REFERENCES

Altaf, Naveena, B.J., and Reddy, G. (2007). Use of inexpensive nitrogen sources and starch for L(+) lactic acid production in anaerobic submered fermentation. *Bioresource Technology* 98: 498-503.

Avgoustakis, K., and Nixon, J. R. (1991). Biodegradable controlled release tablets 1: Preparative variables affecting the properties of poly(lactide-co-glycolide) copolymers as matrix forming material. *International Journal of Pharmaceutics* 70: 77-85.

Baker, M., and Gabryelski, W. (2006). Collision induced dissociation of deprotonated glycolic acid. *International Journal of Mass Spectrometry* 262: 128-135.

Baker, R.W., Kochinke, F., and Huang, C. (1990). Prolonged activity nicotine patch. *United States Patent 4,943,435.*

Berner, B., Mazzenga, G.C., Gargiulo, P. M., and Steffen, R. (1992). A transdermal nicotine system : feasibility studies. *Journal of Controlled Release* 20: 13-19.

Blank, I. (2002). Nicotine delivery compositions. *United States Patent 6,479,076.*

Bobiak, J. P., and Koenig, J. P. (2005). Regions of interest in FTIR imaging application: Diffusion of nicotine into ethylene-co-vinyl acetate films. *Journal of Controlled Release* 106: 329-338.

Breitenbach, A., and Kissel, T. (1998). Biodegradable comb polyesters: part 1 synthesis, characterization and structural analysis of poly(latcide) and poly(lactide-co-glycolide) grafted onto water-soluble poly(vinyl alcohol) as backbone. *Polymer* 39: 3261-3271.

Chung, S. J. (1999). Future drug delivery research in South Korea. *Journal of Controlled Release* 62: 73-79.

Davaran, S., Rachidi, M. R. Khandaghi, R., and Hashemi, H. (2005). Development of a novel prolonged-release nicotine transdermal patch. *Pharmacological Research* 51: 233-237.

Dechy-Cabaret, O., Martin-Vaca, B., and Bourissou, D. (2004). Controlled ring-opening polymerization of lactide and glycolide. *Chemical Reviews* 104: 6147-6176.

Dobrzynski, D., Kasperczk, J., and Bero, M. (1999). Application of calcium acetylacetonate to the polymerization of glycolide and copolymerization of glycolide with caprolactone and L-lactide. *Macromolecules* 32: 4735-4737.

Dobrzynski, P., Kasperczyk, J., Janeczek, H., and Bero, M. (2002). Synthesis of biodegradable glycolide/L-lactide copolymers using iron compounds as initiators. *Polymer* 43: 2595-2601.

Dong, C. M., Qiu, K. Y., Gu, Z. W., and Feng, X. D. (2001). Synthesis of star-shaped poly(D,L-lactic acid-alt-glycolic acid) with multifunctional initiator and $Sn(Oct)_2$ catalyst. *Polymer* 42: 6891-6896.

Fan, L., Xiong, Y. B., Xu, H., and Shen, X. Z. (2005). L-Lactide homopolymerization and L-lactide-ε-caprolactone block copolymerization by lanthanide tris(2,4,6-trimethylphenolate)s. *European Polymer Journal* 41: 1647-1653.

Frauenrath, H. (2005). Dendronized polymers-building a new bridge from molecules to nanoscopic objects. *Progress in Polymer Science* 30: 325-384.

Fukuzaki, H., Yoshida, M., Asano, M., Kumakura, M., Mashimo, T., Yuasa, H., Imai, K., and Yamanaka, H. (1991). In vivo characteristics of high molecular weight copoly(L-lactide/glycolide) with S-type degradation pattern for application in drug delivery systems. *Biomaterials* 12: 433-437.

Grodzinski, J. J. (1999). Biomedical application of functional polymers. *Reactive & Functional Polymers* 39: 99-138.

Hyon, S.H., Jamshidi, K., and Ikada, Y. (1997). Synthesis of polylactides with different molecular weights. *Biomaterials* 18: 1503-1508.

Li, Y., Nothnagel, J., and Kissel, T. (1997). Biodegradable brush-like graft polymers from poly(D,L-lactide) or poly(D,L-lactide-co-glycolide) and charge-modified, hydrophilic dextrans as backbone: Synthesis, characterization and in vitro degradation properties. *Polymer* 38: 6197-6206.

Loo, J. S. C., Tan, H. T., Ooi, C. P., and Boey, F. Y. C. (2006). Hydrolytic degradation of electron beam irradiated high molecular weight and non-irradiated moderate molecular weight PLLA. *Acta Biomaterialia* 2: 287-296.

Mainardes, R. M., and Evangelista, R. C. (2005). PLLGA nanoparticles containing praziquantel: effect of formulation variables on size distribution. *International Journal of Pharmaceutics* 290: 137-144.

Marcotte, N., and Goosen, M. F. A. (1989). Delayed release of water-soluble macromolecules from polylactide pellets. *Journal of Controlled Release* 9: 75-85.

Murakami, H., Kobayashi, M., Takeuchi, H., and Kawashima, Y. (2000). Utilization of poly(DL-lactide-co-glycolide) nanoparticles for preparation of mini-depot tablets by direct compression. *Journal of Controlled Release* 67: 29-36.

Murariu, M., Ferreira, A. D. S., Degee, P., Alexandre, M., and Dubois, P. (2007). Polylactide compositions. Part 1: Effect of filler content and size on mechanical properties of PLA/calcium sulfate composites. *Polymer* 48: 2613-2618.

Narayanan, N., Roychoudhury, P.K., and Srivastava, A. (2004). L(+) lactic acid fermentation and its product polymerization. *Electronic Journal of Biotechnology* 7: 167-179.

