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LAMPIRAN

1. Alat



XRD



FTIR



Furnace



Timbangan Ohaus



Magnetic Stirrer



Gelas Beker

2. Hasil Perhitungan Ukuran Butir Sampel Fe TiO₂

*** Basic Data Process ***							
Group	: Standard						
Data	: valen1p						
# Strongest 3 peaks							
no. peak	2Theta	d	I/I1	FWHM	Intensity	Integrated	Int
	(deg)	(A)		(deg)	(Counts)	(Counts)	
1	27.2773	3.26678	100	1.24970	547	37372	
2	54.2314	1.69004	60	1.33710	326	20924	
3	36.1044	2.48577	58	0.94230	318	15067	
# Peak Data List							
peak no.	2Theta	d	I/I1	FWHM	Intensity	Integrated	Int
	(deg)	(A)		(deg)	(Counts)	(Counts)	
1	24.6400	3.61014	27	1.06660	149	11568	
2	27.2773	3.26678	100	1.24970	547	37372	
3	28.2400	3.15757	29	0.00000	160	0	
4	28.3600	3.14448	24	0.89340	134	3906	
5	29.7400	3.00164	4	0.74000	24	1729	
6	32.4616	2.75592	14	0.74330	77	3457	
7	34.8600	2.57161	4	0.41340	22	1014	
8	36.1044	2.48577	58	0.94230	318	15067	
9	37.1200	2.42006	12	0.52000	63	2150	
10	37.6200	2.38904	4	0.64000	20	690	
11	38.9850	2.30848	5	0.75000	25	1305	
12	41.1750	2.19061	33	0.93000	178	9237	
13	43.7283	2.06843	8	0.88330	42	2424	
14	48.5750	1.87277	15	1.13000	81	4781	
15	50.1950	1.81606	5	0.83000	26	1501	
16	52.6600	1.73671	6	0.56000	32	1838	
17	54.2314	1.69004	60	1.33710	326	20924	
18	56.1200	1.63756	22	1.58660	121	9916	
19	57.3200	1.60609	6	0.00000	32	0	
20	57.5600	1.59997	4	0.44000	22	835	
21	61.3000	1.51101	6	0.88000	33	1896	
22	62.9375	1.47558	18	1.10500	100	5246	
23	64.2400	1.44876	4	0.92000	21	1762	
24	68.5400	1.36798	17	1.32000	93	9669	

```

*** Basic Data Process ***

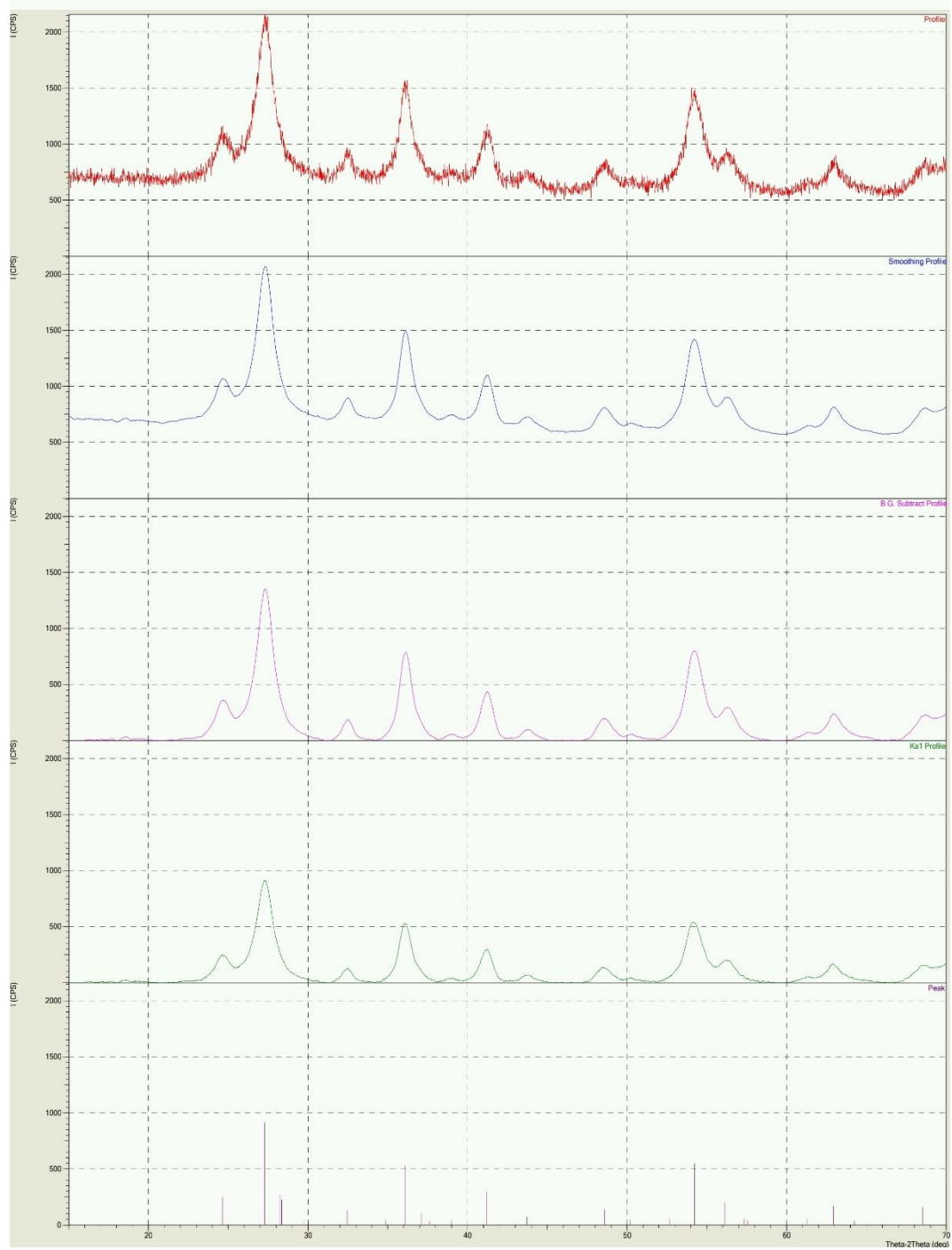
# Data Infomation
  Group           : Standard
  Data            : valen1p
  Sample Nmae    : serbuk
  Comment         :
  Date & Time    : 03-26-18 10:52:38

# Measurement Condition
  X-ray tube
    target        : Cu
    voltage       : 40.0 (kV)
    current       : 30.0 (mA)
  Slits
    Auto Slit     : Used
    divergence slit : 1.00000 (deg)
    scatter slit  : 1.00000 (deg)
    receiving slit : 0.30000(mm)
  Scanning
    drive axis    : Theta-2Theta
    scan range    : 15.0000 - 70.0000 (deg)
    scan mode     : Continuous Scan
    scan speed    : 2.0000 (deg/min)
    sampling pitch : 0.0200 (deg)
    preset time   : 0.60 (sec)

# Data Process Condition
  Smoothing [ AUTO ]
    smoothing points : 51
  B.G.Subtruction [ AUTO ]
    sampling points : 51
    repeat times    : 30
  Ka1-a2 Separate [ MANUAL ]
    Ka1 a2 ratio    : 50 (%)
  Peak Search [ AUTO ]
    differential points : 51
    FWHM threhold    : 0.050 (deg)
    intensity threshold : 30 (par mil)
    FWHM ratio (n-1)/n : 2
  System error Correction [ NO ]
  Precise peak Correction [ NO ]

