

Lampiran 1. Surat Keterangan Hasil Determinasi Tanaman Nangka



KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
 UNIVERSITAS DIPONEGORO
 FAKULTAS SAINS DAN MATEMATIKA
 LABORATORIUM EKOLOGI DAN BIOSISTEMATIKA DEPARTEMEN BIOLOGI
 Jl. Prof. H. Soedarto SH Tembalang Semarang, 024 7474754. 024 76480923

SURAT KETERANGAN

Yang bertanda tangan dibawah ini, menyatakan bahwa mahasiswa sbb :

Nama : RIZAL SIYAM TRIATMOJO
 NIM : 135010950
 Fakultas / Prodi : FARMASI
 Perguruan Tinggi : UNIVERSITAS WAHID HASYIM SEMARANG
 Judul Penelitian : "Pembuatan dan Karakterisasi Nanopartikel Ekstrak Etanol Daun Nangka (*Artocarpus heterophyllus* Lam) pada Berbagai Variasi Komposisi Kitosan-Natrium Tripolifosfat"
 Pembimbing :-

Telah melakukan determinasi / identifikasi satu sampel tumbuhan (satu jenis) di Laboratorium Ekologi dan Biosistematika Departemen Biologi Fakultas Sains dan Matematika Universitas Diponegoro. Hasil determinasi / identifikasi terlampir.

Demikian Surat Keterangan ini dibuat untuk dapat digunakan seperlunya.

Semarang, Juli 2018

Laboratorium Ekologi Dan Biosistematik
 Kepala,

Dr. Mochamad Hadi, M.Si.
 NIP. 196001081987031002

Lampiran 1. Lanjutan...



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HASIL DETERMINASI / IDENTIFIKASI

KLASIFIKASI

Kingdom : Plantae
 Divisi : Magnoliophyta
 Class : Magnoliopsida
 Ordo : Rosales
 Famili : Moraceae
 Genus : *Artocarpus*
 Species : *Artocarpus heterophyllus* Lam. (Nangka)

IDENTIFIKASI

1b, 2b, 3b, 4b, 6b, 7b, 9b, 10b, 11b, 12b, 13b, 14a, 15a, Golongan 8. Tanaman dengan daun tunggal dan tersebar. 109b, 119b, 120a, 121b, 124a, Famili 38 : Moraceae. Genus 2. *Artocarpus*. Species : *Artocarpus heterophyllus* Lamk. (Nangka).

DESKRIPSI

Pohon nangka umumnya berukuran sedang, sampai sekitar 20 m tingginya, walaupun ada yang mencapai 30 meter. Batang bulat silindris, sampai berdiameter sekitar 1 meter. Tajuknya padat dan lebat, melebar dan membulat apabila di tempat terbuka. Seluruh bagian tumbuhan mengeluarkan getah putih pekat dan rekat apabila dilukai.

Daun tunggal, tersebar, bertangkai 1-4 cm, helai daun agak tebal seperti kulit, kaku, bertepi rata, bulat telur terbalik sampai jorong (memanjang), 3,5-12 × 5-25 cm, dengan pangkal menyempit sedikit demi sedikit, dan ujung pendek runcing atau agak runcing. Daun penumpu bulat telur lancip, panjang sampai 8 cm, mudah rontok dan meninggalkan bekas serupa cincin.

Tumbuhan nangka berumah satu (*monoecious*), perbungaan muncul pada ketiak daun pada pucuk yang pendek dan khusus, yang tumbuh pada sisi batang atau cabang tua. Bunga jantan dalam bongkol berbentuk gada atau gelendong, 1-3 × 3-8 cm, dengan cincin berdaging yang jelas di pangkal bongkol, hijau tua, dengan serbuk sari kekuningan dan berbau harum samar apabila masak. Bunga nangka disebut *babal*. Setelah melewati umur masaknya, *babal* akan membusuk (ditumbuhi kapang) dan menghitam semasa masih di pohon, sebelum akhirnya terjatuh. Bunga betina dalam bongkol tunggal atau berpasangan, silindris atau lonjong, hijau tua.

Lampiran 1. Lanjutan...



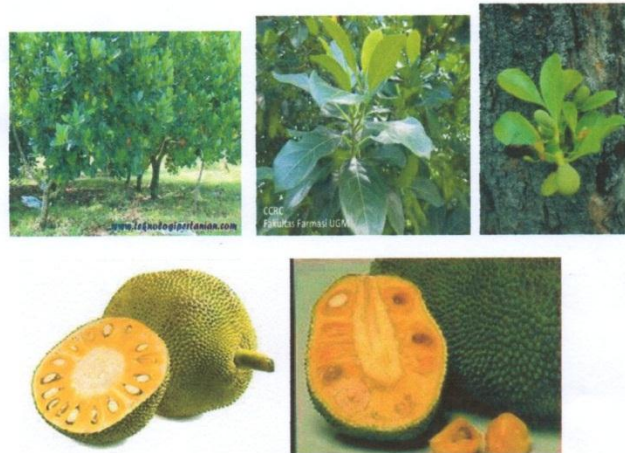
KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
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Buah majemuk (*syncarp*) berbentuk gelendong memanjang, seringkali tidak merata, pada sisi luar membentuk duri pendek lunak. 'Daging buah', yang sesungguhnya adalah perkembangan dari tenda bunga, berwarna kuning keemasan apabila masak, berbau harum-manis yang keras, berdaging, kadang-kadang berisi cairan (nektar) yang manis. Biji berbentuk bulat lonjong sampai jorong agak gepeng, panjang 2-4 cm, berturut-turut tertutup oleh kulit biji yang tipis coklat seperti kulit, endokarp yang liat keras keputihan, dan eksokarp yang lunak. Keping bijinya tidak setangkup.

PUSTAKA :

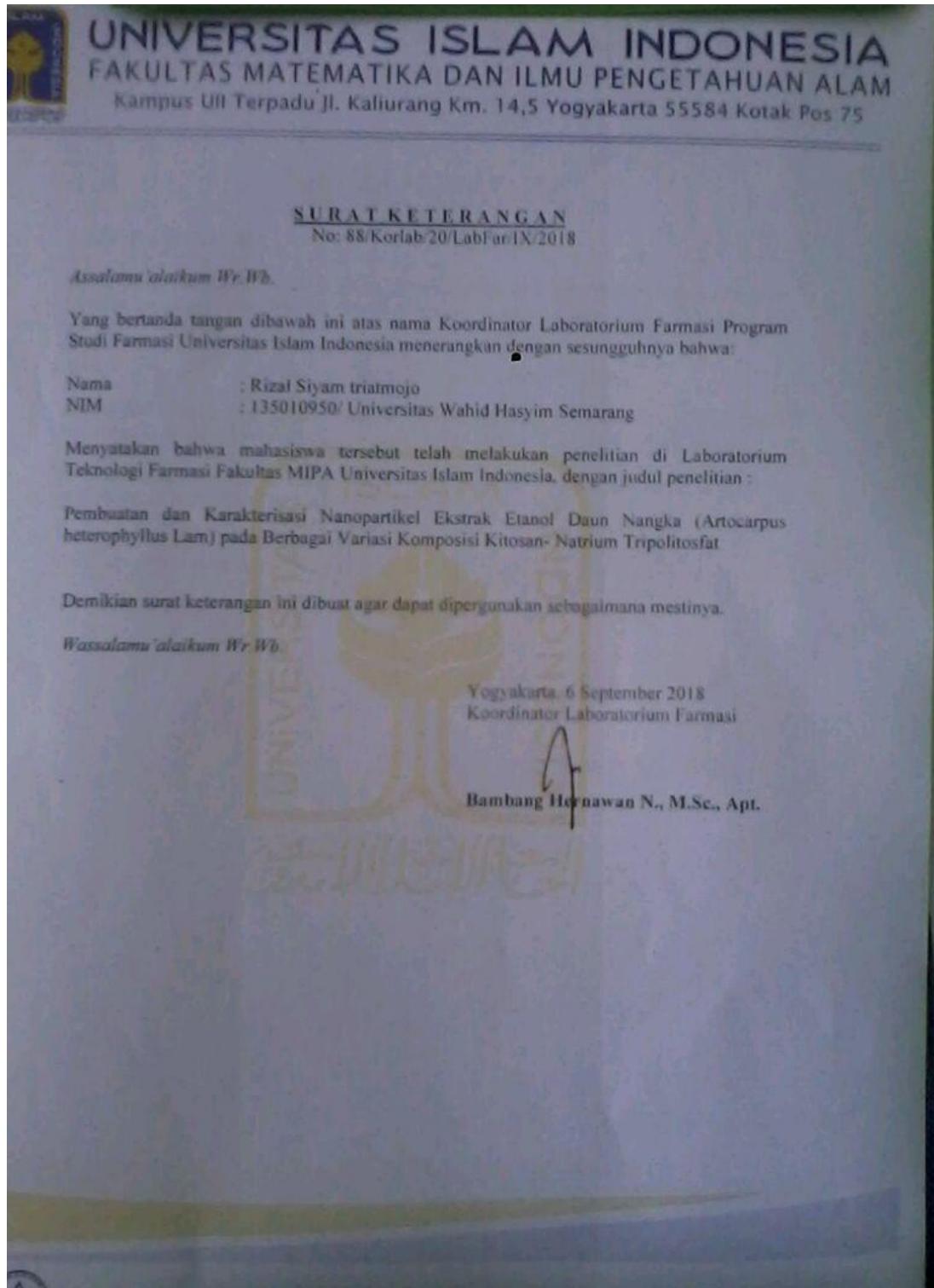
Van Steenis, 2003. Flora Untuk Sekolah di Indonesia. Terjemahan Moeso Surjowinoto. Cetakan ke 9. PT Pradnya Paramita, Jakarta

Backer & Van Den Brink, 1968. Flora of Java. Vol. I, II, III. Wolters Noordhoff, Groningen, The Netherlands.



**Lampiran 2. Surat Keterangan Telah Melakukan Penelitian di Laboratorium
Biologi dan Teknologi Farmasi Fakultas MIPA Universitas Islam
Indonesia**





Lampiran 3. Perhitungan Rendemen Simplisia dan Susut Pengerinan

a. Perhitungan susut pengeringan = $\frac{\text{Bobot awal} - \text{Bobot akhir}}{\text{Bobot awal}} \times 100\%$

$$\text{Susut Pengerinan} = \frac{\text{Bobot awal} - 2015 \text{ gram} - 760 \text{ gram}}{2015 \text{ gram}} \times 100\%$$

$$\text{Susut Pengerinan} = \frac{1225 \text{ gram}}{2015 \text{ gram}} \times 100\%$$

$$\text{Susut Pengerinan} = 62,28\%$$

b. Perhitungan Rendemen Ekstrak

$$\text{Rendemen Ekstrak} = \frac{\text{Bobot Ekstrak Kental}}{\text{Bobot Simplisia Kering}} \times 100\%$$

$$\text{Rendemen Ekstrak} = \frac{203,531 \text{ gram}}{600 \text{ gram}} \times 100\%$$

$$\text{Rendemen Ekstrak} = 33,922\%$$

Lampiran 4. Perhitungan Rf Uji Kromatografi Lapis Tipis

Secara sistematis perhitungan Rf menggunakan rumus :

$$R_f : \frac{l}{h}$$

dengan, l = jarak noda dari titik awal ke titik akhir setelah proses pengembangan (cm) dan h = jarak eluen dari titik awal ke batas akhir eluen (cm).