Niwa, T., Takeuchi, H., Hino, T., Kunou, N., and Kawashima, Y. (1993). Preparations of biodegradable nanospheres of water-soluble and insoluble drugs with D,L-lactide/glycolide copolymer by a novel spontaneous emulsification solvent diffusion method and the drug release behavior. *Journal of Controlled Release* 25: 89-98.

Olivier, J. C., Rabouan, S., and Couet, W. (2003). In vitro comparative studies of two marketed transdermal nicotine delivery systems: Nicopatch® and Nicorette®. *International Journal of Pharmaceutics* 252: 133-140.

Rafferty, D. W., and Koenig, J. L. (2002). FTIR imaging for the characterization of controlled-release drug delivery applications. *Journal of Controlled Release* 83: 29-39.

Rutot, R., Duquesne, E., Tdens, I., Degee, P., and Dubois, P. (2001). Aliphatic polyester-based biodegradable materials: new amphiphilic graft copolymers. *Polymer Degradation and Stability* 73: 561-566.

Saha, S.K., and Tsuji, H. (2006). Effect of molecular weight and small amounts of D-lactide units on hydrolytic degradation of poly(L-lactic acid)s. *Polymer Degradation and Stability* 91: 1665-1673.

Sampath, S. S., Garvin, K., and Robinson, D.H. (1992). Preparation and characterization of biodegradable poly(L-lactic acid) gentamicin delivery system. *International Journal of Pharmaceutics* 78: 165-174.

Sodergard, A., and Stolt, M. (2002). Properties of lactic acid based polymers and their correlation with composition. *Progress in Polymer Science* 27: 1123-1163.

Soppimatha, K. S., Aminabhavia, T. M., Kulkarnia, A. R., and Rudzinski, W. E. (2001). Biodegradable polymeric nanoparticles as drug delivery devices. *Journal of Controlled Release* 70: 1-20.

Sugibayashi, K., and Morimoto, Y. (1994). Polymer for transdermal drug delivery systems. *Journal of Controlled Release* 29: 177-185.

Swift, G. (1993). Directions for environmentally biodegradable polymer research. *Accounts of Chemical Research* 26: 105-110.

Takahashi, K., Taniguchi, I., Miyamoto, M., and Kimura, Y. (2000). Melt/solid polycondensation of glycolic acid to obtain high-molecular-weight poly(glycolic acid). *Polymer* 41: 8725-8728.

Venkatraman, S., and Gale, R. (1998). Skin adhesives and skin adhesion: 1. Transdermal drug delivery systems. *Biomaterials* 19: 1119-1136.

Vert, M., Schwach, G., Engel, R., and Coudane, J. (1998). Something new in the field of PLA/GA bioresorbable polymer. *Journal of Controlled Releas* 53: 85-92.

Wibowo, A.C., Misra, M., Park, H.M., Drzal, L.T., Schalek, R., and Mohanty, A.K. (2006). Biodegradable nanocomposites from cellulose acetate: Mechanical, morphological, and thermal properties. *Composites Part A: Applied Science and Manufacturing* 37: 1428-1433.

Wu, X.S. (2004). Synthesis, charaterization, biodegradation, and drug delivery application of biodegradable lactic/glycolic acid polymer: part III. drug delivery application. *Artificial Cells, Blood Substitutes, and Biotechnology* 32: 575-591.

Yildiz, D. (2004). Nicotine, its metabolism and an overview of its biological effects. *Toxicon* 43: 619-632.

Yuan, W., Tang, X., Huang, X., and Zheng, S. (2005). Synthesis, characterization and thermal properties of hexaarmed star-shaped poly(ε-caprolactone)-*b*-poly(D,L-lactide-co-glycolide) initiated with hydroxyl-terminated cyclotriphosphazene. *Polymer* 46: 1701-1707.

