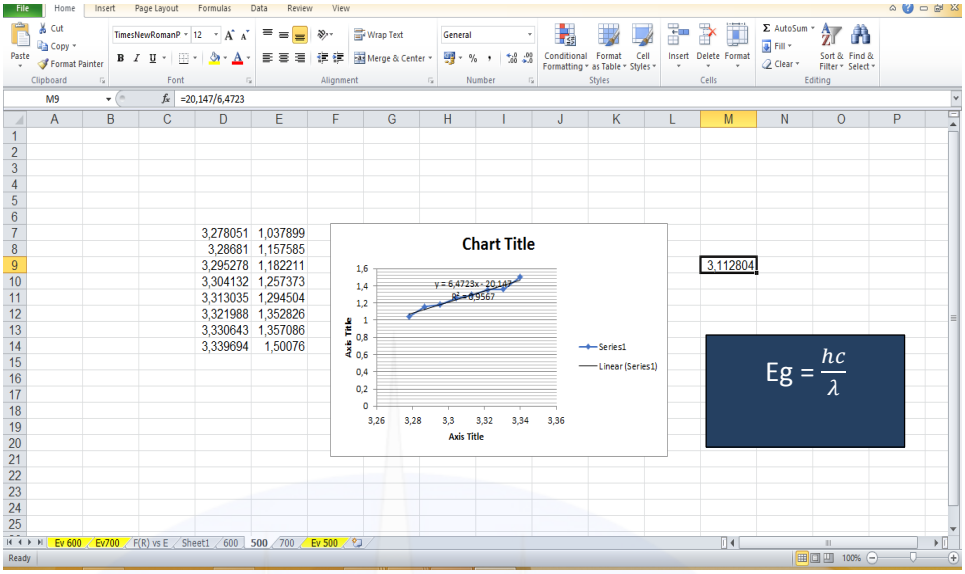
$$\frac{k}{s} = \frac{(1-R)2}{2R}$$

Keterangan : F(R) = Kubelka-Munk Function
K = koefesien absorbsi
S = koefesien scattering