Berdasarkan rumus perhitungan nilai Rf, didapatkan hasil sebagai berikut :

A. Kuersetin dan Ekstrak Etanol Daun Nangka

$$R_f \text{ Kuersetin} = \frac{7.5}{8} = 0.94$$

$$R_f \text{ EEDS} = \frac{7.5}{8} = 0.94$$

B. Kuersetin dan Formula I

$$R_f \text{ Kuersetin} = \frac{4.5}{8} = 0.56$$

$$R_f \text{ FI} = \frac{4.8}{8} = 0.6$$

C. Kuersetin dan Formula II dan III

$$R_f \text{ Kuersetin} = \frac{3.0}{8} = 0.37$$

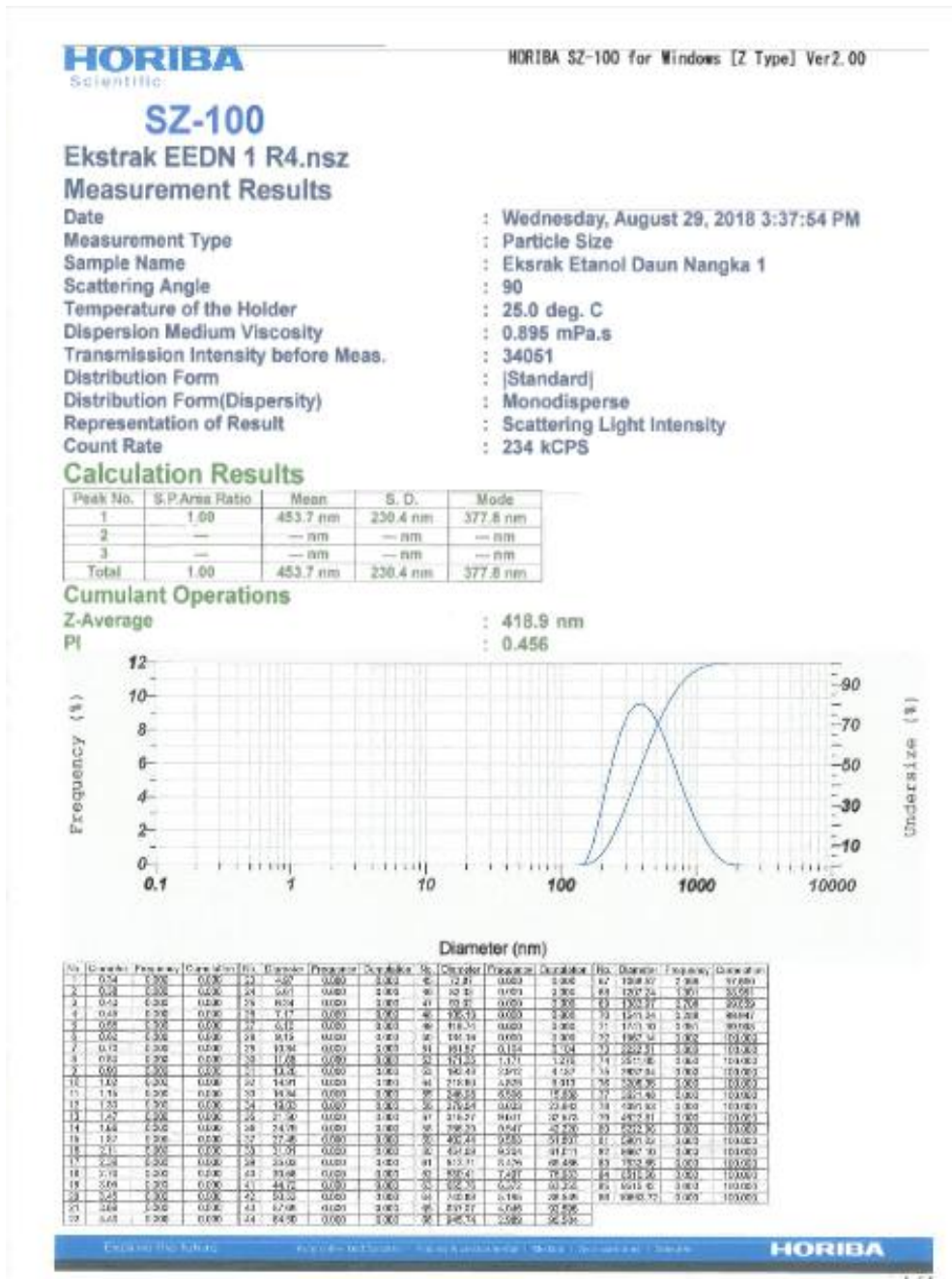
$$R_f \text{ FII} = \frac{2.8}{8} = 0.35$$

$$RF_{FIII} = 2.8 \cdot \frac{2,5}{8} = 0.31$$



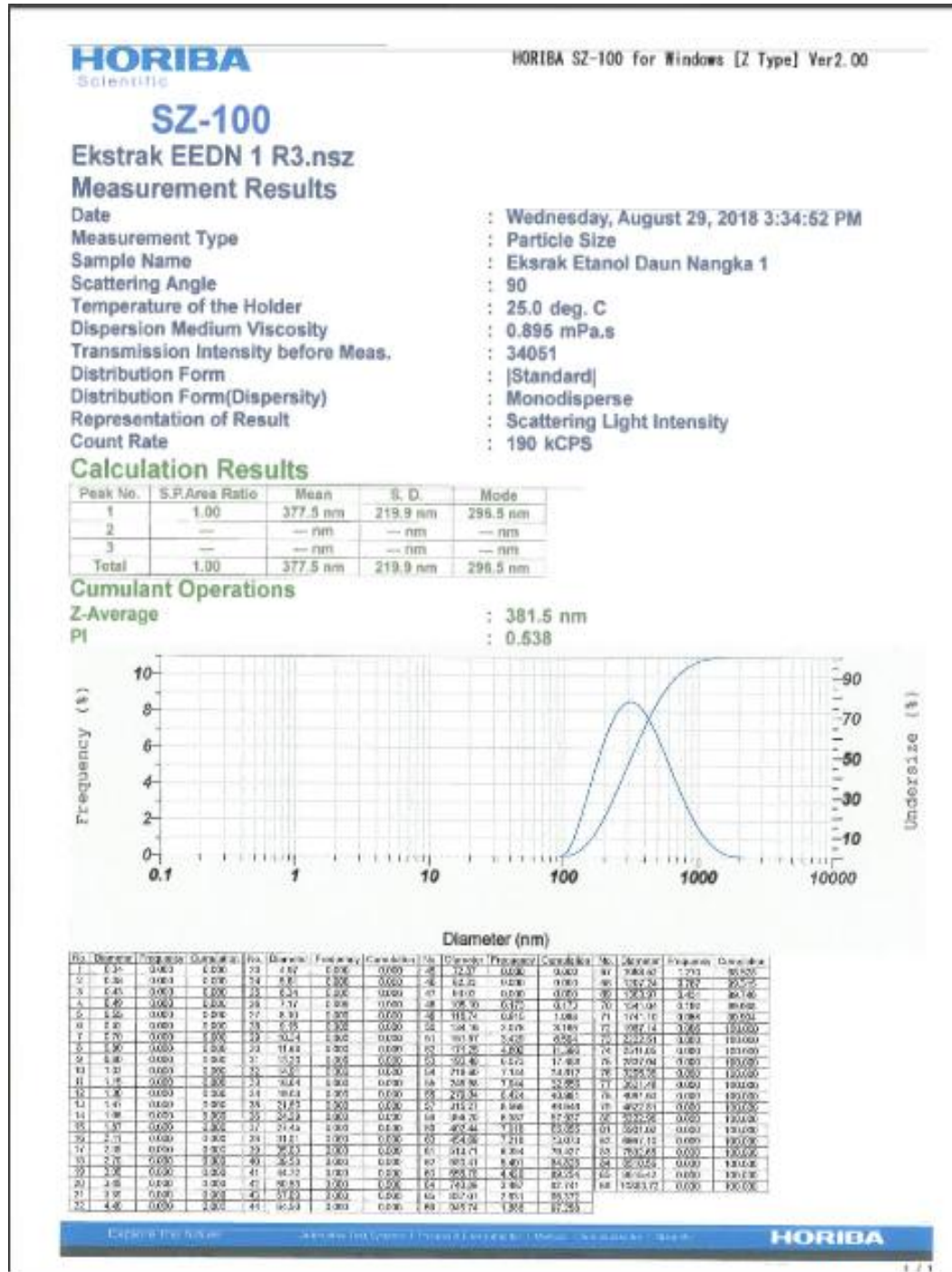
Lampiran 5. Hasil PSA (Particle Size analyzer)

A. Formula I replikasi 1



Lampiran 5. Lanjutan...

B. Formula I replikasi 2



Lampiran 5. Lanjutan...

C. Formula I replikasi 3



SZ-100

Ekstrak EEDN 1 R1.nsz Measurement Results

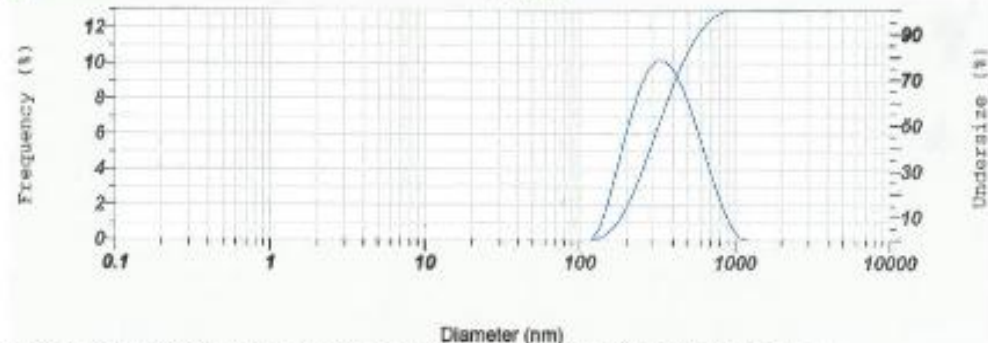
Date : Wednesday, August 29, 2018 3:07:14 PM
 Measurement Type : Particle Size
 Sample Name : Ekstrak Etanol Daun Nangka 1
 Scattering Angle : 90
 Temperature of the Holder : 24.9 deg. C
 Dispersion Medium Viscosity : 0.897 mPa.s
 Transmission Intensity before Meas. : 27740
 Distribution Form : [Standard]
 Distribution Form(Dispersity) : Monodisperse
 Representation of Result : Scattering Light Intensity
 Count Rate : 201 kCPS

Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	358.5 nm	158.4 nm	297.4 nm
2	—	— nm	— nm	— nm
3	—	— nm	— nm	— nm
Total	1.00	358.5 nm	158.4 nm	297.4 nm