```

< Group: Standard Data: valen1p >



*** Basic Data Process ***

Group : Standard
Data : valen1koma5

Strongest 3 peaks

no.	peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	3	27.7353	3.21387	100	1.37730	289	21818
2	16	54.5975	1.67957	81	1.28500	235	16272
3	7	36.5700	2.45519	65	1.02000	187	10522

Peak Data List

peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	23.6400	3.76054	3	0.00000	9	0
2	25.0600	3.55058	29	1.10000	84	6597
3	27.7353	3.21387	100	1.37730	289	21818
4	29.6400	3.01153	9	0.78000	27	1974
5	30.9100	2.89063	4	0.14000	11	137
6	32.9600	2.71538	16	0.92000	46	2304
7	36.5700	2.45519	65	1.02000	187	10522
8	37.6600	2.38659	13	0.41340	39	1304
9	39.7000	2.26853	6	1.08000	17	1042
10	41.5967	2.16937	38	1.02000	110	5843
11	43.4800	2.07967	5	0.42000	14	292
12	44.1550	2.04943	9	0.73000	25	1129
13	49.0108	1.85713	20	1.12830	58	3535
14	50.7400	1.79783	6	1.08000	18	1132
15	52.6400	1.73732	4	0.38000	11	453
16	54.5975	1.67957	81	1.28500	235	16272
17	56.6600	1.62322	31	1.32000	89	6616
18	57.9400	1.59037	6	0.36000	16	571
19	61.5600	1.50525	8	0.64000	23	1042
20	63.3000	1.46800	25	1.24000	72	4259
21	64.2800	1.44796	9	0.60000	26	1007
22	65.1000	1.43169	3	0.06000	9	73
23	67.3600	1.38904	3	0.32000	10	299
24	68.9400	1.36102	26	1.36000	76	6287