APPENDICES

APPENDIX A

^{1}H and ^{13}C NMR Spectrum

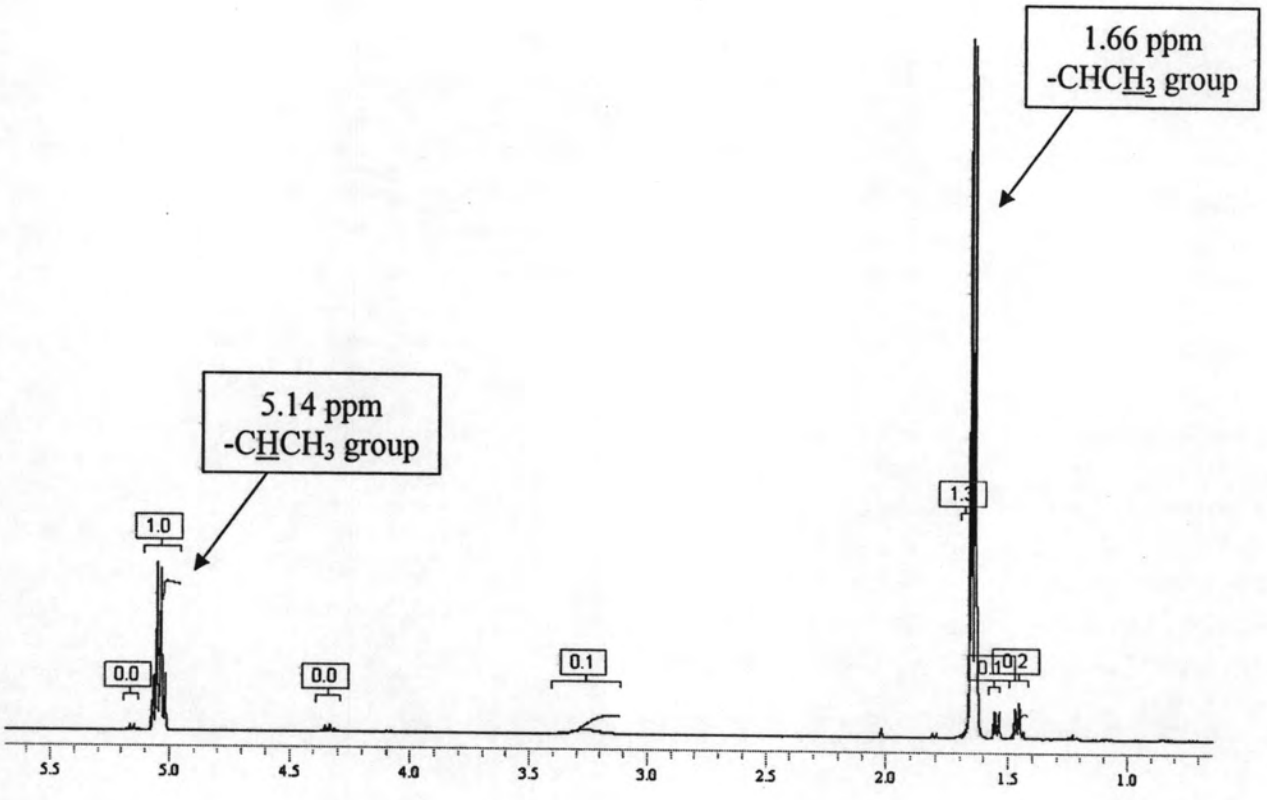

Figure A1 ^{1}H NMR spectrum of L-lactide.

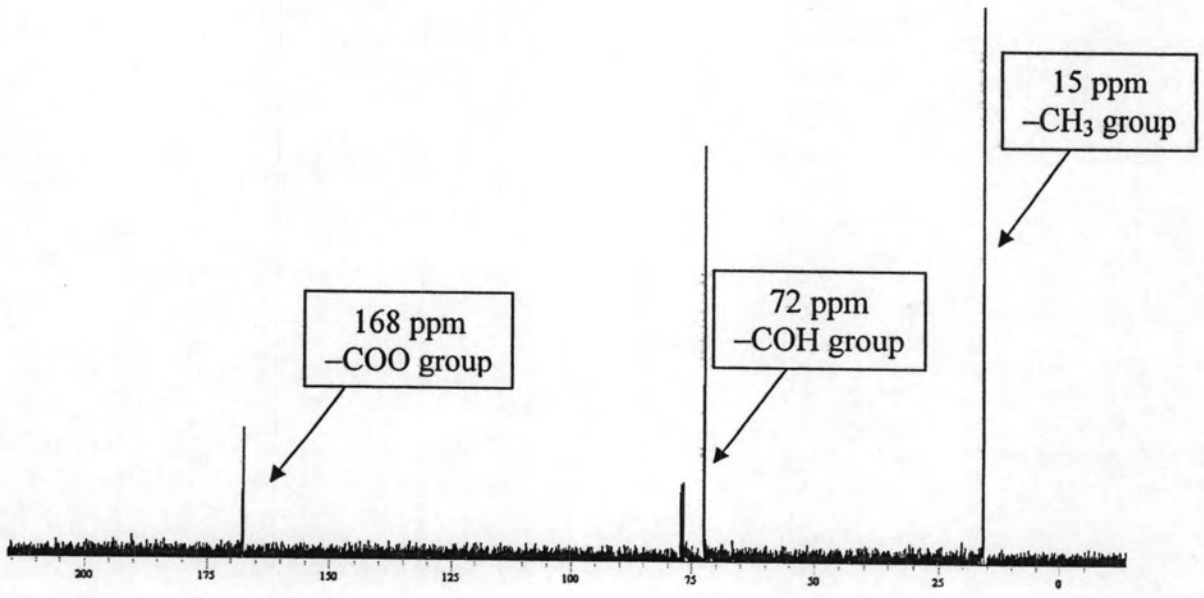

Figure A2 ^{13}C NMR spectrum of L-lactide.