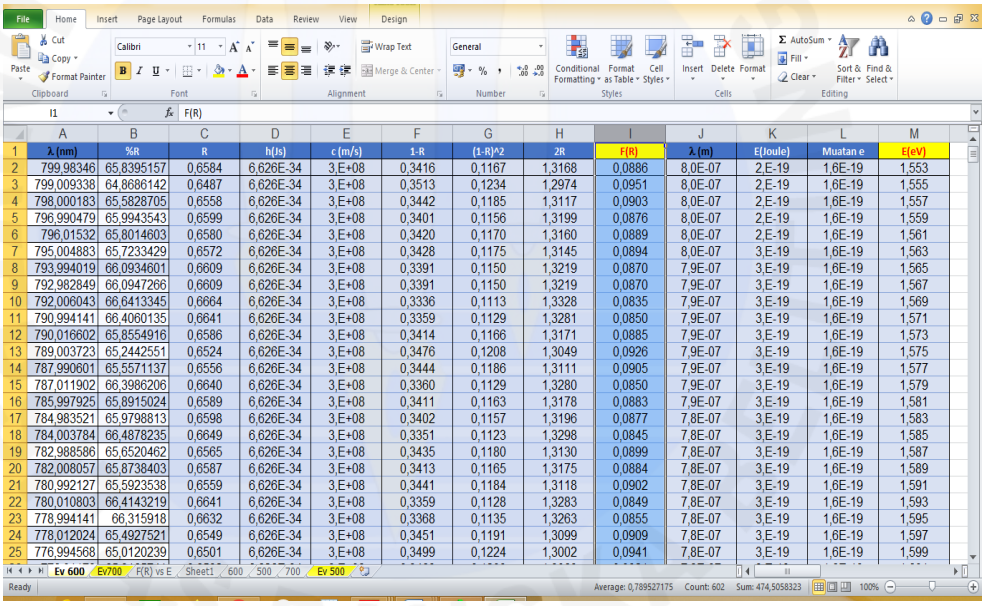
a. Suhu 500°C



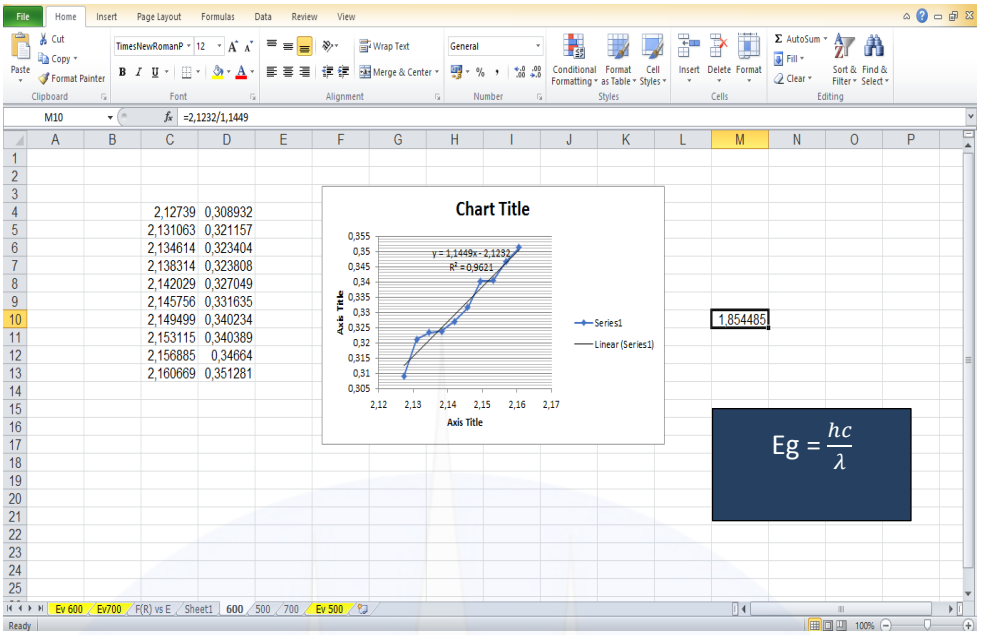
	l (nm)	%R	R	h(Js)	c (m/s)	1-R	(1-R)^2	2R	F(R)	l (m)	E(Joule)	Muatan e
239	562,983948	38,4200707	0,3842	6,626E-34	3,E+08	0,6158	0,3792	0,7684	0,4935	5,6E-07	4,E-19	1,6E-19
240	562,009583	38,9070244	0,3891	6,626E-34	3,E+08	0,6109	0,3732	0,7781	0,4797	5,6E-07	4,E-19	1,6E-19
241	560,997315	38,8467217	0,3885	6,626E-34	3,E+08	0,6115	0,3740	0,7769	0,4813	5,6E-07	4,E-19	1,6E-19
242	559,984985	38,1849632	0,3818	6,626E-34	3,E+08	0,6182	0,3821	0,7637	0,5003	5,6E-07	4,E-19	1,6E-19
243	559,009827	39,008358	0,3901	6,626E-34	3,E+08	0,6099	0,3720	0,7802	0,4768	5,6E-07	4,E-19	1,6E-19
244	557,996948	39,1729164	0,3917	6,626E-34	3,E+08	0,6083	0,3700	0,7835	0,4723	5,6E-07	4,E-19	1,6E-19
245	556,983765	37,9194717	0,3792	6,626E-34	3,E+08	0,6208	0,3854	0,7584	0,5082	5,6E-07	4,E-19	1,6E-19
246	556,007935	38,1941643	0,3819	6,626E-34	3,E+08	0,6181	0,3820	0,7639	0,5001	5,6E-07	4,E-19	1,6E-19
247	554,994263	37,8380203	0,3784	6,626E-34	3,E+08	0,6216	0,3864	0,7568	0,5106	5,5E-07	4,E-19	1,6E-19
248	554,018005	37,8484879	0,3785	6,626E-34	3,E+08	0,6215	0,3863	0,7570	0,5103	5,5E-07	4,E-19	1,6E-19
249	553,003845	37,3477211	0,3735	6,626E-34	3,E+08	0,6265	0,3925	0,7470	0,5255	5,5E-07	4,E-19	1,6E-19