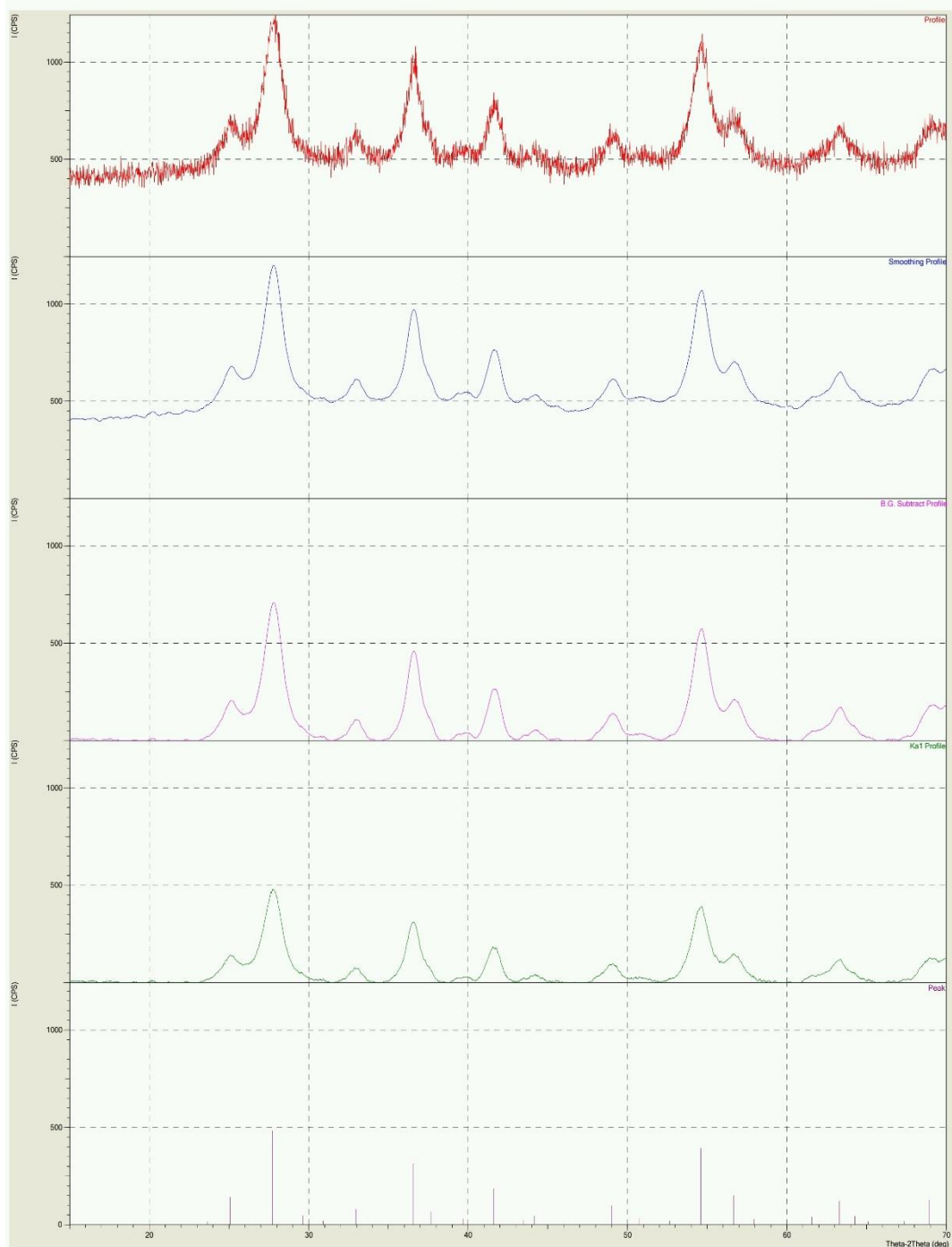
*** Basic Data Process ***

```
# Data Information
  Group           : Standard
  Data            : valen1koma5
  Sample Nmae    : serbuk
  Comment         :
  Date & Time    : 03-26-18 10:21:03

# Measurement Condition
  X-ray tube
    target        : Cu
    voltage       : 40.0 (kV)
    current       : 30.0 (mA)
  Slits
    Auto Slit     : Used
    divergence slit : 1.00000 (deg)
    scatter slit   : 1.00000 (deg)
    receiving slit  : 0.30000(mm)
  Scanning
    drive axis    : Theta-2Theta
    scan range    : 15.0000 - 70.0000 (deg)
    scan mode     : Continuous Scan
    scan speed    : 2.0000 (deg/min)
    sampling pitch : 0.0200 (deg)
    preset time   : 0.60 (sec)

# Data Process Condition
  Smoothing [ AUTO ]
    smoothing points : 51
  B.G.Subtruction [ AUTO ]
    sampling points : 51
    repeat times    : 30
  Ka1-a2 Separate [ MANUAL ]
    Ka1 a2 ratio    : 50 (%)
  Peak Search [ AUTO ]
    differential points : 51
    FWHM threshold   : 0.050 (deg)
    intensity threshold : 30 (par mil)
    FWHM ratio (n-1)/n : 2
  System error Correction [ NO ]
  Precise peak Correction [ NO ]
```

< Group: Standard Data: valen1koma5 >



*** Basic Data Process ***

Group : Standard
Data : valen3p

Strongest 3 peaks

no.	peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	3	27.6816	3.21998	100	1.42330	225	16783
2	15	54.5500	1.68092	94	1.34000	211	15259
3	7	36.4900	2.46039	80	1.02000	181	10438