Cumulant Operations

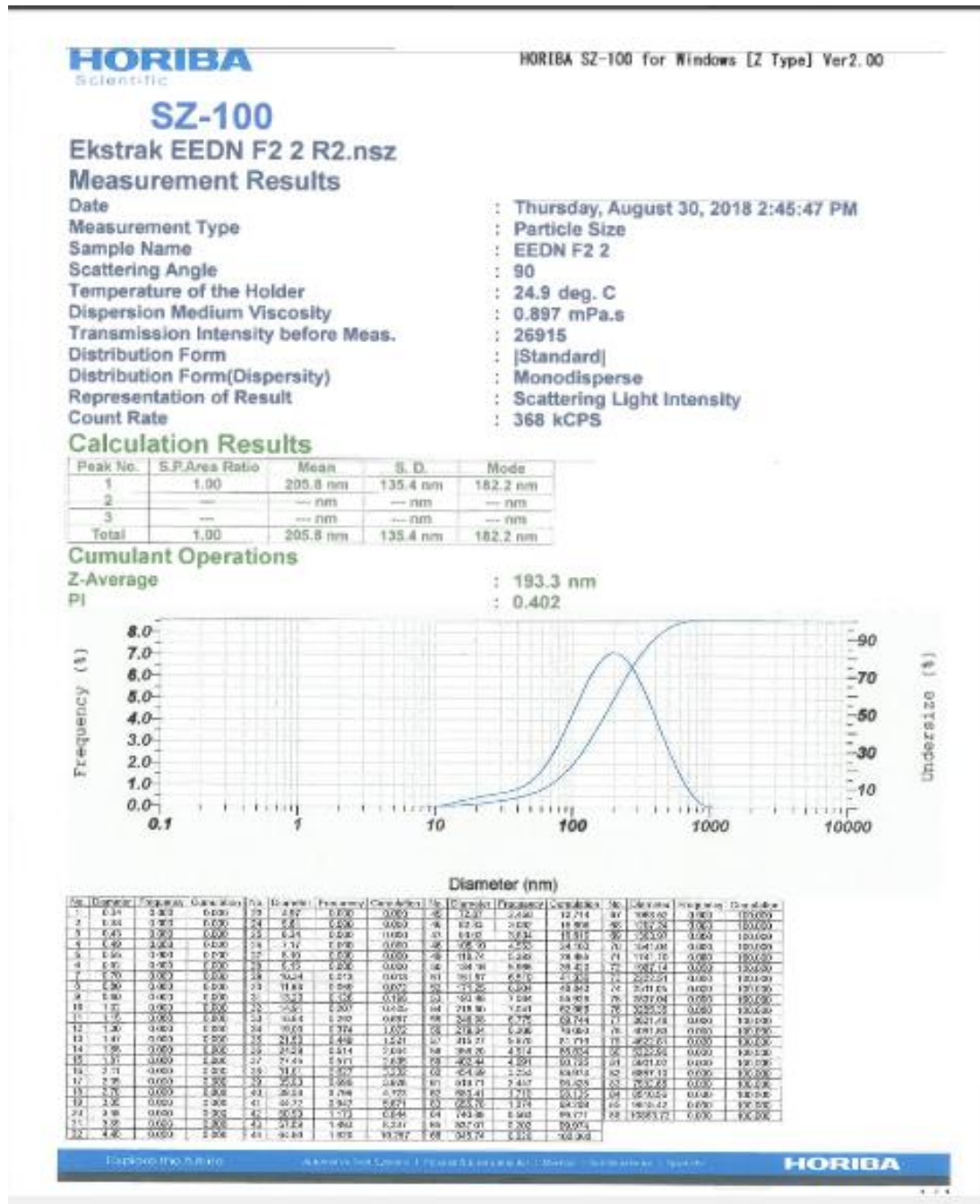
Z-Average : 347.5 nm
 PI : 0.410



No.	Diameter	Frequency	Cumulative	No.	Diameter	Frequency	Cumulative	No.	Diameter	Frequency	Cumulative
1	0.04	0.00	0.00	29	2.07	0.00	0.00				
2	0.05	0.00	0.00	30	2.20	0.00	0.00				
3	0.06	0.00	0.00	31	2.34	0.00	0.00				
4	0.08	0.00	0.00	32	2.49	0.00	0.00				
5	0.10	0.00	0.00	33	2.65	0.00	0.00				
6	0.12	0.00	0.00	34	2.82	0.00	0.00				
7	0.15	0.00	0.00	35	3.00	0.00	0.00				
8	0.18	0.00	0.00	36	3.19	0.00	0.00				
9	0.22	0.00	0.00	37	3.40	0.00	0.00				
10	0.27	0.00	0.00	38	3.63	0.00	0.00				
11	0.33	0.00	0.00	39	3.88	0.00	0.00				
12	0.40	0.00	0.00	40	4.15	0.00	0.00				
13	0.48	0.00	0.00	41	4.44	0.00	0.00				
14	0.58	0.00	0.00	42	4.76	0.00	0.00				
15	0.70	0.00	0.00	43	5.11	0.00	0.00				
16	0.84	0.00	0.00	44	5.49	0.00	0.00				
17	1.01	0.00	0.00	45	5.91	0.00	0.00				
18	1.21	0.00	0.00	46	6.37	0.00	0.00				
19	1.44	0.00	0.00	47	6.88	0.00	0.00				
20	1.71	0.00	0.00	48	7.44	0.00	0.00				
21	2.02	0.00	0.00	49	8.05	0.00	0.00				
22	2.38	0.00	0.00	50	8.72	0.00	0.00				
23	2.80	0.00	0.00	51	9.46	0.00	0.00				
24	3.38	0.00	0.00	52	10.28	0.00	0.00				
25	4.04	0.00	0.00	53	11.19	0.00	0.00				
26	4.88	0.00	0.00	54	12.19	0.00	0.00				
27	5.82	0.00	0.00	55	13.29	0.00	0.00				
28	6.98	0.00	0.00	56	14.49	0.00	0.00				
29	8.38	0.00	0.00	57	15.80	0.00	0.00				
30	10.04	0.00	0.00	58	17.24	0.00	0.00				
31	11.98	0.00	0.00	59	18.82	0.00	0.00				
32	14.24	0.00	0.00	60	20.56	0.00	0.00				
33	16.86	0.00	0.00	61	22.48	0.00	0.00				
34	19.88	0.00	0.00	62	24.60	0.00	0.00				
35	23.34	0.00	0.00	63	26.94	0.00	0.00				
36	27.28	0.00	0.00	64	29.52	0.00	0.00				
37	31.74	0.00	0.00	65	32.36	0.00	0.00				
38	36.76	0.00	0.00	66	35.48	0.00	0.00				
39	42.38	0.00	0.00	67	38.90	0.00	0.00				
40	48.64	0.00	0.00	68	42.64	0.00	0.00				
41	55.58	0.00	0.00	69	46.74	0.00	0.00				
42	63.24	0.00	0.00	70	51.22	0.00	0.00				
43	71.66	0.00	0.00	71	56.10	0.00	0.00				
44	80.88	0.00	0.00	72	61.40	0.00	0.00				
45	90.94	0.00	0.00	73	67.14	0.00	0.00				
46	101.88	0.00	0.00	74	73.36	0.00	0.00				
47	113.74	0.00	0.00	75	80.08	0.00	0.00				
48	126.56	0.00	0.00	76	87.34	0.00	0.00				
49	140.38	0.00	0.00	77	95.16	0.00	0.00				
50	155.24	0.00	0.00	78	104.06	0.00	0.00				
51	171.18	0.00	0.00	79	114.16	0.00	0.00				
52	188.24	0.00	0.00	80	125.58	0.00	0.00				
53	206.46	0.00	0.00	81	138.44	0.00	0.00				
54	225.88	0.00	0.00	82	152.86	0.00	0.00				
55	246.54	0.00	0.00	83	168.96	0.00	0.00				
56	268.48	0.00	0.00	84	186.76	0.00	0.00				
57	291.74	0.00	0.00	85	206.38	0.00	0.00				
58	316.36	0.00	0.00	86	227.94	0.00	0.00				
59	342.38	0.00	0.00	87	251.56	0.00	0.00				
60	369.84	0.00	0.00	88	277.36	0.00	0.00				
61	398.78	0.00	0.00	89	305.46	0.00	0.00				
62	429.24	0.00	0.00	90	335.88	0.00	0.00				

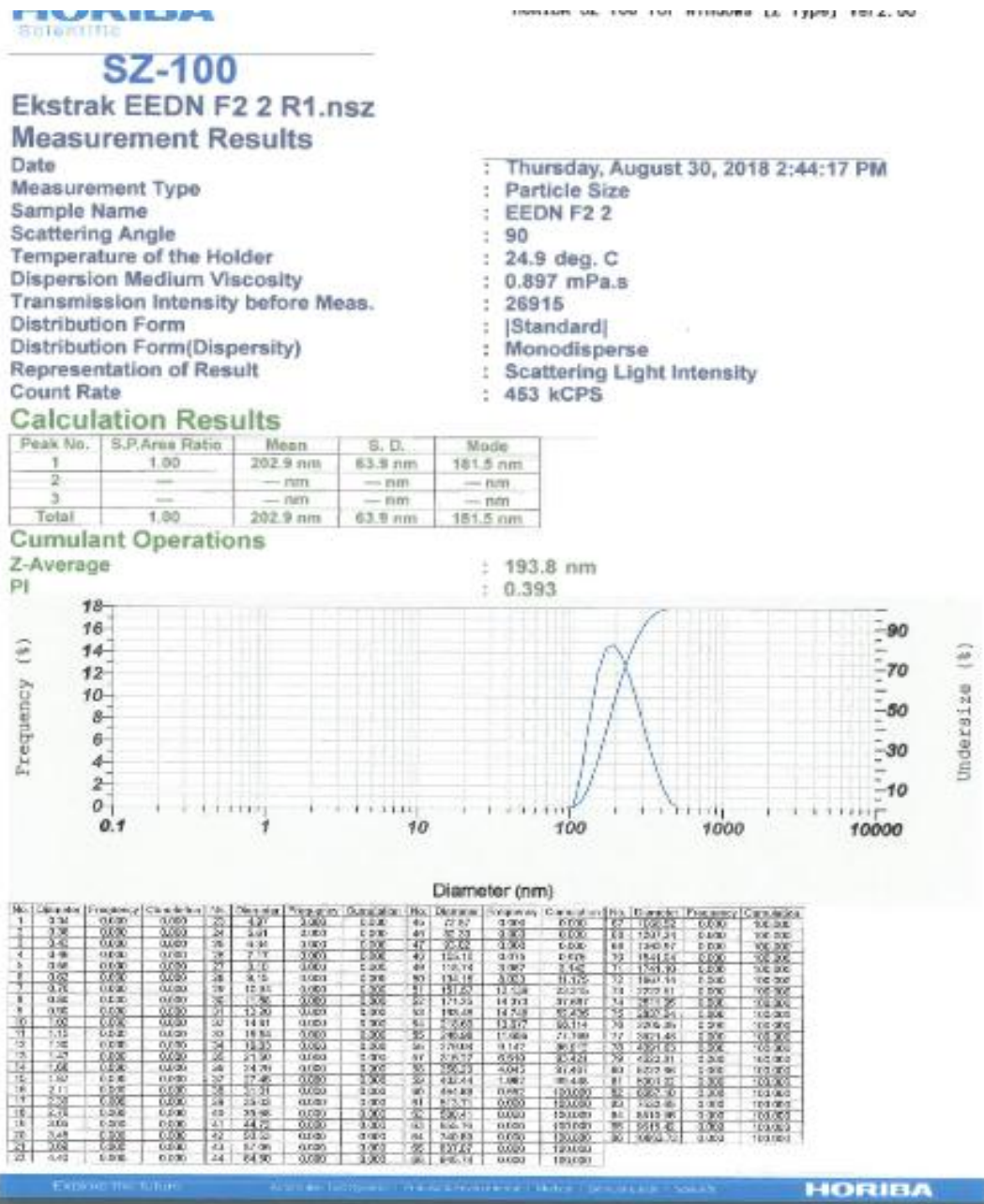
Lampiran 5. Lanjutan...

