

LAMPIRAN

Lampiran A Pengujian serat daun nanas

A.1 Persen Pengurangan Berat

Pre treatment		
Konsentrasi Enzim	Persen pengurangan Berat	
	uji	Rata rata
0	3,23	3,41
	3,08	
	3,92	
2	7,41	5,41
	4,23	
	4,59	
4	4,84	6,34
	5,26	
	8,93	
6	12,20	10,33
	7,69	
	11,11	
8	11,76	11,51
	11,76	
	11,00	
10	9,43	10,31
	11,36	
	10,14	

Enzim saja		
Konsentrasi Enzim	Persen pengurangan Berat	
	uji	Rata rata
0	0	0,00
	0	
	0	
2	2,50	3,84
	3,64	
	5,38	
4	5,26	4,78
	4,55	
	4,55	
6	5,64	5,50
	6,49	
	4,38	

A.2

Enzim saja		
Konsentrasi Enzim	Persen pengurangan Berat	
	uji	Rata rata
8	3,37	5,77
	6,98	
	6,98	
10	5,26	5,70
	6,50	
	5,34	

A.2 Uji statistika persen pengurangan berat

Tests of Normality^b

treatment	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
persen_berat Enzym	.142	15	.200*	.956	15	.628
PE	.172	18	.166	.884	18	.031

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

b. persen_berat is constant when treatment = K. It has been omitted.

Tests of Between-Subjects Effects

Dependent Variable: persen berat

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	351.915 ^a	11	31.992	16.546	.000
Intercept	861.226	1	861.226	445.414	.000
treatment	117.873	2	58.936	30.481	.000
konsentrasi	145.528	5	29.106	15.053	.000
treatment * konsentrasi	23.023	4	5.756	2.977	.040
Error	46.405	24	1.934		
Total	1727.652	36			
Corrected Total	398.320	35			

a. R Squared = ,883 (Adjusted R Squared = ,830)

Post Hoc Tests

treatment

Homogeneous Subsets

persen_berat

Student-Newman-Keuls^{a, b, c}

treatment	N	Subset		
		1	2	3
K	3	.0000		
Enzym	15		5.1213	
PE	18			7.8856
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 1,934.

a. Uses Harmonic Mean Sample Size = 6,585.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

konsentrasi

Homogeneous Subsets

persen_berat

Student-Newman-Keuls^{a, b}

konsentrasi	N	Subset		
		1	2	3
.00	6	1.7050		
2.00	6		4.6250	
4.00	6		5.5650	
6.00	6			7.9183
10.00	6			8.0050
8.00	6			8.6417
Sig.		1.000	.253	.645

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 1,934.

a. Uses Harmonic Mean Sample Size = 6,000.

b. Alpha = 0,05.

A.3 Data kekuatan uji tarik serat
PRETREATMENT+ENZIM

Konsentrasi Enzim	kekuatan per bundel	berat/5 cm	elongation	tex	g/tex	Persen mulur
Konsentrasi 0	11	0,023	1,5	460	23,9	3
Konsentrasi 0	16	0,0304	1,5	608	26,3	3
Konsentrasi 0	11	0,023	1,5	460	23,9	3
Konsentrasi 0	11,2	0,0212	1,5	424	26,4	3
Konsentrasi 0	15,3	0,027	1,5	540	28,3	3
Konsentrasi 0	8	0,0144	1	288	27,8	2
Konsentrasi 0	11,1	0,0224	1,5	448	24,8	3
Konsentrasi 0	11	0,0193	1,5	386	28,5	3
Konsentrasi 0	15,2	0,02615	1	523	29,1	2
Konsentrasi 0	15,6	0,0297	1,5	594	26,3	3
Konsentrasi 0	11,3	0,0205	1	410	27,6	2
Konsentrasi 0	16	0,0268	1	536	29,9	2
Konsentrasi 0	15,4	0,02635	1,5	527	29,2	3
Konsentrasi 0	9,9	0,0226	1,5	452	21,9	3
Konsentrasi 0	16	0,0277	1	554	28,9	2
Rerata					26,85333	2,67

Konsentrasi 2	11,5	0,02014	1	402,8	28,6	2
Konsentrasi 2	11,5	0,02018	1	403,6	28,5	2
Konsentrasi 2	15,4	0,02507	1	501,4	30,7	2
Konsentrasi 2	11,3	0,02407	1,5	481,4	23,5	3
Konsentrasi 2	12	0,02218	1,5	443,6	27,1	3
Konsentrasi 2	11,3	0,01963	1,5	392,6	28,8	3
Konsentrasi 2	14,8	0,02979	1	595,8	24,8	2
Konsentrasi 2	7,8	0,01671	1	334,2	23,3	2
Konsentrasi 2	8,8	0,01701	1	340,2	25,9	2
Konsentrasi 2	7,8	0,01671	1,5	334,2	23,3	3
Konsentrasi 2	14,6	0,02833	1,5	566,6	25,8	3
Konsentrasi 2	14,2	0,0247	1,5	494	28,7	3
Konsentrasi 2	14,2	0,0259	1,5	518	27,4	3
Konsentrasi 2	13,3	0,023	1,5	460	28,9	3
Konsentrasi 2	14,8	0,0328	1,5	656	22,6	3
Rerata				461,6267	26,52667	2,6
Konsentrasi 4	6,7	0,0147	1,5	294	22,8	3
Konsentrasi 4	13,3	0,0237	1,5	474	28,1	3
Konsentrasi 4	15,8	0,0306	1,5	612	25,8	3
Konsentrasi 4	8,6	0,0154	1	308	27,9	2

A.5

Konsentrasi Enzim	kekuatan per bundel	berat/5 cm	elongation	tex	g/tex	Persen mulur
Konsentrasi 4	15,8	0,0306	1	612	25,8	2
Konsentrasi 4	17,7	0,0319	1,5	638	27,7	3
Konsentrasi 4	8,6	0,0154	1	308	27,9	2
Konsentrasi 4	8,8	0,018	1,5	360	24,4	3
Konsentrasi 4	15,6	0,0294	1,5	588	26,5	3
Konsentrasi 4	15,6	0,0294	1,5	588	26,5	3
Konsentrasi 4	11,6	0,0223	1	446	26	2
Konsentrasi 4	13,3	0,023	1	460	28,9	2
Konsentrasi 4	10	0,0182	1,5	364	27,5	3
Konsentrasi 4	10,4	0,02	1,5	400	26	3
Konsentrasi 4	10,4	0,0214	1,5	428	24,3	3
				458,67	26,41	2,67
Konsentrasi 6	13,4	0,0294	1,5	588	22,8	3
Konsentrasi 6	10,1	0,0184	1,5	368	27,4	3
Konsentrasi 6	8,2	0,018	1,5	360	22,8	3
Konsentrasi 6	13,7	0,0246	1	492	27,8	2
Konsentrasi 6	14,8	0,0256	1,5	512	28,9	3
Konsentrasi 6	9,2	0,0202	1,5	404	22,8	3
Konsentrasi 6	10,5	0,0216	1,5	432	24,3	3
Konsentrasi 6	15,2	0,02595	1	519	29,3	2
Konsentrasi 6	10,5	0,0216	1,5	432	24,3	3
Konsentrasi 6	18,5	0,0286	1,5	572	32,3	3
Konsentrasi 6	16,4	0,0269	1	538	30,5	2
Konsentrasi 6	9,2	0,0202	1,5	404	22,8	3
Konsentrasi 6	10,5	0,0216	1	432	24,3	2
Konsentrasi 6	11,8	0,0216	1,5	432	27,3	3
Konsentrasi 6	13,5	0,02445	1,5	489	27,6	3
				464,93	26,35	2,73
Konsentrasi 8	13,4	0,02425	1,5	485	27,6	3
Konsentrasi 8	11	0,0257	1,5	514	21,4	3
Konsentrasi 8	7,3	0,0143	1,5	286	25,5	3
Konsentrasi 8	11,8	0,02275	1,5	455	25,9	3
Konsentrasi 8	8,4	0,0152	1	304	27,6	2
Konsentrasi 8	14,4	0,02515	1,5	503	28,6	3
Konsentrasi 8	9,6	0,02055	1	411	23,4	2
Konsentrasi 8	11,8	0,023	1,5	460	25,7	3
Konsentrasi 8	13,6	0,02445	1	489	27,8	2
Konsentrasi 8	11,6	0,0226	1,5	452	25,7	3
Konsentrasi 8	13,8	0,026	1	520	26,5	2

A.6

Konsentrasi Enzim	kekuatan per bundel	berat/5 cm	elongation	tex	g/tex	Persen mulur
Konsentrasi 8	9,5	0,0186	2	372	25,5	4
Konsentrasi 8	13,4	0,02425	1	485	27,6	2
Konsentrasi 8	18	0,03333	1,5	666,6	27	3
Konsentrasi 8	13,1	0,024	1,5	480	27,3	3
				458,84	26,21	2,73
konsentrasi 10	7	0,0156	1,5	312	22,4	3
Konsentrasi 10	8,5	0,019	1,5	380	22,4	3
Konsentrasi 10	8,4	0,0187	1	374	22,5	2
Konsentrasi 10	8,2	0,0169	1,5	338	24,3	3
Konsentrasi 10	10,4	0,0178	1	356	29,2	2
Konsentrasi 10	9,3	0,0163	1	326	28,5	2
Konsentrasi 10	6,8	0,0124	1,5	248	27,4	3
Konsentrasi 10	9,8	0,02	1,5	400	24,5	3
Konsentrasi 10	10,3	0,0182	1,5	364	28,3	3
Konsentrasi 10	10,5	0,01915	1,5	383	27,4	3
Konsentrasi 10	7	0,01565	1,5	313	22,4	3
Konsentrasi 10	11,3	0,01985	1	397	28,5	2
Konsentrasi 10	10,5	0,0184	1,5	368	28,5	3
Konsentrasi 10	11,6	0,02015	1,5	403	28,8	3
Konsentrasi 10	15	0,0256	1,5	512	29,3	3
Rerata	rerata			364,9333	26,29333	2,733333