Peak Data List

peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	23.6000	3.76682	3	0.36000	7	250
2	25.0200	3.55616	29	1.14660	65	4690
3	27.6816	3.21998	100	1.42330	225	16783
4	29.1800	3.05795	15	0.70660	34	1756
5	29.9400	2.98204	7	0.72000	15	712
6	32.8400	2.72503	16	0.96000	37	2081
7	36.4900	2.46039	80	1.02000	181	10438
8	37.8200	2.37686	11	0.52000	24	1089
9	39.3600	2.28734	7	0.76000	16	755
10	41.5350	2.17245	47	0.94000	106	5655
11	44.1750	2.04855	10	1.09000	22	1232
12	48.9100	1.86072	23	1.30000	52	3438
13	50.5900	1.80280	7	0.62000	15	627
14	52.6400	1.73732	4	0.44000	10	451
15	54.5500	1.68092	94	1.34000	211	15259
16	56.6200	1.62428	37	1.18000	83	5568
17	57.9200	1.59088	7	0.62660	15	682
18	58.4900	1.57672	4	0.30000	8	149
19	61.4800	1.50701	8	0.36000	17	609
20	63.1900	1.47029	31	1.06000	70	4277
21	64.1400	1.45078	11	0.00000	25	0
22	64.4400	1.44475	8	0.84000	19	785
23	67.3200	1.38977	4	0.12000	9	107
24	68.8800	1.36205	31	1.04000	69	5610

*** Basic Data Process ***

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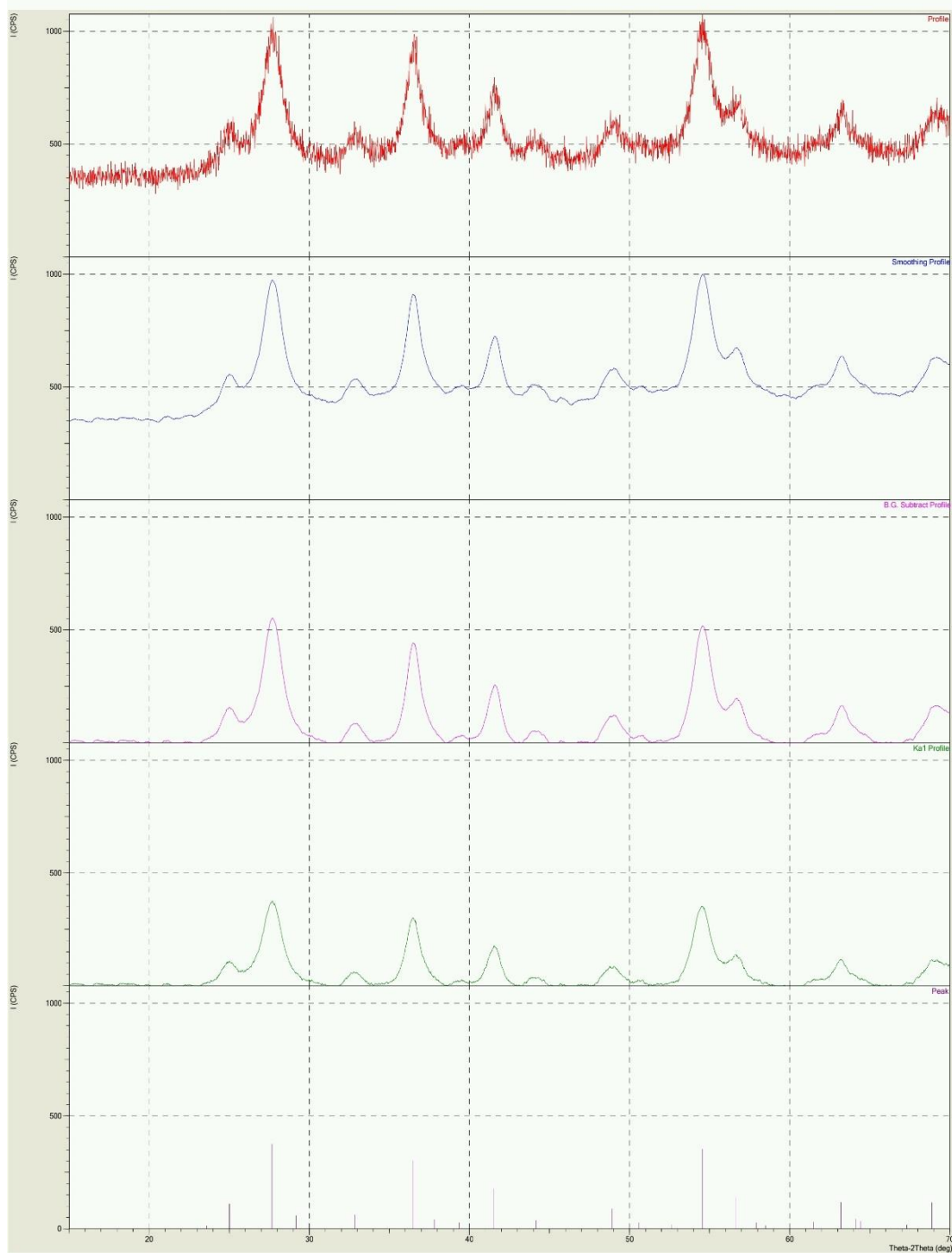
# Data Information
  Group           : Standard
  Data            : valen3p
  Sample Nmae    : serbuk
  Comment         :
  Date & Time     : 03-26-18 11:23:45