250	551,989563	37,1458817	0,3715	6,626E-34	3,E+08	0,6285	0,3951	0,7429	0,5318	5,5E-07	4,E-19	1,6E-19
251	551,012573	36,9478989	0,3695	6,626E-34	3,E+08	0,6305	0,3976	0,7390	0,5380	5,5E-07	4,E-19	1,6E-19
252	549,997742	37,3704605	0,3737	6,626E-34	3,E+08	0,6263	0,3922	0,7474	0,5248	5,5E-07	4,E-19	1,6E-19
253	548,982727	35,9448662	0,3594	6,626E-34	3,E+08	0,6406	0,4103	0,7189	0,5707	5,5E-07	4,E-19	1,6E-19
254	548,005005	36,1355324	0,3614	6,626E-34	3,E+08	0,6386	0,4079	0,7227	0,5644	5,5E-07	4,E-19	1,6E-19
255	546,989502	36,6376457	0,3664	6,626E-34	3,E+08	0,6336	0,4015	0,7328	0,5479	5,5E-07	4,E-19	1,6E-19
256	546,011292	36,208725	0,3621	6,626E-34	3,E+08	0,6379	0,4069	0,7242	0,5619	5,5E-07	4,E-19	1,6E-19
257	544,9953	35,8680382	0,3587	6,626E-34	3,E+08	0,6413	0,4113	0,7174	0,5733	5,4E-07	4,E-19	1,6E-19
258	544,016724	35,7962761	0,3580	6,626E-34	3,E+08	0,6420	0,4122	0,7159	0,5758	5,4E-07	4,E-19	1,6E-19
259	543,000183	35,5487099	0,3555	6,626E-34	3,E+08	0,6445	0,4154	0,7110	0,5843	5,4E-07	4,E-19	1,6E-19
260	541,983521	35,5155754	0,3552	6,626E-34	3,E+08	0,6448	0,4158	0,7103	0,5854	5,4E-07	4,E-19	1,6E-19
261	541,004211	35,5336762	0,3553	6,626E-34	3,E+08	0,6447	0,4156	0,7107	0,5848	5,4E-07	4,E-19	1,6E-19