ENZIM SAJA

Konsentrasi Enzim	kekuatan per bundel	berat/5 cm	elongation	tex	g/tex	Persen mulur
Konsentrasi NT0	9,4	0,01211	1	242,2	38,8	2
Konsentrasi NT0	12,7	0,01607	1	321,4	39,5	2
Konsentrasi NT0	10,2	0,0186	1	372,0	27,4	2
Konsentrasi NT0	9,1	0,01325	1	265,0	34,3	2
Konsentrasi NT0	9,6	0,0145	1,5	290,0	33,1	3
Konsentrasi NT0	6	0,011194	1,5	223,9	26,8	3
Konsentrasi NT0	15,2	0,022	1,5	440,0	34,5	3

A.7

Konsentrasi Enzim	kekuatan per bundel	berat/5 cm	elongation	tex	g/tex	Persen mulur
Konsentrasi NT0	7,6	0,012614	1,5	252,3	30,1	3
Konsentrasi NT0	7,4	0,012447	1	248,9	29,7	2
Konsentrasi NT0	9,2	0,01542	1	308,4	29,8	2
Konsentrasi NT0	10,3	0,014661	1,5	293,2	35,1	3
Konsentrasi NT0	8,1	0,01299	1	259,8	31,2	2
Konsentrasi NT0	6,2	0,011403	1	228,1	27,2	2
Konsentrasi NT0	6	0,011194	1,5	223,9	26,8	3
Konsentrasi NT0	11,1	0,01607	1	321,4	34,5	2
Rerata		rerata		286,0	31,9	2,4
Konsentrasi NT2	9,4	0,0181	1	362,0	26,0	2
Konsentrasi NT2	7,4	0,0142	1,5	284,0	26,1	3
Konsentrasi NT2	9	0,0149	1	298,0	30,2	2
Konsentrasi NT2	11,4	0,0186	1	372,0	30,6	2
Konsentrasi NT2	14,6	0,022121	1	442,4	33,0	2
Konsentrasi NT2	16,2	0,0282	1,5	564,0	28,7	3
Konsentrasi NT2	11,1	0,0178	1	356,0	31,2	2
Konsentrasi NT2	16,4	0,028	1,5	560,0	29,3	3
Konsentrasi NT2	10,4	0,018692	1,5	373,8	27,8	3
Konsentrasi NT2	12,6	0,020575	1	411,5	30,6	2
Konsentrasi NT2	12,8	0,020709	1	414,2	30,9	2
Konsentrasi NT2	14,3	0,02192	1	438,4	32,6	2
Konsentrasi NT2	11,1	0,0204	1,5	408,0	27,2	3
Konsentrasi	12,4	0,0203	1,5	406,0	30,5	3

Konsentrasi Enzim	kekuatan per bundel	berat/5 cm	elongation	tex	g/tex	Persen mulur
NT2						
Konsentrasi NT2	8,8	0,0142	1	284,0	31,0	2
Rerata		rerata		398,3	29,7	2,4
Konsentrasi NT4	7,2	0,0116	1,5	232,0	31,0	3
Konsentrasi NT4	8,2	0,0147	1,5	294,0	27,9	3
Konsentrasi NT4	8,3	0,015	1,5	300,0	27,7	3
Konsentrasi NT4	9,1	0,0158	1,5	316,0	28,8	3
Konsentrasi NT4	10,8	0,018539	1	370,8	29,1	2
Konsentrasi NT4	14,5	0,021469	1	429,4	33,8	2
Konsentrasi NT4	10	0,0169	1,5	338,0	29,6	3
Konsentrasi NT4	10,8	0,018539	1	370,8	29,1	2
Konsentrasi NT4	12,3	0,019813	1	396,3	31,0	2
Konsentrasi NT4	9,2	0,0149	1,5	298,0	30,9	3
Konsentrasi NT4	10,1	0,017902	1	358,0	28,2	2
Konsentrasi NT4	12,4	0,021	1,5	420,0	29,5	3
Konsentrasi NT4	13,8	0,0262	1,5	524,0	26,3	3
Konsentrasi NT4	14	0,0262	1,5	524,0	26,7	3
Konsentrasi NT4	14,1	0,021215	1,5	424,3	33,2	3
		rerata		373,0	29,5	2,7
Konsentrasi NT6	14,6	0,0264	1	528,0	27,7	2
Konsentrasi NT6	15,4	0,027	1,5	540,0	28,5	3
Konsentrasi NT6	15,9	0,0252	1,5	504,0	31,5	3
Konsentrasi NT6	16,4	0,0237	1,5	474,0	34,6	3
Konsentrasi	15	0,0246	1,5	492,0	30,5	3

Konsentrasi Enzim	kekuatan per bundel	berat/5 cm	elongation	tex	g/tex	Persen mulur
NT6						
Konsentrasi NT6	12,8	0,022656	1	453,1	28,2	2
Konsentrasi NT6	20,2	0,028419	1,5	568,4	35,5	3
Konsentrasi NT6	20,4	0,02858	1,5	571,6	35,7	3
Konsentrasi NT6	11,2	0,021134	1	422,7	26,5	2
Konsentrasi NT6	9	0,0146	1	292,0	30,8	2
Konsentrasi NT6	11,1	0,021054	1,5	421,1	26,4	3
Konsentrasi NT6	14,3	0,0239	1,5	478,0	29,9	3
Konsentrasi NT6	14,8	0,024337	1,5	486,7	30,4	3
Konsentrasi NT6	6,7	0,016331	1,5	326,6	20,5	3
Konsentrasi NT6	14,6	0,0262	1,5	524,0	27,9	3
Rerata		rerata		472,1	29,6	2,7
Konsentrasi NT8	9,3	0,0156	1,5	312,0	29,8	3
Konsentrasi NT8	12,3	0,0203	1,5	406,0	30,3	3
Konsentrasi NT8	9	0,0174	1	348,0	25,9	2
Konsentrasi NT8	10,6	0,0179	1,5	358,0	29,6	3
Konsentrasi NT8	16,5	0,024256	1,5	485,1	34,0	3
Konsentrasi NT8	11,5	0,020201	1	404,0	28,5	2
Konsentrasi NT8	9,8	0,0131	1,5	262,0	37,4	3
Konsentrasi NT8	15,9	0,023758	1,5	475,2	33,5	3
Konsentrasi NT8	18,2	0,0297	1,5	594,0	30,6	3
Konsentrasi NT8	10,4	0,0215	1,5	430,0	24,2	3
Konsentrasi NT8	12,6	0,0223	1,5	446,0	28,3	3

Konsentrasi Enzim	kekuatan per bundel	berat/5 cm	elongation	tex	g/tex	Persen mulur
Konsentrasi NT8	9	0,017854	1	357,1	25,2	2
Konsentrasi NT8	11,4	0,0206	1,5	412,0	27,7	3
Konsentrasi NT8	13	0,0242	1,5	484,0	26,9	3
Konsentrasi NT8	13,2	0,0217	1,5	434,0	30,4	3
Rerata		rerata		413,8	29,5	2,8
Konsentrasi NT10	14	0,023	1,5	460,0	30,4	3
Konsentrasi NT10	13	0,0244	1,5	488,0	26,6	3
Konsentrasi NT10	11,3	0,019597	1,5	391,9	28,8	3
Konsentrasi NT10	5,5	0,0086	1,5	172,0	32,0	3
Konsentrasi NT10	10,6	0,018987	1	379,7	27,9	2
Konsentrasi NT10	8,1	0,0128	1,5	256,0	31,6	3
Konsentrasi NT10	10,6	0,0183	1	366,0	29,0	2
Konsentrasi NT10	12	0,020139	1,5	402,8	29,8	3
Konsentrasi NT10	8,4	0,015	1,5	300,0	28,0	3
Konsentrasi NT10	13,8	0,021631	1,5	432,6	31,9	3
Konsentrasi NT10	12	0,020139	1	402,8	29,8	2
Konsentrasi NT10	11,2	0,019529	1,5	390,6	28,7	3
Konsentrasi NT10	14,6	0,0262	1,5	524,0	27,9	3
Konsentrasi NT10	13,4	0,021292	1,5	425,8	31,5	3
Konsentrasi NT10	15	0,027	1	540,0	27,8	2
Rerata		rerata		395,5	29,4	2,7

A.4 Uji statistika kekuatan tarik

konsentrasi**Case Processing Summary**

		Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
uji_tarik	.00	30	100.0%	0	.0%	30	100.0%
	2.00	30	100.0%	0	.0%	30	100.0%
	4.00	30	100.0%	0	.0%	30	100.0%
	6.00	30	100.0%	0	.0%	30	100.0%
	8.00	30	100.0%	0	.0%	30	100.0%
	10.00	30	100.0%	0	.0%	30	100.0%

Tests of Normality

konsentrasi		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
uji_tarik	.00	.166	30	.034	.944	30	.113
	2.00	.120	30	.200*	.958	30	.272
	4.00	.095	30	.200*	.974	30	.658
	6.00	.097	30	.200*	.969	30	.508
	8.00	.309	30	.000	.758	30	.000
	10.00	.200	30	.003	.892	30	.005

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Between-Subjects Factors

		Value Label	N
treatment	1.00	K	15
	2.00	Enzym	75
	3.00	PE	90
konsentrasi	1.00	.00	30
	2.00	2.00	30
	3.00	4.00	30
	4.00	6.00	30
	5.00	8.00	30
	6.00	10.00	30

Tests of Between-Subjects Effects

Dependent Variable: uji tarik

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	9607.982 ^a	11	873.453	115.960	.000
Intercept	105421.444	1	105421.444	13995.855	.000
treatment	2532.908	2	1266.454	168.136	.000
konsentrasi	3723.245	5	744.649	98.860	.000
treatment * konsentrasi	3332.461	4	833.115	110.605	.000
Error	1265.432	168	7.532		
Total	134815.430	180			
Corrected Total	10873.414	179			

a. R Squared = ,884 (Adjusted R Squared = ,876)

treatment

Homogeneous Subsets

uji tarik

Student-Newman-Keuls^{a,b,c}

treatment	N	Subset		
		1	2	3
PE	90	22.5267		
Enzym	75		29.5613	
K	15			31.9200
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 7,532.

a. Uses Harmonic Mean Sample Size = 32,927.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c. Alpha = 0,05.

konsentrasi**Homogeneous Subsets**

uji_tarik

Student-Newman-Keuls^{a..b}

konsentrasi	N	Subset	
		1	2
8.00	30	16.1100	
10.00	30		27.8700
4.00	30		27.9633
6.00	30		27.9933
2.00	30		28.1200
.00	30		29.3867
Sig.		1.000	.208

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = 7,532.

a. Uses Harmonic Mean Sample Size = 30,000.

b. Alpha = 0,05.