# Measurement Condition
  X-ray tube
    target        : Cu
    voltage       : 40.0 (kV)
    current       : 30.0 (mA)
  Slits
    Auto Slit     : Used
    divergence slit : 1.00000 (deg)
    scatter slit   : 1.00000 (deg)
    receiving slit : 0.30000(mm)
  Scanning
    drive axis    : Theta-2Theta
    scan range    : 15.0000 - 70.0000 (deg)
    scan mode     : Continuous Scan
    scan speed    : 2.0000 (deg/min)
    sampling pitch : 0.0200 (deg)
    preset time   : 0.60 (sec)

# Data Process Condition
  Smoothing [ AUTO ]
    smoothing points : 51
  B.G.Subtruction [ AUTO ]
    sampling points : 51
    repeat times    : 30
  Ka1-a2 Separate [ MANUAL ]
    Ka1 a2 ratio    : 50 (%)
  Peak Search [ AUTO ]
    differential points : 51
    FWHM threshold    : 0.050 (deg)
    intensity threshold : 30 (par mil)
    FWHM ratio (n-1)/n : 2
  System error Correction [ NO ]
  Precise peak Correction [ NO ]

```

< Group: Standard Data: valen3p >



*** Basic Data Process ***

Group : Standard
Data : valen4p

Strongest 3 peaks

no.	peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	4	27.3232	3.26140	100	1.29640	388	25200
2	16	54.2050	1.69080	60	1.27660	233	16104
3	9	36.1333	2.48385	56	0.98670	217	11195

Peak Data List