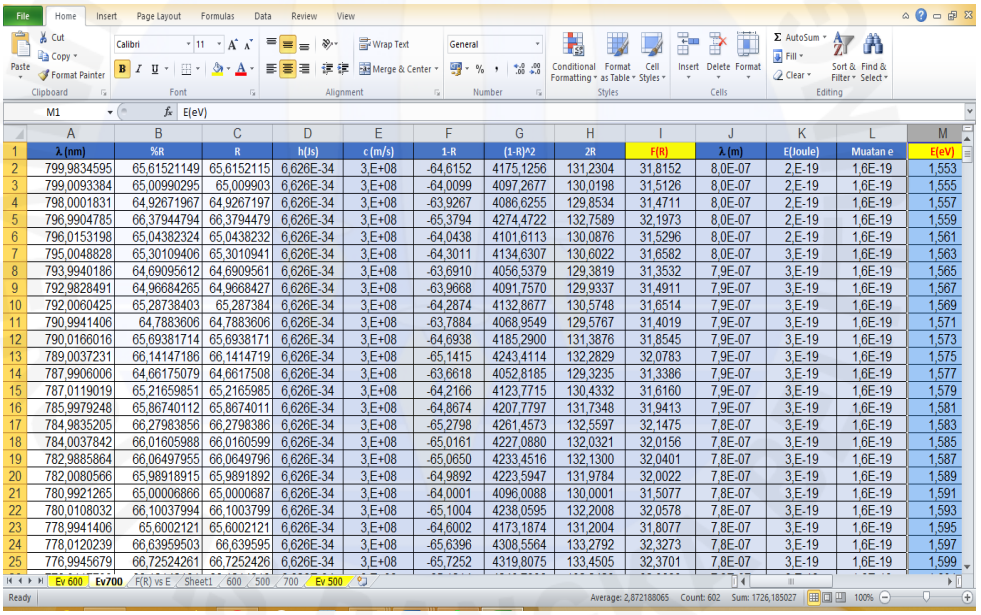
b. Suhu 600°C



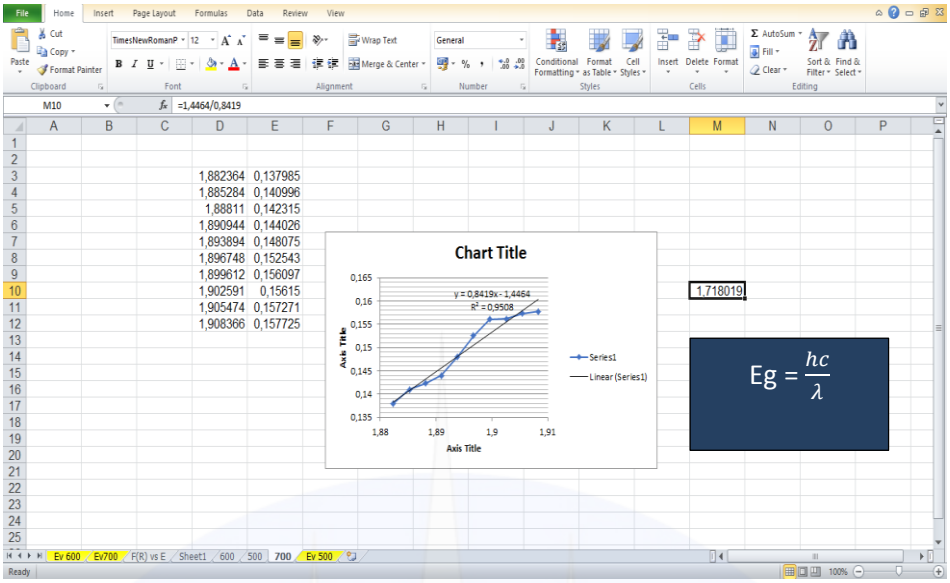
λ (nm)	%R	R	h(Js)	c (m/s)	1-R	(1-R)^2	2R	F(R)	λ (m)	E(Joule)	Muatan e	E(eV)
799,98346	65,8395157	0,6584	6,626E-34	3,E+08	0,3416	0,1167	1,3168	0,0886	8,0E-07	2,E-19	1,6E-19	1,553
799,009338	64,8686142	0,6487	6,626E-34	3,E+08	0,3513	0,1234	1,2974	0,0951	8,0E-07	2,E-19	1,6E-19	1,555
798,000183	65,5828705	0,6558	6,626E-34	3,E+08	0,3442	0,1185	1,3117	0,0903	8,0E-07	2,E-19	1,6E-19	1,557
796,990479	65,9943543	0,6599	6,626E-34	3,E+08	0,3401	0,1156	1,3199	0,0876	8,0E-07	2,E-19	1,6E-19	1,559
796,01532	65,8014603	0,6580	6,626E-34	3,E+08	0,3420	0,1170	1,3160	0,0889	8,0E-07	2,E-19	1,6E-19	1,561
795,004883	65,7233429	0,6572	6,626E-34	3,E+08	0,3428	0,1175	1,3145	0,0894	8,0E-07	3,E-19	1,6E-19	1,563
793,994019	66,0934601	0,6609	6,626E-34	3,E+08	0,3391	0,1150	1,3219	0,0870	7,9E-07	3,E-19	1,6E-19	1,565
792,982849	66,0947266	0,6609	6,626E-34	3,E+08	0,3391	0,1150	1,3219	0,0870	7,9E-07	3,E-19	1,6E-19	1,567
792,006043	66,6413345	0,6664	6,626E-34	3,E+08	0,3336	0,1113	1,3328	0,0835	7,9E-07	3,E-19	1,6E-19	1,569
790,994141	66,4060135	0,6641	6,626E-34	3,E+08	0,3359	0,1129	1,3281	0,0850	7,9E-07	3,E-19	1,6E-19	1,571
790,016602	65,8554916	0,6586	6,626E-34	3,E+08	0,3414	0,1166	1,3171	0,0885	7,9E-07	3,E-19	1,6E-19	1,573