A.5 Data uji mulur serat daun nanas

PRETREATMENT+ENZIM

ENZIM	KEKUATAN TARIK	KEKUATAN MULUR
0	23,9	3
	26,3	3
	23,9	3
	26,4	3
	28,3	3
	27,8	2
	24,9	3
	28,5	3
	29,1	2
	26,3	3
	27,6	2
	29,8	2
	29,3	3
	21,9	3
	28,9	2
Rerata	26,86	2,666666667
2	28,6	2
	28,5	2
	30,7	2
	23,5	3
	27,1	3
	28,8	3
	24,8	2
	23,3	2
	25,9	2
	23,3	3
	25,8	3
	28,7	3
	27,4	3
	28,9	3
	22,6	3
Rerata	26,52666667	2,6
4	22,8	3
	28,1	3
	25,8	3
	27,9	2
	25,8	2
	27,7	3

	27,9	2
	24,4	3
	26,5	3
	26,5	3
	26	2
	28,9	2
	27,5	3
	26	3
	24,3	3
Rerata	26,40666667	2,666666667
6	22,8	3
	27,4	3
	22,8	3
	27,8	2
	28,9	3
	22,8	3
	24,4	3
	29,3	2
	24,4	3
	32,3	3
	30,4	2
	22,8	3
	24,4	2
	27,3	3
	27,6	3
Rerata	26,36	2,733333333
8	27,6	3
	21,4	3
	25,5	3
	25,9	3
	27,6	2
	28,6	3
	23,4	2
	25,7	3
	27,8	2
	25,7	3
	26,5	2
	25,5	4
	27,6	2
	27	3
	27,3	3
Rerata	26,20666667	2,733333333
10	22,3	3

22,4	3
22,5	2
24,2	3
29,2	2
28,5	2
27,4	3
24,5	3
28,3	3
27,4	3
22,4	3
28,4	2
28,5	3
28,8	3
29,3	3

Rerata 26,27333333 2,733333333

ENZIM SAJA

ENZIM	KEKUATAN TARIK	KEKUATAN MULUR
0	38,8	2
	39,5	2
	27,4	2
	34,3	2
	33,1	3
	26,8	3
	34,5	3
	30,2	3
	29,8	2
	29,8	2
	35,1	3
	31,1	2
	27,3	2
	26,8	3
	34,5	2
Rerata	31,9	2,4
2	26	2
	26,1	3
	30,2	2
	30,6	2

	32,9	2
	28,7	3
	31,2	2
	29,3	3
	27,8	3
	30,6	2
	30,8	2
	32,6	2
	27,2	3
	30,5	3
	31	2
Rerata	29,7	2,4
4	31	3
	27,9	3
	27,7	3
	28,8	3
	29,1	2
	33,7	2
	29,6	3
	29,1	2
	31,1	2
	30,9	3
	28,1	2
	29,5	3
	26,3	3
	26,7	3
	33,3	3
Rerata	29,52	2,666666667
6	27,7	2
	28,5	3
	31,5	3
	34,6	3
	30,5	3
	28,3	2
	35,5	3
	35,7	3
	26,4	2
	30,8	2
	26,3	3
	29,9	3
	30,4	3
	20,4	3
	27,9	3

Rerata	29,62666667	2,733333333
8	29,8	3
	30,3	3
	25,9	2
	29,6	3
	34,1	3
	28,4	2
	37,4	3
	33,4	3
	30,6	3
	24,2	3
	28,3	3
	25,1	2
	27,7	3
	26,9	3
	30,4	3
Rerata	29,47333333	2,8
10	30,4	3
	26,6	3
	28,9	3
	32	3
	28	2
	31,6	3
	29	2
	29,7	3
	28	3
	31,9	3
	29,7	2
	28,8	3
	27,9	3
	31,4	3
	27,8	2
Rerata	29,44666667	2,733333333

A.6 Uji statistika persen mulur serat daun nanas

Tests of Normality

treatment	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
uji_mulur K	.385	15	.000	.630	15	.000
Enzym	.425	75	.000	.595	75	.000
PE	.415	90	.000	.638	90	.000

a. Lilliefors Significance Correction

Between-Subjects Factors

	Value Label	N
treatment 1.00	K	15
2.00	Enzym	75
3.00	PE	90
konsentrasi 1.00	.00	30
2.00	2.00	30
3.00	4.00	30
4.00	6.00	30
5.00	8.00	30
6.00	10.00	30

Tests of Between-Subjects Effects

Dependent Variable: uji_mulur

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2.778 ^a	11	.253	1.064	.393
Intercept	996.286	1	996.286	4198.396	.000
treatment	.560	2	.280	1.180	.310
konsentrasi	1.382	5	.276	1.165	.329
treatment * konsentrasi	.307	4	.077	.323	.862
Error	39.867	168	.237		
Total	1312.000	180			
Corrected Total	42.644	179			

a. R Squared = ,065 (Adjusted R Squared = ,004)

treatment**Homogeneous Subsets****uji_mulur**Student-Newman-Keuls^{a.,b.,c}

treatment	N	Subset	
		1	2
K	15	2.4000	
Enzym	75		2.6667
PE	90		2.6889
Sig.		1.000	.853

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = ,
237.

a. Uses Harmonic Mean Sample Size =
32,927.

b. The group sizes are unequal. The
harmonic mean of the group sizes is
used. Type I error levels are not
guaranteed.

c. Alpha = 0,05.

konsentrasi**Homogeneous Subsets**

uji_mulur

Student-Newman-Keuls^{a..b}

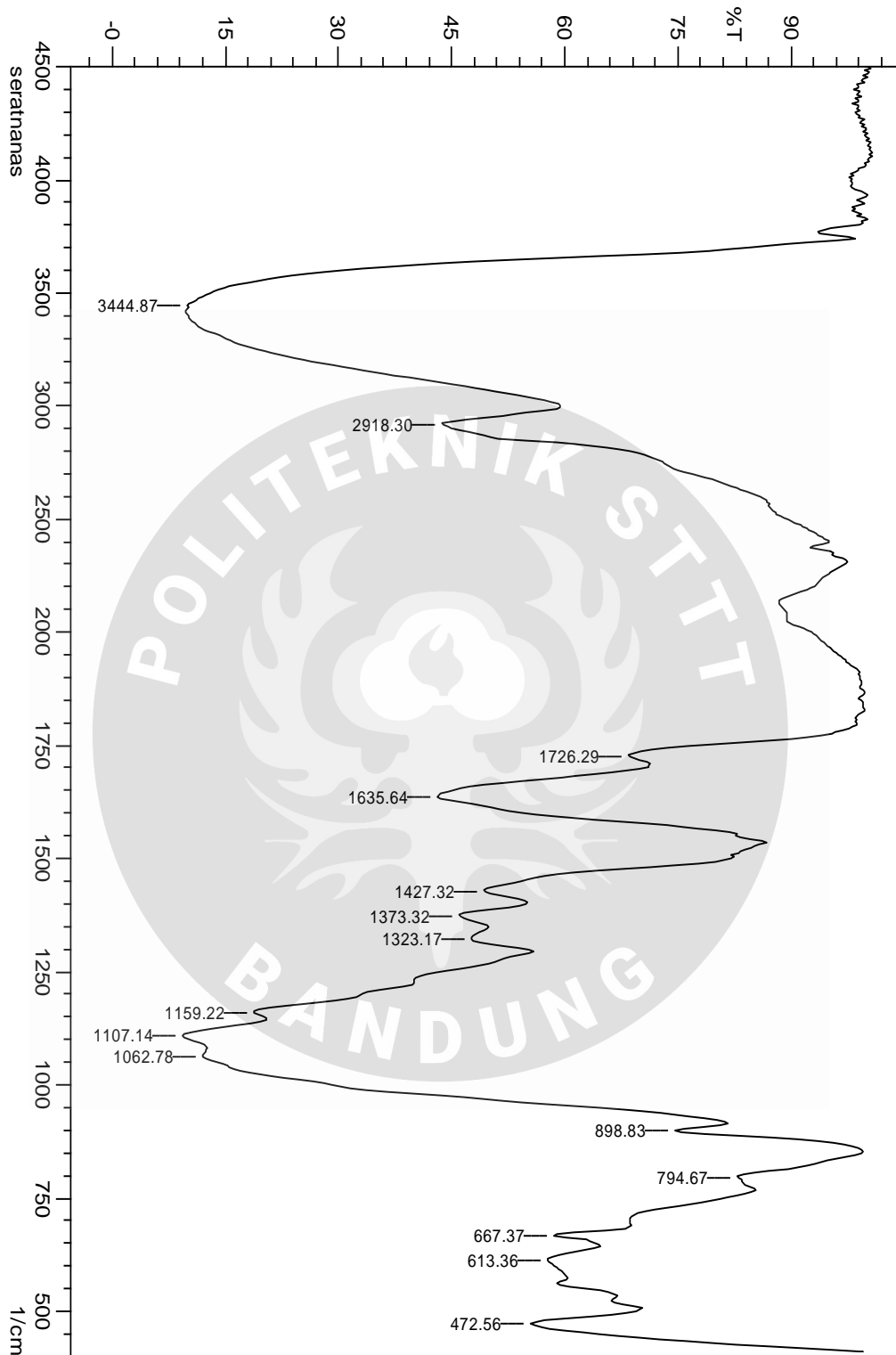
konsentrasi	N	Subset
		1
2.00	30	2.5000
.00	30	2.5333
4.00	30	2.6667
10.00	30	2.7333
6.00	30	2.7333
8.00	30	2.7667
Sig.		.282

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square (Error) = ,237.