peak no.	2Theta (deg)	d (A)	I/I1	FWHM (deg)	Intensity (Counts)	Integrated Int (Counts)
1	21.2300	4.18167	4	0.70000	14	633
2	22.5400	3.94151	4	0.33340	15	414
3	24.6200	3.61302	30	1.16660	118	9403
4	27.3232	3.26140	100	1.29640	388	25200
5	28.5000	3.12935	23	0.72000	88	3870
6	29.3600	3.03961	8	0.80000	31	1588
7	32.4850	2.75399	14	0.91000	54	2716
8	34.6800	2.58454	3	0.62000	12	658
9	36.1333	2.48385	56	0.98670	217	11195
10	37.3200	2.40755	8	0.40000	32	1291
11	39.0766	2.30327	5	0.60670	19	792
12	41.1950	2.18959	33	0.93000	128	6556
13	43.8566	2.06268	6	1.00670	25	1593
14	48.5900	1.87223	17	1.14000	65	4241
15	50.5100	1.80547	5	0.86000	21	1339
16	54.2050	1.69080	60	1.27660	233	16104
17	56.3200	1.63221	22	1.33600	87	6570
18	57.2800	1.60712	7	0.00000	26	0
19	57.6600	1.59743	4	0.88000	15	875
20	61.0800	1.51592	4	0.64000	17	807
21	62.1000	1.49345	9	0.92000	35	1312
22	62.8133	1.47819	19	1.20000	75	3008
23	63.9000	1.45565	7	0.94000	28	1312
24	64.6800	1.43997	3	0.32000	12	332
25	67.4000	1.38832	4	0.56000	15	583
26	68.5600	1.36763	19	1.10660	74	5652
27	69.6800	1.34836	19	0.00000	73	0

*** Basic Data Process ***

Data Information

Group : Standard
 Data : valen4p
 Sample Name : serbuk
 Comment :
 Date & Time : 03-26-18 11:57:45

Measurement Condition

X-ray tube
 target : Cu
 voltage : 40.0 (kV)
 current : 30.0 (mA)