789,003723	65,2442551	0,6524	6,626E-34	3,E+08	0,3476	0,1208	1,3049	0,0926	7,9E-07	3,E-19	1,6E-19	1,575
787,990601	65,5571137	0,6556	6,626E-34	3,E+08	0,3444	0,1186	1,3111	0,0905	7,9E-07	3,E-19	1,6E-19	1,577
787,011902	66,3986206	0,6640	6,626E-34	3,E+08	0,3360	0,1129	1,3280	0,0850	7,9E-07	3,E-19	1,6E-19	1,579
785,997925	65,8915024	0,6589	6,626E-34	3,E+08	0,3411	0,1163	1,3178	0,0883	7,9E-07	3,E-19	1,6E-19	1,581
784,983521	65,9798813	0,6598	6,626E-34	3,E+08	0,3402	0,1157	1,3196	0,0877	7,8E-07	3,E-19	1,6E-19	1,583
784,003784	66,4878235	0,6649	6,626E-34	3,E+08	0,3351	0,1123	1,3298	0,0845	7,8E-07	3,E-19	1,6E-19	1,585
782,988586	65,6520462	0,6565	6,626E-34	3,E+08	0,3435	0,1180	1,3130	0,0899	7,8E-07	3,E-19	1,6E-19	1,587
782,008057	65,8738403	0,6587	6,626E-34	3,E+08	0,3413	0,1165	1,3175	0,0884	7,8E-07	3,E-19	1,6E-19	1,589
780,992127	65,5923538	0,6559	6,626E-34	3,E+08	0,3441	0,1184	1,3118	0,0902	7,8E-07	3,E-19	1,6E-19	1,591
780,010803	66,4143219	0,6641	6,626E-34	3,E+08	0,3359	0,1128	1,3283	0,0849	7,8E-07	3,E-19	1,6E-19	1,593
778,994141	66,315918	0,6632	6,626E-34	3,E+08	0,3368	0,1135	1,3263	0,0855	7,8E-07	3,E-19	1,6E-19	1,595
778,012024	65,4927521	0,6549	6,626E-34	3,E+08	0,3451	0,1191	1,3099	0,0909	7,8E-07	3,E-19	1,6E-19	1,597
776,994568	65,0120239	0,6501	6,626E-34	3,E+08	0,3499	0,1224	1,3002	0,0941	7,8E-07	3,E-19	1,6E-19	1,599