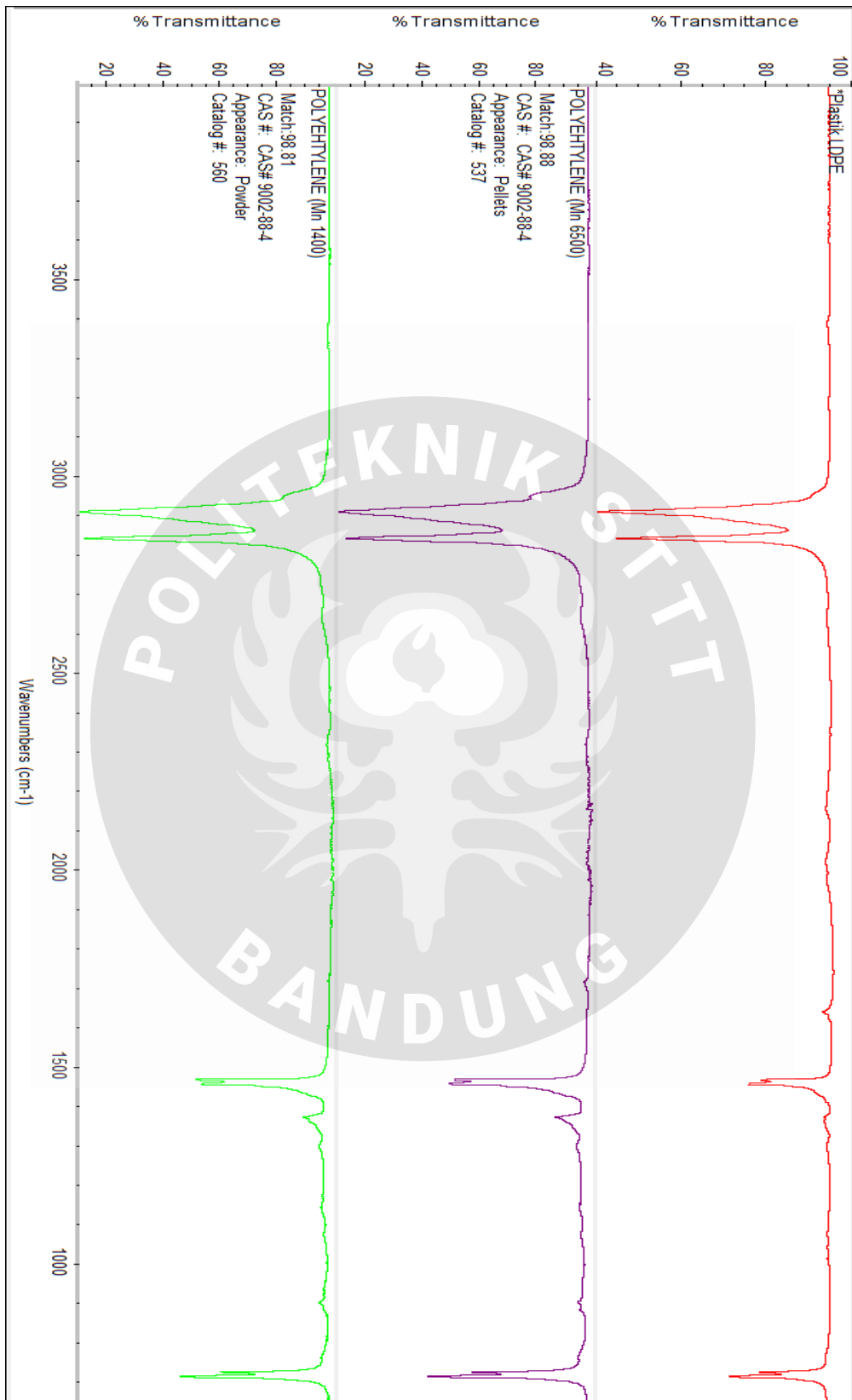
a. Uses Harmonic Mean Sample Size = 30,000.

b. Alpha = 0,05.

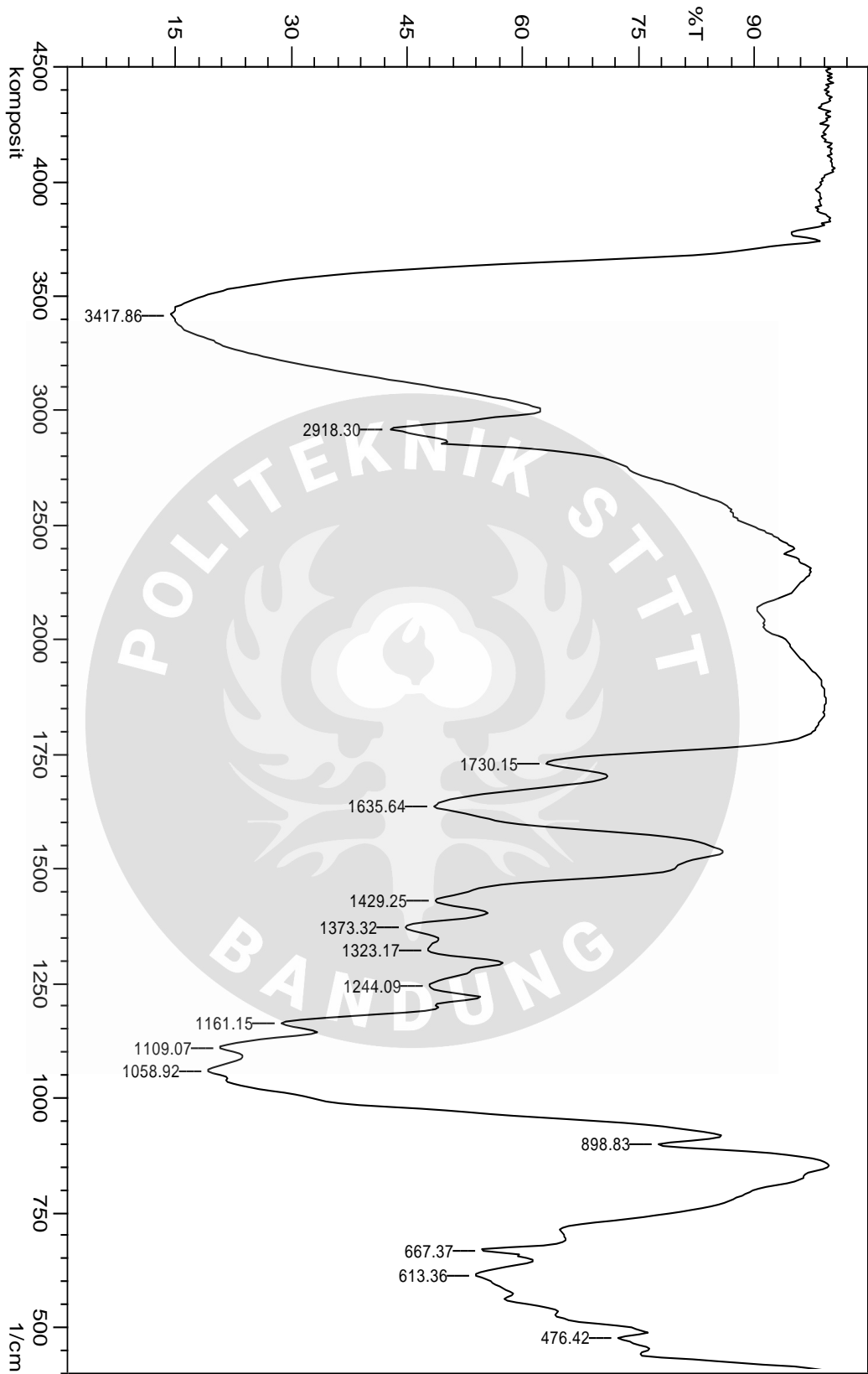
A.7 Uji FTIR serat daun nanas, LDPE dan komposit serat daun nana
Serat daun nanas