Slits
 Auto Slit : Used
 divergence slit : 1.00000 (deg)
 scatter slit : 1.00000 (deg)
 receiving slit : 0.30000(mm)

Scanning
 drive axis : Theta-2Theta
 scan range : 15.0000 - 70.0000 (deg)
 scan mode : Continuous Scan
 scan speed : 2.0000 (deg/min)
 sampling pitch : 0.0200 (deg)
 preset time : 0.60 (sec)

Data Process Condition

Smoothing [AUTO]
 smoothing points : 51

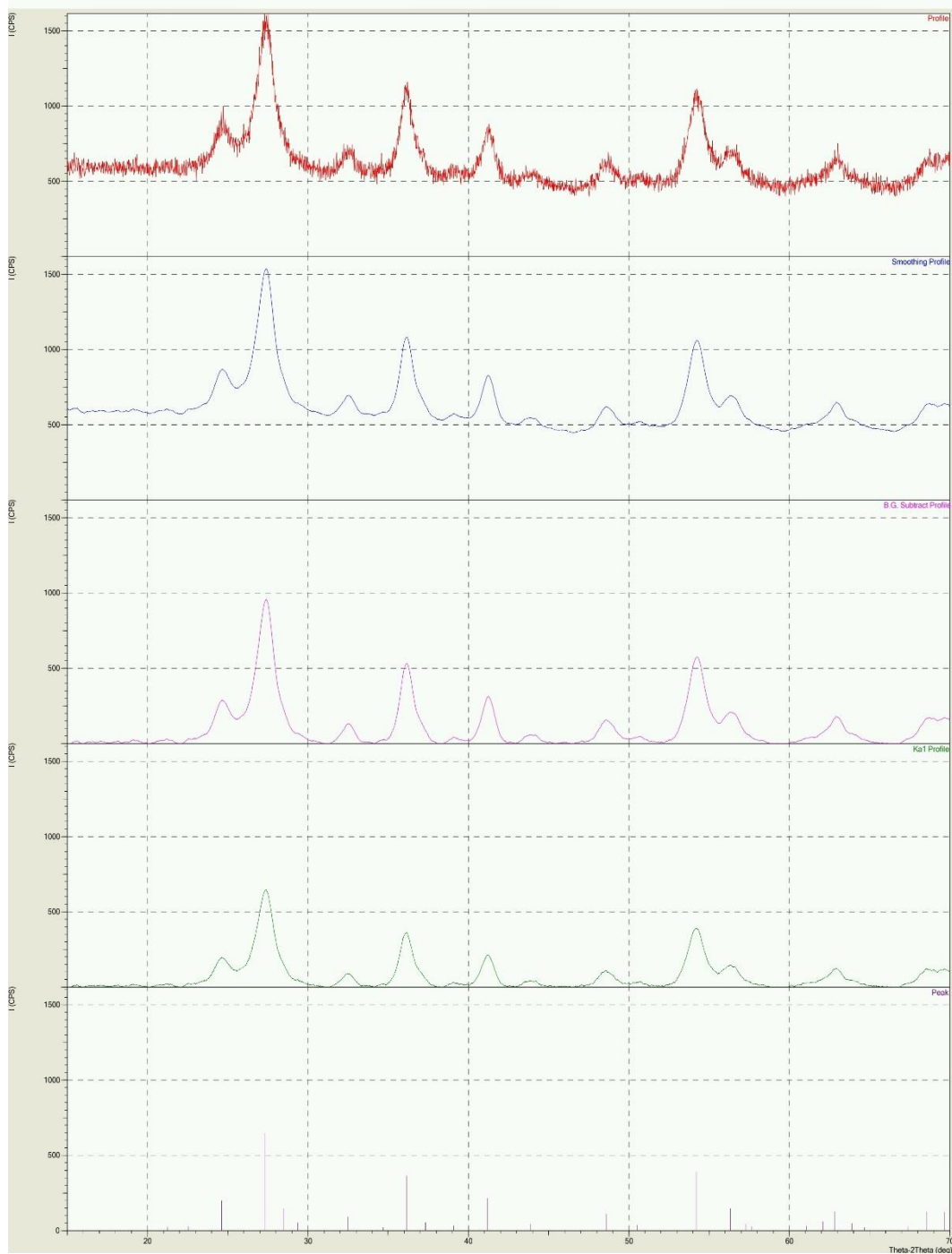
B.G.Subtraction [AUTO]
 sampling points : 51
 repeat times : 30

Ka1-a2 Separate [MANUAL]
 Ka1 a2 ratio : 50 (%)

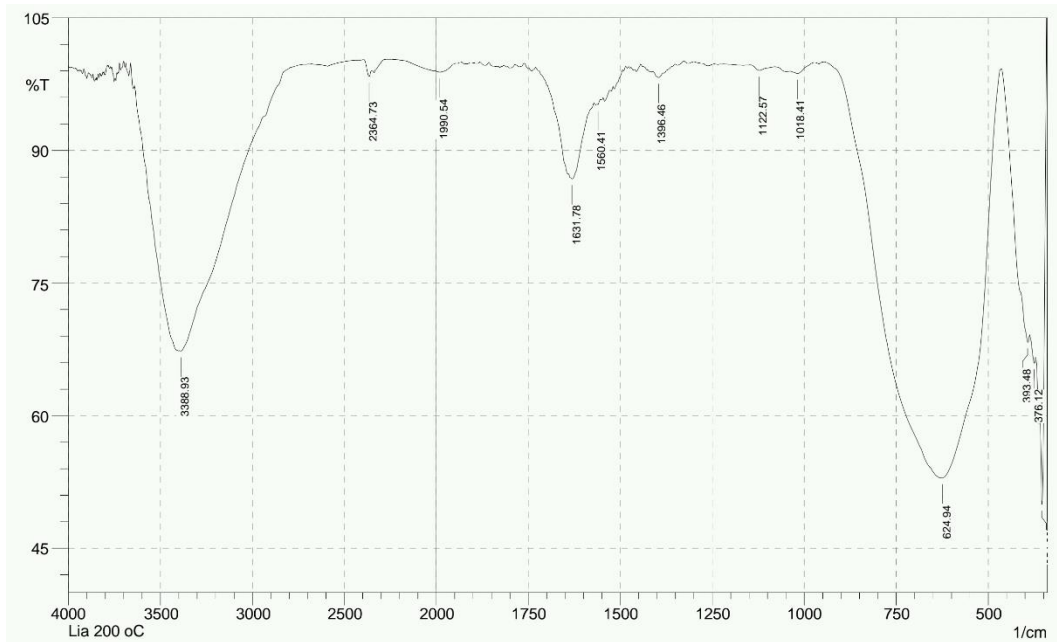
Peak Search [AUTO]
 differential points : 51
 FWHM threshold : 0.050 (deg)
 intensity threshold : 30 (par mil)
 FWHM ratio (n-1)/n : 2

System error Correction [NO]
 Precise peak Correction [NO]

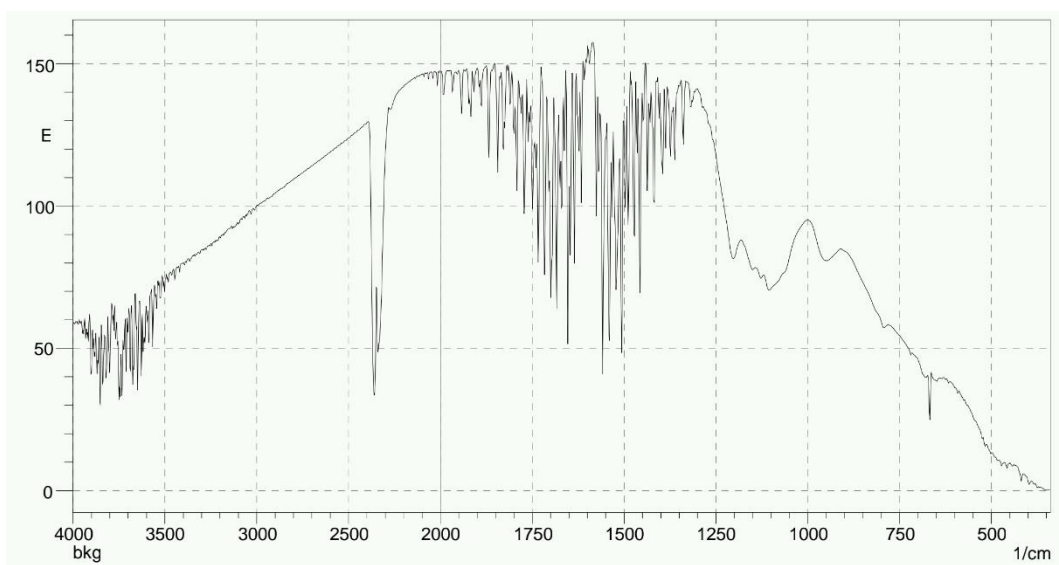
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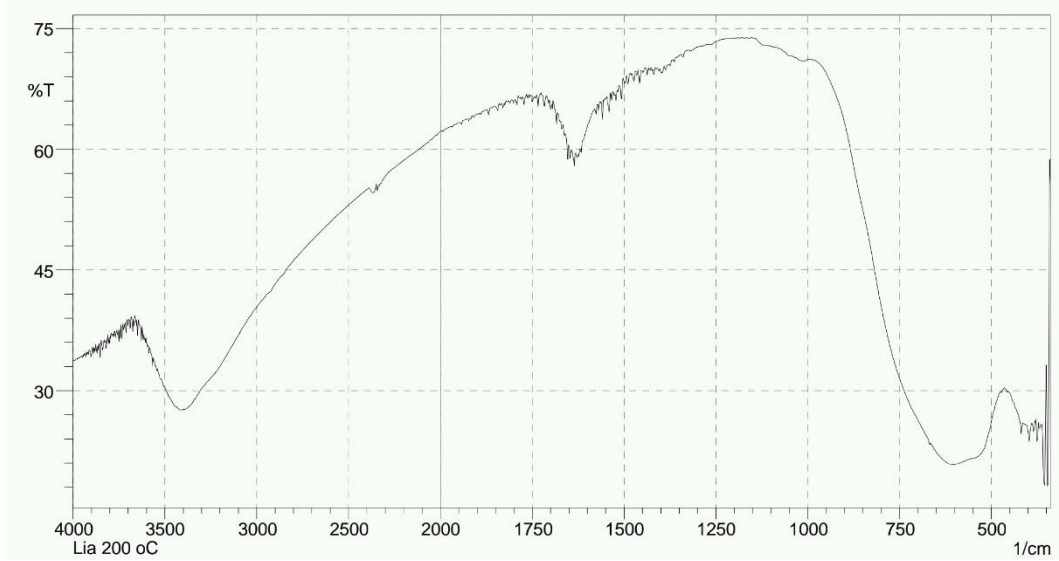
3. Hasil Karakterisasi Fe-TiO₂

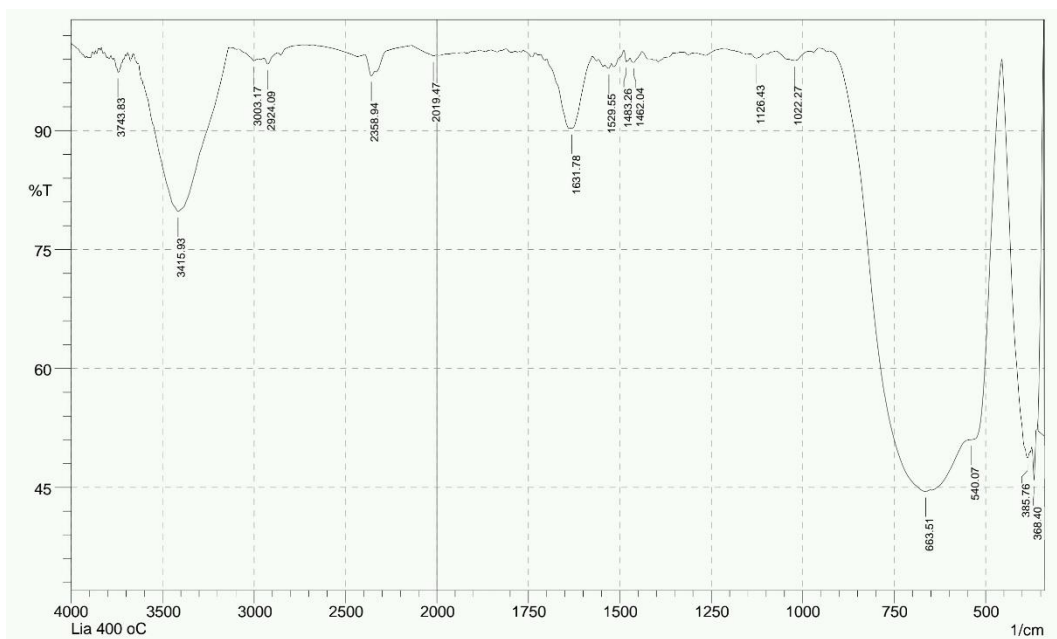


No.	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	354.9	49.942	18.424	358.76	343.33	2.981	1.283
2	376.12	65.941	1.285	387.69	372.26	2.66	0.06
3	393.48	68.3	3.082	464.84	387.69	7.03	0.714
4	624.94	52.96	46.531	945.12	464.84	72.858	72.064
5	1018.41	98.689	0.578	1039.63	972.12	0.232	0.07