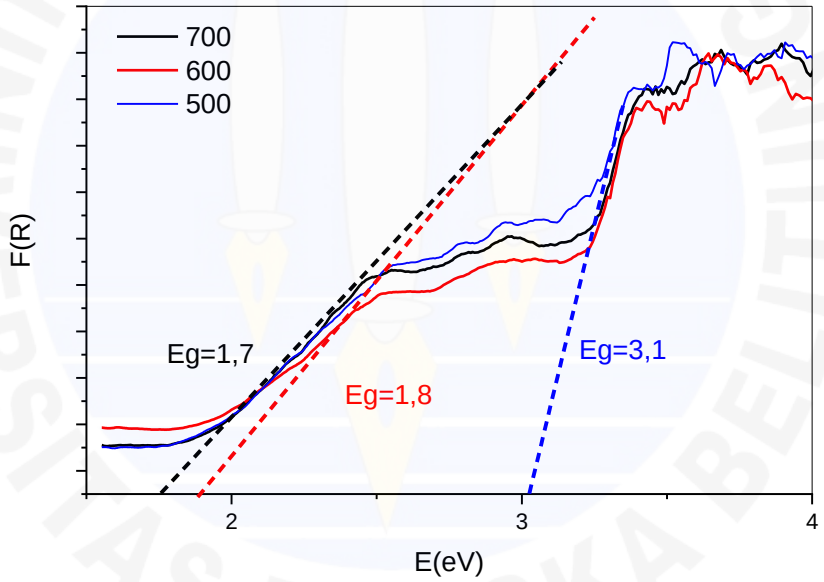
c. Suhu 700°C



λ (nm)	%R	R	h(Js)	c (m/s)	1-R	(1-R)^2	2R	F(R)	λ (m)	E(Joule)	Muatan e	E(eV)
799,9834595	65,61521149	65,6152115	6,626E-34	3,E+08	-64,6152	4175,1256	131,2304	31,8152	8,0E-07	2,E-19	1,6E-19	1,553
799,0093384	65,00990295	65,009903	6,626E-34	3,E+08	-64,0099	4097,2677	130,0198	31,5126	8,0E-07	2,E-19	1,6E-19	1,555
798,0001831	64,92671967	64,9267197	6,626E-34	3,E+08	-63,9267	4086,6255	129,8534	31,4711	8,0E-07	2,E-19	1,6E-19	1,557
796,9904785	66,37944794	66,3794479	6,626E-34	3,E+08	-65,3794	4274,4722	132,7589	32,1973	8,0E-07	2,E-19	1,6E-19	1,559
796,0153198	65,04382324	65,0438232	6,626E-34	3,E+08	-64,0438	4101,6113	130,0876	31,5296	8,0E-07	2,E-19	1,6E-19	1,561
795,0048828	65,30109406	65,3010941	6,626E-34	3,E+08	-64,3011	4134,6307	130,6022	31,6582	8,0E-07	3,E-19	1,6E-19	1,563
793,9940186	64,69095612	64,6909561	6,626E-34	3,E+08	-63,6910	4056,5379	129,3819	31,3532	7,9E-07	3,E-19	1,6E-19	1,565
792,9828491	64,96684265	64,9668427	6,626E-34	3,E+08	-63,9668	4091,7570	129,9337	31,4911	7,9E-07	3,E-19	1,6E-19	1,567
792,0060425	65,28738403	65,287384	6,626E-34	3,E+08	-64,2874	4132,8677	130,5748	31,6514	7,9E-07	3,E-19	1,6E-19	1,569
790,9941406	64,7883606	64,7883606	6,626E-34	3,E+08	-63,7884	4068,9549	129,5767	31,4019	7,9E-07	3,E-19	1,6E-19	1,571
790,0166016	65,69381714	65,6938171	6,626E-34	3,E+08	-64,6938	4185,2900	131,3876	31,8545	7,9E-07	3,E-19	1,6E-19	1,573
789,0037231	66,14147186	66,1414719	6,626E-34	3,E+08	-65,1415	4243,4114	132,2829	32,0783	7,9E-07	3,E-19	1,6E-19	1,575
787,9906006	64,66175079	64,6617508	6,626E-34	3,E+08	-63,6618	4052,8185	129,3235	31,3386	7,9E-07	3,E-19	1,6E-19	1,577
787,0119019	65,21659851	65,2165985	6,626E-34	3,E+08	-64,2166	4123,7715	130,4332	31,6160	7,9E-07	3,E-19	1,6E-19	1,579
785,9979248	65,86740112	65,8674011	6,626E-34	3,E+08	-64,8674	4207,7797	131,7348	31,9413	7,9E-07	3,E-19	1,6E-19	1,581
784,9835205	66,27983856	66,2798386	6,626E-34	3,E+08	-65,2798	4261,4573	132,5597	32,1475	7,8E-07	3,E-19	1,6E-19	1,583
784,0037842	66,01605988	66,0160599	6,626E-34	3,E+08	-65,0161	4227,0880	132,0321	32,0156	7,8E-07	3,E-19	1,6E-19	1,585
782,9885864	66,06497955	66,0649796	6,626E-34	3,E+08	-65,0650	4233,4516	132,1300	32,0401	7,8E-07	3,E-19	1,6E-19	1,587
782,0080566	65,98918915	65,9891892	6,626E-34	3,E+08	-64,9892	4223,5947	131,9784	32,0022	7,8E-07	3,E-19	1,6E-19	1,589
780,9921265	65,00006866	65,0000687	6,626E-34	3,E+08	-64,0001	4096,0088	130,0001	31,5077	7,8E-07	3,E-19	1,6E-19	1,591
780,0108032	66,10037994	66,1003799	6,626E-34	3,E+08	-65,1004	4238,0595	132,2008	32,0578	7,8E-07	3,E-19	1,6E-19	1,593
778,9941406	65,6002121	65,6002121	6,626E-34	3,E+08	-64,6002	4173,1874	131,2004	31,8077	7,8E-07	3,E-19	1,6E-19	1,595
778,0120239	66,63959503	66,639595	6,626E-34	3,E+08	-65,6396	4308,5564	133,2792	32,3273	7,8E-07	3,E-19	1,6E-19	1,597
776,9945679	66,72524261	66,7252426	6,626E-34	3,E+08	-65,7252	4319,8075	133,4505	32,3701	7,8E-07	3,E-19	1,6E-19	1,599



d. Grafik Pita Celah Energi $ZnFe_2O_4$



Lampiran 5. Perhitungan

5.1 Perhitungan XRD

Ukuran Kristal Persamaan *Debye-Scherrer*

$$D = \frac{K\lambda}{\beta . cos\ \theta}$$

Keterangan :

D = ukuran rata-rata partikel

θ = sudut bragg (rad)

β = FWHM (rad)

λ = panjang gelombang Cu-Kα (1,5406 Å)

K = *shape factor* (0,9)

A. Suhu 500ºC

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians}\ (0,3582) \times \cos(\text{Radians}\frac{29,9339}{2})} = 22,94\ \text{nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians}\ (0,1279) \times \cos(\text{Radians}\frac{35,2243}{2})} = 65,14\ \text{nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians}\ (0,4093) \times \cos(\text{Radians}\frac{42,7746}{2})} = 20,84\ \text{nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians}\ (0,4093) \times \cos(\text{Radians}\frac{53,0870}{2})} = 21,69\ \text{nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians}\ (0,3070) \times \cos(\text{Radians}\frac{56,5499}{2})} = 29,37\ \text{nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians}\ (0,4093) \times \cos(\text{Radians}\frac{62,1437}{2})} = 22,65\ \text{nm}$$