LDPE



Komposit



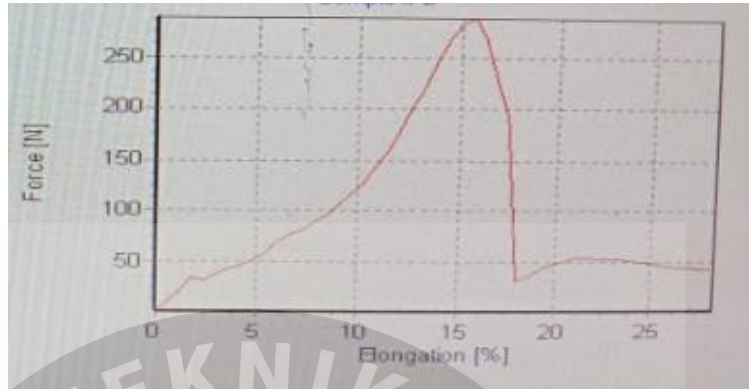


B.1

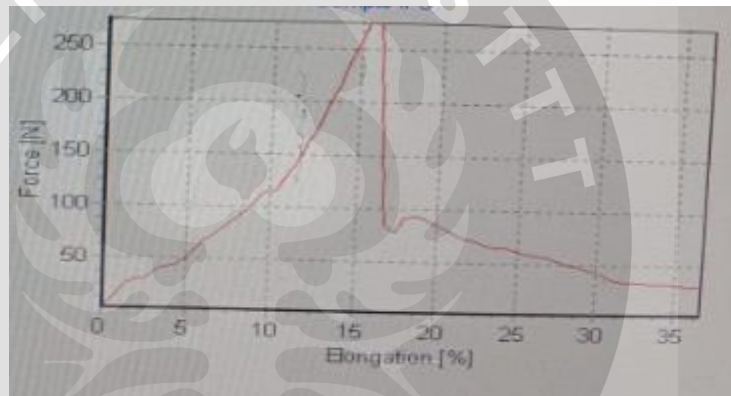
Lampiran B Pengujian Komposit

B.1 Grafik uji tarik komposit

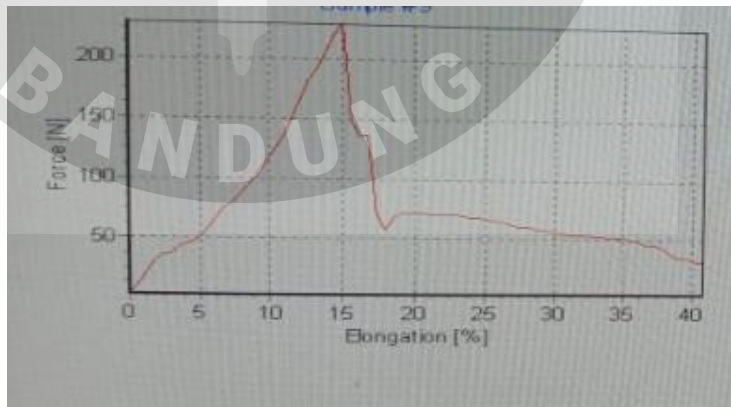
PRETREATMENT ENZIM



1

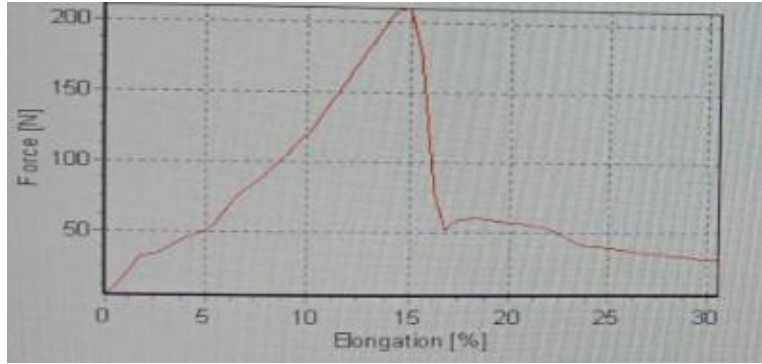


2

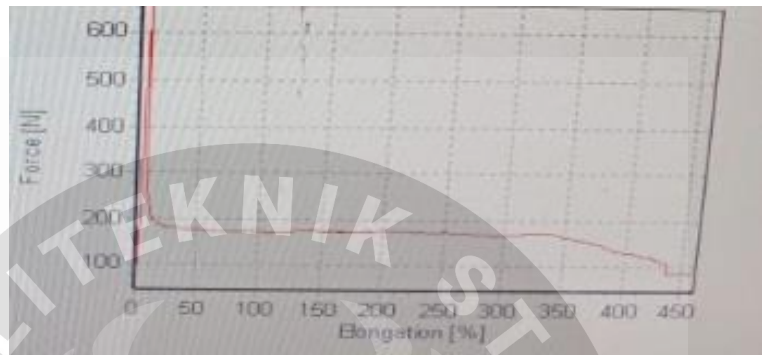


3

B.2

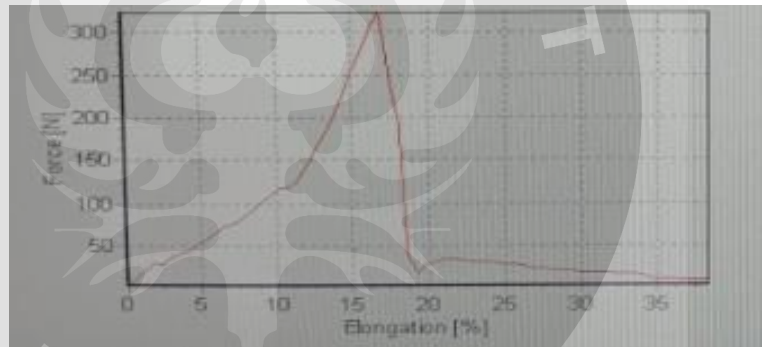


4

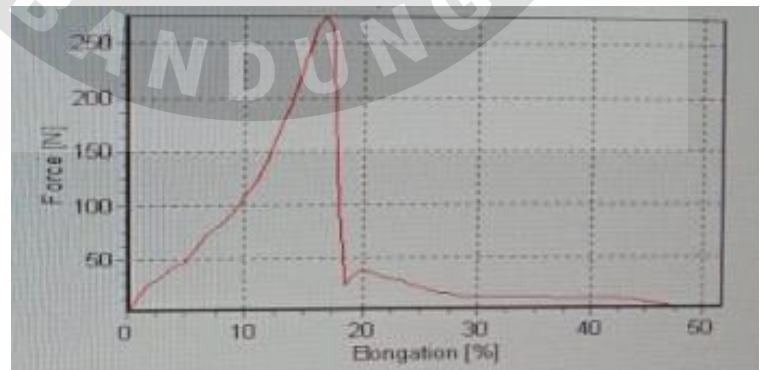


5

ENZIM

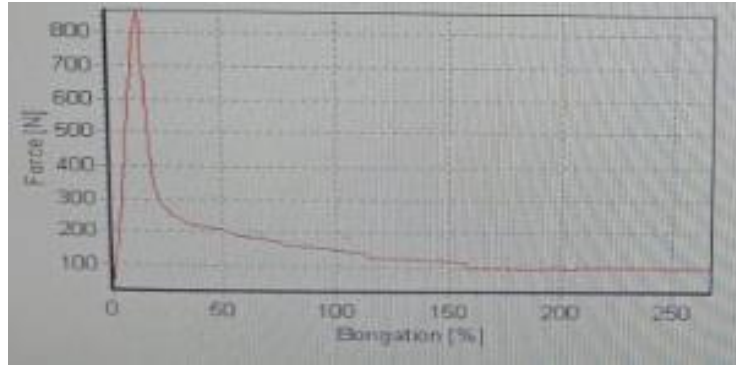


1

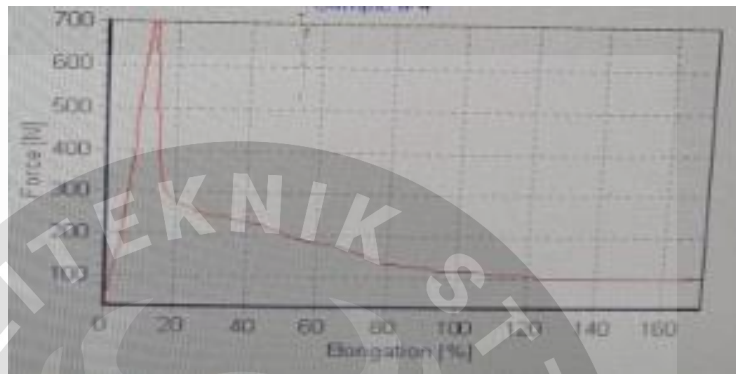


2

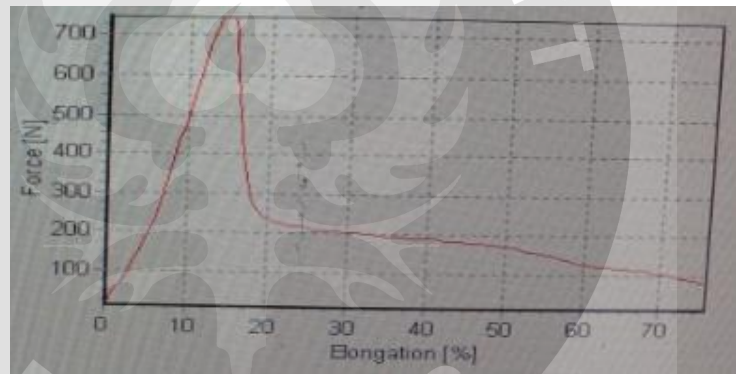
B.3



3

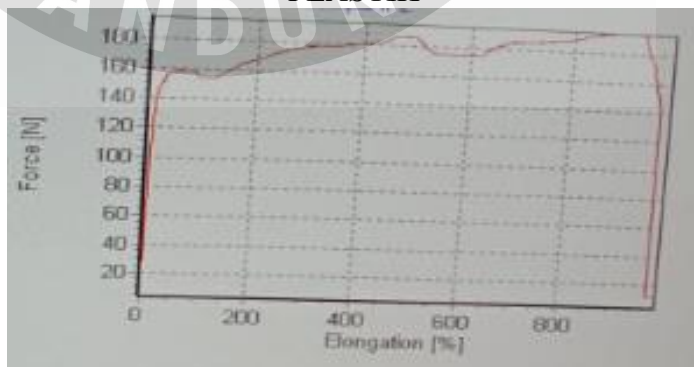


4



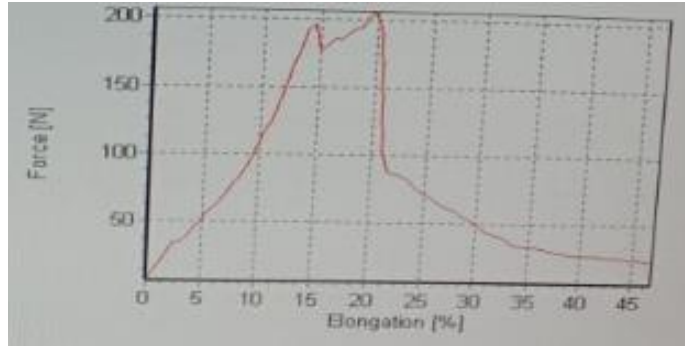
5

PLASTIK

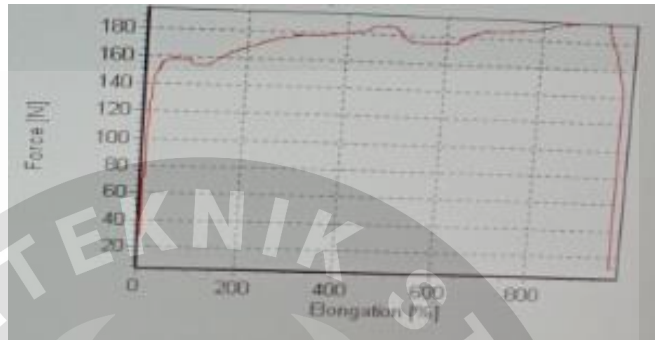


1

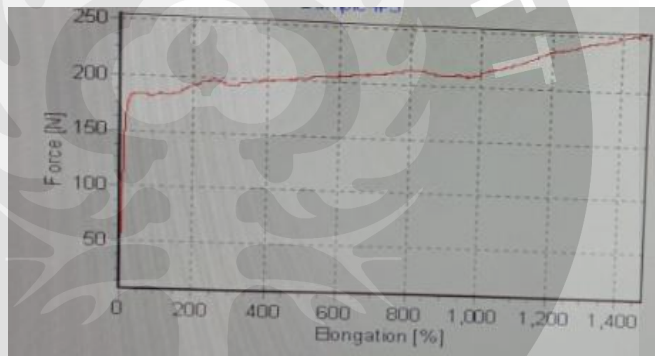
B.4



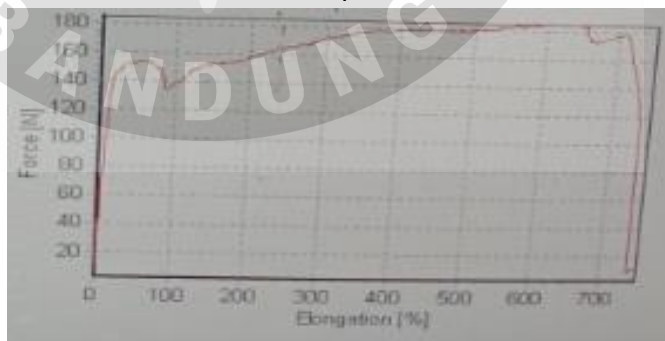
2



3



4



5

B.2 Uji statistika kekuatan tarik dan mulur komposit

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
KEKUATAN_TARIK	Between Groups	2000.885	3	666.962	61.643	.000
	Within Groups	173.115	16	10.820		
	Total	2174.000	19			
PERSEN_MULUR	Between Groups	2863525.129	3	887841.710	24.456	.000
	Within Groups	580867.952	16	36304.247		
	Total	3244393.081	19			

Post Hoc Tests**Homogeneous Subsets****KEKUATAN_TARIK**Student-Newman-Keuls^a

MATERIAL	N	Subset for alpha = 0.05	
		1	2
PLASTIK	5	9.6340	
ORIGINAL	5		30.2420
ENZIM	5		32.9140
PRE+ENZIM	5		34.3020
Sig.		1.000	.157

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5,000.

PERSEN_MULURStudent-Newman-Keuls^a

MATERIAL	N	Subset for alpha = 0.05	
		1	2
ENZIM	5	12.4400	
ORIGINAL	5	12.9600	
PRE+ENZIM	5	14.5140	
PLASTIK	5		856.0800
Sig.		1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5,000.

B.3 Tabel kekuatan tarik dan mulur komposit Plastik

Mulur (%)	Beban (N)					Rata-Rata	Kekuatan Tarik (MPa)					Modulus Elastisitas (Mpa)	
	Sampel 1						Sampel 2						Rata-Rata
	Sampel 1	Sampel 2	Sampel 3	Sampel 4	Sampel 5		Sampel 1	Sampel 2	Sampel 3	Sampel 4	Sampel 5		
0.60%	7.24	5.29	4.82	14.94	10.11	8.48	0.333487	0.251187	0.2181	0.713808	0.489115	0.401139	66.85653649
1.20%	12.52	9.65	8.65	26.05	16.19	14.612	0.576693	0.458215	0.391403	1.244625	0.783261	0.690839	57.56993021
1.80%	20.26	16.89	13.97	36.7	22.67	22.098	0.933211	0.801994	0.632127	1.753464	1.096759	1.043511	57.9728224
2.40%	29.92	26.55	21.71	47.31	29.45	30.988	1.378167	1.260684	0.982353	2.260392	1.42477	1.461273	60.88637855
3.00%	39.11	37.65	30.87	56.96	33.74	39.666	1.801474	1.787749	1.396833	2.711452	1.632317	1.867965	62.26550447
3.60%	48.36	47.31	40.56	65.19	33.78	47.04	2.227545	2.246439	1.835294	3.114668	1.634253	2.21164	61.43443475
4.20%	56.5	56.96	49.72	70.48	38.61	54.454	2.602487	2.704653	2.249774	3.367415	1.867925	2.558451	60.9154961
4.80%	64.23	65.66	57.46	74.35	42.48	60.836	2.958544	3.117759	2.6	3.552317	2.055152	2.856755	59.51572032
5.40%	69.06	72.89	65.19	82.09	45.85	67.016	3.181023	3.461064	2.949774	3.922121	2.218191	3.146434	58.26730343
