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APPENDICES

APPENDIX A CTAB Adsorption Measurement

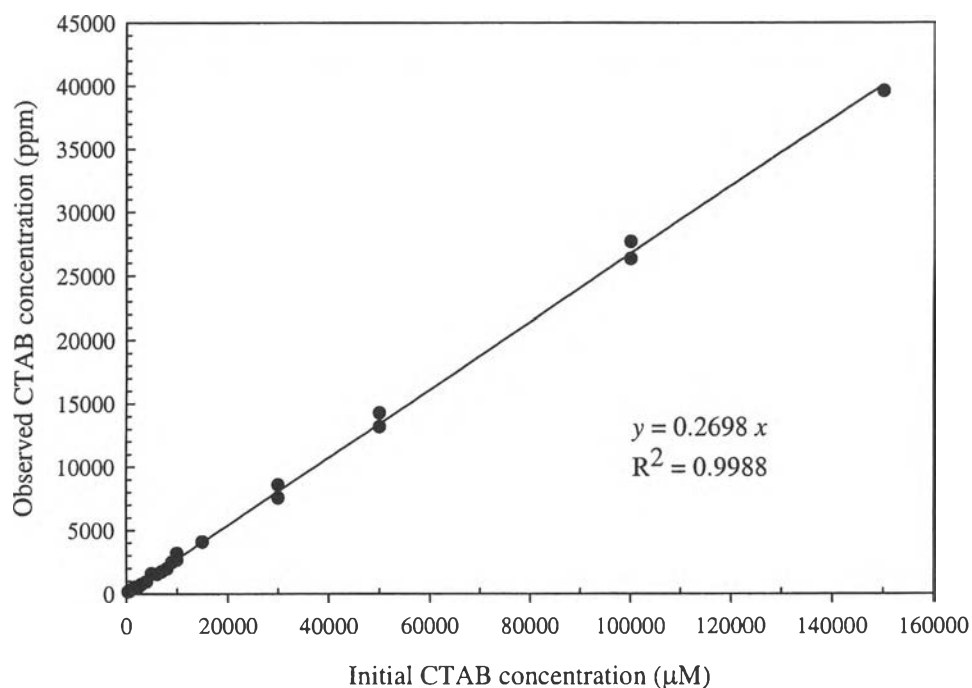


Figure A1 Calibration curve of CTAB solution by Total Organic Carbon analyzer (TOC).

Table A1 Data from CTAB adsorption isotherm on Aerosil[®]OX50

Initial CTAB concentration (μM)	Observed initial CTAB concentration, (μM)	Equilibrium CTAB concentration (μM)	CTAB adsorption ($\mu\text{mol/g}$)
400	566.42	266.38	3.75
600	743.96	278.69	5.82
800	927.06	282.39	8.06
1400	1458.19	278.47	14.75
1600	1643.88	279.28	17.06
1800	1821.05	285.80	19.19
2000	1977.84	293.96	21.05
2200	2031.95	268.01	22.05

Initial CTAB concentration (μM)	Observed initial CTAB concentration (μM)	Equilibrium CTAB concentration (μM)	CTAB adsorption ($\mu\text{mol/g}$)
2500	2139.81	328.84	72.44
3000	2660.19	355.52	92.19
4000	3475.61	488.95	119.47
4200	3738.40	570.13	126.73
4600	4057.15	964.86	123.69
4800	4327.72	1428.54	115.97
5000	5837.73	2436.69	136.04
6000	5606.45	1739.88	154.66
7000	6361.08	2610.16	150.04
8000	7262.49	3255.82	160.27
9000	9127.58	5072.72	162.19
15000	15057.89	11195.77	154.48
30000	31733.21	26266.20	218.68
50000	52804.37	48023.05	191.25
100000	102507.86	94724.31	311.34
150000	146836.99	137163.16	386.95

APENDIX B Styrene Adsolubilization Measurement

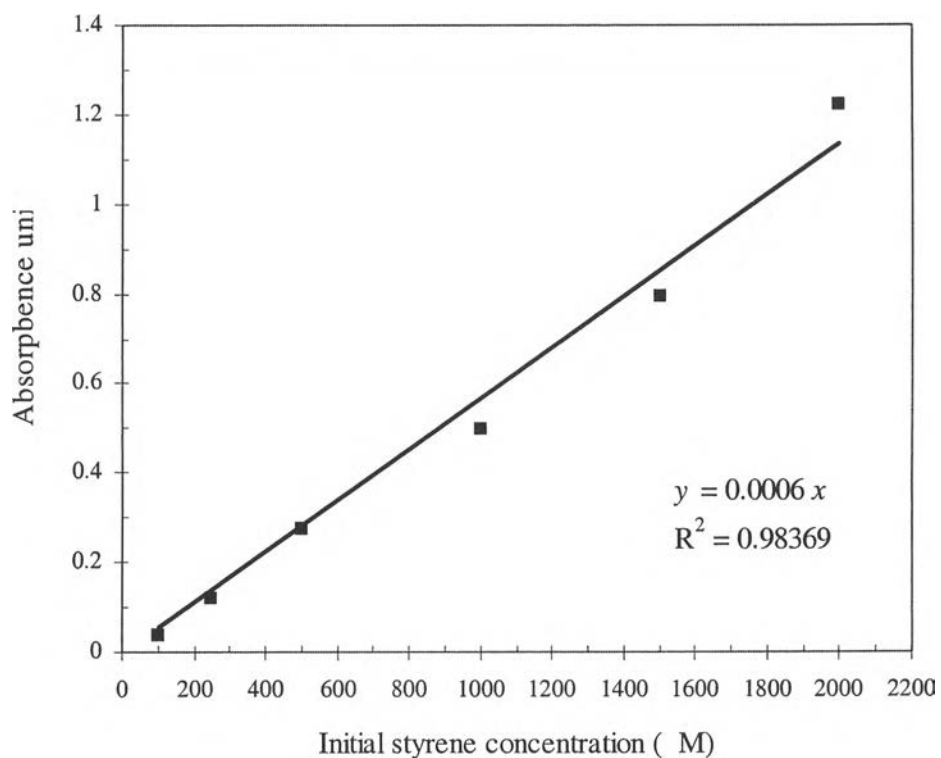


Figure B1 Calibration curve of styrene in CTAB solution by UV-Vis at 280cm^{-1} .

Ratio of mixture = Silica 0.5 g : 20 ml solution

Table B1 Data from styrene adsolubilization into CTAB adsorption $20\ \mu\text{mol/g}$ on Aerosil[®]OX50

Initial styrene concentration (μM)	Equilibrium styrene concentration (μM)	Styrene adsolubilization ($\mu\text{mol/g}$)
100	43.86	2.25
250	77.02	6.92
500	151.93	13.92
1000	376.11	24.96
1500	608.07	35.68
2000	785.44	48.58

Table B2 Data from styrene adsolubilization into CTAB adsorption 100 $\mu\text{mol/g}$ on Aerosil[®]OX50

Initial styrene concentration (μM)	Equilibrium styrene concentration (μM)	Styrene adsolubilization ($\mu\text{mol/g}$)
1000	315.33	27.39
2000	690.67	52.37
3000	809.33	87.63
4000	1119.67	115.21
5000	1485.67	140.57
7000	2190.00	192.40

APPENDIX C Calculation for Amount of CTAB Loading, Styrene Loading, and AIBN for Admicellar Polymerization

System; Silica 15 g : Solution 250 ml

CTAB

Molecular weight : 364.46 gmol^{-1}

Styrene

Molecular weight: 104.15 gmol^{-1}

Density: 0.906 ml/g

AIBN

Molecular weight : 164.21 gmol^{-1}

C 1 CTAB Loading Calculation

Table C1 Calculation of initial CTAB concentration for CTAB adsorption 20 and $100 \mu\text{mol/g}$ silica in the system

CTAB adsorption		Equilibrium CTAB concentration		Initial CTAB loading in the system (μmol)	Total weight of CTAB (g)
($\mu\text{mol/g}$)	($\mu\text{mol}/15\text{g}$)	(μM)	(μmol in 250 ml)		
20	300	300	75	375	0.1367
100	1500	400	100	1600	0.5831

C 2 Styrene loading calculation

Table C2 Calculation of initial styrene loading into CTAB adsorption $20 \mu\text{mol/g}$ silica in the system

Styrene adsolubilization		Equilibrium styrene concentration		Initial styrene loading in the system (μmol)	Total volume of styrene (μl)
($\mu\text{mol/g}$)	($\mu\text{mol}/15\text{g}$)	(μM)	(μmol in 250 ml)		
10	150	161.03	40.26	190.26	22.09
20	300	322.06	80.52	380.52	44.18
40	600	644.12	161.03	761.03	88.37

Table C3 Calculation of initial styrene loading into CTAB adsorption 100 $\mu\text{mol/g}$ silica in the system

Styrene adsolubilization		Equilibrium styrene concentration		Initial styrene loading in system (μmol)	Total volume of styrene (μl)
($\mu\text{mol/g}$)	($\mu\text{mol}/15\text{ g}$)	(μM)	(μmol in 250 ml)		
50	3000	517.06	129.27	879.27	175.85
100	1500	1034.13	258.53	1758.53	351.71
200	750	2068.25	517.06	3517.06	703.41

C 3 AIBN loading calculation

Ratio of AIBN = 1 mole AIBN : 5 mole styrene

Table C4 Calculation of AIBN loading at CTAB adsorption 20 $\mu\text{mol/g}$ silica

Total styrene (μmol)	AIBN loading (μmol)	Total weight (g)
190.26	38.05	0.0062
380.52	76.10	0.0125
761.03	152.21	0.0250

Table C5 Calculation of AIBN loading at CTAB adsorption 100 $\mu\text{mol/g}$ silica

Total styrene (μmol)	AIBN loading (μmol)	Total weight (g)
879.27	175.85	0.0289
1758.53	351.71	0.0578
3517.06	703.41	0.1155

APENDIX D Data of Gel Permeation Chromatography

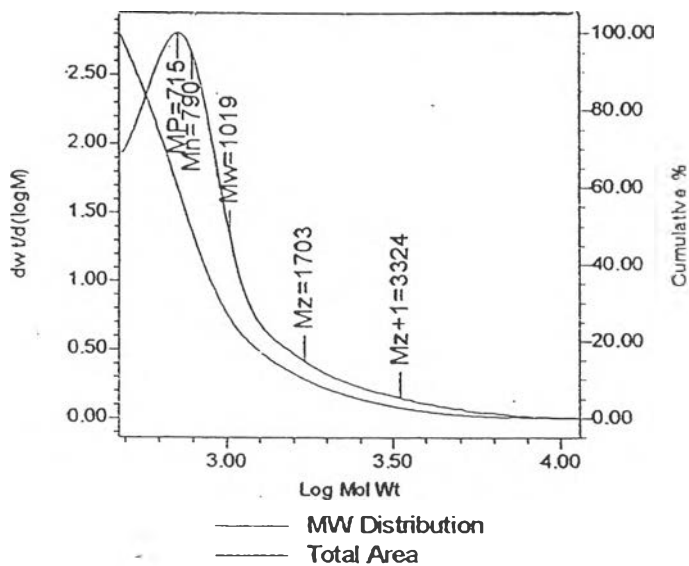
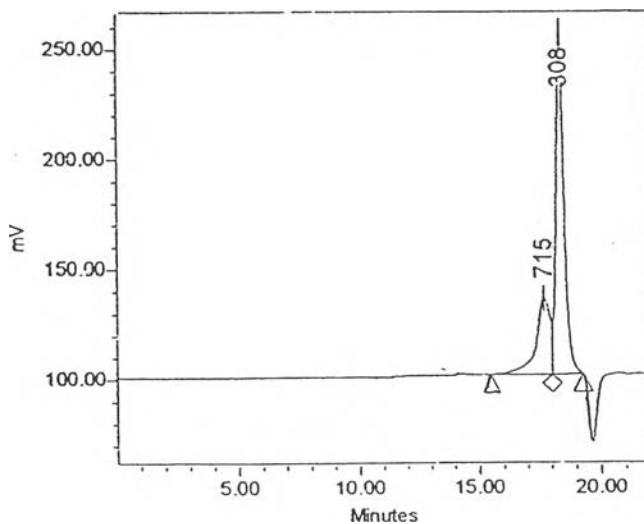
Table D1 Sample name for gel permeation analysis

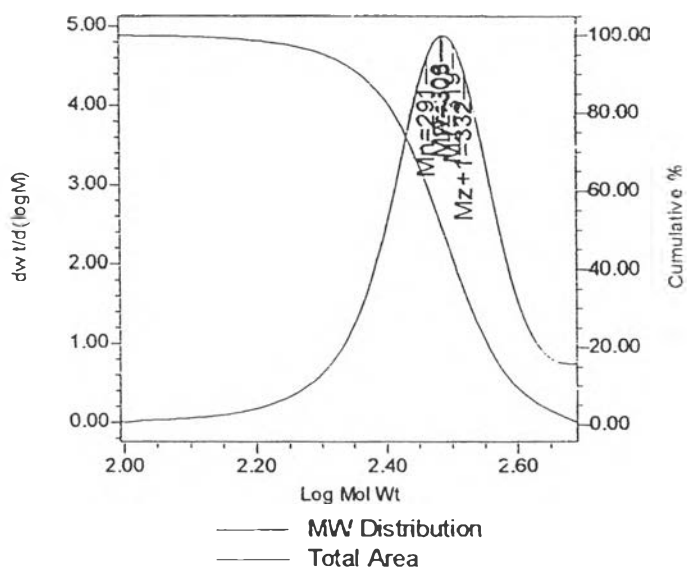
CTAB _{adsorp} :Styrene _{adsol}	CTAB adsorption ($\mu\text{mol/g}$ of silica)	Styrene adsolubilization ($\mu\text{mol/g}$ of silica)	Reaction time (h)	Sample name
1:0.5	20	10	1	10/2/1
			2	10/2/2
			4	10/2/4
			6	10/2/6
1:1	20	20	1	20/2/1
			2	20/2/2
			4	20/2/4
			6	20/2/6
1:2	20	40	1	40/2/1
			2	40/2/2
			4	40/2/4
			6	40/2/6
1:0.5	100	50	1	50/3/1
			2	50/3/2
			4	50/3/4
			6	50/3/6
1:1	100	100	1	100/3/1
			2	100/3/2
			4	100/3/4
			6	100/3/6
1:2	100	200	1	200/3/1
			2	200/3/2
			4	200/3/4
			6	200/3/6

Sample Information

SampleName	10/2/1	Sample Type	Broad Unknown
Vial	2	Date Acquired	2/5/2002 3:37:56 PM
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Channel	SATIN	Date Processed	2/7/2002 9:44:51 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