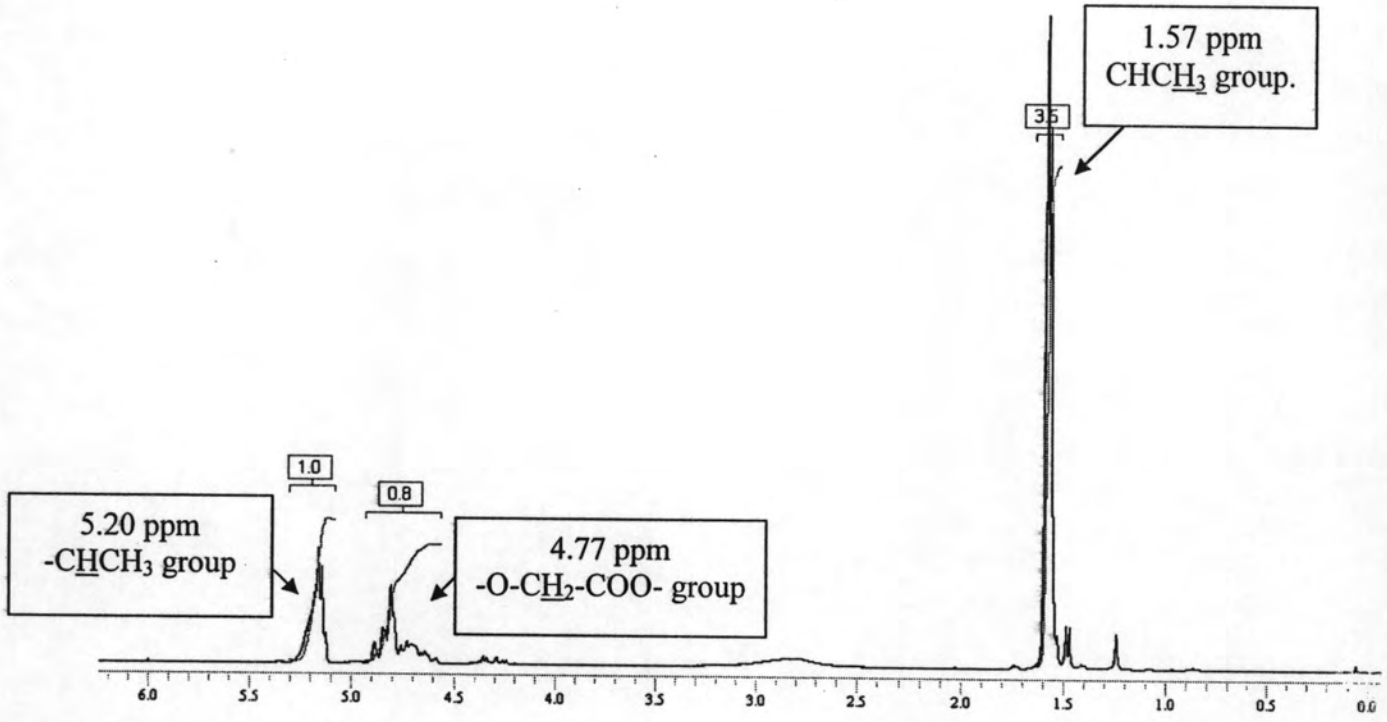

Figure A3 ^{1}H NMR spectrum of 70:30 PLLGA copolymer.

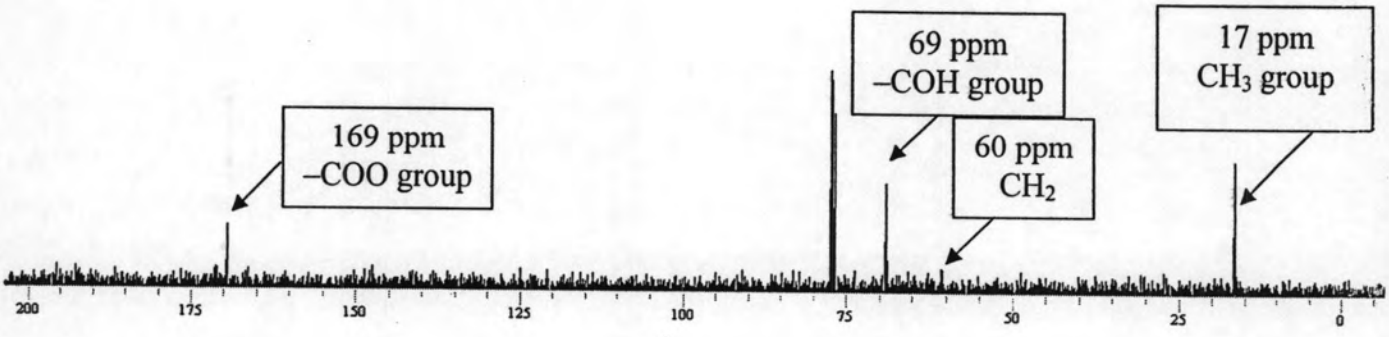

Figure A4 ^{13}C NMR spectrum of 70:30 PLLGA copolymer.