D. Formula II replikasi 1



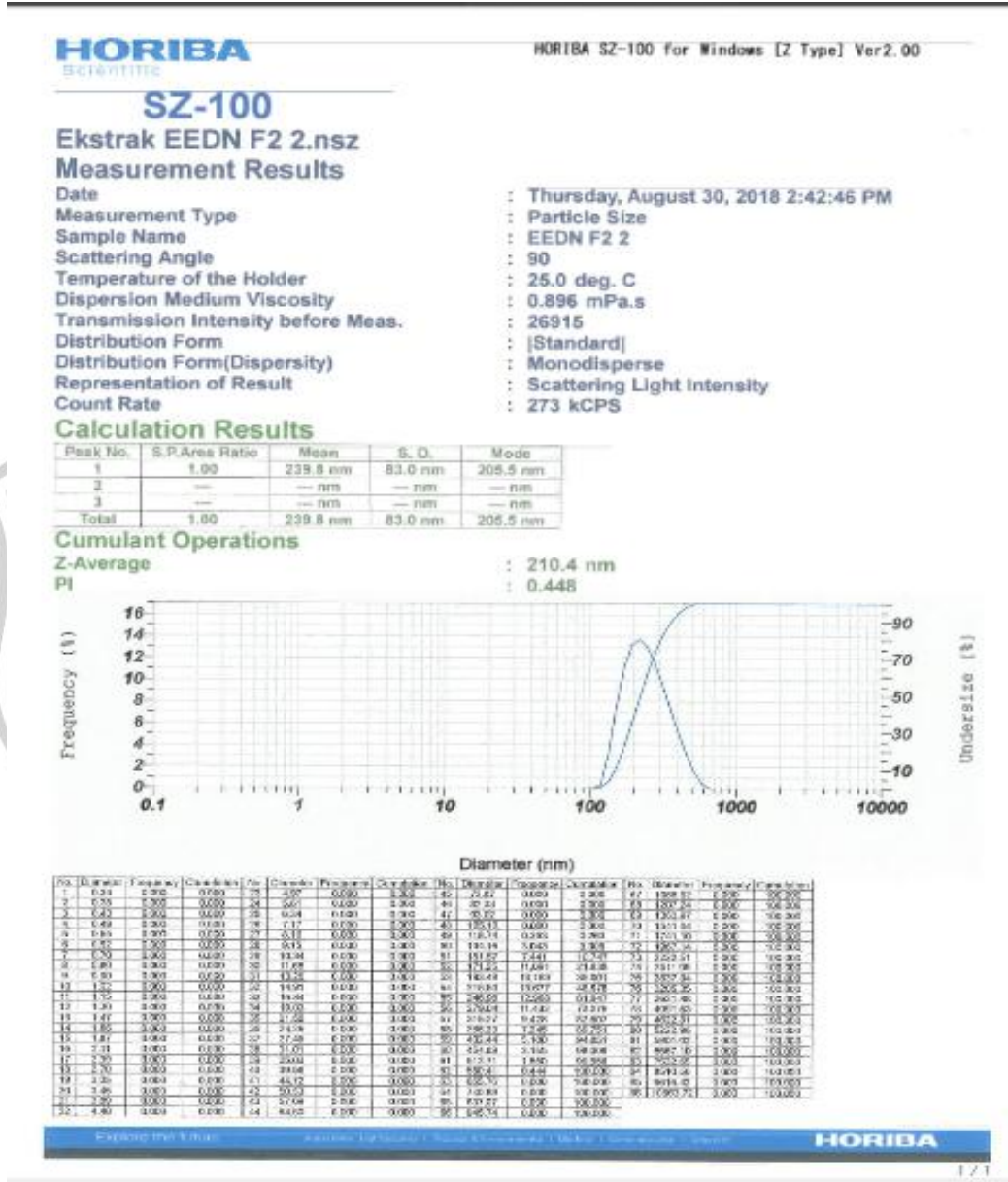
Lampiran 5. Lanjutan...

E. Formula II replikasi 2



Lampiran 5. Lanjutan...

F. Formula II replikasi 3



Lampiran 5. Lanjutan...

G. Formula III replikasi 1



SZ-100

Ekstrak EEDN F3 R2.nsz

Measurement Results

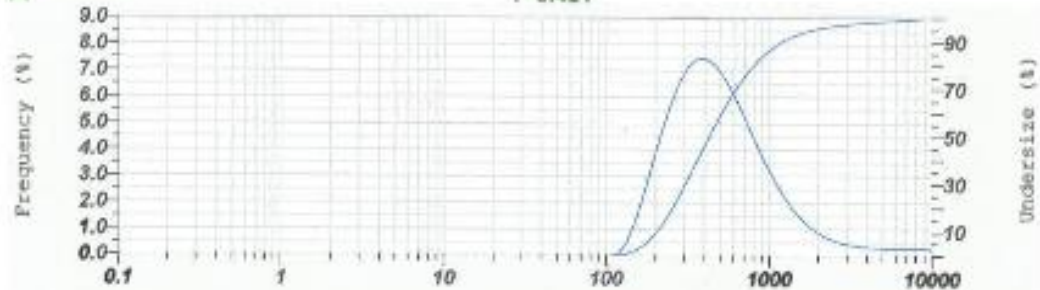
Date : Monday, September 03, 2018 1:35:31 PM
 Measurement Type : Particle Size
 Sample Name : EEDN F3 Rizal
 Scattering Angle : 90
 Temperature of the Holder : 24.9 deg. C
 Dispersion Medium Viscosity : 0.898 mPa.s
 Transmission Intensity before Meas. : 30640
 Distribution Form : [Standard]
 Distribution Form(Dispersity) : Monodisperse
 Representation of Result : Scattering Light Intensity
 Count Rate : 228 kCPS

Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	683.8 nm	959.0 nm	378.1 nm
2	---	--- nm	--- nm	--- nm
3	---	--- nm	--- nm	--- nm
Total	1.00	683.8 nm	959.0 nm	378.1 nm