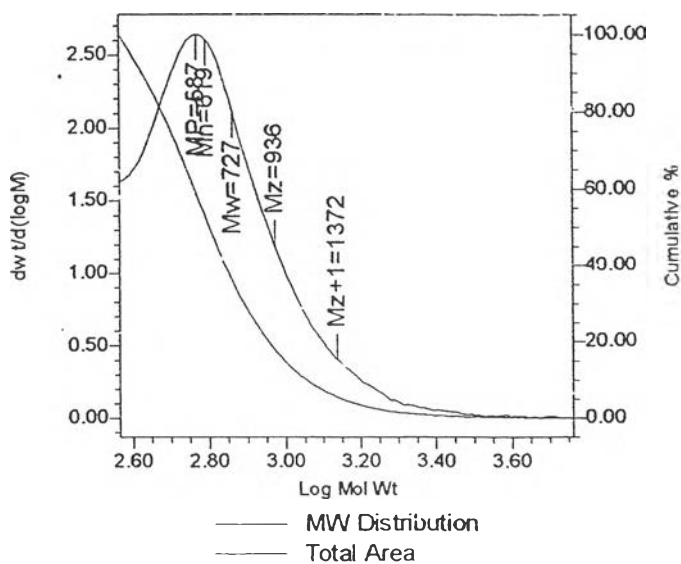
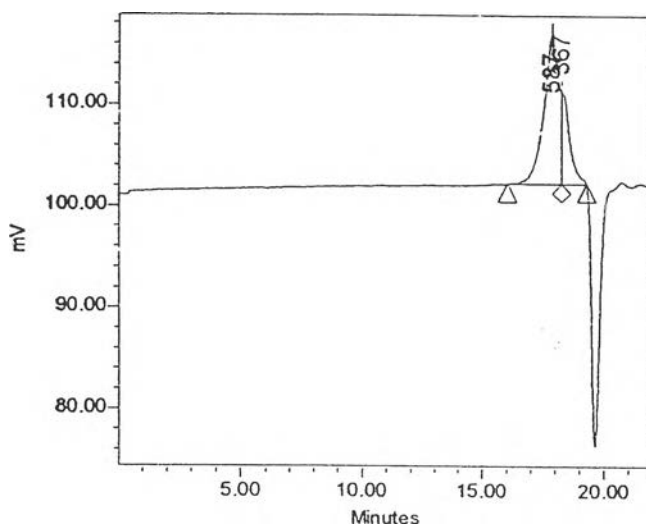
GPC Results

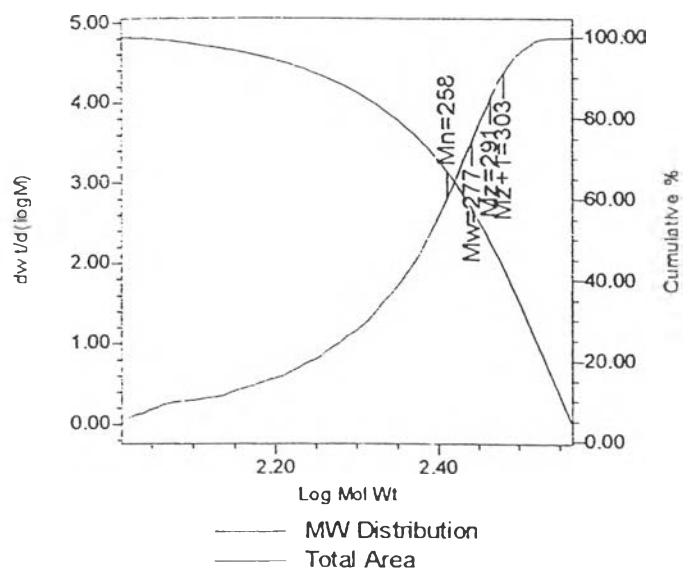
Sl	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	790	1019	715	1703	3324	1.290685
2	291	306	308	319	332	1.051059

Sample Information

SampleName	10/2/2	Sample Type	Broad Unknown
Vial	3	Date Acquired	2/5/2002 4:03:38 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
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Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





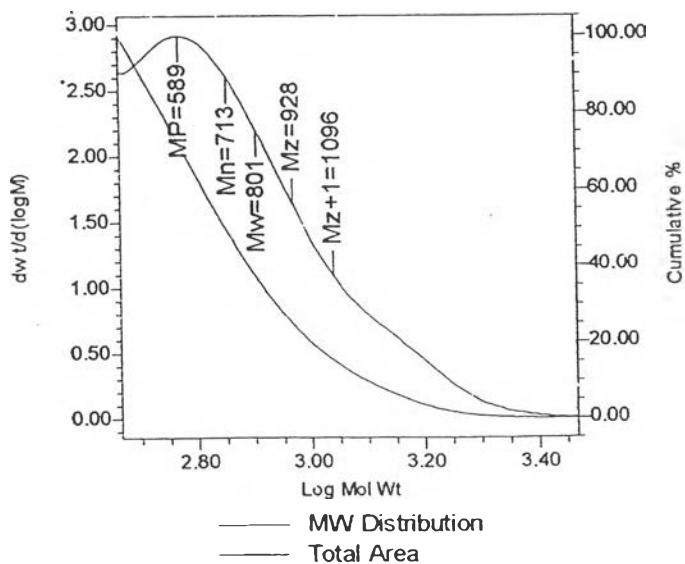
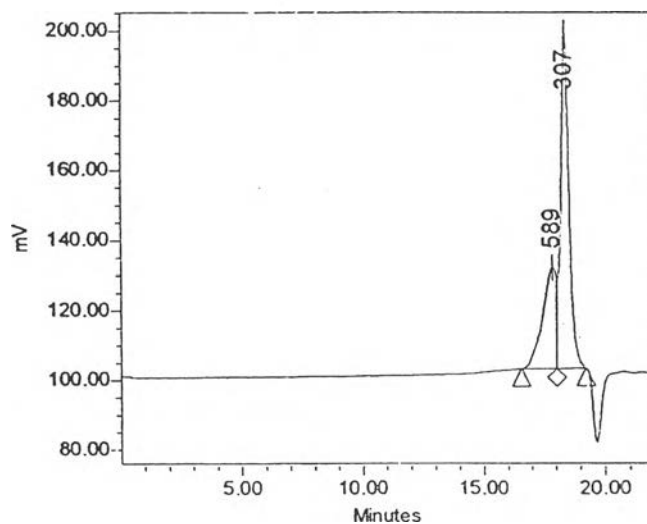
GPC Results

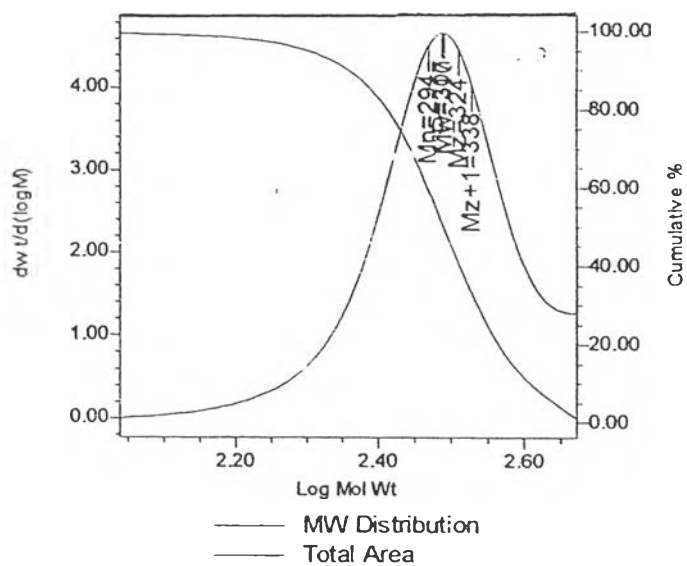
6	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	619	727	587	936	1372	1.174811
2	258	277	367	291	303	1.073108

Sample Information

SampleName	10/2/4	Sample Type	Broad Unknown
Vial	4	Date Acquired	2/5/2002 4:29:20 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 9:35:33 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





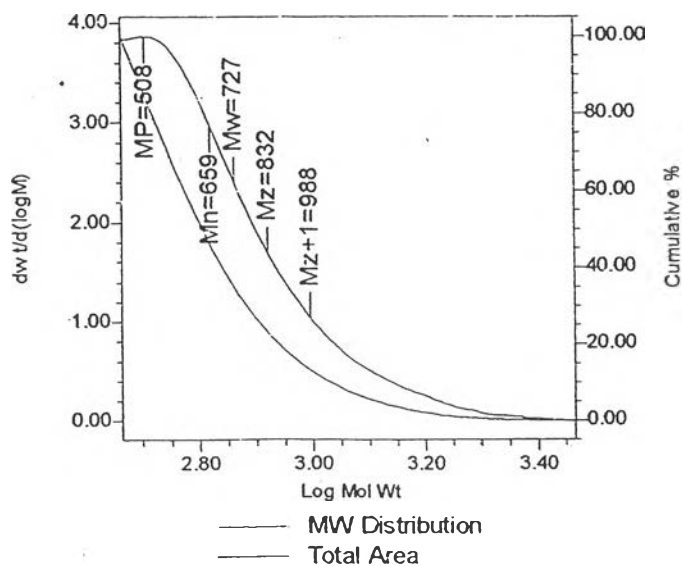
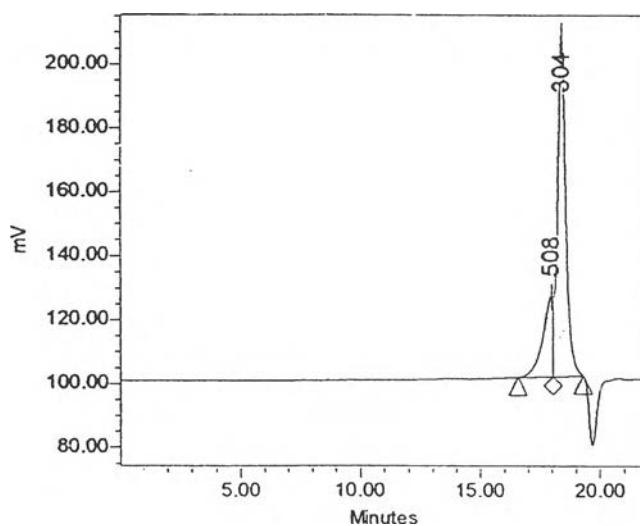
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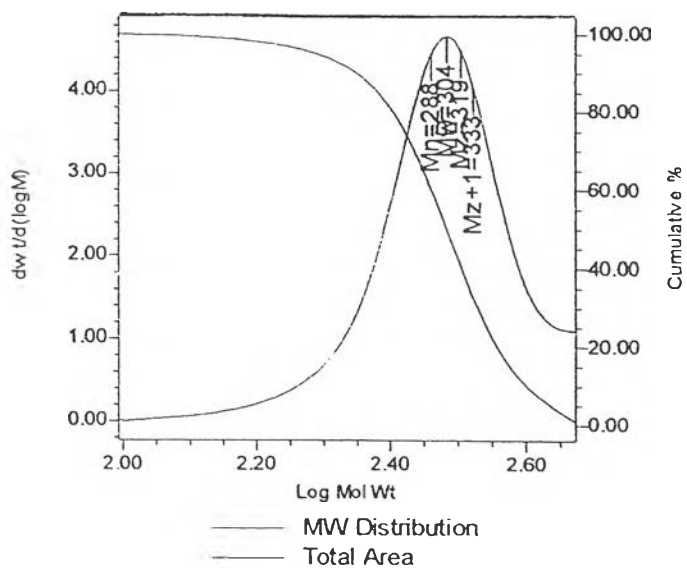
6	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	713	801	589	928	1096	1.123715
2	294	310	307	324	338	1.052133

Sample Information

SampleName	10/2/6	Sample Type	Broad Unknown
Vial	5	Date Acquired	2/5/2002 4:55:04 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
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Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





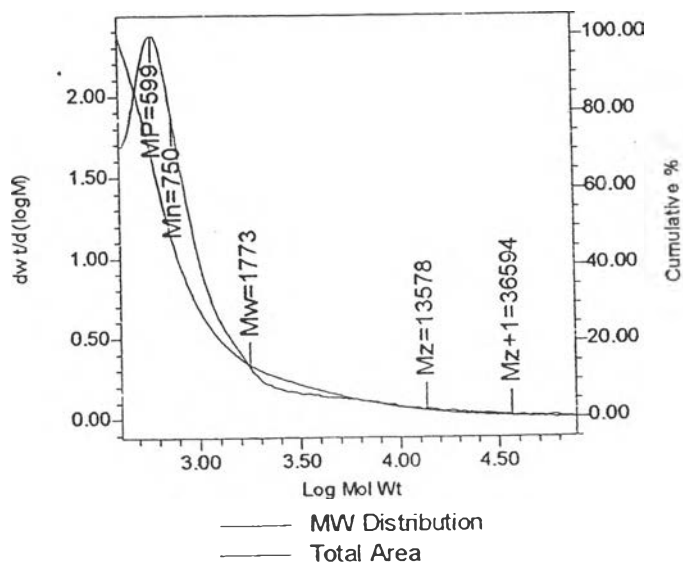
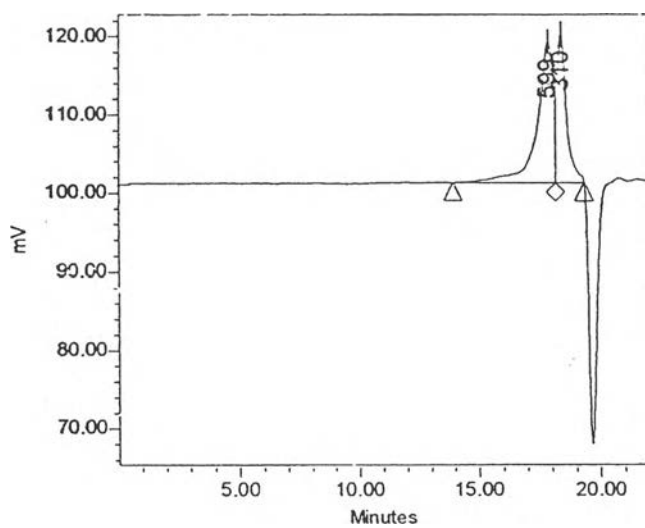
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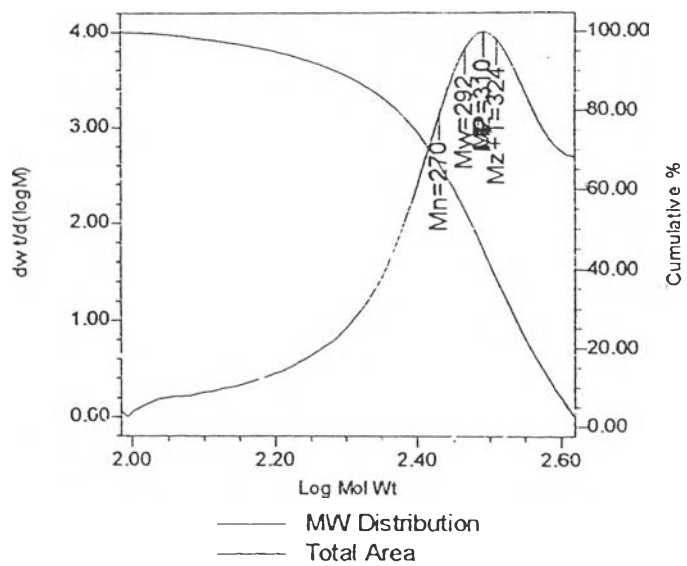
	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	659	727	508	832	988	1.102269
2	288	304	304	319	333	1.055151