Ukuran rata-rata partikel =

$$\frac{22,94 + 65,14 + 20,84 + 21,69 + 29,37 + 22,65}{6} = 30,44\ \text{nm}$$

B. Suhu 600ºC

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians}\ (0,3582) \times \cos(\text{Radians}\frac{29,9040}{2})} = 22,95\ \text{nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians}\ (0,1279) \times \cos(\text{Radians}\frac{35,1138}{2})} = 65,12\ \text{nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians}\ (0,3070) \times \cos(\text{Radians}\frac{42,7013}{2})} = 27,77\ \text{nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians}\ (0,4093) \times \cos(\text{Radians}\frac{53,0844}{2})} = 21,69\ \text{nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians } (0,3582) \times \cos(\text{Radians}\frac{56,5660}{2})} = 25,17 \text{ nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians } (0,2047) \times \cos(\text{Radians}\frac{62,0839}{2})} = 45,28 \text{ nm}$$

Ukuran rata-rata partikel =

$$\frac{22,95 + 65,12 + 27,77 + 21,69 + 25,17 + 45,28}{6} = 34,66 \text{ nm}$$

C. Suhu 700ºC

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians } (0,17,91) \times \cos(\text{Radians}\frac{29,9986}{2})} = 45,90 \text{ nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians } (0,1535) \times \cos(\text{Radians}\frac{35,3402}{2})} = 54,29 \text{ nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians } (0,2558) \times \cos(\text{Radians}\frac{42,8940}{2})} = 33,35 \text{ nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians } (0,2047) \times \cos(\text{Radians}\frac{53,2348}{2})} = 43,39 \text{ nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians } (0,2303) \times \cos(\text{Radians}\frac{56,8067}{2})} = 39,20 \text{ nm}$$

$$D = \frac{K\lambda}{\beta . \cos\theta} = \frac{0,9 \times 0,1546}{(\text{Radians } (0,1535) \times \cos(\text{Radians}\frac{62,3724}{2})} = 60,44 \text{ nm}$$

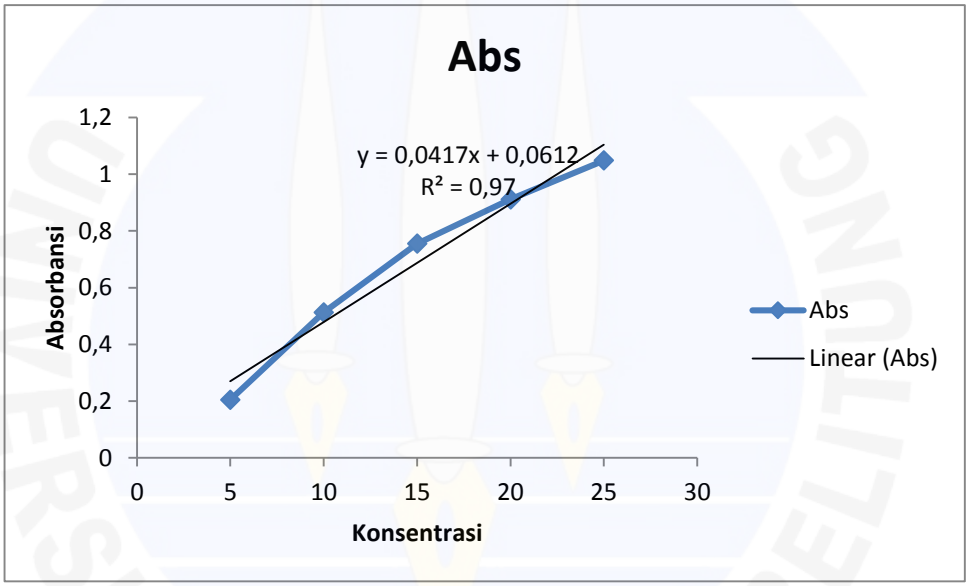
Ukuran rata-rata partikel =

$$\frac{45,90 + 54,29 + 33,35 + 43,39 + 39,20 + 60,44}{4} = 46,09 \text{ nm}$$

Lampiran 6. Penentuan Kurva Kalibrasi Zat Warna Metilen Biru

Tabel 1. Kurva Kalibrasi Zat Warna Metilen Biru

No.	Konsentrasi (ppm)	Absorbansi
1.	5	0,206
2.	10	0,515
3.	15	0,760
4.	20	0,915
5.	25	1,050