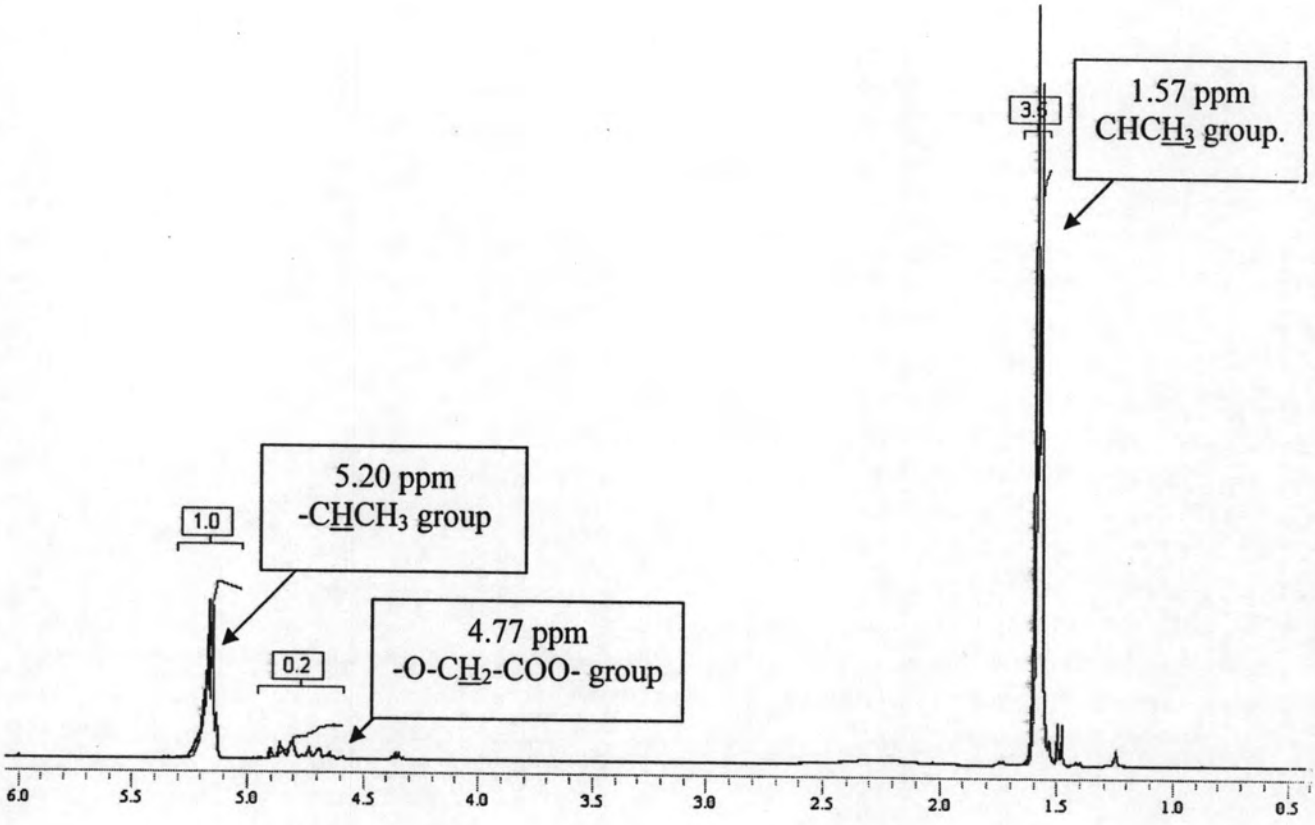

Figure A5 ^{1}H NMR spectrum of 90:10 PLLGA copolymer.

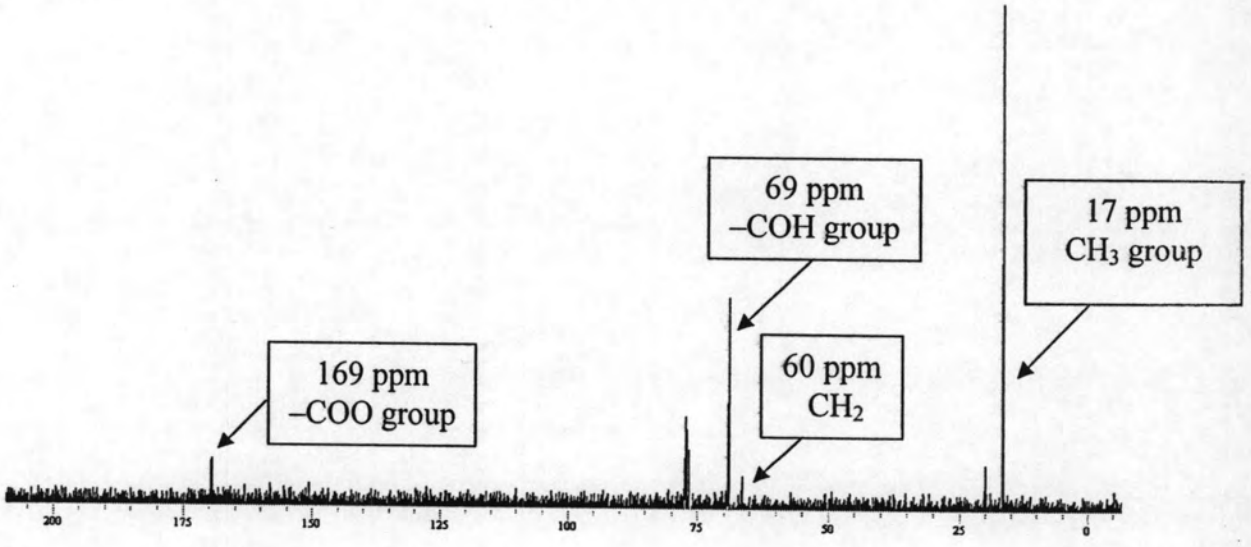

Figure A6 ^{13}C NMR spectrum of 90:10 PLLGA copolymer.