Sample Information

SampleName	20/2/1	Sample Type	Broad Unknown
Vial	6	Date Acquired	2/5/2002 5:20:47 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 9:30:44 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





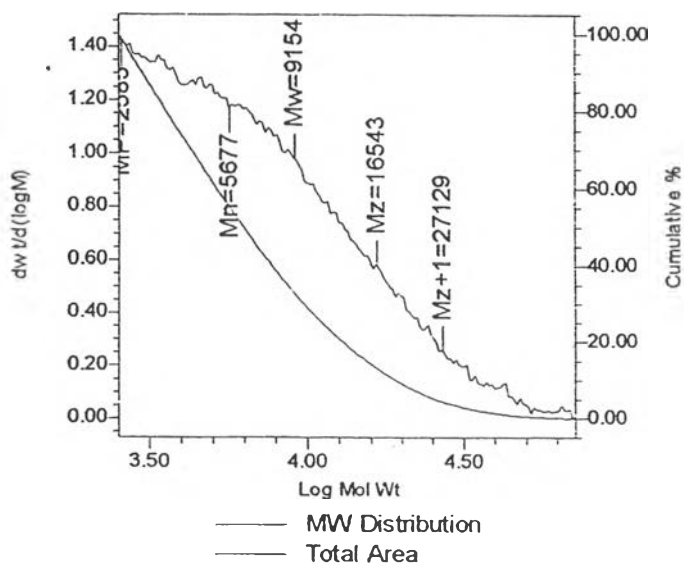
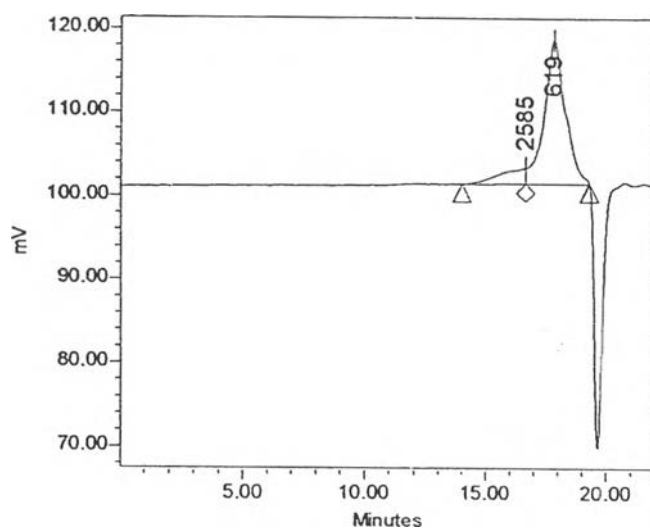
GPC Results

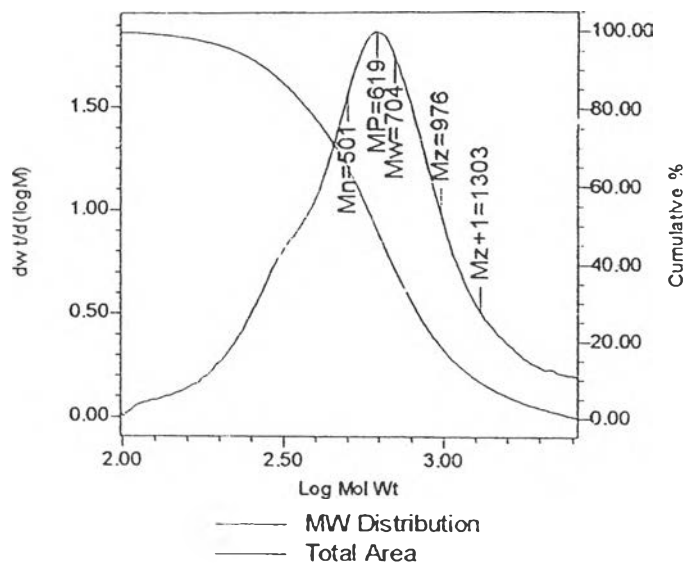
66	M_n	M_w	M_p	M_z	M_z+1	Polydispersity
1	750	1773	599	13578	36594	.2.364490
2	270	292	310	310	324	1.082734

Sample Information

SampleName	20/2/2	Sample Type	Broad Unknown
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Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 9:29:32 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





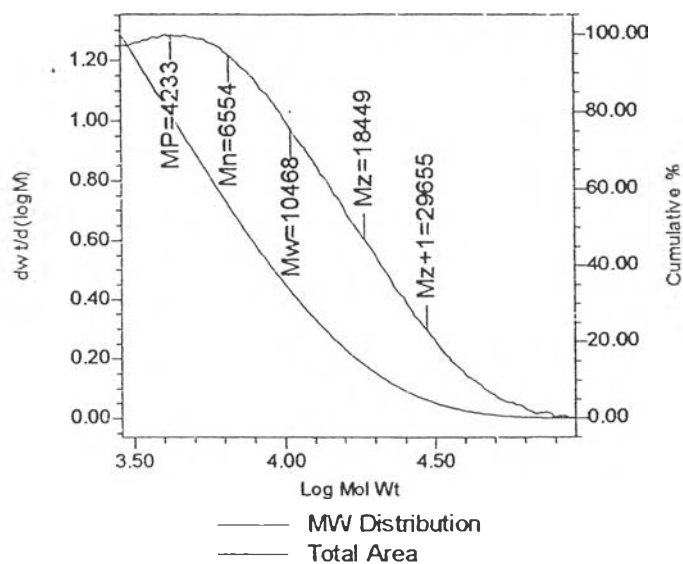
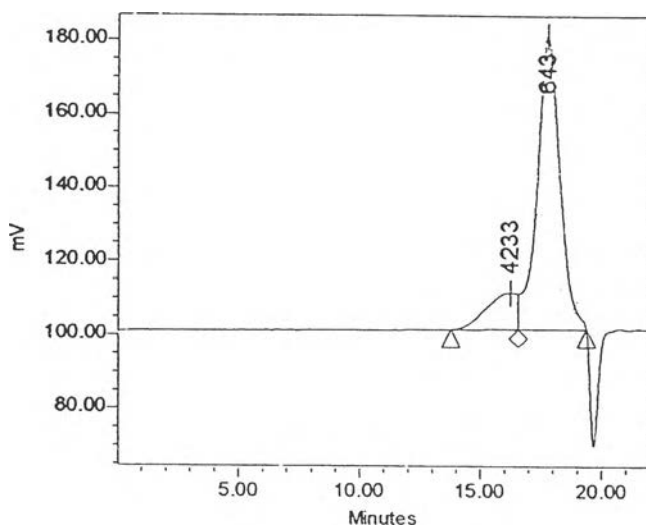
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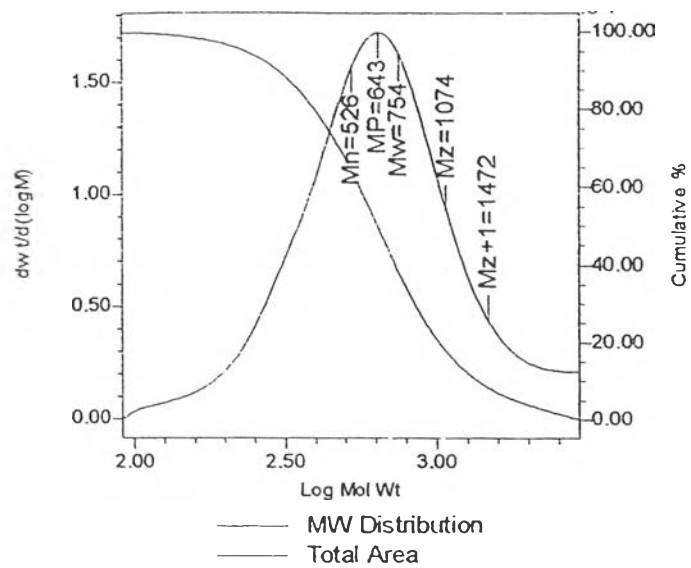
6	M_n	M_w	M_P	M_z	M_z+1	Polydispersity
1	5677	9154	2585	16543	27129	1.612530
2	501	704	619	976	1303	1.405703

Sample Information

SampleName	20/2/4	Sample Type	Broad Unknown
Vial	8	Date Acquired	2/5/2002 6:12:13 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 9:04:43 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





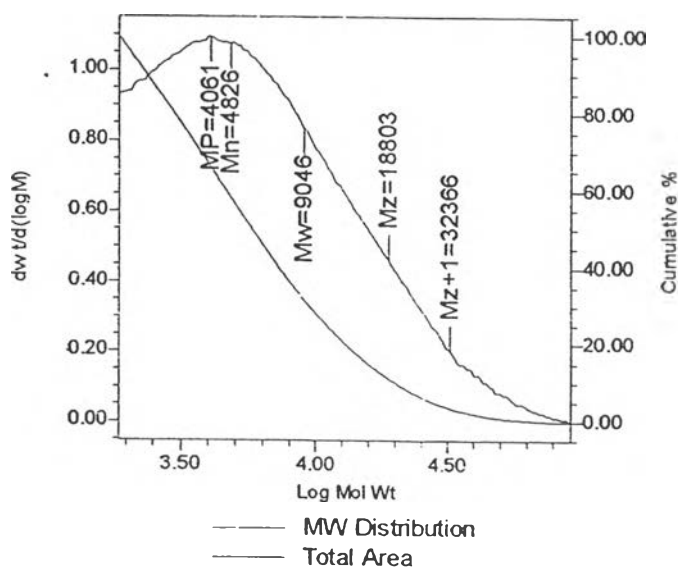
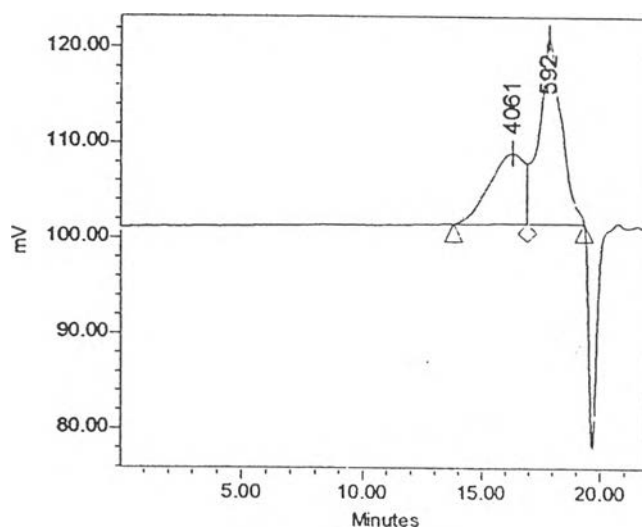
GPC Results

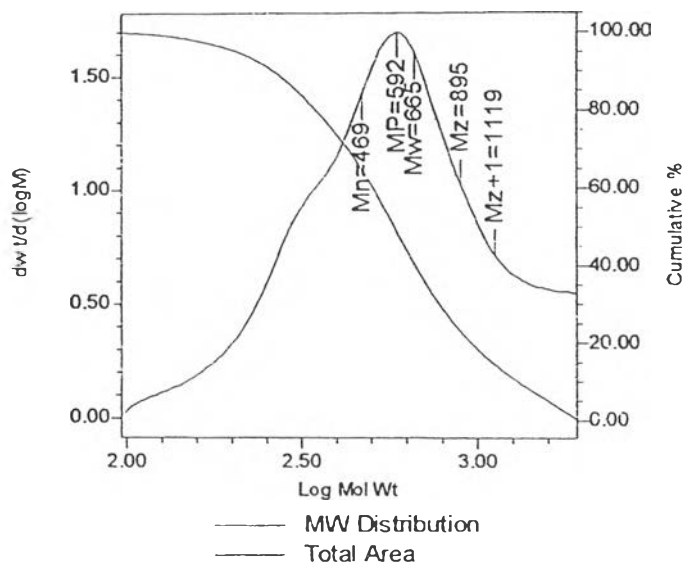
66	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	6554	10468	4233	18449	29655	1.597331
2	526	754	643	1074	1472	1.433563

Sample Information

SampleName	20/2/6	Sample Type	Broad Unknown
Vial	9	Date Acquired	2/5/2002 6:37:55 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 9:04:08 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





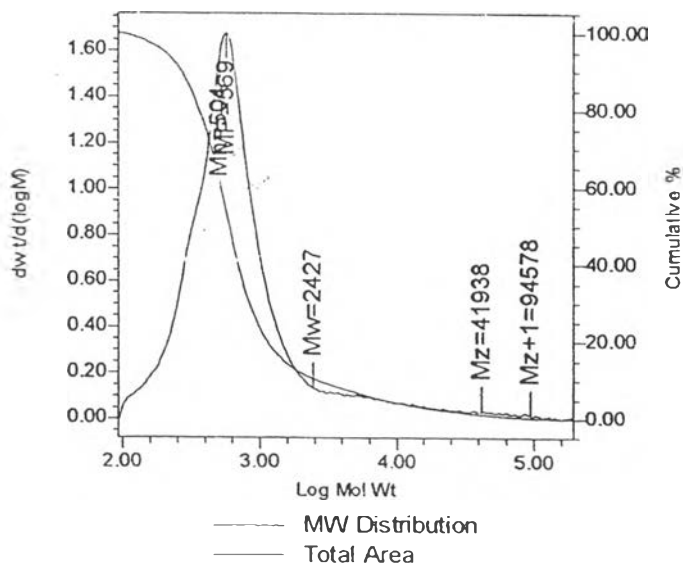
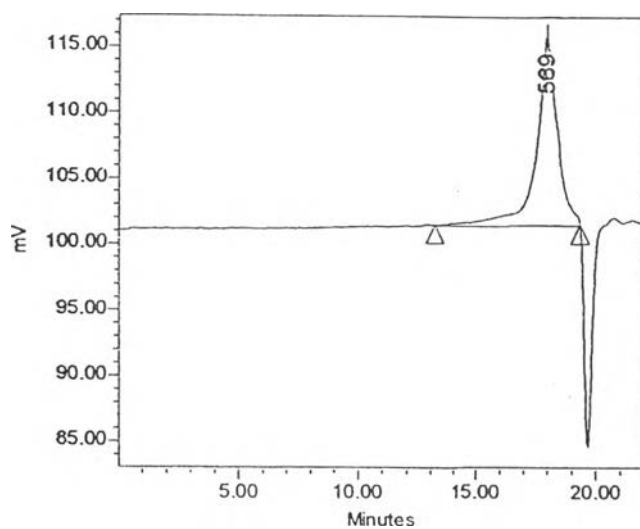
GPC Results

SG	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	4826	9046	4061	18803	32366	1.874425
2	469	665	592	895	1119	1.417924

Sample Information

SampleName	40/2/1	Sample Type	Broad Unknown
Vial	10	Date Acquired	2/5/2002 7:03:37 PM
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Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 9:03:37 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram

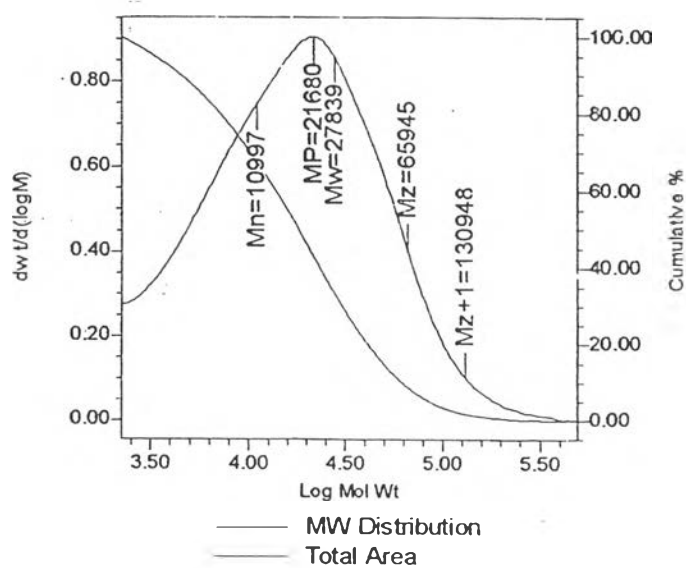
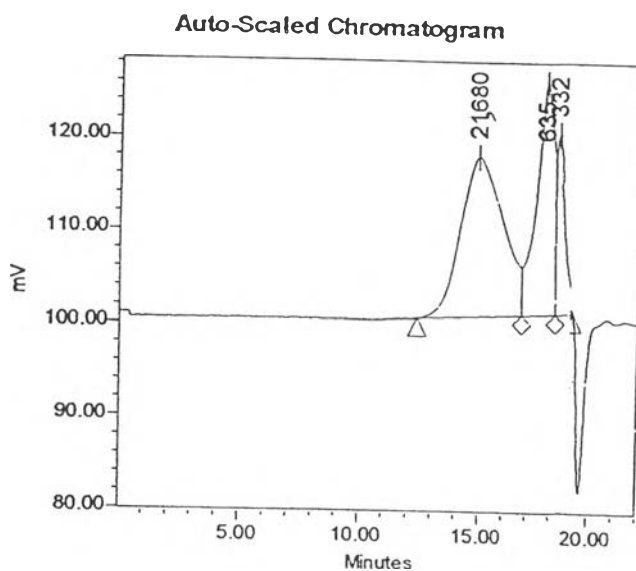


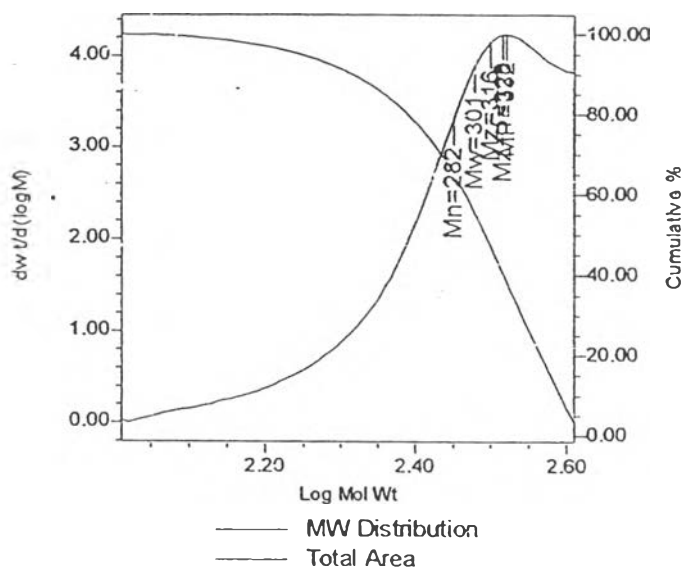
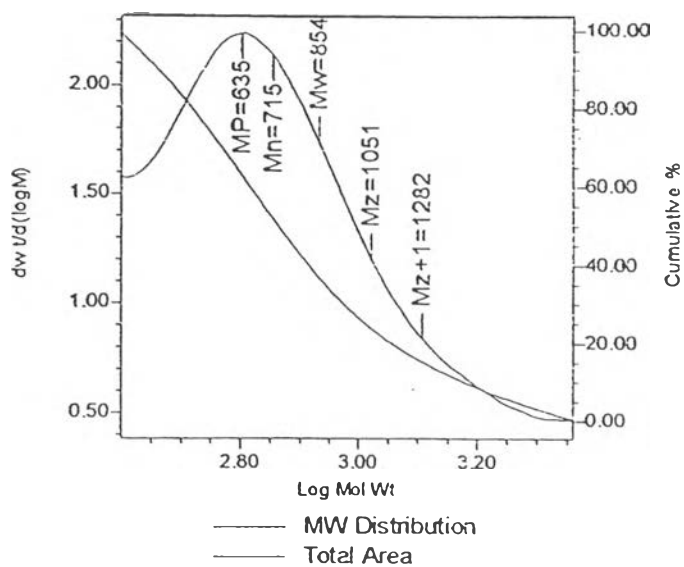
GPC Results

	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	504	2427	569	41938	94578	4.815172

Sample Information

SampleName	40/2/2	Sample Type	Broad Unknown
Vial	11	Date Acquired	2/5/2002 7:29:21 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 8:59:57 AM
Run Time	22.0 Minutes		



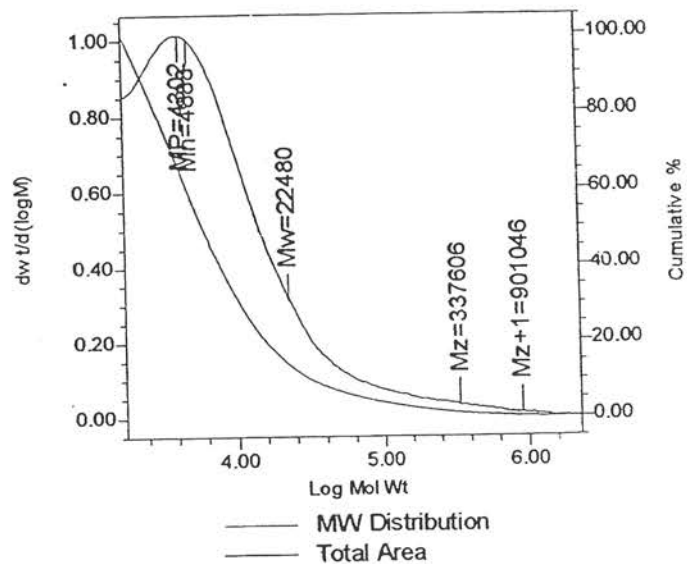
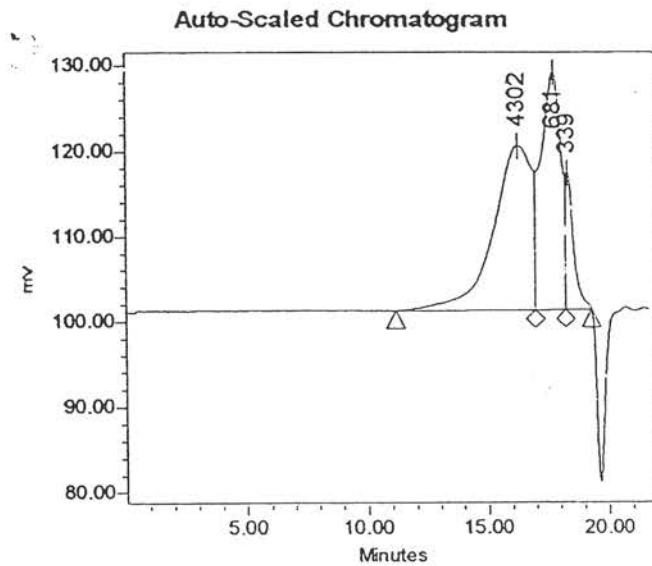


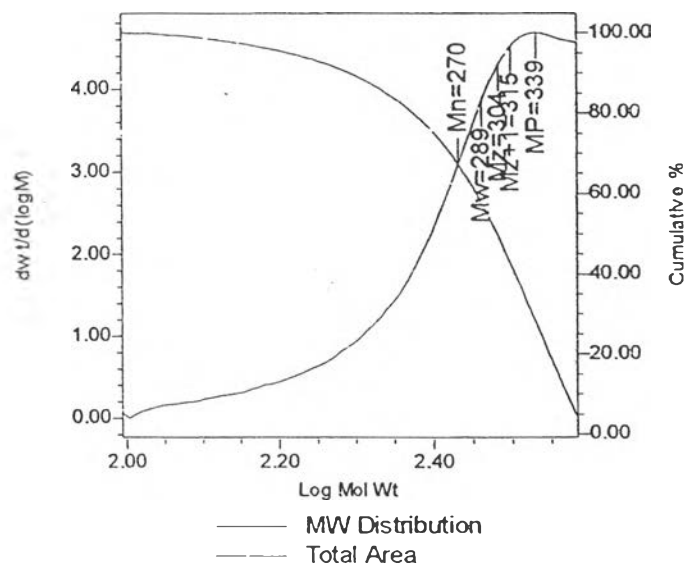
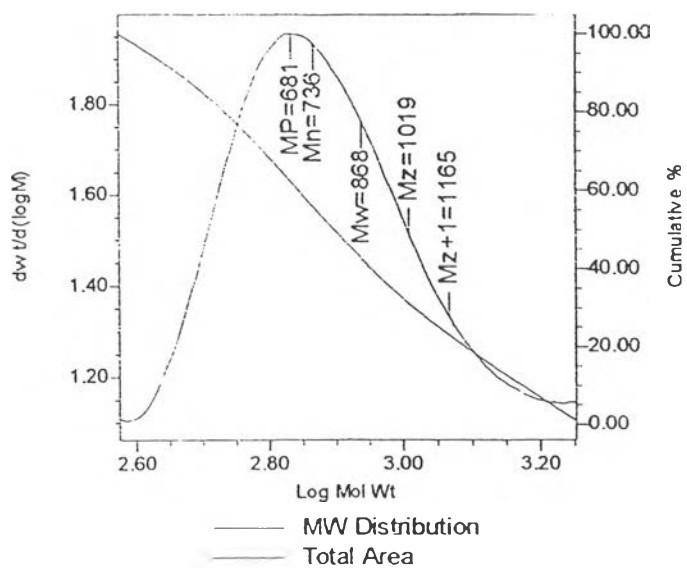
GPC Results

	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	10997	27839	1680	65945	130948	2.531435
2	715	854	635	1051	1282	1.194845
3	282	301	332	316	328	1.066894

Sample Information

<p>SampleName 40/2/4</p> <p>Vial 12</p> <p>Injection 1</p> <p>Injection Volume 100.00 ul</p> <p>Channel SATIN</p> <p>Run Time 22.0 Minutes</p>	<p>Sample Type Broad Unknown</p> <p>Date Acquired 2/5/2002 7:55:04 PM</p> <p>Acq Method Set Meth_AA</p> <p>Processing Method Proc_AA</p> <p>Date Processed 2/7/2002 8:59:25 AM</p>
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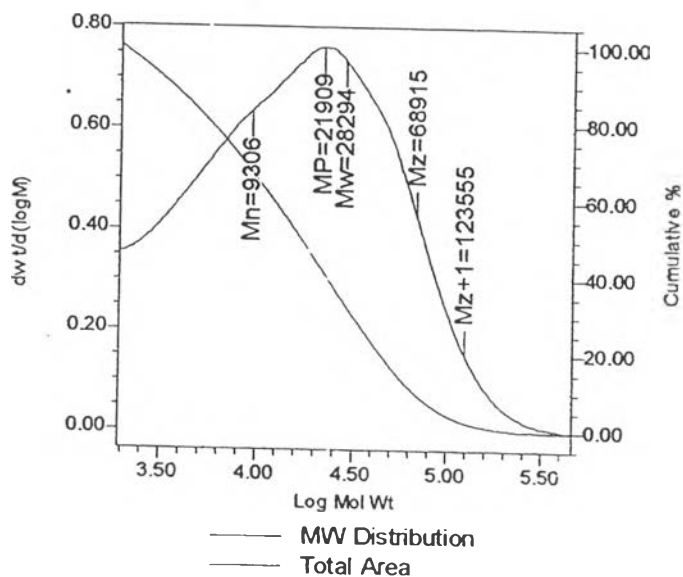
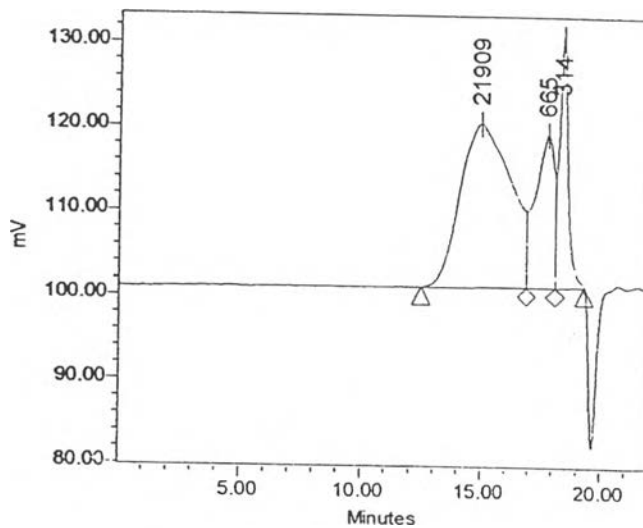
GPC Results

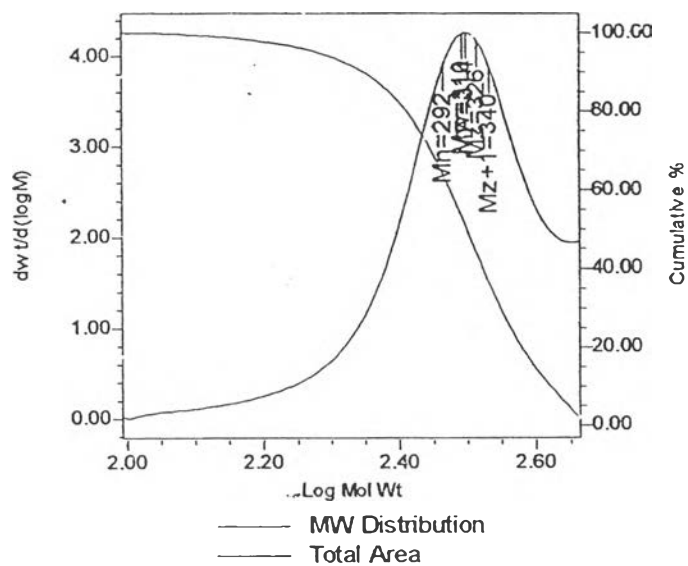
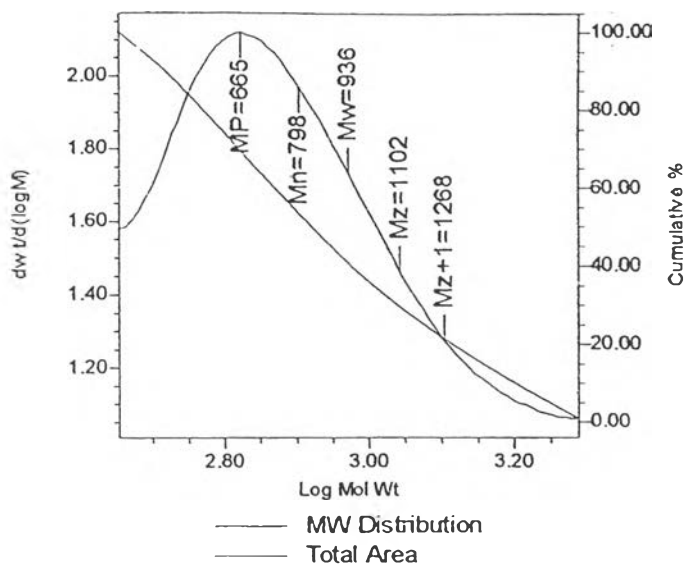
	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	4888	22480	4302	337606	901046	4.598657
2	736	868	681	1019	1165	1.179764
3	270	289	339	304	315	1.070362