6.1. Penentuan Kondisi Optimum Degradasi Zat Warna Metilen Biru Menggunakan Katalis $ZnFe_2O_4$ Dengan Variasi Waktu

6.1.1. Data efektivitas penurunan konsentrasi zat warna zat warna metilen biru terhadap pengaruh variasi waktu menggunakan penyinaran UV

Konsentrasi Awal (ppm)	Waktu (jam)	Adsorbansi	Konsentrasi Akhir (ppm)	% Efektivitas
20 ppm	1	0,153	1,20 ppm	89 %
20 ppm	2	0,116	1,31 ppm	93,45 %
20 ppm	3	0,078	0,40 ppm	98 %
20 ppm	4	0,055	0,14 ppm	99,3 %
20 ppm	5	0,115	1,29 ppm	93,55 %

Lampiran 7. Perhitungan

A. Rumus perhitungan % degradasi zat warna metilen biru menggunakan katalis $ZnFe_2O_4$
   y = ax +b
   y = Nilai absorbansi metilen biru
   x = konsentrasi metilen biru
   a = slope
   b = intersept

   % Degradasi = {(Co-C/Co}x100%
   Ket : Co = Konsentrasi metilen biru awal
   C = Konsentrasi metilen biru sisa

B. Perhitungan konsentrasi sisa metilen biru
   1. Degradasi metilen biru dengan waktu kontak 1 jam
      y = 0,0417x + 0,0612

      $x = \frac{0,153-0,0612}{0,0417}$

      x = 2,20 ppm

      % Degradasi = $\frac{20-2,20}{20}\ x\ 100\%$ = 89 %

   2. Degradasi metilen biru dengan waktu kontak 2 jam
      y = 0,0417x + 0,0612

      $x = \frac{0,116-0,0612}{0,0417}$

      x = 1,31 ppm

      % Degradasi = $\frac{20-1,31}{20}\ x\ 100\%$ = 93,45%

   3. Degradasi metilen biru dengan waktu kontak 3 jam
      y = 0,0417x + 0,0612

      $x = \frac{0,078-0,0612}{0,0417}$

      x = 0,40 ppm

      % Degradasi = $\frac{20-0,40}{20}\ x\ 100\%$ = 98%

4. Degradasi metilen biru dengan waktu kontak 4 jam
   y = 0,0417x + 0,0612

   $x = \frac{0,050-0,0612}{0,0417}$

   x = 0,14 ppm

   % Degradasi = $\frac{20-0,14}{20}\ x\ 100\% = 99,3\ \%$

5. Degradasi metilen biru dengan waktu kontak 5 jam
   y = 0,0147x + 0,0612

   $x = \frac{0,115-0,0612}{0,0417}$

   x = 1,29 ppm

   % Degradasi = $\frac{20-1,29}{20}\ x\ 100\% = 93,55\%$

RIWAYAT HIDUP

Penulis dilahirkan di Pangkalpinang pada tanggal 25 Juni 2001. Penulis merupakan anak pertama dari tiga bersaudara dari pasangan Bapak Zulfandi dan Ibu Rafika Fitrianti. Penulis menyelesaikan pendidikan dasar di SD Negeri 45 Pangkalpinang dilanjutkan pendidikan menengah pertama di SMP Negeri 7 Pangkalpinang lalu pendidikan menengah kejuruan di SMK Farmasi 5 Pangkalpinang pada tahun 2019. Penulis diterima di Universitas Bangka Belitung pada program studi Kimia, Fakultas Teknik pada tahun 2019 melalui jalur SBMPTN (Seleksi Bersama Masuk Perguruan Tinggi Negeri), selama proses perkuliahan penulis mengikuti beberapa organis didalam maupun diluar kampus salah satunya Himpunan Mahasiswa Kimia (HIMKA), sebagai anggota aktif departemen MIKAT, sebagai KADEP departemen MIKAT selain itu, penulis juga ikut sebagai panitia di berbagai kegiatan kemahasiswaan yang ada di Universitas Bangka Belitung.