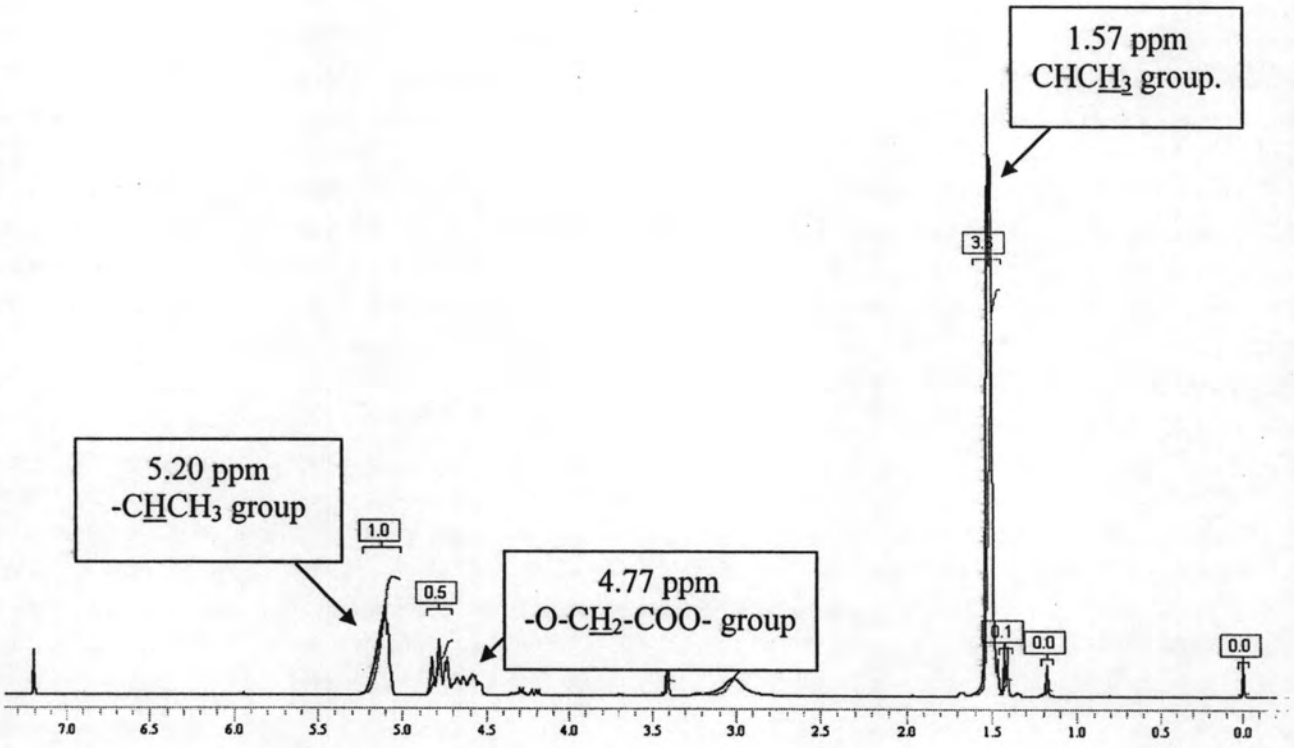

Figure A7 ^{1}H NMR spectrum of solidified PLLGA nanospheres.

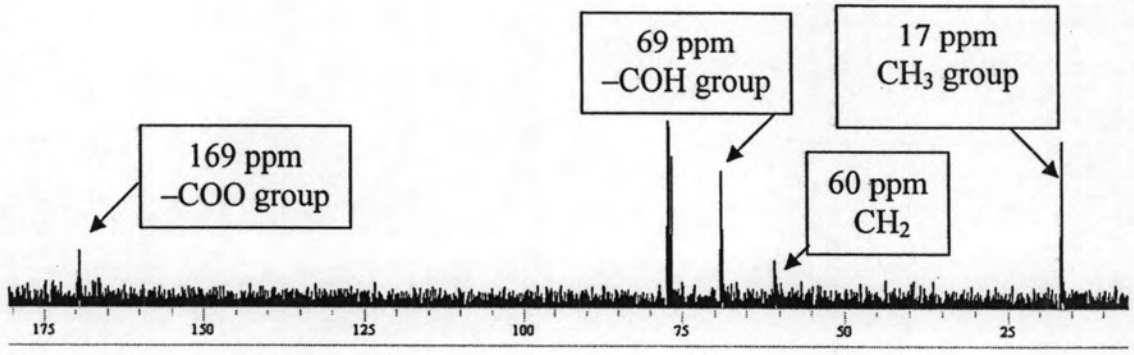

Figure A8 ^{13}C NMR spectrum of solidified PLLGA nanospheres.

APPENDIX B

The GPC Chromatogram

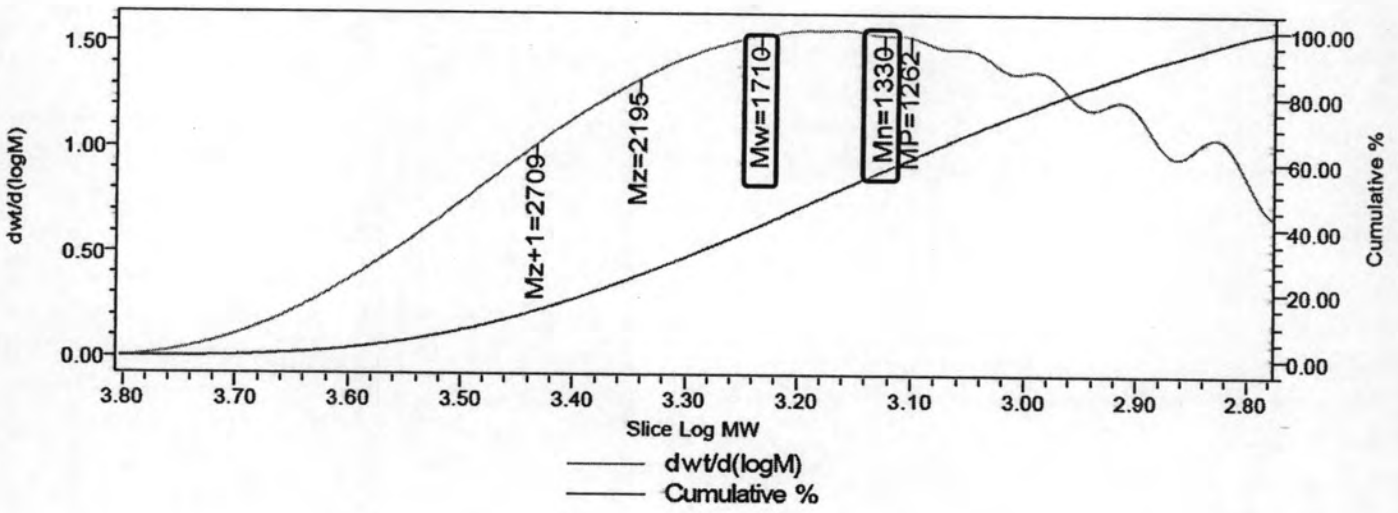

Figure B1 The chromatogram of low molecular weight ($\overline{M}_w$ = 1710, and $\overline{M}_n$ = 1330).