Sample Information

SampleName	40/2/6	Sample Type	Broad Unknown
Vial	13	Date Acquired	2/5/2002 8:20:48 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 8:57:51 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





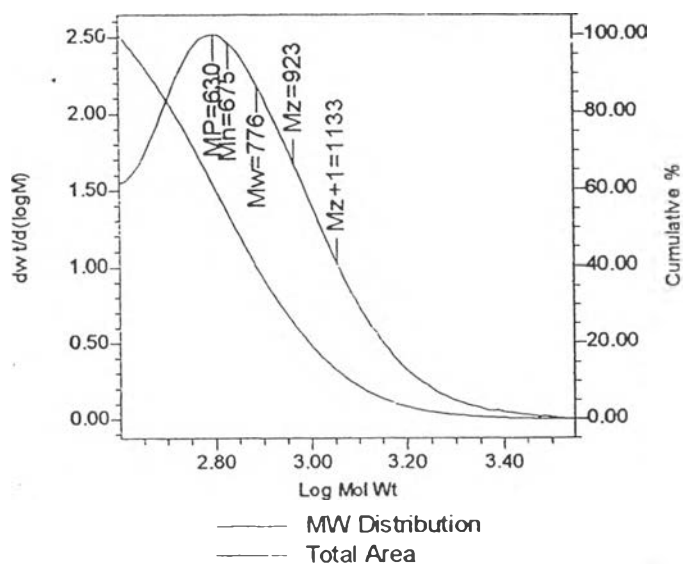
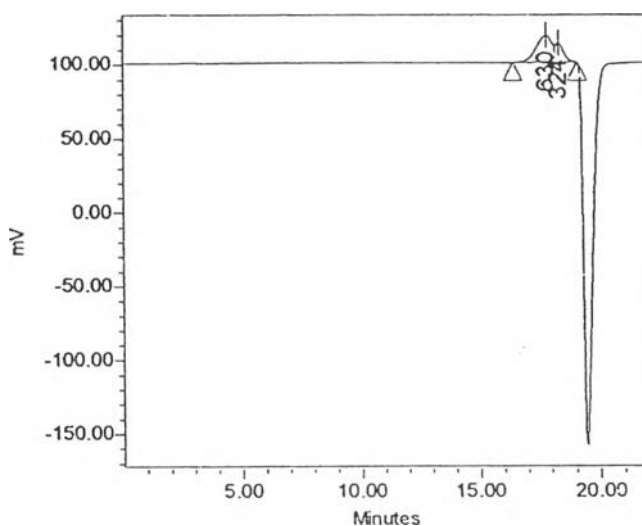
GPC Results

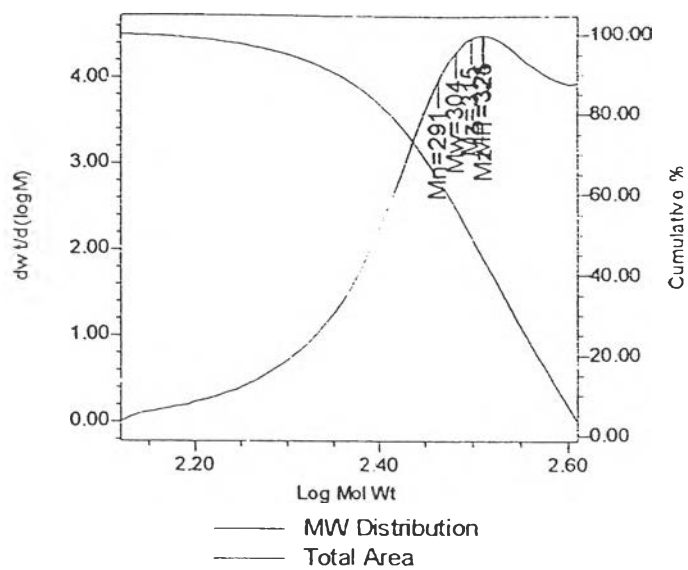
	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	9306	28294	21909	68915	123555	3.040510
2	798	936	665	1102	1268	1.172447
3	292	310	314	326	340	1.064995

Sample Information

SampleName	50/3/1	Sample Type	Broad Unknown
Vial	14	Date Acquired	2/5/2002 8:46:30 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 8:37:07 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





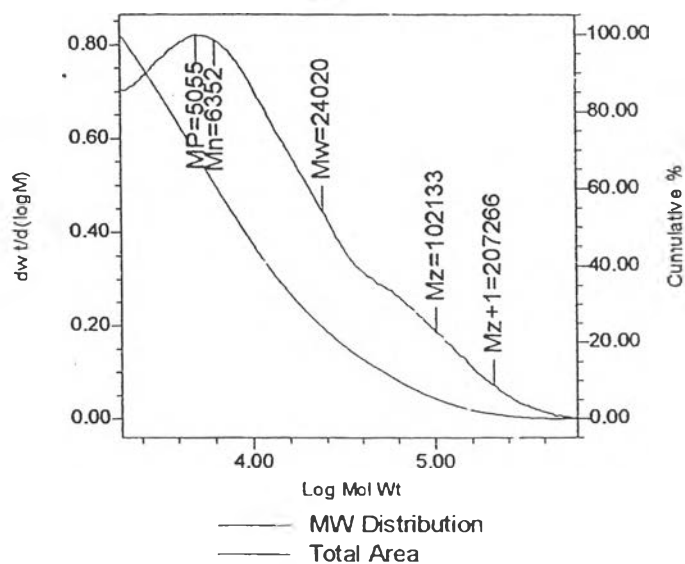
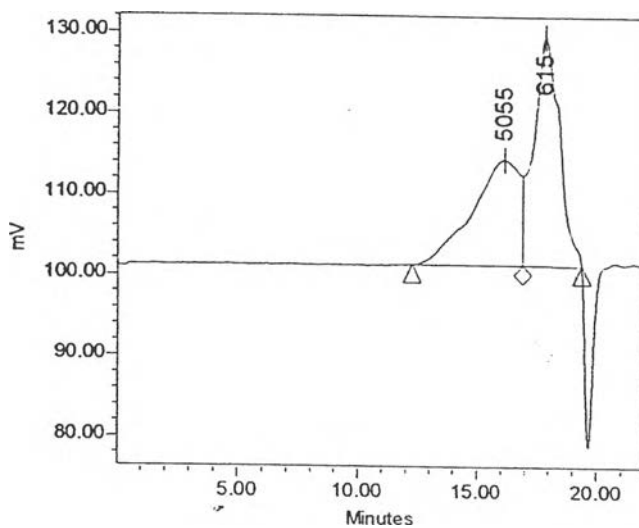
GPC Results

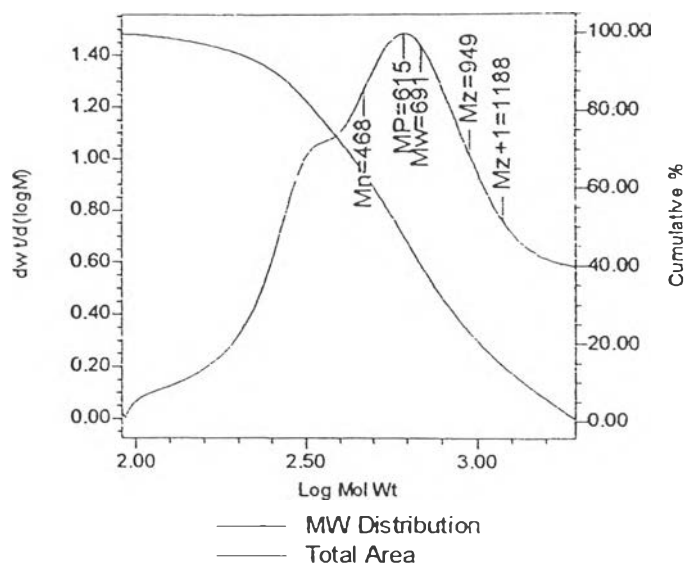
	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	675	776	630	923	1133	1.148930
2	291	304	324	315	325	1.045745

Sample Information

SampleName	50/3/2	Sample Type	Broad Unknown
Vial	15	Date Acquired	2/5/2002 9:12:12 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 8:36:25 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





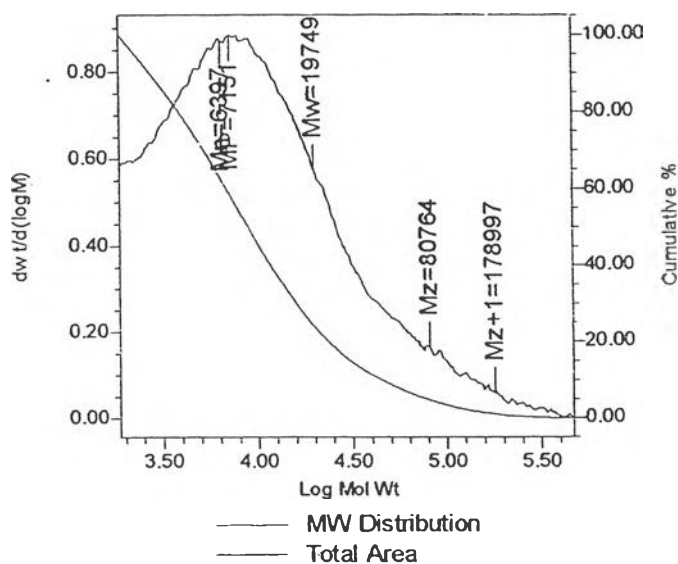
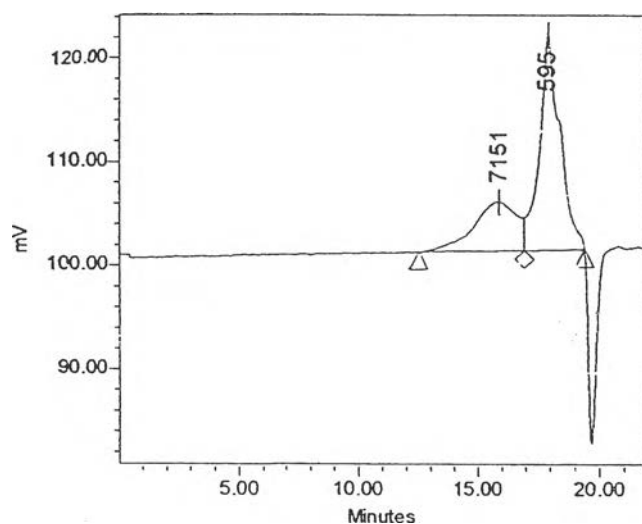
GPC Results

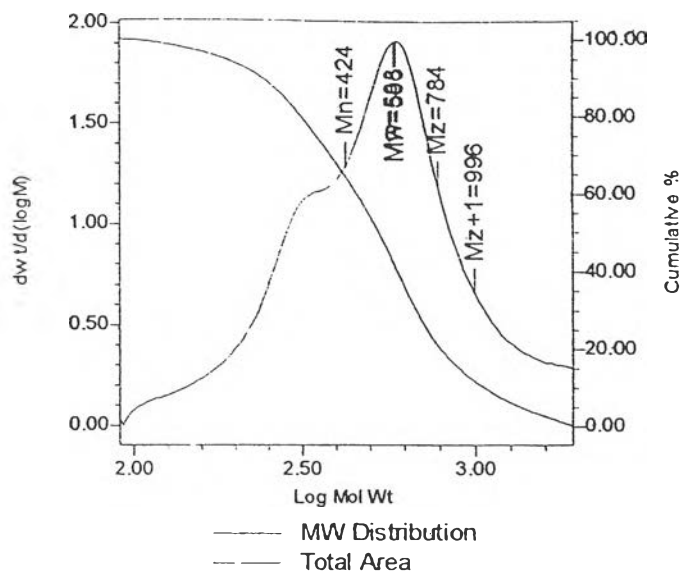
	M_n	M_w	M_P	M_z	M_z+1	Polydispersity
1	6352	24020	5055	102133	207266	3.781467
2	468	691	615	949	1188	1.475154

Sample Information

SampleName	50/3/4	Sample Type	Broad Unknown
Vial	1	Date Acquired	2/6/2002 9:01:36 AM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 9:59:35 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





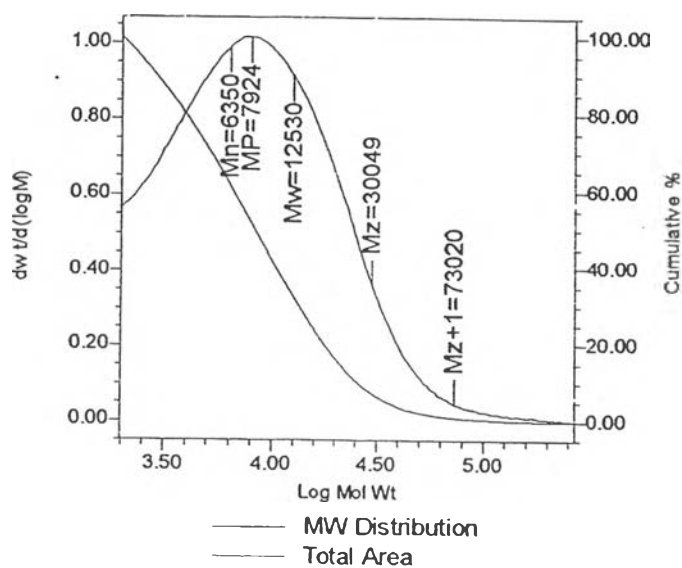
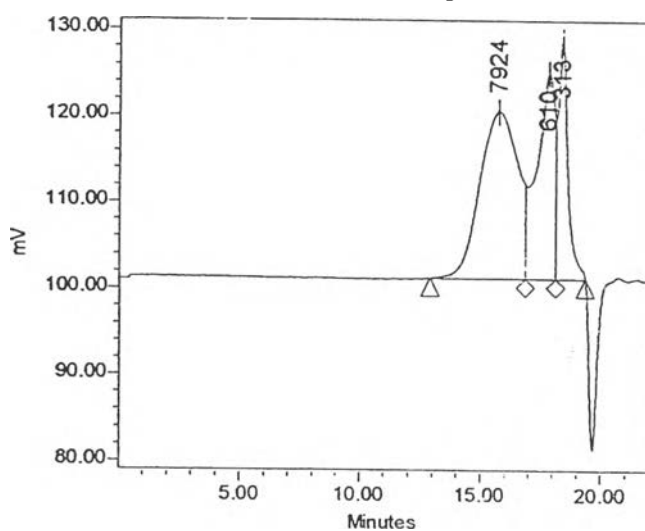
GPC Results