Cumulant Operations

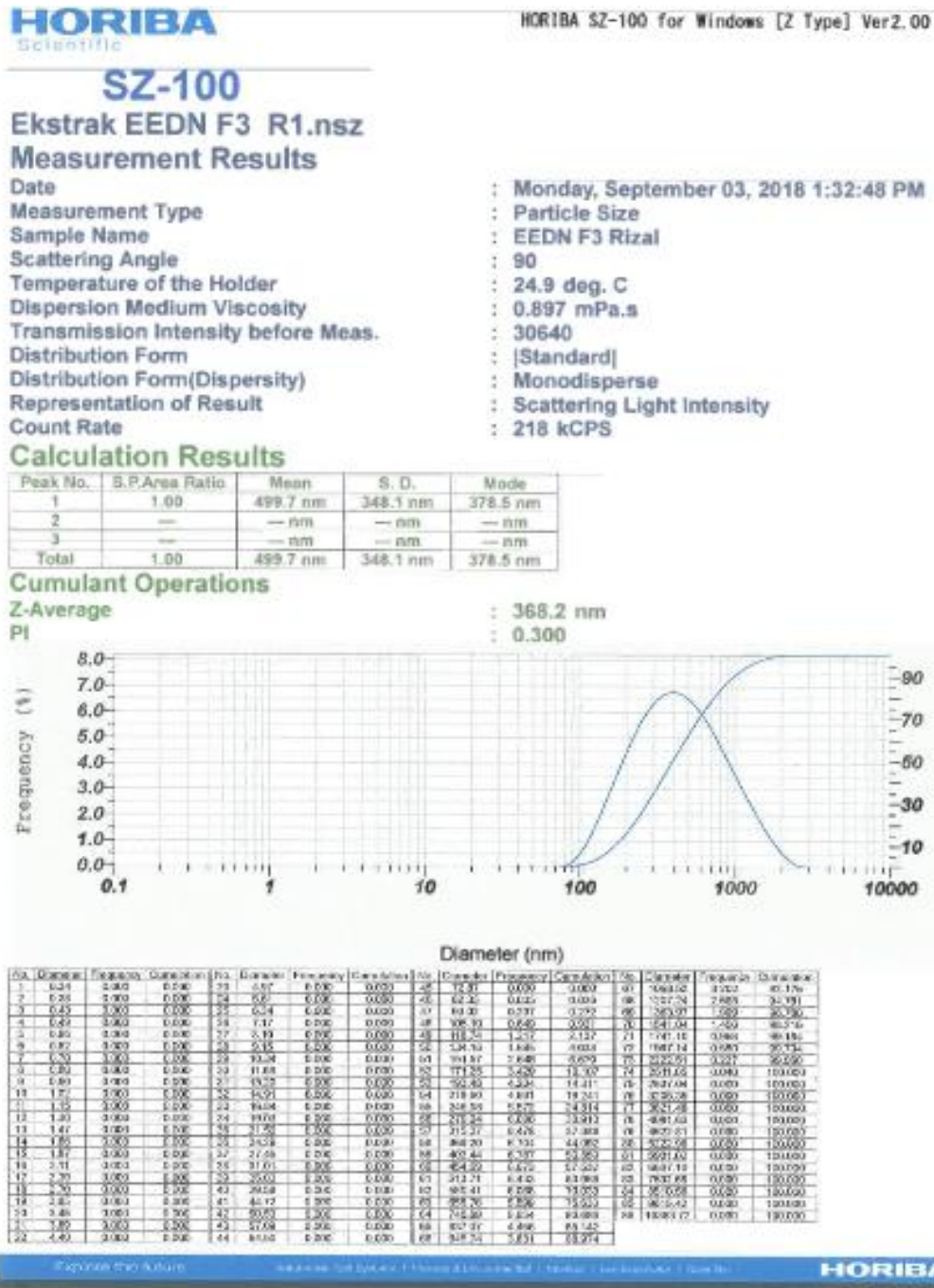
Z-Average : 431.2 nm
 PI : 0.421



No.	Diameter	Frequency	Cumulative	No.	Diameter	Frequency	Cumulative	No.	Diameter	Frequency	Cumulative
1	0.24	0.000	0.000	25	4.97	0.000	0.500	45	25.00	0.000	1.000
2	0.28	0.000	0.000	26	5.61	0.000	0.500	46	27.73	0.000	1.000
3	0.33	0.000	0.000	27	6.28	0.000	0.500	47	30.53	0.000	1.000
4	0.39	0.000	0.000	28	7.07	0.000	0.500	48	33.41	0.000	1.000
5	0.47	0.000	0.000	29	7.98	0.000	0.500	49	36.42	0.000	1.000
6	0.57	0.000	0.000	30	9.01	0.000	0.500	50	39.57	0.000	1.000
7	0.70	0.000	0.000	31	10.18	0.000	0.500	51	42.96	0.000	1.000
8	0.86	0.000	0.000	32	11.51	0.000	0.500	52	46.59	0.000	1.000
9	1.05	0.000	0.000	33	13.01	0.000	0.500	53	50.47	0.000	1.000
10	1.27	0.000	0.000	34	<td>0.000</td> <td>0.500</td> <td>54</td> <td>54.61</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	54	54.61	0.000	1.000
11	1.53	0.000	0.000	35	<td>0.000</td> <td>0.500</td> <td>55</td> <td>59.01</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	55	59.01	0.000	1.000
12	1.84	0.000	0.000	36	<td>0.000</td> <td>0.500</td> <td>56</td> <td>63.68</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	56	63.68	0.000	1.000
13	2.21	0.000	0.000	37	<td>0.000</td> <td>0.500</td> <td>57</td> <td>68.63</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	57	68.63	0.000	1.000
14	2.65	0.000	0.000	38	<td>0.000</td> <td>0.500</td> <td>58</td> <td>73.86</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	58	73.86	0.000	1.000
15	3.17	0.000	0.000	39	<td>0.000</td> <td>0.500</td> <td>59</td> <td>79.38</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	59	79.38	0.000	1.000
16	3.78	0.000	0.000	40	<td>0.000</td> <td>0.500</td> <td>60</td> <td>85.19</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	60	85.19	0.000	1.000
17	4.49	0.000	0.000	41	<td>0.000</td> <td>0.500</td> <td>61</td> <td>91.30</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	61	91.30	0.000	1.000
18	5.32	0.000	0.000	42	<td>0.000</td> <td>0.500</td> <td>62</td> <td>97.71</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	62	97.71	0.000	1.000
19	6.29	0.000	0.000	43	<td>0.000</td> <td>0.500</td> <td>63</td> <td>104.42</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	63	104.42	0.000	1.000
20	7.43	0.000	0.000	44	<td>0.000</td> <td>0.500</td> <td>64</td> <td>111.43</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	64	111.43	0.000	1.000
21	8.77	0.000	0.000	45	<td>0.000</td> <td>0.500</td> <td>65</td> <td>118.74</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	65	118.74	0.000	1.000
22	10.34	0.000	0.000	46	<td>0.000</td> <td>0.500</td> <td>66</td> <td>126.35</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	66	126.35	0.000	1.000
23	12.18	0.000	0.000	47	<td>0.000</td> <td>0.500</td> <td>67</td> <td>134.26</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	67	134.26	0.000	1.000
24	14.34	0.000	0.000	48	<td>0.000</td> <td>0.500</td> <td>68</td> <td>142.47</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	68	142.47	0.000	1.000
25	16.86	0.000	0.000	49	<td>0.000</td> <td>0.500</td> <td>69</td> <td>150.98</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	69	150.98	0.000	1.000
26	19.79	0.000	0.000	50	<td>0.000</td> <td>0.500</td> <td>70</td> <td>159.79</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	70	159.79	0.000	1.000
27	23.19	0.000	0.000	51	<td>0.000</td> <td>0.500</td> <td>71</td> <td>168.90</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	71	168.90	0.000	1.000
28	27.12	0.000	0.000	52	<td>0.000</td> <td>0.500</td> <td>72</td> <td>178.31</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	72	178.31	0.000	1.000
29	31.64	0.000	0.000	53	<td>0.000</td> <td>0.500</td> <td>73</td> <td>188.52</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	73	188.52	0.000	1.000
30	36.82	0.000	0.000	54	<td>0.000</td> <td>0.500</td> <td>74</td> <td>199.53</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	74	199.53	0.000	1.000
31	42.73	0.000	0.000	55	<td>0.000</td> <td>0.500</td> <td>75</td> <td>211.34</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	75	211.34	0.000	1.000
32	49.44	0.000	0.000	56	<td>0.000</td> <td>0.500</td> <td>76</td> <td>223.95</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	76	223.95	0.000	1.000
33	57.03	0.000	0.000	57	<td>0.000</td> <td>0.500</td> <td>77</td> <td>237.46</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	77	237.46	0.000	1.000
34	65.58	0.000	0.000	58	<td>0.000</td> <td>0.500</td> <td>78</td> <td>251.87</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	78	251.87	0.000	1.000
35	75.18	0.000	0.000	59	<td>0.000</td> <td>0.500</td> <td>79</td> <td>267.18</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	79	267.18	0.000	1.000
36	86.02	0.000	0.000	60	<td>0.000</td> <td>0.500</td> <td>80</td> <td>283.39</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	80	283.39	0.000	1.000
37	98.29	0.000	0.000	61	<td>0.000</td> <td>0.500</td> <td>81</td> <td>300.50</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	81	300.50	0.000	1.000
38	112.18	0.000	0.000	62	<td>0.000</td> <td>0.500</td> <td>82</td> <td>318.51</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	82	318.51	0.000	1.000
39	127.87	0.000	0.000	63	<td>0.000</td> <td>0.500</td> <td>83</td> <td>337.42</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	83	337.42	0.000	1.000
40	145.56	0.000	0.000	64	<td>0.000</td> <td>0.500</td> <td>84</td> <td>357.73</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	84	357.73	0.000	1.000
41	165.45	0.000	0.000	65	<td>0.000</td> <td>0.500</td> <td>85</td> <td>379.94</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	85	379.94	0.000	1.000
42	187.84	0.000	0.000	66	<td>0.000</td> <td>0.500</td> <td>86</td> <td>404.15</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	86	404.15	0.000	1.000
43	213.03	0.000	0.000	67	<td>0.000</td> <td>0.500</td> <td>87</td> <td>430.46</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	87	430.46	0.000	1.000
44	241.32	0.000	0.000	68	<td>0.000</td> <td>0.500</td> <td>88</td> <td>458.87</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	88	458.87	0.000	1.000
45	273.01	0.000	0.000	69	<td>0.000</td> <td>0.500</td> <td>89</td> <td>489.88</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	89	489.88	0.000	1.000
46	308.50	0.000	0.000	70	<td>0.000</td> <td>0.500</td> <td>90</td> <td>523.49</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	90	523.49	0.000	1.000
47	348.19	0.000	0.000	71	<td>0.000</td> <td>0.500</td> <td>91</td> <td>563.60</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	91	563.60	0.000	1.000
48	392.58	0.000	0.000	72	<td>0.000</td> <td>0.500</td> <td>92</td> <td>612.21</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	92	612.21	0.000	1.000
49	442.17	0.000	0.000	73	<td>0.000</td> <td>0.500</td> <td>93</td> <td>665.42</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	93	665.42	0.000	1.000
50	497.46	0.000	0.000	74	<td>0.000</td> <td>0.500</td> <td>94</td> <td>723.83</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	94	723.83	0.000	1.000
51	558.95	0.000	0.000	75	<td>0.000</td> <td>0.500</td> <td>95</td> <td>787.24</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	95	787.24	0.000	1.000
52	627.14	0.000	0.000	76	<td>0.000</td> <td>0.500</td> <td>96</td> <td>856.65</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	96	856.65	0.000	1.000
53	702.53	0.000	0.000	77	<td>0.000</td> <td>0.500</td> <td>97</td> <td>932.66</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	97	932.66	0.000	1.000
54	785.62	0.000	0.000	78	<td>0.000</td> <td>0.500</td> <td>98</td> <td>1015.47</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	98	1015.47	0.000	1.000
55	876.91	0.000	0.000	79	<td>0.000</td> <td>0.500</td> <td>99</td> <td>1105.28</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	99	1105.28	0.000	1.000
56	976.90	0.000	0.000	80	<td>0.000</td> <td>0.500</td> <td>100</td> <td>1202.99</td> <td>0.000</td> <td>1.000</td>	0.000	0.500	100	1202.99	0.000	1.000

Lampiran 5. Lanjutan...

H. Formula III replikasi 2



Lampiran 5. Lanjutan...

I. Formula III replikasi 3



SZ-100

**Ekstrak EEDN F3 R3.nsz
Measurement Results**

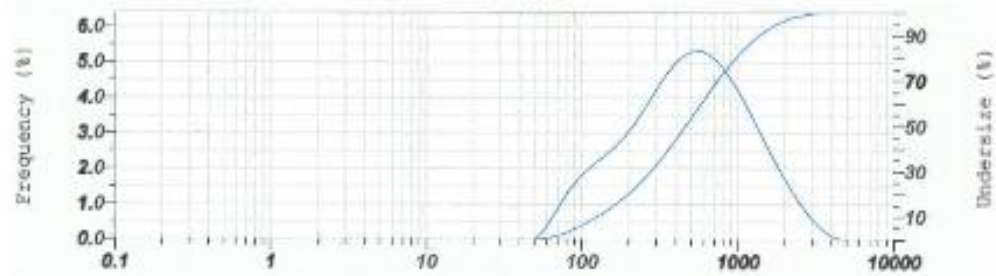
Date : Monday, September 03, 2018 1:49:23 PM
 Measurement Type : Particle Size
 Sample Name : EEDN F3 Rizal
 Scattering Angle : 90
 Temperature of the Holder : 24.9 deg. C
 Dispersion Medium Viscosity : 0.897 mPa.s
 Transmission Intensity before Meas. : 30352
 Distribution Form : [Standard]
 Distribution Form(Dispersity) : Polydisperse
 Representation of Result : Scattering Light Intensity
 Count Rate : 183 kCPS

Calculation Results

Peak No.	S.P.Area Ratio	Mean	S. D.	Mode
1	1.00	634.0 nm	560.1 nm	545.4 nm
2	---	--- nm	--- nm	--- nm
3	---	--- nm	--- nm	--- nm
Total	1.00	634.0 nm	560.1 nm	545.4 nm