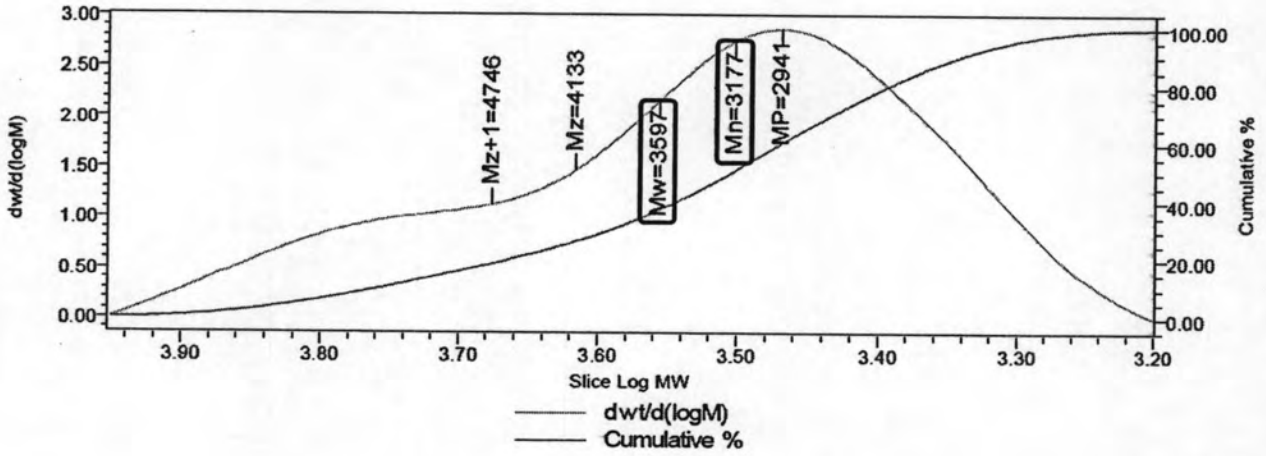

Figure B2 The chromatogram of 90:10 PLLGA using Zn dust 0.3 mol% of monomers as catalyst, 120°C, 24 hours. ($\overline{M}_w$ = 3597, and $\overline{M}_n$ = 3177).

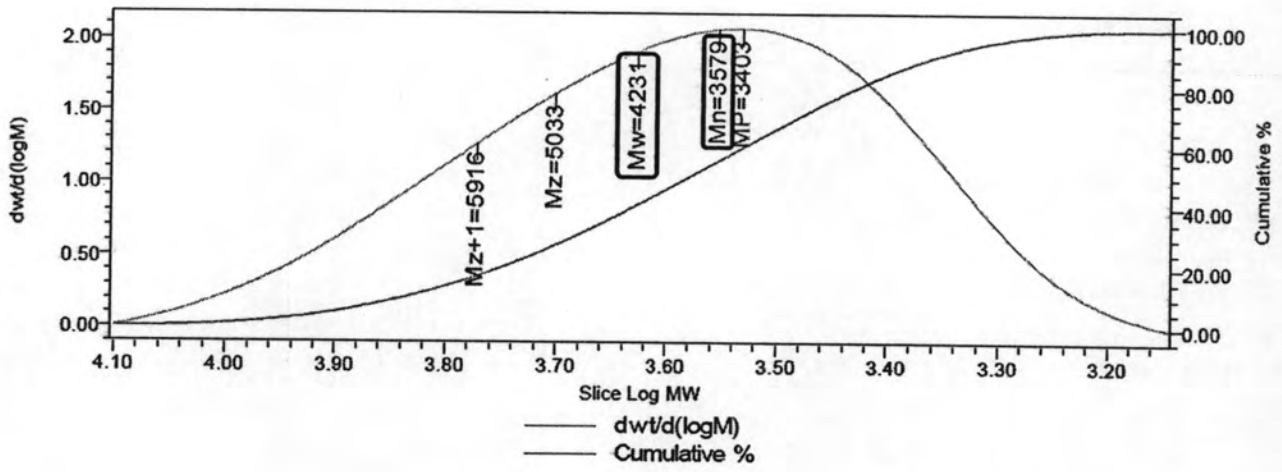

Figure B3 The chromatogram of 90:10 PLLGA using $Sn(Oct)_2$ 0.3 mol% of monomers as catalyst, 120°C, 24 hours. ($\overline{M}_w = 4231$, and $\overline{M}_n = 3579$).