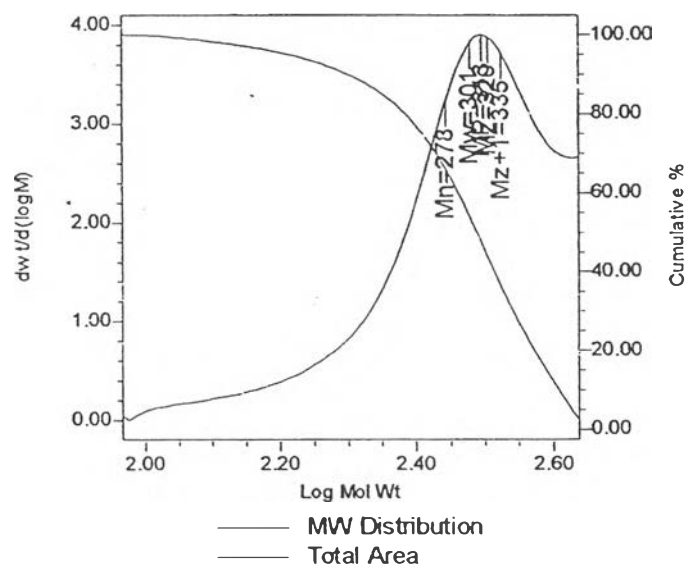
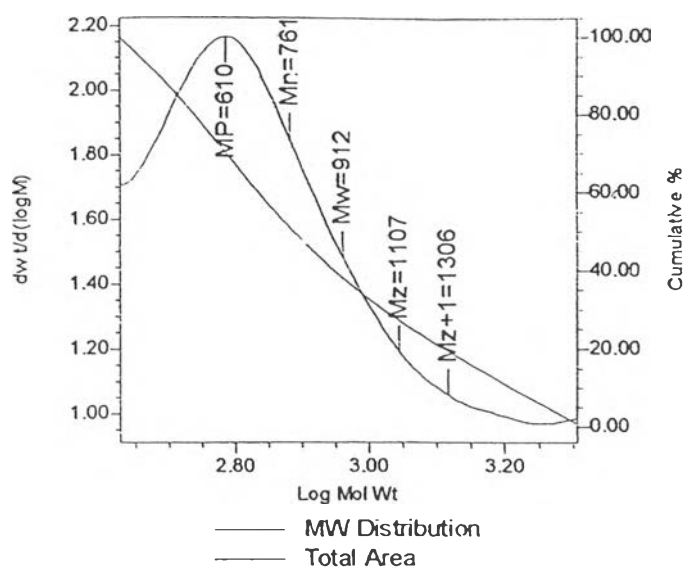
	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	6397	19749	7151	80764	178997	3.087035
2	424	588	595	784	996	1.388150

Sample Information

SampleName	50/3/6	Sample Type	Broad Unknown
Vial	16	Date Acquired	2/5/2002 9:37:54 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 8:34:56 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram



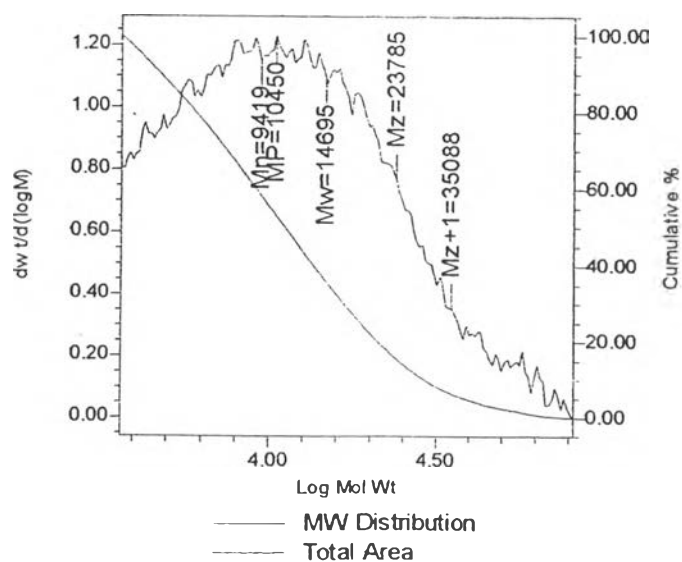
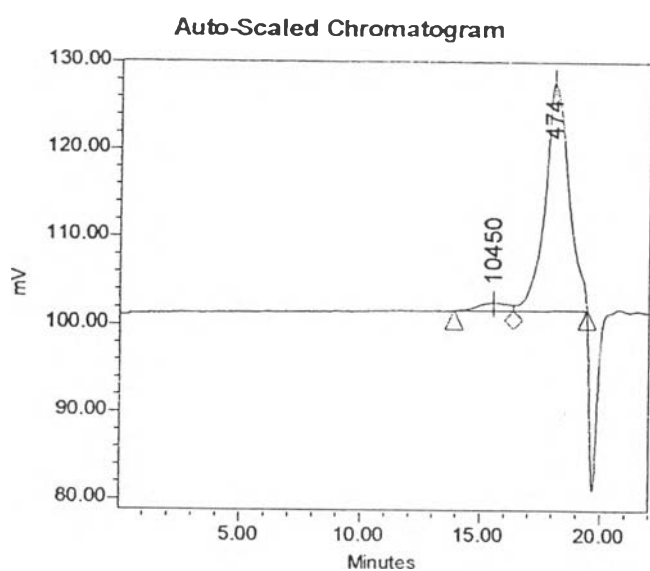


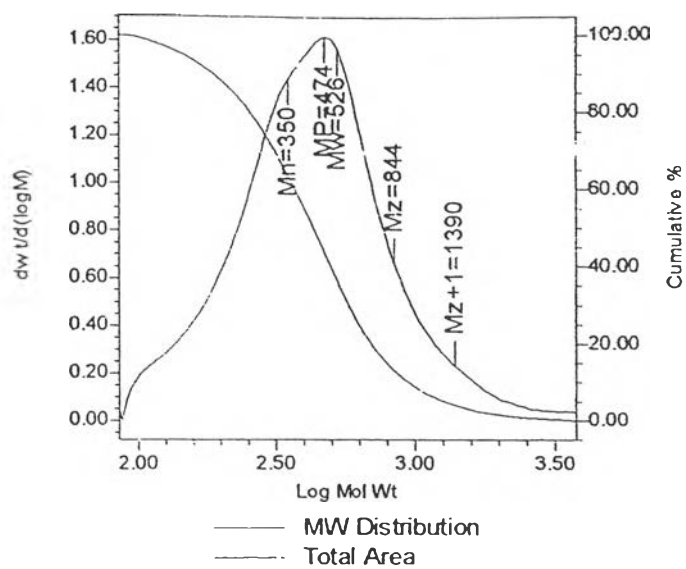
GPC Results

	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	6350	12530	7924	30049	73020	1.973234
2	761	912	610	1107	1306	1.199322
3	278	301	313	320	335	1.085367

Sample Information

SampleName	100/3/1	Sample Type	Broad Unknown
Vial	2	Date Acquired	2/6/2002 9:33:50 AM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 10:00:29 AM
Run Time	22.0 Minutes		





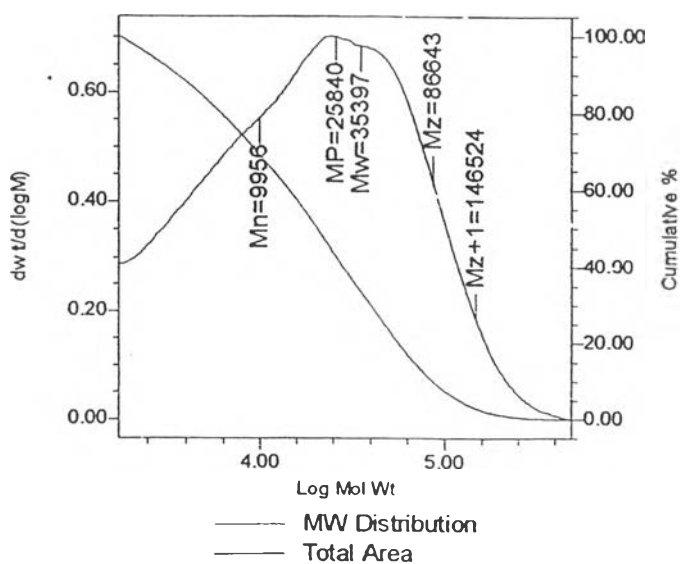
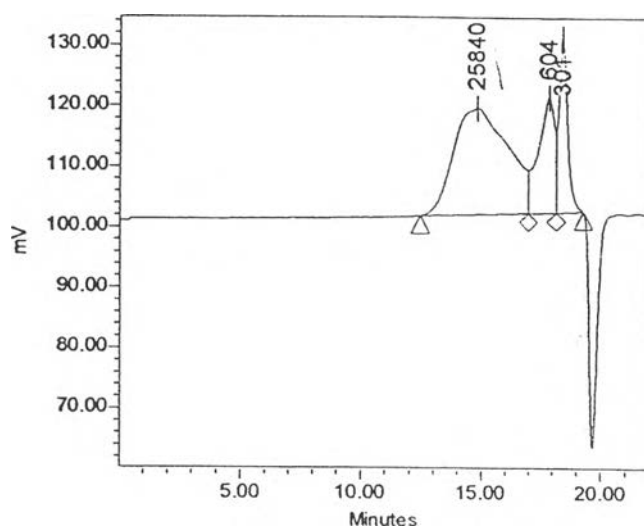
GPC Results

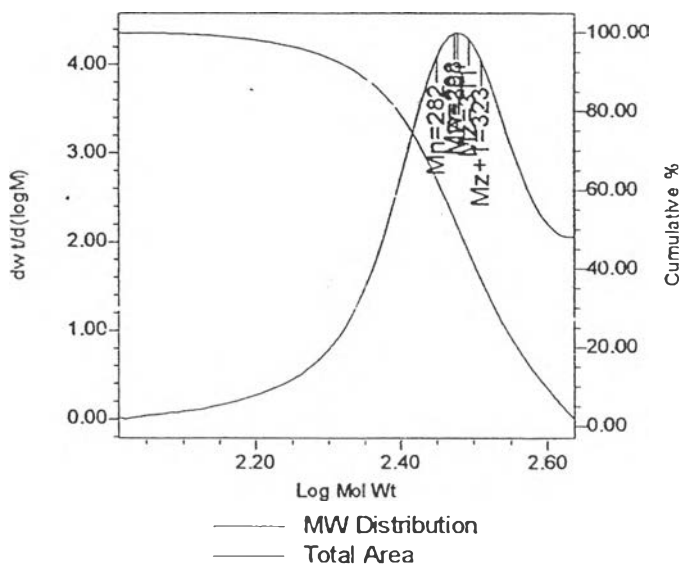
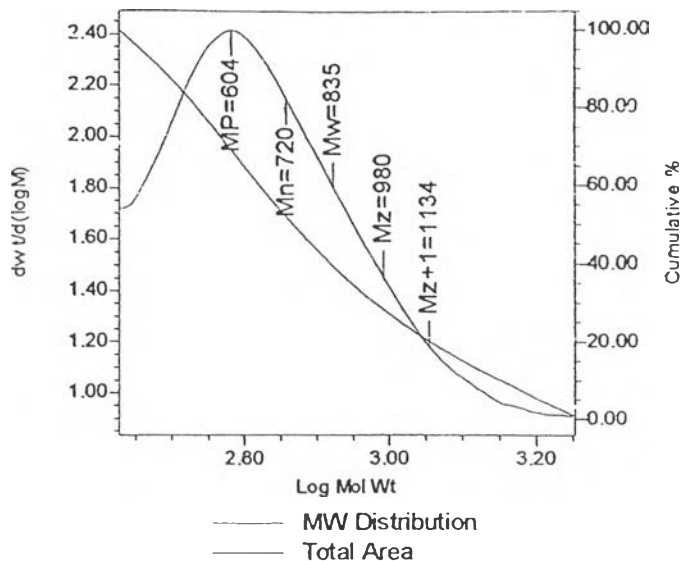
	M_n	M_w	M_P	M_z	M_{z+1}	Polydispersity
1	9419	14695	10450	23785	35088	1.560171
2	350	526	474	844	1390	1.500321

Sample Information

SampleName	100/3/2	Sample Type	Broad Unknown
Vial	3	Date Acquired	2/6/2002 9:59:32 AM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 10:03:38 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





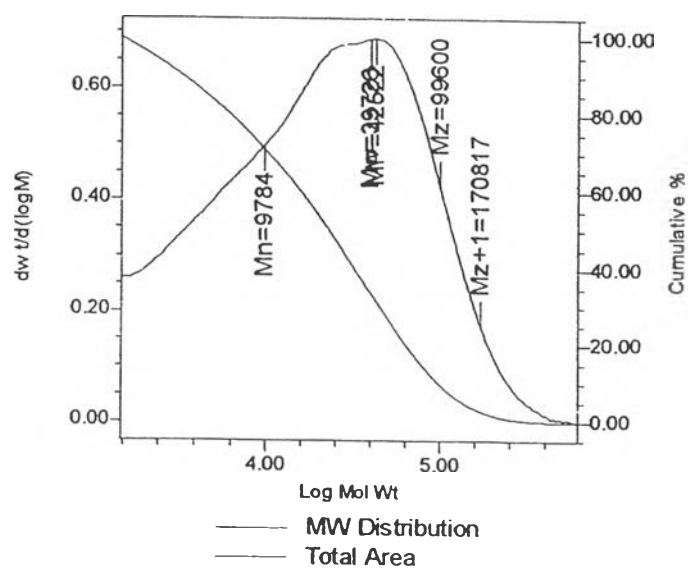
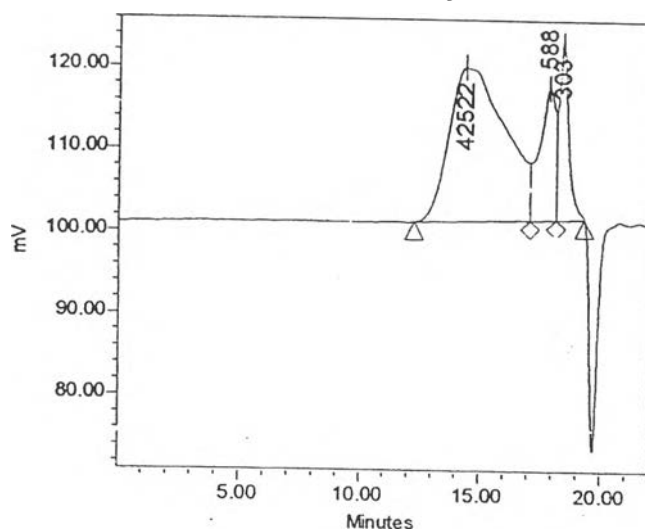
GPC Results