6.00%	72.43	75.81	68.57	89.83	48.26	70.98	3.336251	3.599715	3.102715	4.291925	2.334785	3.333078	55.55130262
6.60%	79.68	84.5	72.89	96.57	50.22	76.772	3.670198	4.012346	3.29819	4.613951	2.429608	3.604859	54.61907025
7.20%	85.96	92.24	80.63	103.35	55.54	83.544	3.959466	4.379867	3.648416	4.937888	2.686986	3.922525	54.47950886
7.80%	92.24	98.98	87.42	109.13	61.32	89.818	4.248733	4.699905	3.955656	5.214047	2.966618	4.216992	54.06399886
8.40%	98.03	105.76	93.19	114.45	66.65	95.616	4.515431	5.021842	4.216742	5.468227	3.22448	4.489344	53.44457729
9.00%	102.85	111.09	98.52	119.29	71.93	100.736	4.737448	5.274929	4.457919	5.699474	3.479923	4.729939	52.55487231
9.60%	107.68	116.38	103.35	124.11	76.31	105.566	4.959926	5.526116	4.676471	5.929766	3.691824	4.956821	51.63354695
10.20%	112.04	121.2	108.18	128.48	80.17	110.014	5.160755	5.754986	4.895023	6.138557	3.878568	5.165578	50.64291933
10.80%	115.41	126.03	112.5	132.8	84	114.148	5.315983	5.98433	5.090498	6.344959	4.063861	5.359926	49.62894758
11.40%	118.79	129.9	115.91	136.68	87.87	117.83	5.471672	6.168091	5.244796	6.530339	4.251089	5.533197	48.53681991
12.00%	122.19	133.76	119.78	140.05	91.74	121.504	5.628282	6.351377	5.41991	6.691352	4.438316	5.705847	47.54872824
12.60%	125.06	137.64	122.65	143.42	96.57	125.068	5.760479	6.535613	5.549774	6.852365	4.671988	5.874044	46.61939484
13.20%	127.49	141	125.56	146.83	100.93	128.362	5.872409	6.695157	5.681448	7.015289	4.882922	6.029445	45.67761342
13.80%	129.9	144.41	127.49	149.7	104.8	131.26	5.983418	6.857075	5.768778	7.152413	5.07015	6.166367	44.68381719
14.40%	132.31	147.29	129.9	151.65	109.13	134.056	6.094427	6.993827	5.877828	7.245581	5.279632	6.298259	43.73790913
15.00%	134.26	149.24	132.31	153.57	113.5	136.576	6.184247	7.08642	5.986878	7.337315	5.49105	6.417182	42.78121222
15.60%	136.18	150.2	134.26	154.52	117.37	138.506	6.272685	7.132004	6.075113	7.382704	5.678278	6.508157	41.71895419
16.20%	138.13	150.2	136.18	155.98	119.78	140.054	6.362506	7.132004	6.161991	7.452461	5.794872	6.580767	40.62201591
16.80%	139.59	151.16	137.64	156.94	120.24	141.114	6.429756	7.177588	6.228054	7.498328	5.817126	6.63017	39.46530005
17.40%	141	153.11	139.09	160.35	121.7	143.05	6.494703	7.27018	6.293665	7.661252	5.88776	6.721512	38.62937969
18.00%	142.46	156.48	140.55	162.76	126.03	145.656	6.561953	7.430199	6.359729	7.776398	6.097242	6.845104	38.0283565
18.60%	143.42	158.9	141.5	164.67	129.9	147.678	6.606172	7.545109	6.402715	7.867654	6.28447	6.941224	37.3184094
19.20%	144.87	160.81	142.46	166.63	133.76	149.706	6.672962	7.635802	6.446154	7.9613	6.471214	7.037486	36.65357497
19.80%	145.37	162.76	143.42	167.59	137.14	151.256	6.695993	7.728395	6.489593	8.007167	6.634736	7.111177	35.91503387
20.40%	145.83	164.67	144.41	169.51	140.05	152.894	6.717181	7.819088	6.534389	8.098901	6.77552	7.189016	35.24027417