Cumulant Operations

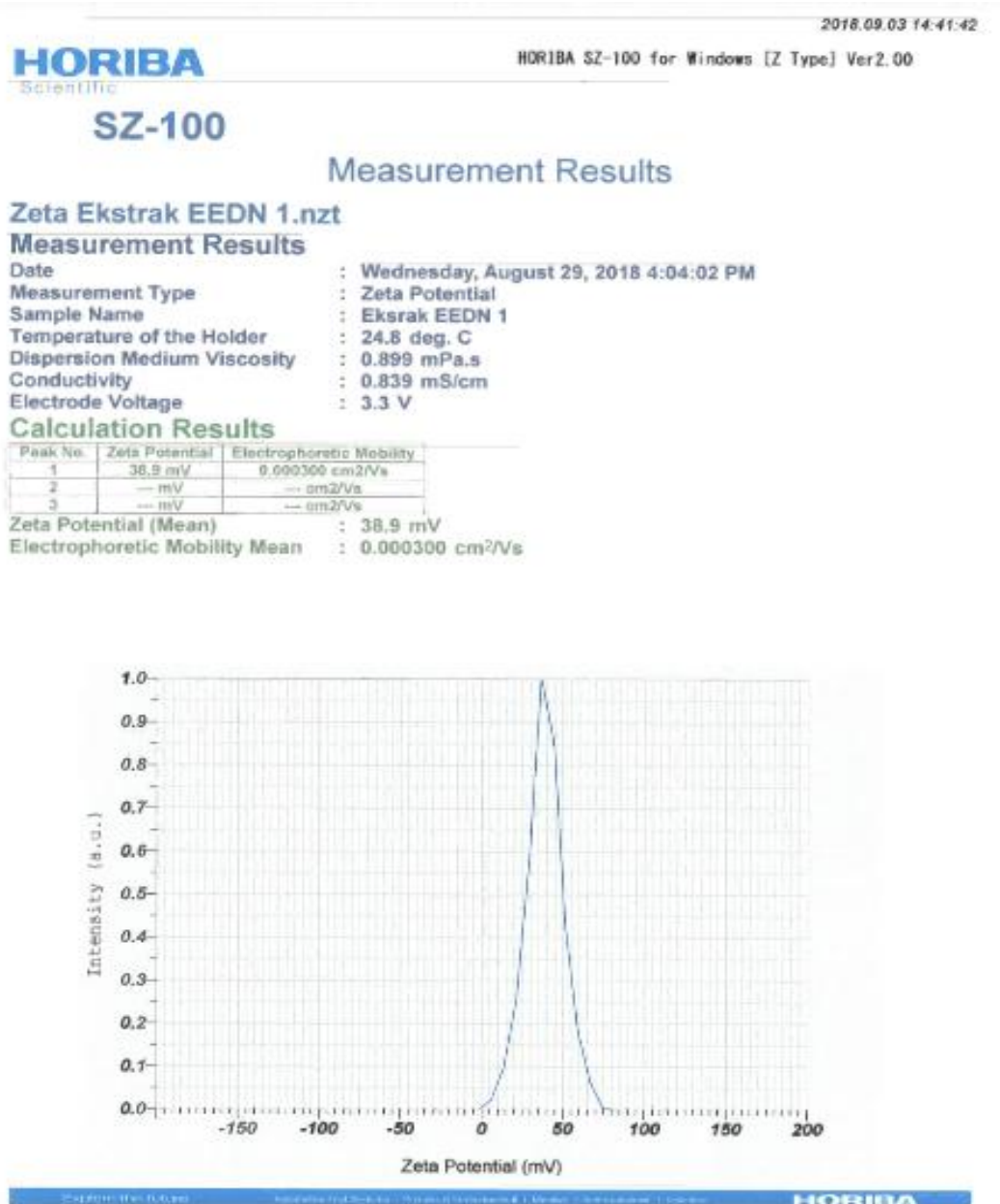
Z-Average : 407.2 nm
 PI : 0.470



No.	Binwidth	Frequency	Cumulative	No.	Binwidth	Frequency	Cumulative	No.	Binwidth	Frequency	Cumulative	No.	Binwidth	Frequency	Cumulative
1	0.50	0.000	0.00	23	4.91	0.000	0.00	45	7.57	0.000	0.00	67	10.80	0.000	0.00
2	0.50	0.000	0.00	24	5.41	0.000	0.00	46	8.07	0.000	0.00	68	12.37	0.000	0.00
3	0.50	0.000	0.00	25	5.91	0.000	0.00	47	9.52	0.000	0.00	69	14.07	0.000	0.00
4	0.50	0.000	0.00	26	6.41	0.000	0.00	48	10.95	0.000	0.00	70	15.97	0.000	0.00
5	0.50	0.000	0.00	27	6.91	0.000	0.00	49	12.44	0.000	0.00	71	18.15	0.000	0.00
6	0.50	0.000	0.00	28	7.41	0.000	0.00	50	13.97	0.000	0.00	72	20.14	0.000	0.00
7	0.50	0.000	0.00	29	7.91	0.000	0.00	51	15.70	0.000	0.00	73	22.47	0.000	0.00
8	0.50	0.000	0.00	30	8.41	0.000	0.00	52	17.52	0.000	0.00	74	25.14	0.000	0.00
9	0.50	0.000	0.00	31	8.91	0.000	0.00	53	19.44	0.000	0.00	75	28.15	0.000	0.00
10	0.50	0.000	0.00	32	9.41	0.000	0.00	54	21.44	0.000	0.00	76	31.57	0.000	0.00
11	0.50	0.000	0.00	33	9.91	0.000	0.00	55	23.52	0.000	0.00	77	35.47	0.000	0.00
12	0.50	0.000	0.00	34	10.41	0.000	0.00	56	25.67	0.000	0.00	78	39.80	0.000	0.00
13	0.50	0.000	0.00	35	10.91	0.000	0.00	57	27.97	0.000	0.00	79	44.57	0.000	0.00
14	0.50	0.000	0.00	36	11.41	0.000	0.00	58	30.44	0.000	0.00	80	49.80	0.000	0.00
15	0.50	0.000	0.00	37	11.91	0.000	0.00	59	33.07	0.000	0.00	81	55.57	0.000	0.00
16	0.50	0.000	0.00	38	12.41	0.000	0.00	60	35.84	0.000	0.00	82	62.47	0.000	0.00
17	0.50	0.000	0.00	39	12.91	0.000	0.00	61	38.74	0.000	0.00	83	70.57	0.000	0.00
18	0.50	0.000	0.00	40	13.41	0.000	0.00	62	41.77	0.000	0.00	84	79.80	0.000	0.00
19	0.50	0.000	0.00	41	13.91	0.000	0.00	63	44.94	0.000	0.00	85	90.17	0.000	0.00
20	0.50	0.000	0.00	42	14.41	0.000	0.00	64	48.24	0.000	0.00	86	101.70	0.000	0.00
21	0.50	0.000	0.00	43	14.91	0.000	0.00	65	51.67	0.000	0.00	87	114.40	0.000	0.00
22	0.50	0.000	0.00	44	15.41	0.000	0.00	66	55.24	0.000	0.00	88	128.30	0.000	0.00
23	0.50	0.000	0.00	45	15.91	0.000	0.00	67	58.94	0.000	0.00	89	143.40	0.000	0.00
24	0.50	0.000	0.00	46	16.41	0.000	0.00	68	62.77	0.000	0.00	90	159.80	0.000	0.00

Lampiran 6. Hasil Pengukuran Potensial Zeta

A. Formula I replikasi 1



Lampiran 6. Lanjutan...

B. Formula I replikasi 2



SZ-100

Measurement Results

Zeta Ekstrak EEDN 1 R4.nzt

Measurement Results

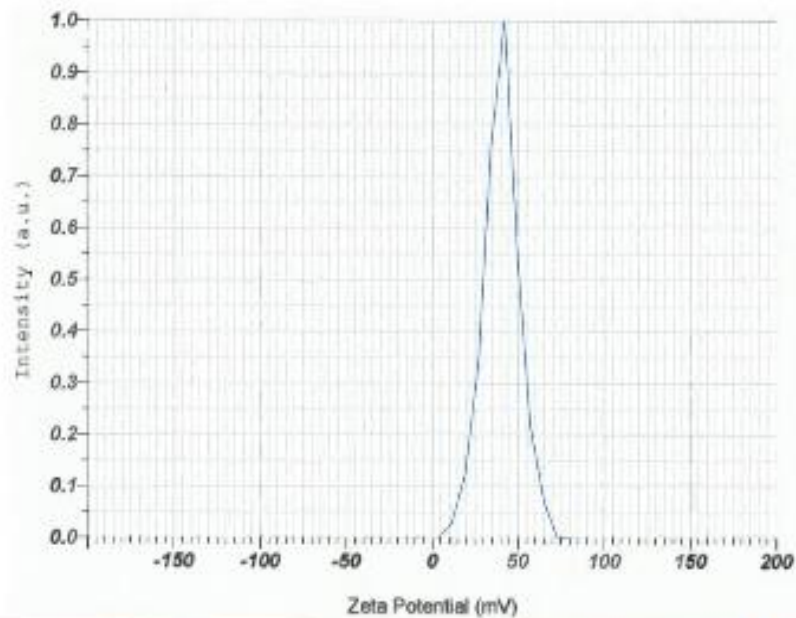
Date : Wednesday, August 29, 2018 4:05:32 PM
 Measurement Type : Zeta Potential
 Sample Name : Ekstrak EEDN 1
 Temperature of the Holder : 24.8 deg. C
 Dispersion Medium Viscosity : 0.898 mPa.s
 Conductivity : 0.839 mS/cm
 Electrode Voltage : 3.3 V

Calculation Results

Peak No.	Zeta Potential	Electrophoretic Mobility
1	40.3 mV	0.000311 cm ² /Vs
2	-- mV	-- cm ² /Vs
3	-- mV	-- cm ² /Vs