6	1122.57	99.05	0.548	1145.72	1078.21	0.199	0.072
7	1396.46	98.249	0.876	1411.89	1350.17	0.291	0.113
8	1560.41	95.159	0.176	1562.34	1552.7	0.194	0.001
9	1631.78	86.782	10.082	1720.5	1571.99	5.073	3.226
10	1990.54	98.85	0.395	2005.97	1948.1	0.209	0.068
11	2364.73	98.376	1.098	2393.66	2349.3	0.163	0.097
12	3388.93	67.307	0.416	3396.64	2742.78	46.641	0.185



bkg





No.	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	356.83	52.247	5.688	358.76	343.33	2.192	0.206
2	368.4	45.9	4.724	372.26	362.62	3.034	0.224
3	385.76	48.722	8.325	455.2	374.19	16.269	3.638
4	540.07	50.997	1.104	542	457.13	14.94	2.732
5	663.51	44.496	2.548	925.83	651.94	52.85	7.558
6	1022.27	98.857	1.192	1072.42	979.84	0.245	0.265
7	1126.43	99.151	0.557	1143.79	1103.28	0.105	0.054
8	1462.04	98.598	0.784	1471.69	1438.9	0.127	0.064
9	1483.26	98.693	0.646	1489.05	1479.4	0.033	0.01
10	1529.55	97.849	0.556	1541.12	1523.76	0.148	0.025
11	1631.78	90.299	0.337	1633.71	1575.84	1.384	0.11
12	2019.47	99.422	0.254	2137.13	2004.04	0.004	0.087
13	2358.94	96.919	1.354	2395.59	2337.72	0.517	0.149
14	2924.09	98.392	0.964	2947.23	2870.08	0.29	0.12
15	3003.17	98.804	0.552	3084.18	2976.16	0.244	0.088
16	3415.93	79.792	18.264	3610.74	3140.11	26.531	23.231
17	3743.83	97.356	0.79	3751.55	3724.54	0.264	0.059