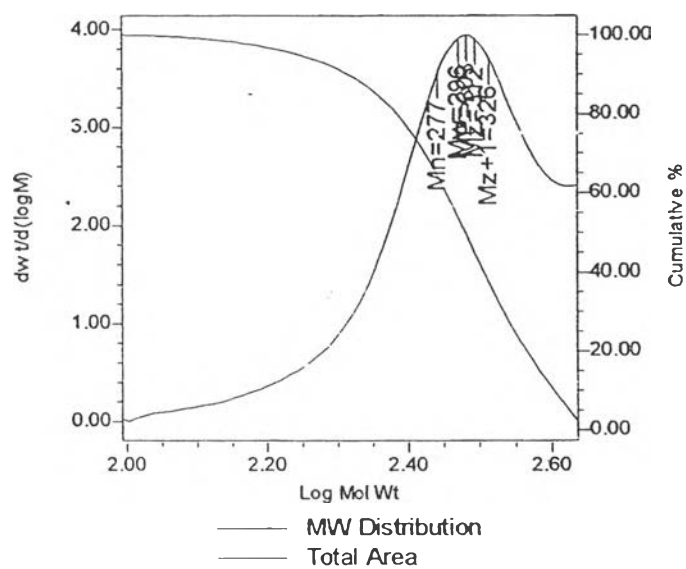
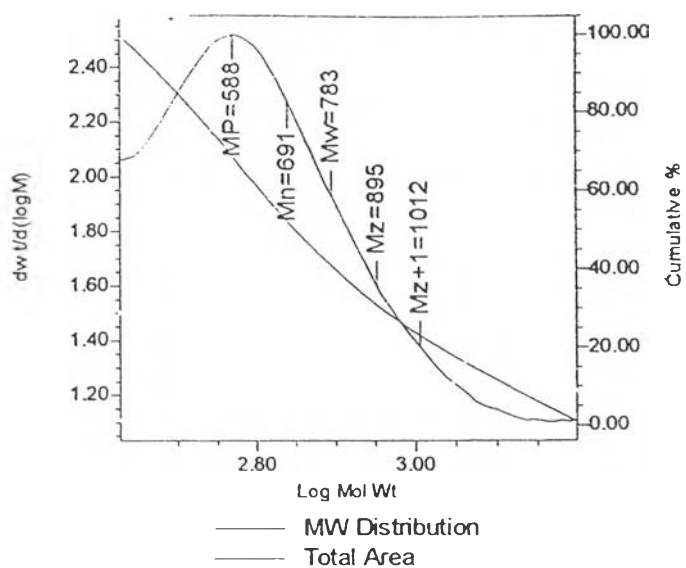
Sample	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	9956	35397	25840	86643	146524	3.555470
2	720	835	604	980	1134	1.159276
3	282	298	301	311	323	1.055433

Sample Information

SampleName	100/3/4	Sample Type	Broad Unknown
Vial	4	Date Acquired	2/6/2002 10:25:14 AM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 10:04:40 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





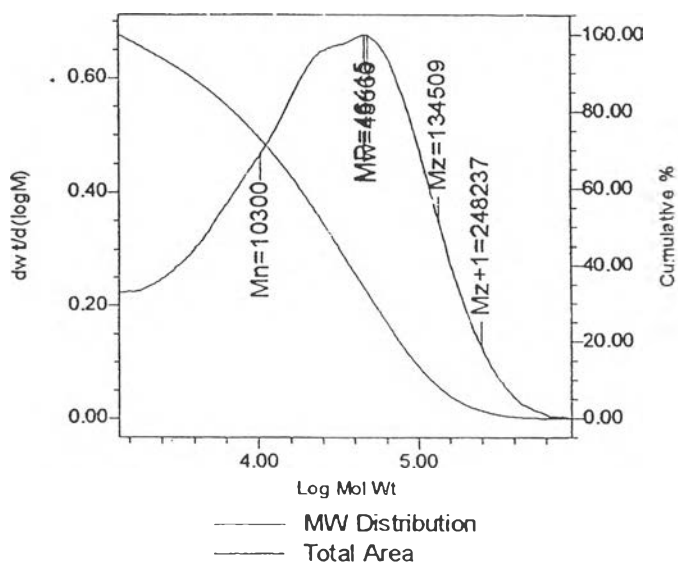
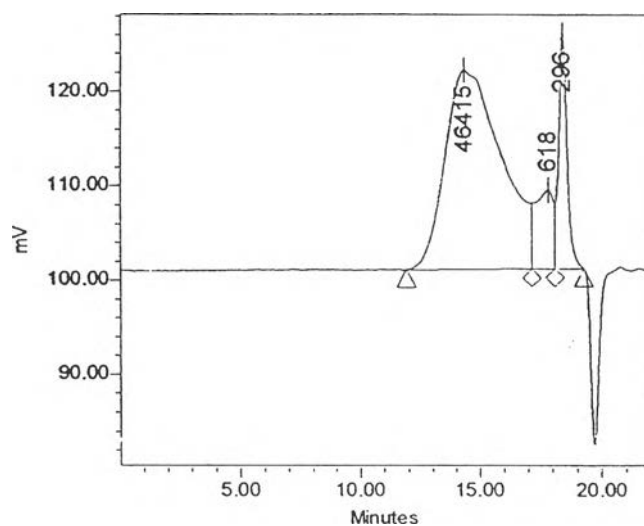
GPC Results

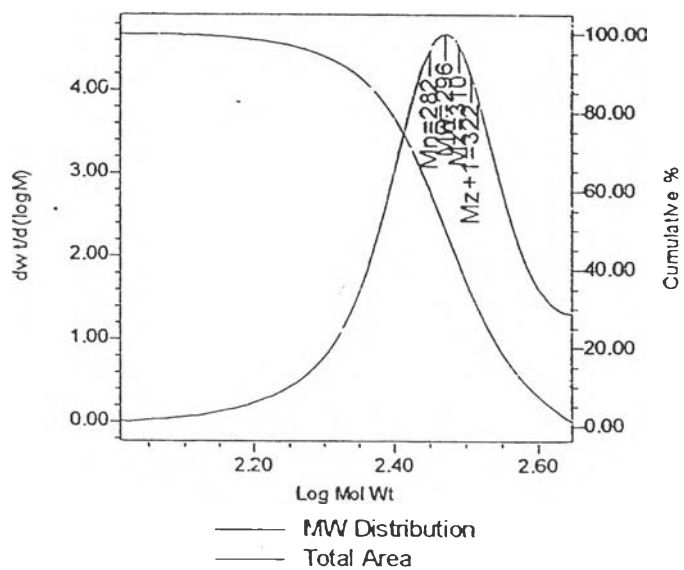
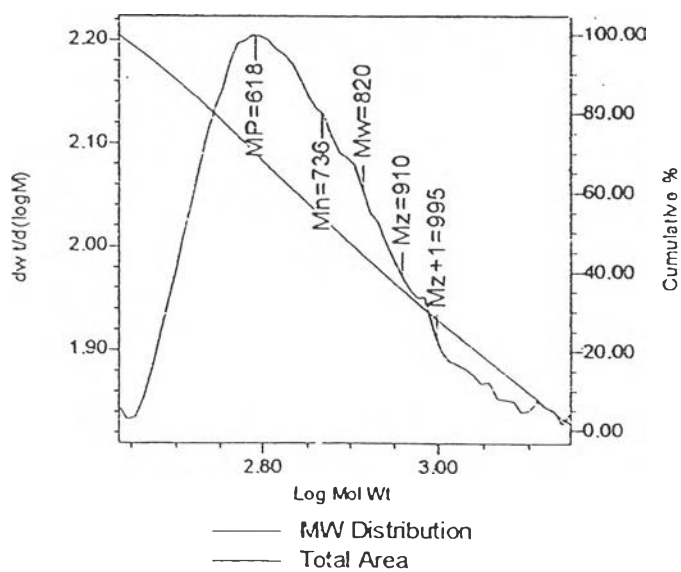
Sl	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	9784	39726	42522	99600	170817	4.060210
2	691	783	588	895	1012	1.133864
3	277	296	303	312	326	1.069461

Sample Information

SampleName	100/3/6	Sample Type	Broad Unknown
Vial	5	Date Acquired	2/6/2002 10:50:57 AM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 10:05:27 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





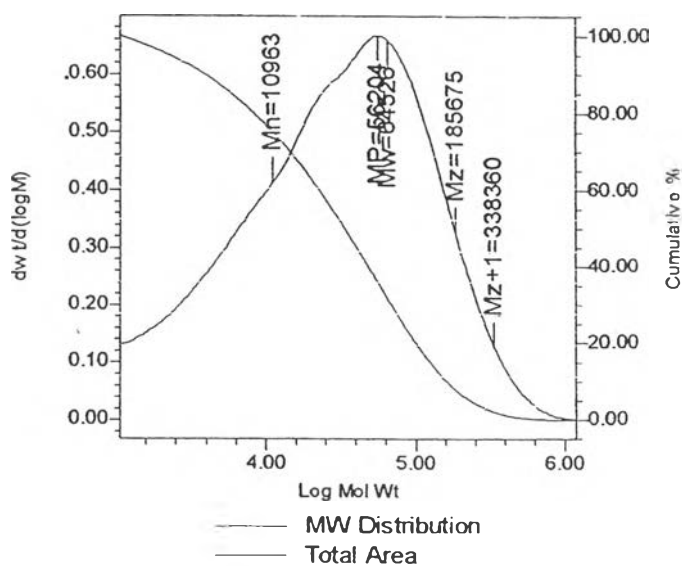
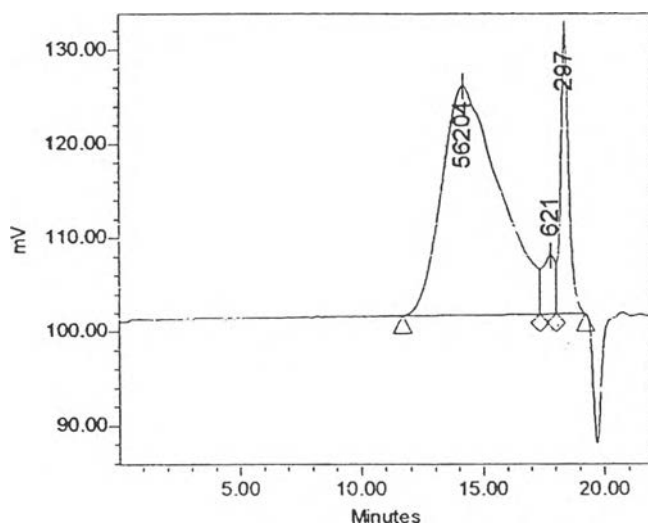
GPC Results

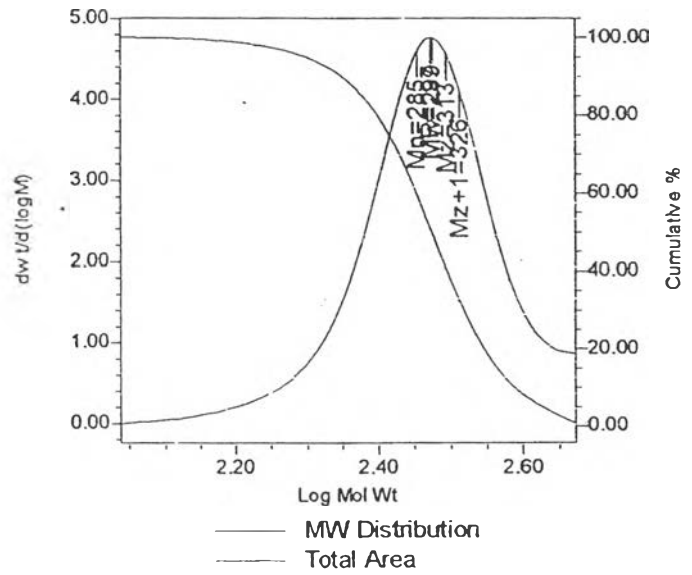
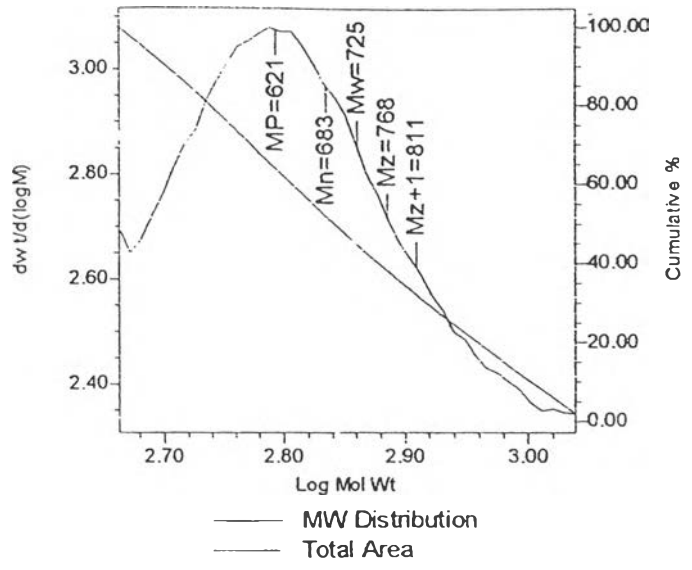
	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	10300	48666	46415	134509	248237	4.724666
2	736	820	618	910	995	1.114697
3	282	296	296	310	322	1.051487

Sample Information

SampleName	200/3/1	Sample Type	Broad Unknown
Vial	6	Date Acquired	2/6/2002 11:16:41 AM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 10:08:05 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