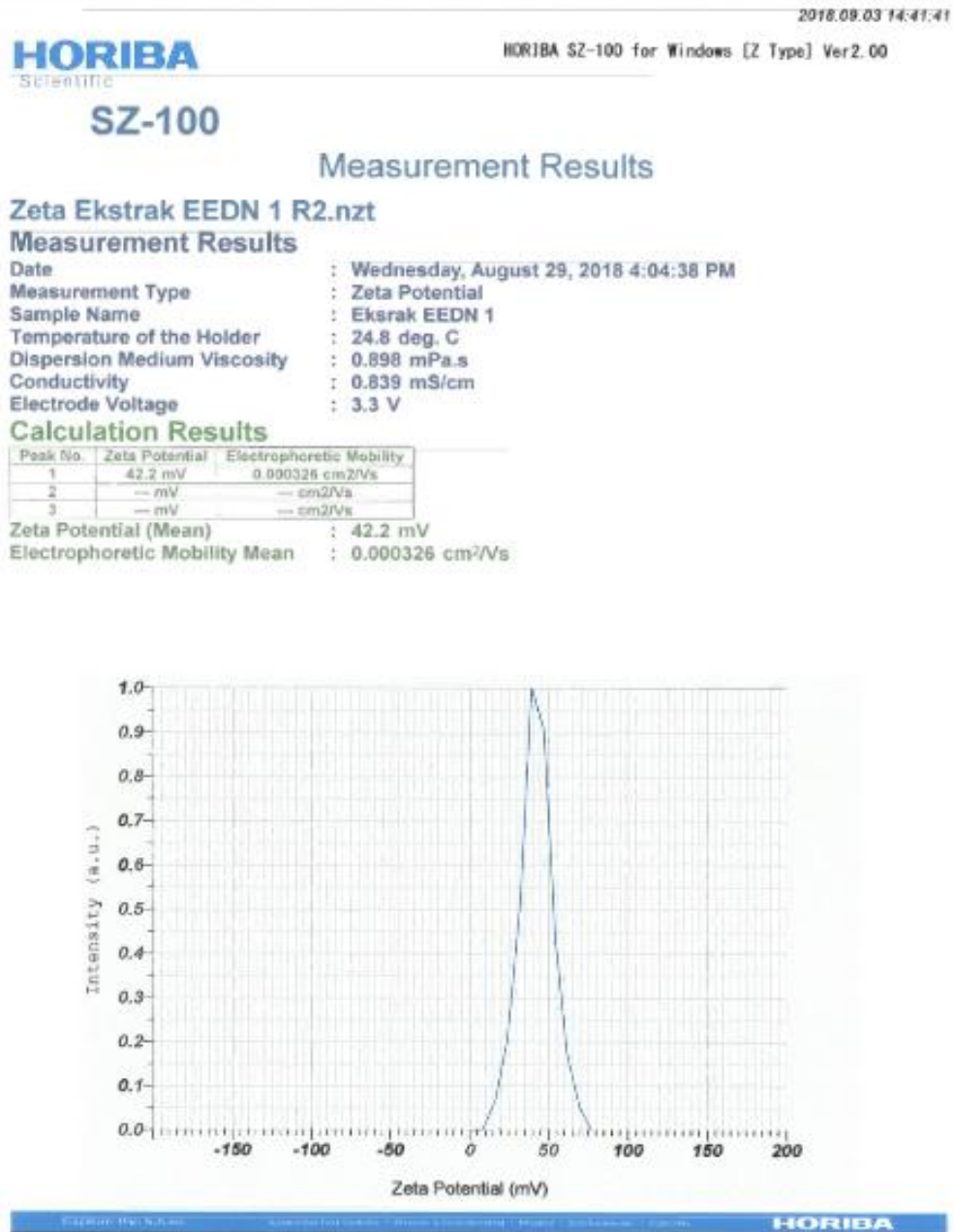
Zeta Potential (Mean) : 40.3 mV

Electrophoretic Mobility Mean : 0.000311 cm²/Vs



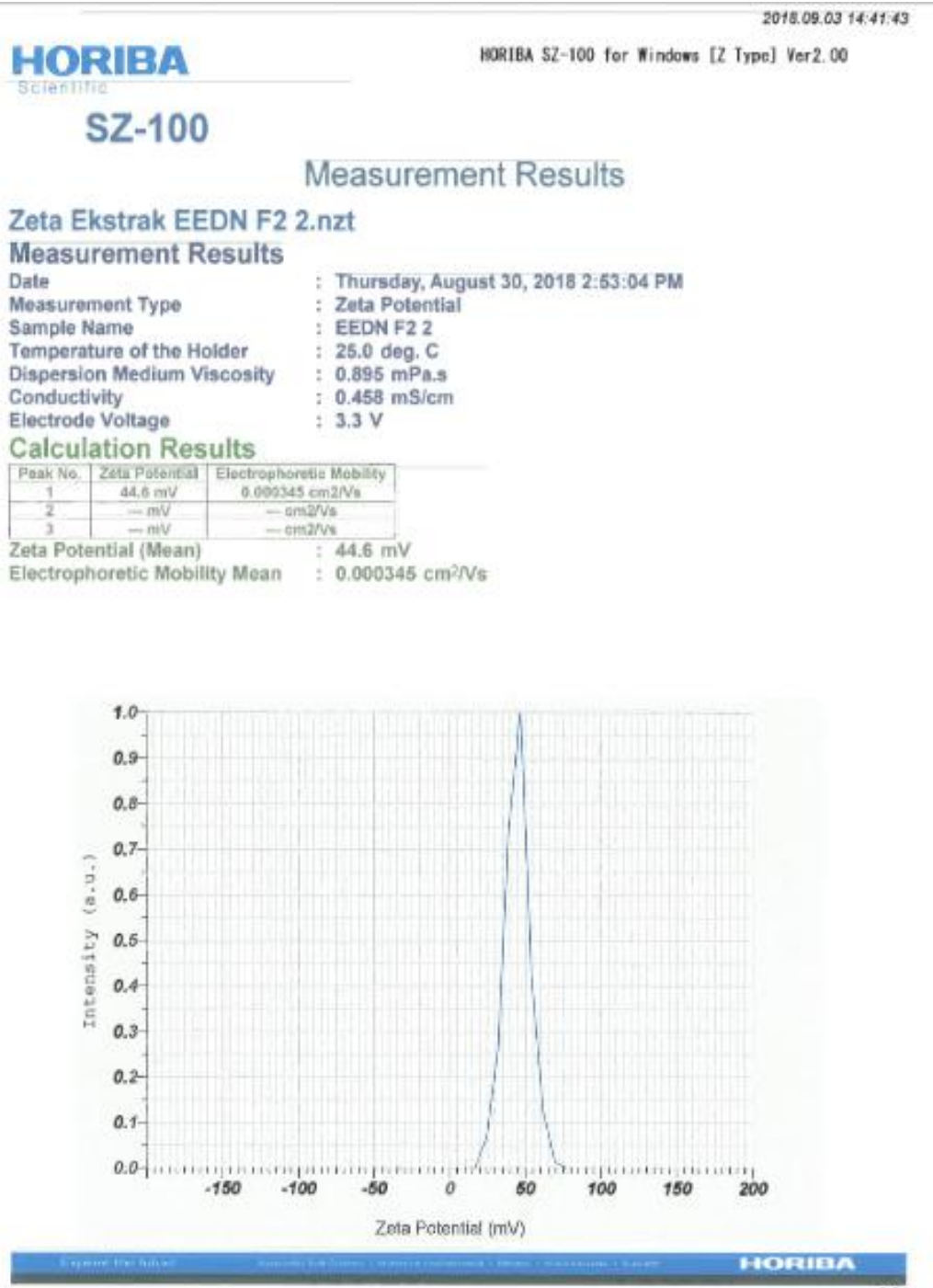
Lampiran 6. Lanjutan...

C. Formula I replikasi 3



Lampiran 6. Lanjutan...

D. Formula II replikasi 1





Lampiran 6. Lanjutan...

E. Formula II replikasi 2



SZ-100

Measurement Results

Zeta Ekstrak EEDN F2 2 R2.nzt

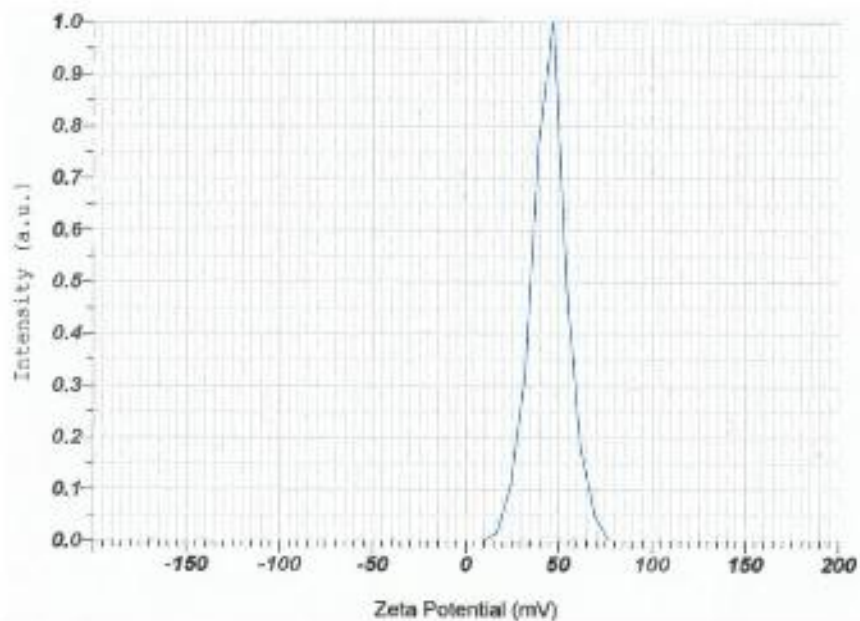
Measurement Results

Date : Thursday, August 30, 2018 2:55:38 PM
 Measurement Type : Zeta Potential
 Sample Name : EEDN F2 2
 Temperature of the Holder : 25.0 deg. C
 Dispersion Medium Viscosity : 0.895 mPa.s
 Conductivity : 0.446 mS/cm
 Electrode Voltage : 3.3 V

Calculation Results

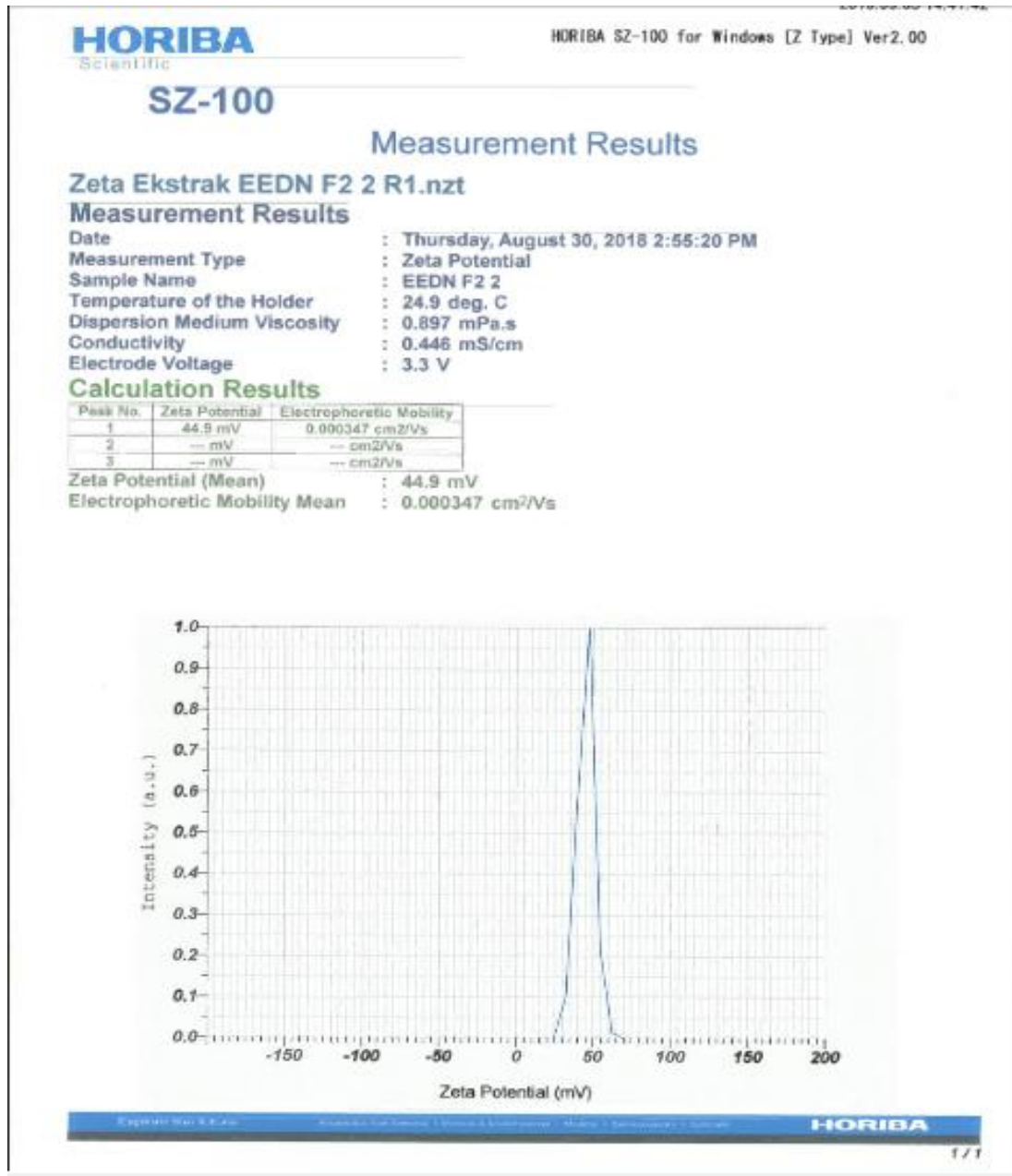
Peak No.	Zeta Potential	Electrophoretic Mobility
1	44.7 mV	0.000346 cm ² /Vs
2	-- mV	-- cm ² /Vs
3	-- mV	-- cm ² /Vs

Zeta Potential (Mean) : 44.7 mV
 Electrophoretic Mobility Mean : 0.000346 cm²/Vs



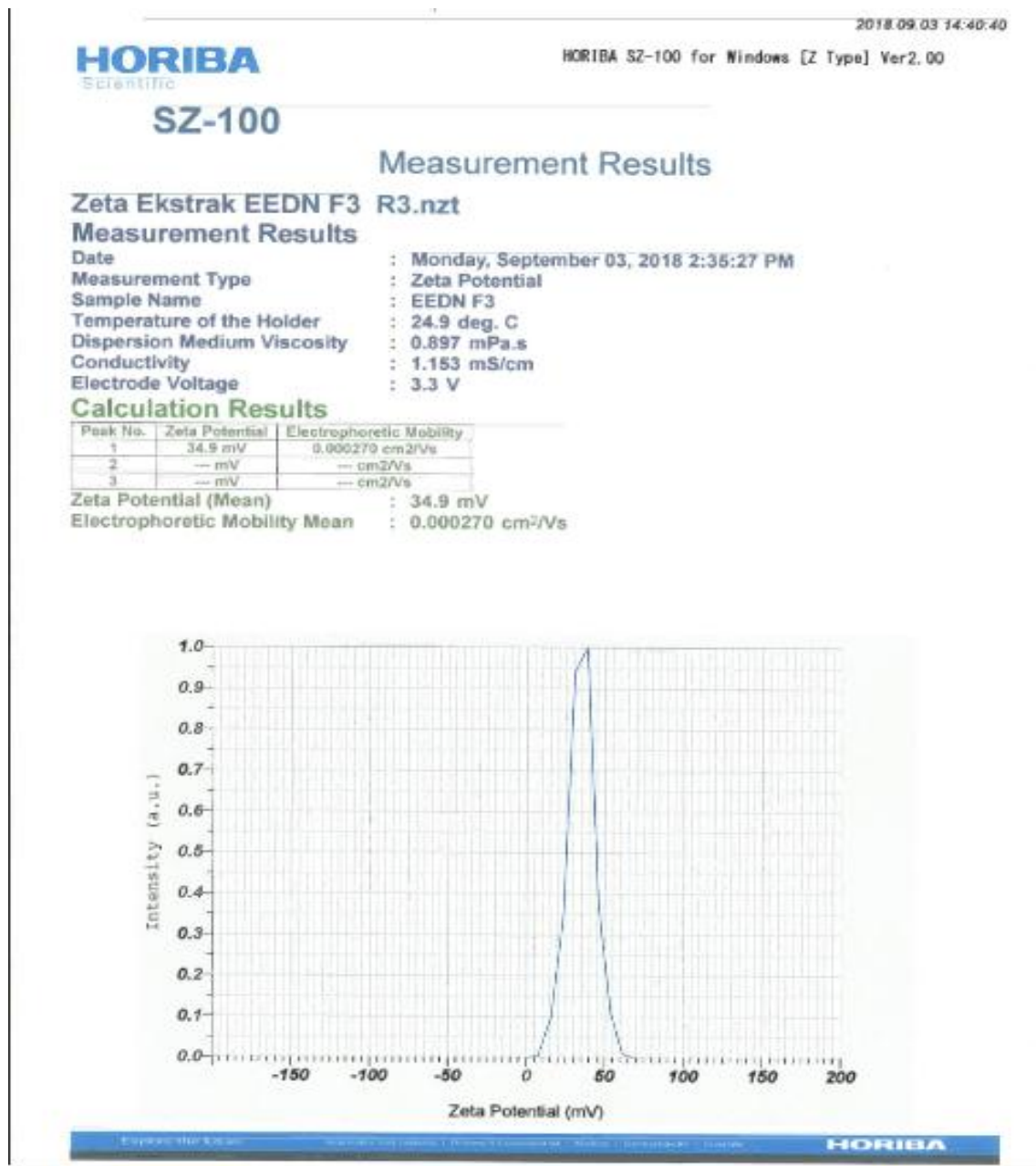
Lampiran 6. Lanjutan...