Mulur (%)	Beban (N)					Rata-Rata	Kekuatan Tarik (MPa)					Modulus Elastisitas	
	Sampel 1	Sampel 2	Sampel 3	Sampel 4	Sampel 5		Sampel 1	Sampel 2	Sampel 3	Sampel 4	Sampel 5	Rata-Rata	Elastisitas
0.60%	17.85	9.15	44.43	57.46	33.32	32.442	2.250946	1.213528	2.703364	1.525641	1.929289	321.5482	
1.20%	28.46	20.76	60.37	91.28	58.42	51.858	3.588903	2.753316	4.294519	2.674908	3.193054	266.0879	
1.80%	33.32	32.32	91.28	115.91	66.26	67.818	4.201765	4.286472	4.012308	5.453305	3.033883	4.197547	
2.40%	34.74	30.87	117.83	116.38	99.48	79.86	4.380832	4.094164	5.179341	5.475418	4.554945	4.73694	
3.00%	40.06	38.15	123.61	143.42	119.78	93.004	5.051702	5.059682	5.433407	6.747589	5.484432	5.555362	
3.60%	43.93	43.93	132.8	177.75	139.09	107.5	5.539723	5.82626	5.837363	8.362738	6.386859	6.386935	
4.20%	47.31	46.35	158.4	224.09	167.59	128.748	5.965952	6.147215	6.962637	10.54293	7.673535	7.458454	
4.80%	54.54	49.26	191.26	275.77	190.31	152.228	6.87768	6.533156	8.407033	12.97436	8.713828	8.701211	
5.40%	63.24	56.96	229.88	323.12	221.18	178.876	7.974779	7.554377	10.10462	15.20207	10.12729	10.19263	
6.00%	71.93	68.07	271.44	369.97	259.38	208.158	9.070618	9.027851	11.93143	17.40626	11.87637	11.86251	
6.60%	78.72	76.31	311.51	415.86	297.52	235.984	9.92686	10.12069	13.69275	19.56528	13.62271	13.38566	
7.20%	84.99	83.04	354.03	462.21	335.18	263.89	10.71753	11.01326	15.56176	21.74594	15.34707	14.87711	
7.80%	92.24	89.33	393.64	509.1	372.38	291.338	11.63178	11.84748	17.30286	23.95201	17.05037	16.3569	
8.40%	101.39	98.03	433.25	555.45	409.07	319.438	12.78562	13.00133	19.04396	26.13267	18.73031	17.93878	
9.00%	111.09	106.72	471.91	602.3	443.3	347.064	14.00883	14.15385	20.7433	28.33686	20.29762	19.50809	
9.60%	120.74	117.83	509.1	647.69	476.73	374.418	15.22573	15.62732	22.37802	30.47236	21.8283	21.10634	
10.20%	134.26	127.98	543.85	693.12	510.05	401.852	16.93064	16.97347	23.90549	32.60974	23.35394	22.75466	
10.80%	148.74	143.42	576.21	730.78	540.47	427.924	18.75662	19.02122	25.32791	34.38156	24.74679	24.44682	
11.40%	165.17	160.35	601.8	755.92	568.01	450.25	20.8285	21.26658	26.45275	35.56434	26.00778	26.02399	
12.00%	184.02	178.7	621.5	724.04	592.65	460.182	23.20555	23.70027	27.31868	34.06446	27.13599	27.08499	
12.60%	205.74	200.42	619.19	588.28	610.04	444.734	25.94451	26.5809	27.21714	27.67725	27.93223	27.07041	
13.20%	225.05	202.37	560.27	452.1	614.87	410.932	28.37957	26.83952	24.62725	21.27029	28.15339	25.854	
13.80%	242.44	201.87	470.91	418.77	599.39	386.676	30.57251	26.77321	20.69934	19.70219	27.4446	25.03837	
14.40%	189.81	212.03	348.7	406.2	532.74	337.896	23.93569	28.12069	15.32747	19.1108	24.39286	22.1775	
15.00%	56	211.07	307.68	396.55	415.86	277.432	7.061791	27.99337	13.5244	18.65679	19.04121	17.25551	
15.60%	54.08	63.24	296.07	390.27	279.18	216.568	6.819672	8.387268	13.01407	18.36133	12.78297	11.87306	
16.20%	63.24	42.48	286.87	385.44	260.79	207.764	7.974779	5.633952	12.60967	18.13409	11.94093	11.25868	
16.80%	71.48	54.08	277.22	381.08	246.8	206.132	9.013871	7.172414	12.18549	17.92896	11.30037	11.52022	
17.40%	73.89	55.54	270.94	377.7	235.7	202.754	9.317781	7.366048	11.90945	17.76994	10.79212	11.43107	
18.00%	73.39	61.73	265.65	373.79	228.46	200.604	9.254729	8.187003	11.67692	17.58598	10.46062	11.43305	
18.60%	72.89	65.66	261.79	372.88	223.13	199.27	9.191677	8.708223	11.50725	17.54317	10.21658	11.43338	
19.20%	71.93	65.19	257.42	370.47	217.81	196.564	9.070618	8.645889	11.31516	17.42978	9.97295	11.28689	
19.80%	71.48	64.69	233.09	368.51	212.98	194.15	9.013871	8.579576	11.12484	17.33757	9.751832	11.16154	
20.40%	70.02	64.69	248.73	367.05	208.16	191.73	8.82976	8.579576	10.93319	17.26888	9.531136	11.02851	