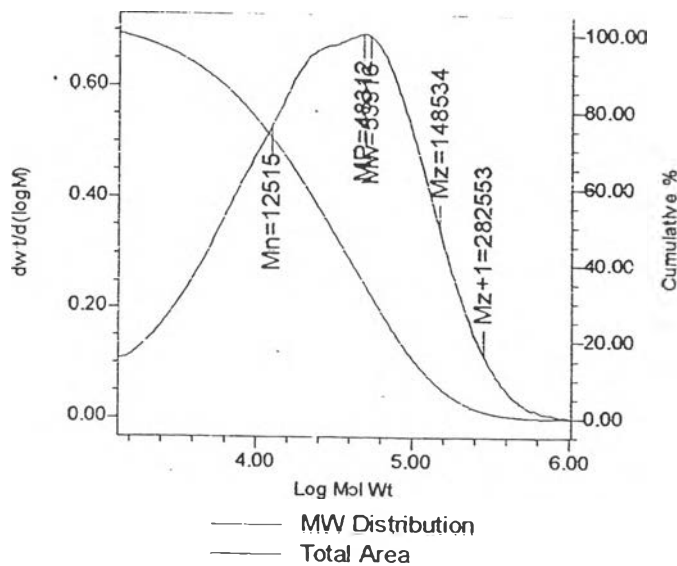
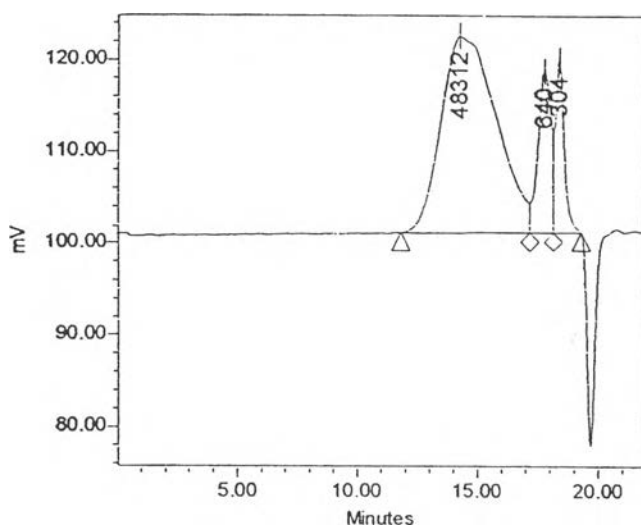
GPC Results

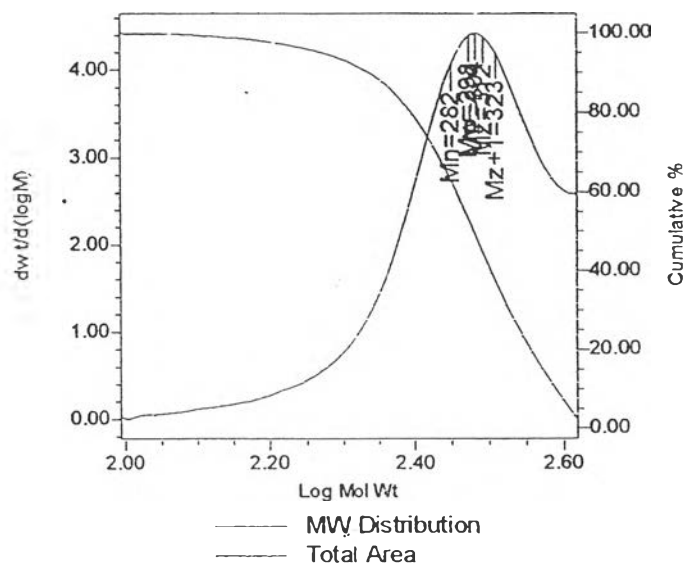
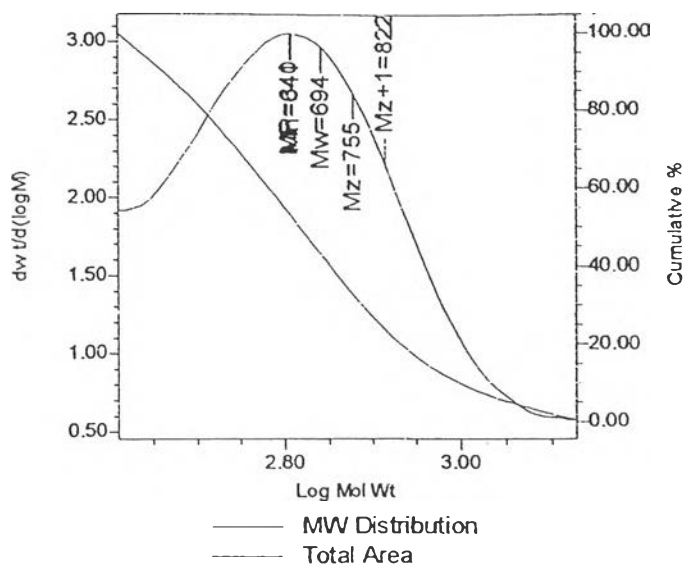
86	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	10963	64526	56204	185675	338360	5.885754
2	683	725	621	768	811	1.060517
3	285	299	297	313	326	1.050877

Sample Information

SampleName	200/3/2	Sample Type	Broad Unknown
Vial	7	Date Acquired	2/6/2002 11:42:23 AM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 10:08:52 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





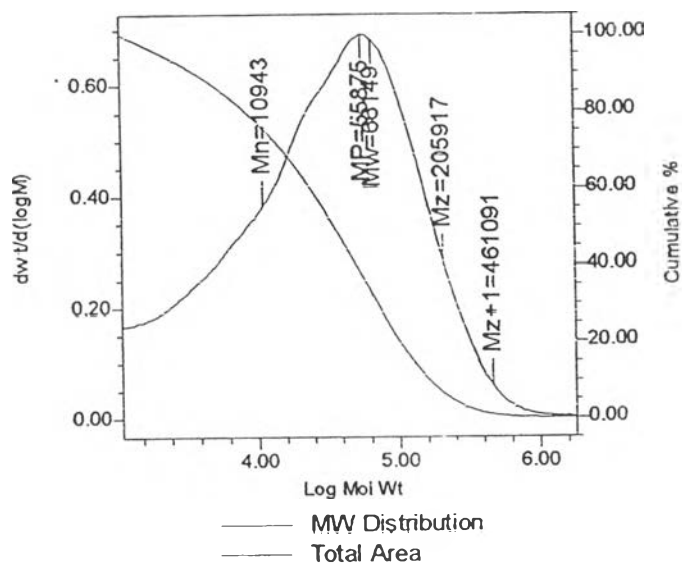
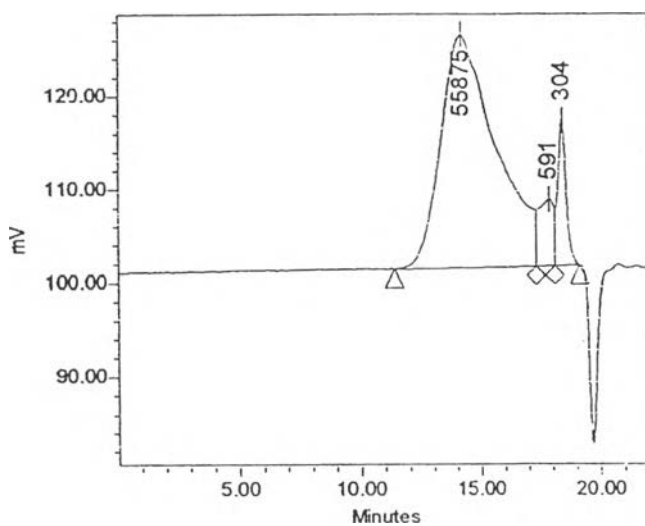
GPC Results

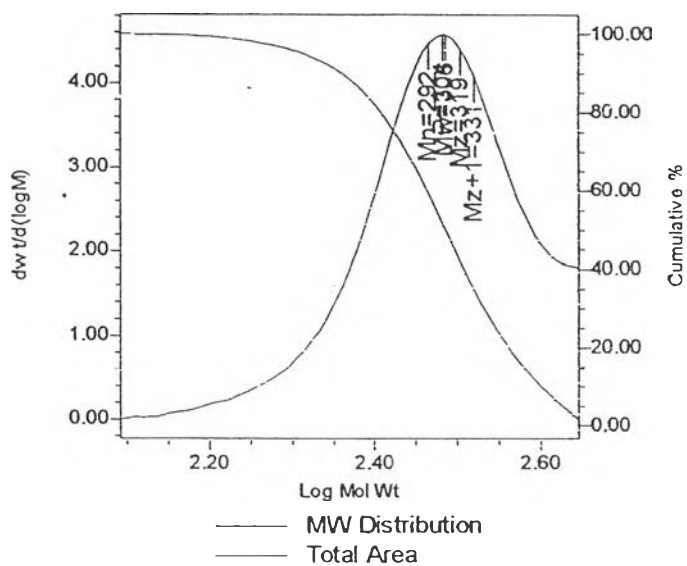
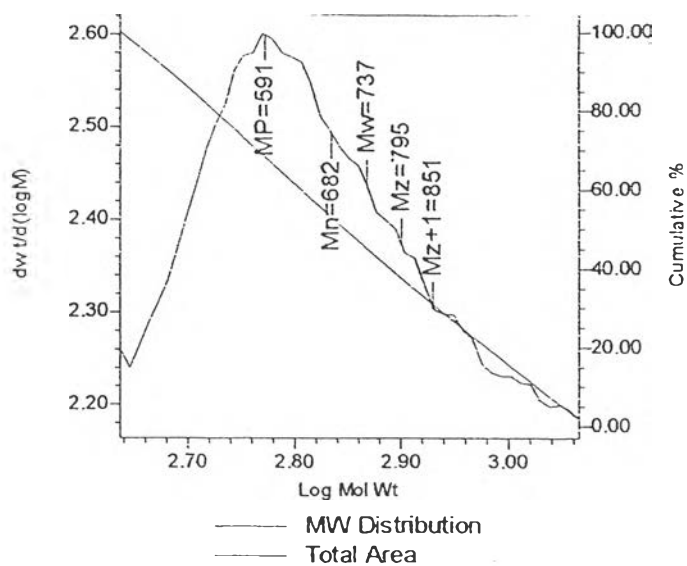
	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	12515	53916	48312	148534	282553	4.308017
2	641	694	640	755	822	1.081620
3	282	298	304	312	323	1.058032

Sample Information

SampleName	200/3/4	Sample Type	Broad Unknown
Vial	8	Date Acquired	2/6/2002 12:08:05 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATifN	Date Processed	2/7/2002 10:43:57 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





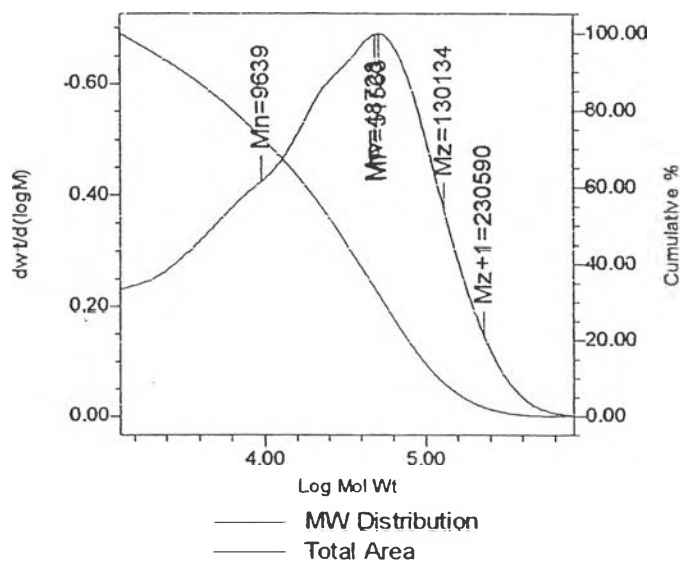
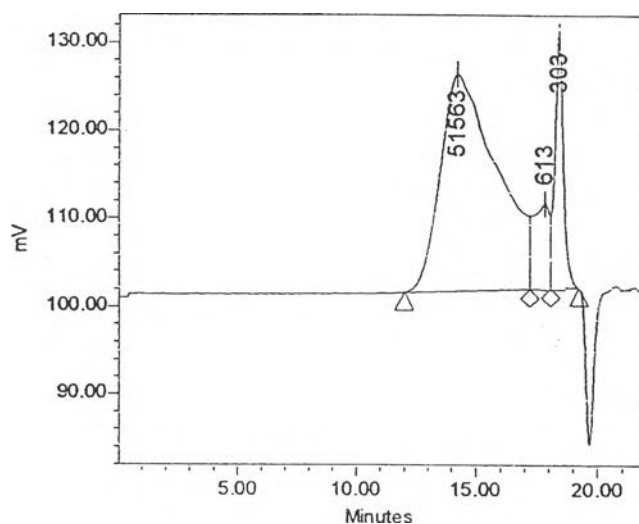
GPC Results

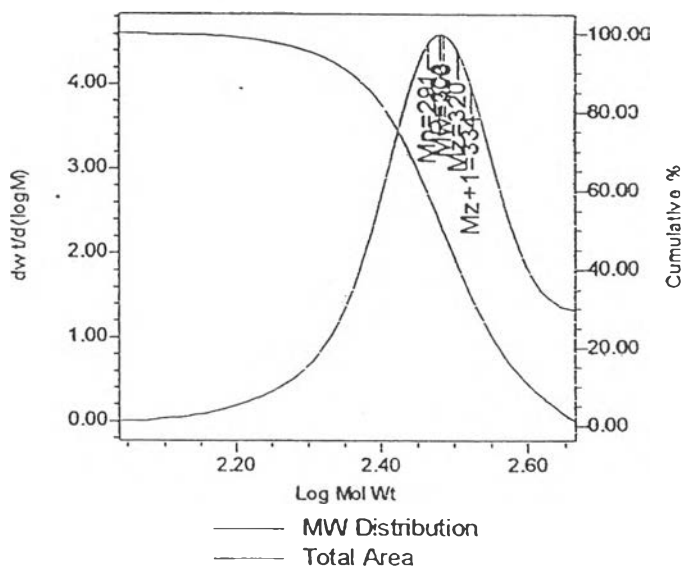
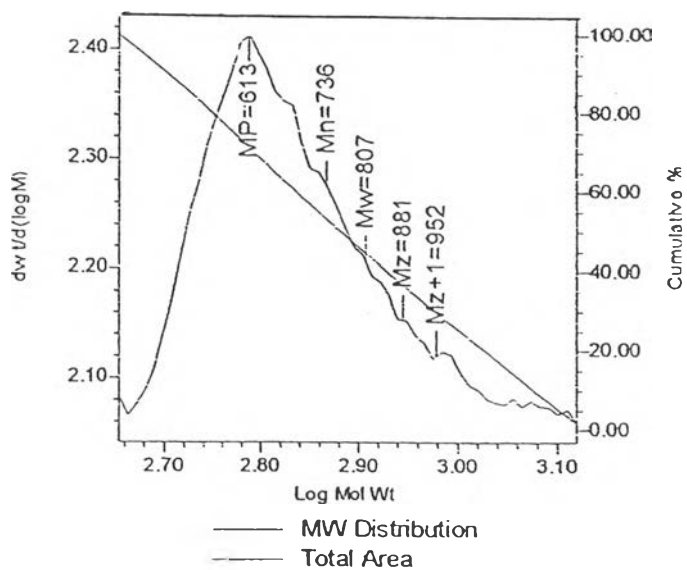
	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	10943	66149	55875	205917	461091	6.044760
2	682	737	591	795	851	1.080821
3	292	306	304	319	331	1.047674

Sample Information

SampleName	200/3/6	Sample Type	Broad Unknown
Vial	9	Date Acquired	2/6/2002 12:33:49 PM
Injection	1	Acq Method Set	Meth_AA
Injection Volume	100.00 ul	Processing Method	Proc_AA
Channel	SATIN	Date Processed	2/7/2002 10:44:26 AM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





GPC Results

66	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1	9639	48728	51563	130134	230590	5.055212
2	736	807	613	881	952	1.096154
3	291	306	303	320	334	1.051191

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