F. Formula II replikasi 3



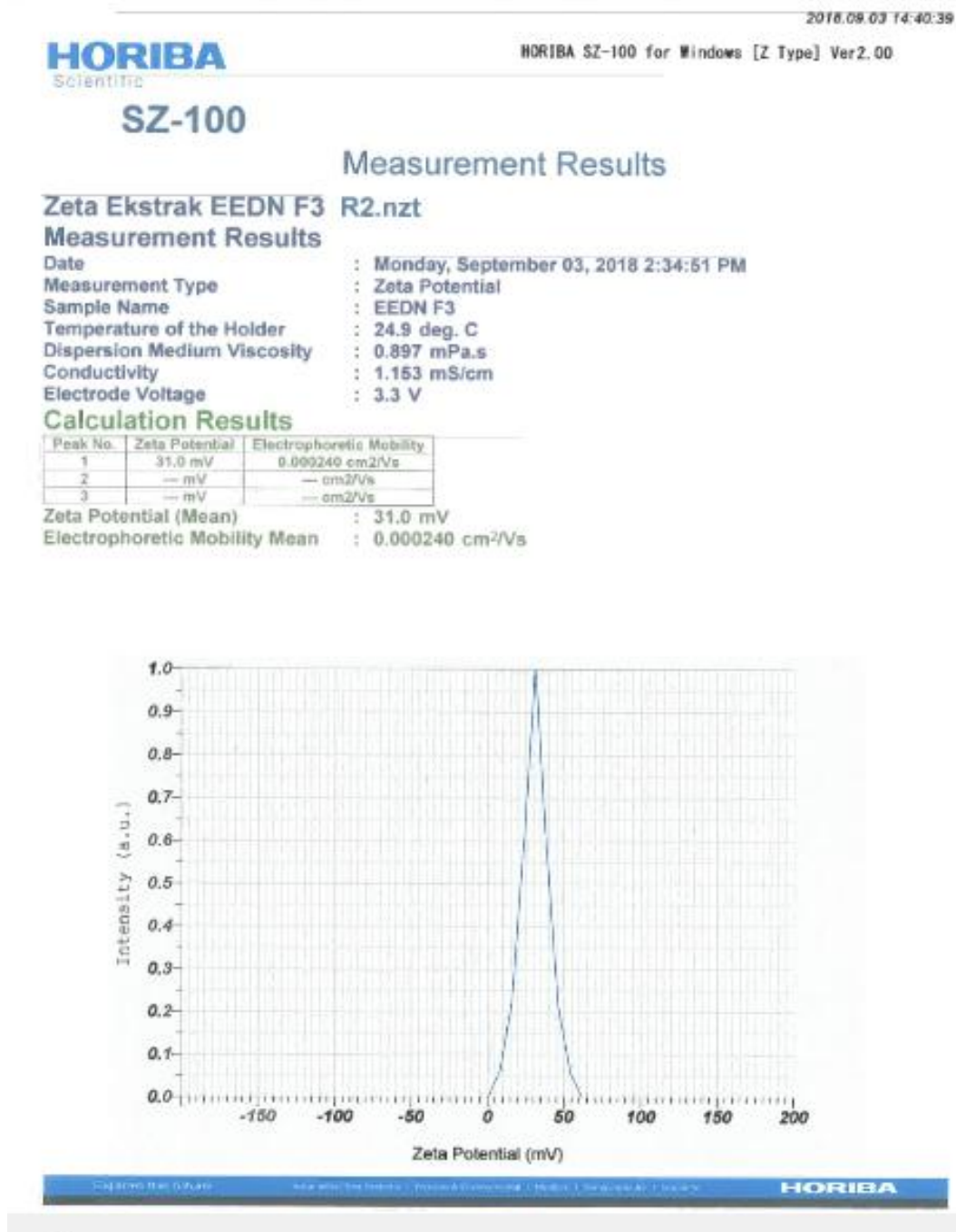
Lampiran 6. Lanjutan...

G. Formula III replikasi 1



Lampiran 6. Lanjutan...

H. Formula III replikasi 2



Lampiran 6. Lanjutan...

I. Formula III replikasi 3



2018.09.03 14:40:30

HORIBA
 Scientific

HORIBA SZ-100 for Windows [Z Type] Ver2.00

SZ-100

Measurement Results

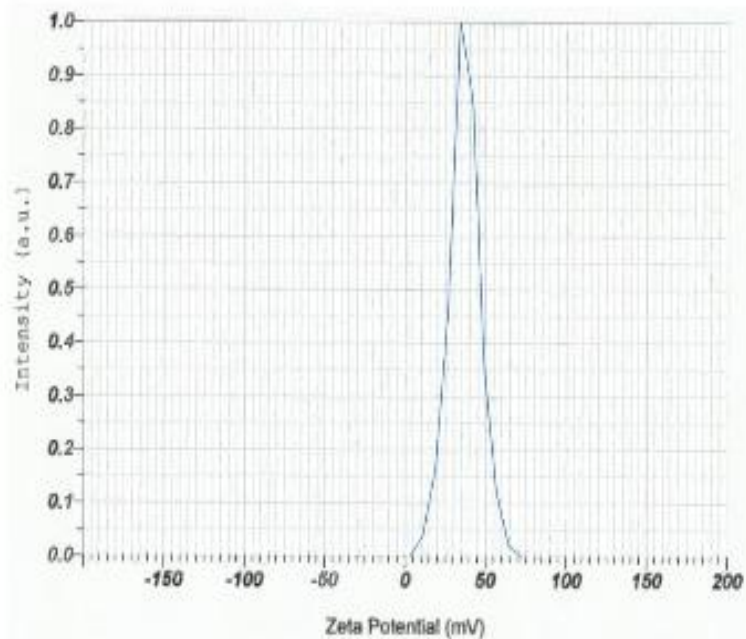
Zeta Ekstrak EEDN F3 R1.nzt
Measurement Results

Date : Monday, September 03, 2018 2:34:33 PM
 Measurement Type : Zeta Potential
 Sample Name : EEDN F3
 Temperature of the Holder : 24.9 deg. C
 Dispersion Medium Viscosity : 0.897 mPa.s
 Conductivity : 1.153 mS/cm
 Electrode Voltage : 3.3 V

Calculation Results

Peak No.	Zeta Potential	Electrophoretic Mobility
1	36.8 mV	0.000284 cm ² /Vs
2	-- mV	-- cm ² /Vs
3	-- mV	-- cm ² /Vs

Zeta Potential (Mean) : 36.8 mV
 Electrophoretic Mobility Mean : 0.000284 cm²/Vs



Exploring the Future

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1 / 1

Lampiran 7. Certificate of Analysis Chitosan



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sigma-aldrich.com

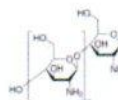
3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.comEmail USA: techserv@sial.comOutside USA: eurtechserv@sial.com

Product Specification

Product Name:
Chitosan - low molecular weight

Product Number: 448869
CAS Number: 9012-76-4
MDL: MFCD00161512



TEST	Specification
Appearance (Color)	Faint Beige to Beige
Appearance (Form)	Conforms to Requirements
Powder and/or Chips	
Assay	≥ 75 %
Deacetylation	
Viscosity	20 - 300 cps
c = 1% in 1% Acetic Acid	
Specification: PRD.2 ZQ5.10000020770	

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

1 of 1

Lampiran 8. Hasil analisis data ukuran partikel

Regression

[DataSet0]

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	konsentrasi kitosan dan NaTPP ^a		. Enter

a. All requested variables entered.

b. Dependent Variable: rata - rata nilai ukuran partikel

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.088 ^a	.008	-.985	157.7471

a. Predictors: (Constant), konsentrasi kitosan dan NaTPP

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	192.080	1	192.080	.008	.944 ^a
	Residual	24884.160	1	24884.160		
	Total	25076.240	2			

a. Predictors: (Constant), konsentrasi kitosan dan NaTPP

b. Dependent Variable: rata - rata nilai ukuran partikel

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T
	B	Std. Error	Beta	
(Constant)	308.400	240.963		1.280
konsentrasi kitosan dan NaTPP	9.800	111.544	.088	.088

a. Dependent Variable: rata - rata nilai ukuran partikel



Lampiran 8. Analisis data Indeks Polidispersitas

Regression

[DataSet0]

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	konsentrasi kitosan dan NaTPP ^a		. Enter

a. All requested variables entered.

b. Dependent Variable: rata - rata nilai indeks polidispersitas

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.958 ^a	.917	.834	.015105

a. Predictors: (Constant), konsentrasi kitosan dan NaTPP

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.003	1	.003	11.047	.186 ^a
	Residual	.000	1	.000		
	Total	.003	2			

a. Predictors: (Constant), konsentrasi kitosan dan NaTPP

b. Dependent Variable: rata - rata nilai indeks polidispersitas

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.497	.023		21.554	.030
	konsentrasi kitosan dan NaTPP	-.036	.011	-.958	-3.324	.186

a. Dependent Variable: rata - rata nilai indeks polidispersitas



Lampiran 8. Analisis data nilai Zeta Potensial

Regression

[DataSet0]

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	konsentrasi kitosan dan NaTPP ^a		. Enter

a. All requested variables entered.

b. Dependent Variable: rata - rata nilai zeta potensial

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.596 ^a	.355	-.289	6.0012

a. Predictors: (Constant), konsentrasi kitosan dan NaTPP

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.845	1	19.845	.551	.593 ^a
	Residual	36.015	1	36.015		
	Total	55.860	2			

a. Predictors: (Constant), konsentrasi kitosan dan NaTPP

b. Dependent Variable: rata - rata nilai zeta potensial

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	46.100	9.167		5.029	.125
	konsentrasi kitosan dan NaTPP	-3.150	4.244	-.596	-.742	.593

a. Dependent Variable: rata - rata nilai zeta potensial



Lampiran 9. Pembuatan Ekstrak

Dokumentasi Penelitian

1. Tanaman Nangka dan Daun Nangka



2. Penimbangan dan Proses Pengeringan Daun Nangka



Lampiran 9. Lanjutan

3. Simplisia Kering dan Pemeriksaan Kadar Air



4. Penghalusan Daun Nangka



5. Perkolasi dan Ekstrak Kental Daun Nangka