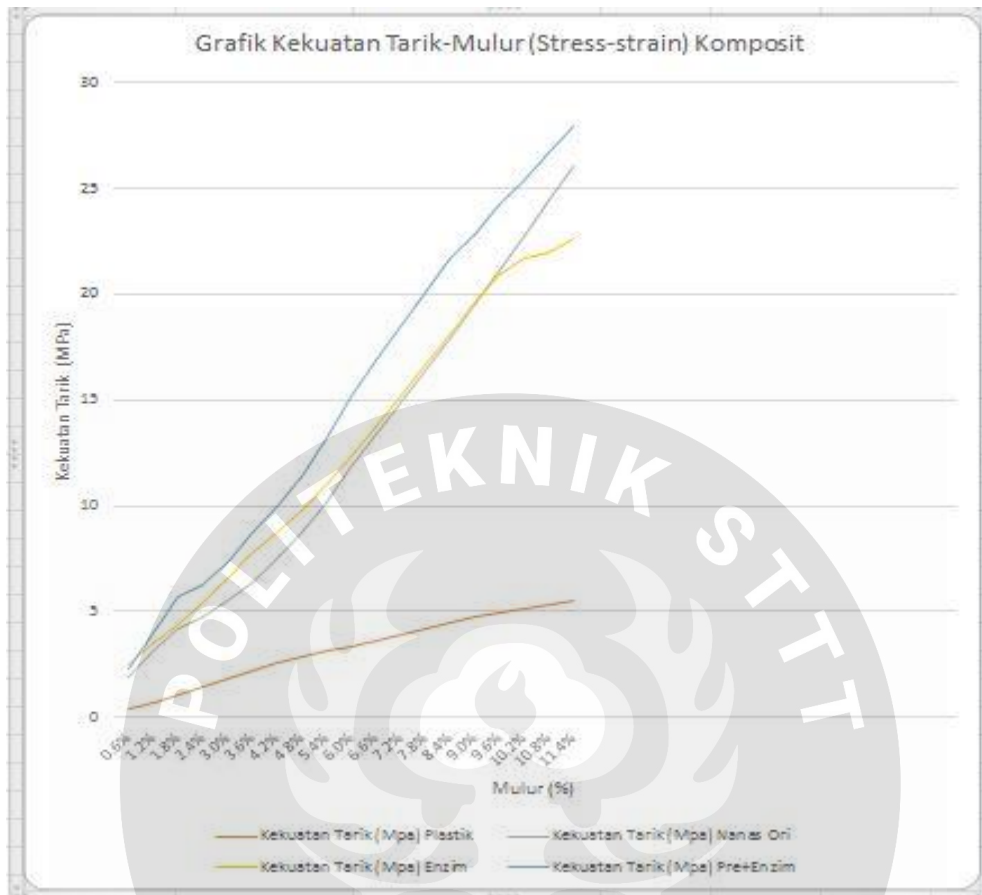
Enzim

Mulur (%)	Beban (N)					Rata-Rata	Kekuatan Tarik (MPa)					Modulus Elastisitas	
	Sampel 1	Sampel 2	Sampel 3	Sampel 4	Sampel 5		Sampel 1	Sampel 2	Sampel 3	Sampel 4	Sampel 5		Rata-Rata
0.60%	48.76	40.56	20.26	17.06	10.63	27.454	5.245831	5.37931	0.649359	0.86336	0.406812	2.508935	418.1558
1.20%	58.42	63.24	24.62	22.21	23.22	38.342	6.2851	8.387268	0.789103	1.123988	0.888634	3.494818	291.2349
1.80%	81.59	70.98	28.46	30.43	31.87	48.666	8.77838	9.413793	0.912179	1.53998	1.219671	4.372692	242.9273
2.40%	101.89	93.07	35.74	28.46	30.41	57.914	10.96181	12.3435	1.145513	1.440283	1.163796	5.41098	225.4575
3.00%	122.65	114.45	39.11	36.7	38.15	70.212	13.19527	15.17905	1.253526	1.857287	1.460008	6.589026	219.6342
3.60%	142	139.09	42.57	41.52	43.43	81.722	15.27703	18.44695	1.364423	2.101215	1.662074	7.770338	215.8427
4.20%	163.72	153.11	51.17	44.89	45.39	91.656	17.61377	20.30637	1.640064	2.271761	1.737084	8.713809	207.4716
4.80%	182.57	171.92	60.83	52.13	48.26	103.142	19.64174	22.80106	1.949679	2.638158	1.846919	9.775512	203.6565
5.40%	203.33	195.13	68.57	59.87	55.54	116.488	21.8752	25.87931	2.197756	3.029858	2.125526	11.02153	204.1024
6.00%	225.05	219.27	73.89	67.11	63.74	129.812	24.21194	29.0809	2.368269	3.396255	2.439342	12.29934	204.989
6.60%	250.68	245.85	80.63	72.89	72.43	144.496	26.96934	32.6061	2.584295	3.688765	2.77191	13.72408	207.9406
7.20%	275.31	274.81	87.42	78.22	79.68	159.088	29.61915	36.44695	2.801923	3.958502	3.049369	15.17518	210.7664
7.80%	300.9	303.31	95.61	84.99	85.46	174.054	32.37224	40.22679	3.064423	4.301113	3.27057	16.64703	213.4234
8.40%	325.03	331.81	106.72	91.74	93.19	189.698	34.96826	44.00663	3.420513	4.642713	3.566399	18.1209	215.725
9.00%	347.74	359.82	115.41	100.44	101.89	205.06	37.41151	47.72149	3.699038	5.082996	3.899349	19.56288	217.3653
9.60%	366.1	388.81	114.91	110.09	111.09	218.2	39.38677	51.56631	3.683013	5.571356	4.251435	20.89178	217.6227
10.20%	359.82	415.86	124.61	117.37	122.19	227.97	38.71114	55.15385	3.99391	5.939777	4.676234	21.69498	212.6959
10.80%	329.4	443.4	142	117.83	135.22	233.57	35.43841	58.80637	4.551282	5.963057	5.174895	21.9868	203.5815
11.40%	309.6	468.49	162.26	128.94	151.65	244.188	33.30823	62.13395	5.200641	6.525304	5.803674	22.59436	198.1961
12.00%	299.45	491.71	184.02	145.37	171.92	258.494	32.21625	65.21353	5.898077	7.356781	6.579411	23.45281	195.4401
12.60%	291.71	511.51	210.07	163.22	198.01	274.904	31.38354	67.83952	6.733013	8.260121	7.57788	24.35882	193.3239
13.20%	283.51	520.2	238.12	183.03	226.04	290.18	30.50134	68.99204	7.632051	9.262652	8.650593	25.00774	189.4526
13.80%	278.19	501.82	266.11	205.24	256.46	301.564	29.92899	66.55438	8.529167	10.38664	9.814772	25.04279	181.4695
14.40%	275.31	493.13	296.07	228.46	286.87	315.968	29.61915	65.40186	9.489423	11.56174	10.97857	25.41015	176.4594
15.00%	269.03	481.56	326.98	255	252.59	317.032	28.94352	63.86737	10.48013	12.90486	9.666667	25.17251	167.8167
15.60%	265.65	457.77	357.9	281.1	244.85	321.454	28.57988	60.7122	11.47115	14.22571	9.370455	24.87188	159.4351
16.20%	261.79	464.17	388.81	307.15	254.55	335.294	28.1646	61.56101	12.46186	15.54403	9.741676	25.49464	157.3743
16.80%	259.38	439.53	418.77	323.62	265.16	341.292	27.90533	58.2931	13.42212	16.37753	10.14772	25.22916	150.1736
17.40%	257.91	421.19	446.27	239.57	274.31	327.85	27.74718	55.86074	14.30353	12.12399	10.4979	24.10667	138.5441
18.00%	253.55	411.49	384.45	195.59	265.15	302.046	27.27811	54.57427	12.32212	9.898279	10.14734	22.84402	126.9112
18.60%	250.18	389.96	-12.52	41.02	248.27	183.382	26.91555	51.71883	-0.40128	2.075911	9.501339	17.96207	96.57027
19.20%	246.8	384.45	-9.65	18.8	230.38	174.156	26.55191	50.98806	-0.30929	0.951417	8.816686	17.39976	90.62373
19.80%	244.39	377.2	0.45	30.41	184.89	167.468	26.29263	50.02653	0.014423	1.538968	7.075775	16.98966	85.80639
20.40%	242.44	372.38	-7.7	30.87	160.35	159.668	26.08284	49.38727	-0.24679	1.562247	6.136625	16.58444	81.29626

Pretreatment+Enzim

Mulur (%)	Beban (N)					Kekuatan Tarik (MPa)					Modulus Elastisitas		
	Sampel 1	Sampel 2	Sampel 3	Sampel 4	Sampel 5	Rata-Rata	Sampel 1	Sampel 2	Sampel 3	Sampel 4	Sampel 5	Rata-Rata	Rata-Rata
0.60%	53.56	8.65	12.52	8.65	9.65	18.606	6.645161	1.20979	1.783476	1.357928	0.482018	2.295675	382.6124
1.20%	86.92	16.89	22.21	17.85	20.26	32.826	10.78412	2.362238	3.163818	2.802198	1.011988	4.024872	335.406
1.80%	117.37	25.59	29.45	28	31.87	46.456	14.56203	3.579021	4.195157	4.395604	1.591908	5.664745	314.7081
2.40%	132.8	32.32	27.5	33.78	21.87	49.654	16.47643	4.52028	3.917379	5.302983	1.092408	6.261895	260.9123
3.00%	166.13	30.41	34.28	32.82	35.74	59.876	20.61166	4.253147	4.883191	5.152276	1.785215	7.337098	244.5699
3.60%	195.59	37.65	40.06	40.06	41.02	70.876	24.26675	5.265734	5.706553	6.288854	2.048951	8.715368	242.0936
4.20%	233.74	41.52	41.52	43.93	45.85	81.312	29	5.806993	5.91453	6.896389	2.29021	9.981624	237.6577
4.80%	276.76	46.85	45.85	45.85	48.26	92.714	34.33747	6.552448	6.531339	7.197802	2.410589	11.40593	237.6235
5.40%	323.12	52.13	54.54	51.67	54.54	107.2	40.08933	7.290909	7.769231	8.11146	2.724276	13.19704	244.3897
6.00%	366.1	58.42	63.24	62.28	65.19	123.046	45.42184	8.170629	9.008547	9.77708	3.256244	15.12687	252.1145
6.60%	408.12	64.23	70.48	70.48	74.84	137.63	50.63524	8.983217	10.03989	11.06436	3.738262	16.89219	255.9423
7.20%	449.18	69.62	76.31	76.31	81.13	150.51	55.72953	9.737063	10.87037	11.97959	4.052448	18.4738	256.5806
7.80%	489.75	75.34	82.09	82.09	87.42	163.338	60.76303	10.53706	11.69373	12.88697	4.366633	20.04949	257.0447
8.40%	526.95	81.59	89.33	88.87	95.61	176.47	65.37841	11.41119	12.72507	13.95133	4.775724	21.64835	257.7184
9.00%	544.34	88.37	97.57	96.57	104.3	186.23	67.53598	12.35944	13.89886	15.16013	5.20979	22.83284	253.6982
9.60%	567.52	95.61	106.26	104.8	113.96	197.63	70.41191	13.37203	15.13675	16.45212	5.692308	24.21302	252.219
10.20%	583	103.35	114.45	113.5	122.65	207.39	72.33251	14.45455	16.30342	17.8179	6.126374	25.40695	249.0877
10.80%	595.6	112.04	126.03	122.19	133.76	217.924	73.89578	15.66993	17.95299	19.1821	6.681319	26.67643	247.0039
11.40%	599.39	121.2	140.55	134.72	146.33	228.438	74.366	16.95105	20.02137	21.14914	7.309191	27.95935	245.2575
12.00%	599.47	132.31	156.94	147.79	159.39	239.18	74.37593	18.5049	22.35613	23.20094	7.961538	29.27989	243.9991
12.60%	493.62	144.87	174.83	161.81	172.42	229.51	61.24318	20.26154	24.90456	25.40188	8.612388	28.08471	222.8945
13.20%	296.57	157.94	195.13	176.75	185.93	202.464	36.79529	22.08951	27.7963	27.74725	9.287213	24.74311	187.4478
13.80%	256.96	170.5	216.85	193.68	197.55	207.108	31.88089	23.84615	30.89031	30.40502	9.867632	25.378	183.8986
14.40%	239.07	169.05	239.57	191.72	207.66	209.414	29.66129	23.64336	34.12678	30.09733	10.37263	25.58028	177.6408
15.00%	226.5	175.32	262.74	192.22	210.57	213.47	28.10174	24.52028	37.42735	30.17582	10.51798	26.14863	174.3242
15.60%	218.77	127.49	284.46	191.26	177.75	199.946	27.14268	17.83077	40.52137	30.02512	8.878621	24.87971	159.4853
16.20%	214.44	61.32	306.68	191.26	78.22	170.384	26.60546	8.576224	43.68661	30.02512	3.907093	22.5601	139.2599
16.80%	207.66	52.63	309.6	195.13	50.67	163.138	25.76427	7.360839	44.10256	30.63265	2.530969	22.07826	131.4182
17.40%	204.29	61.31	91.47	33.78	57.46	89.662	25.34615	8.574825	13.02991	5.302983	2.87013	11.0248	63.36093
18.00%	201.87	64.23	70.02	23.17	59.37	83.732	25.04591	8.983217	9.974359	3.637363	2.965534	10.12128	56.22931
18.60%	199.46	65.19	84	27.5	58.91	87.012	24.7469	9.117483	11.96581	4.317111	2.942557	10.61797	57.08587
19.20%	198.01	63.74	89.33	31.37	57.96	88.082	24.567	8.914685	12.72507	4.924647	2.895105	10.8053	56.27761
19.80%	196.54	63.24	88.87	31.37	56.5	87.304	24.38462	8.844755	12.65954	4.924647	2.822178	10.72715	54.17751
20.40%	195.59	62.28	86.46	31.37	56	86.34	24.26675	8.71049	12.31624	4.924647	2.797203	10.60307	51.97581

B.4 Grafik hubungan kekuatan tarik dan mulur komposit



Sampel	Modulus Elastisitas
Plastik	57,973 MPa
Nanas Ori	233,197 MPa
Enzim	242,927 MPa
Pre+enzim	314,708 MPa