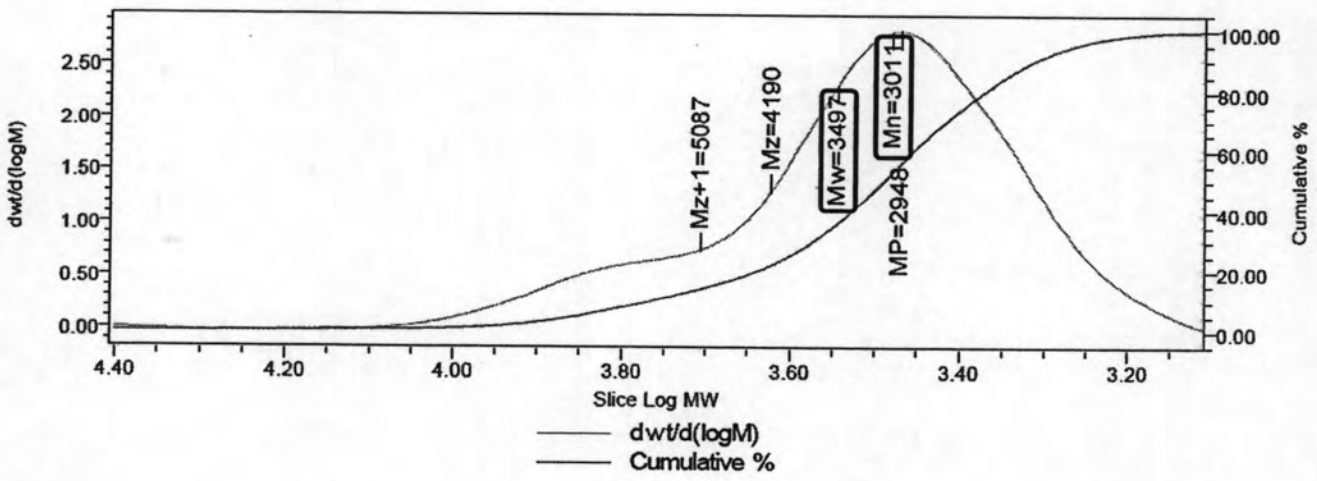

Figure B4 The chromatogram of 90:10 PLLGA using $Sn(Oct)_2$ 0.1 mol% of monomers as catalyst, 120°C, 24 hours. ($\overline{M}_w = 3497$, and $\overline{M}_n = 3011$).

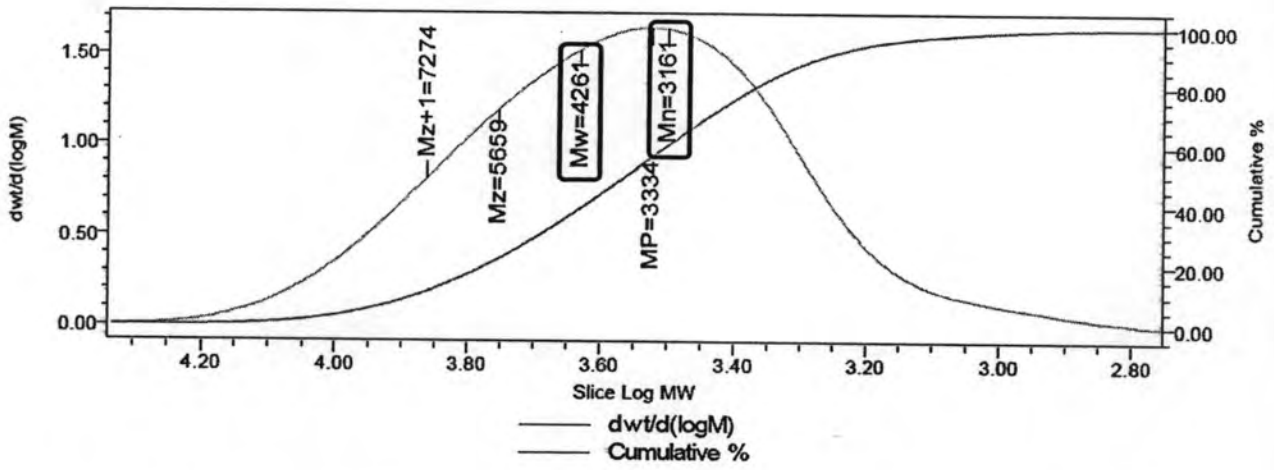

Figure B5 The chromatogram of 90:10 PLLGA using $Sn(Oct)_2$ 0.2 mol% of monomers as catalyst, 120°C, 24 hours. ($\overline{M}_w = 4261$, and $\overline{M}_n = 3161$).

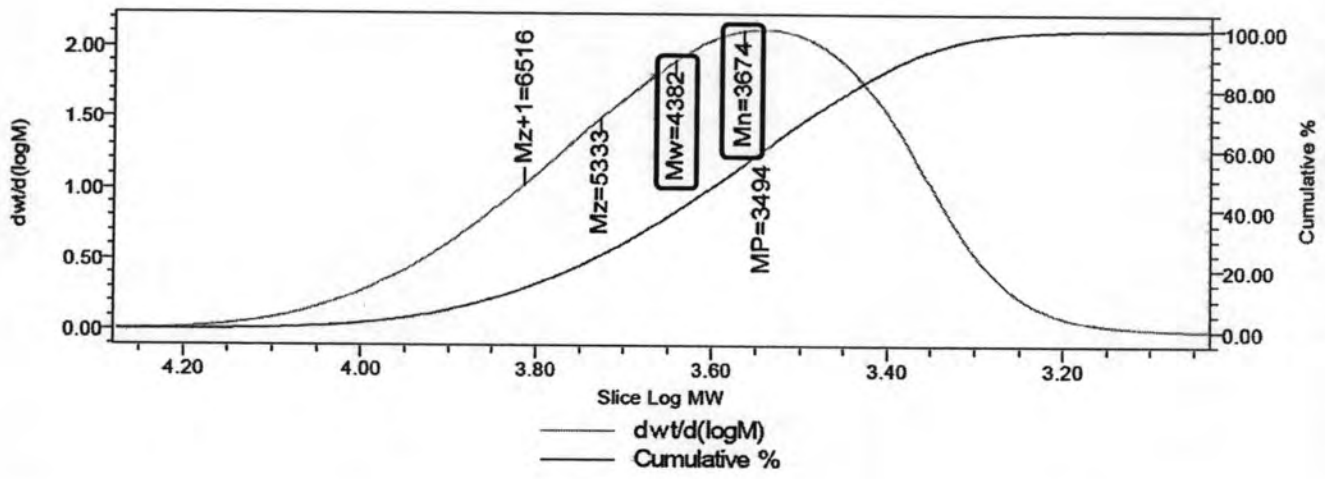

Figure B6 The chromatogram of 90:10 PLLGA using $Sn(Oct)_2$ 0.4 mol% of monomers as catalyst, 120°C, 24 hours. ($\overline{M}_w = 4382$, and $\overline{M}_n = 3674$).

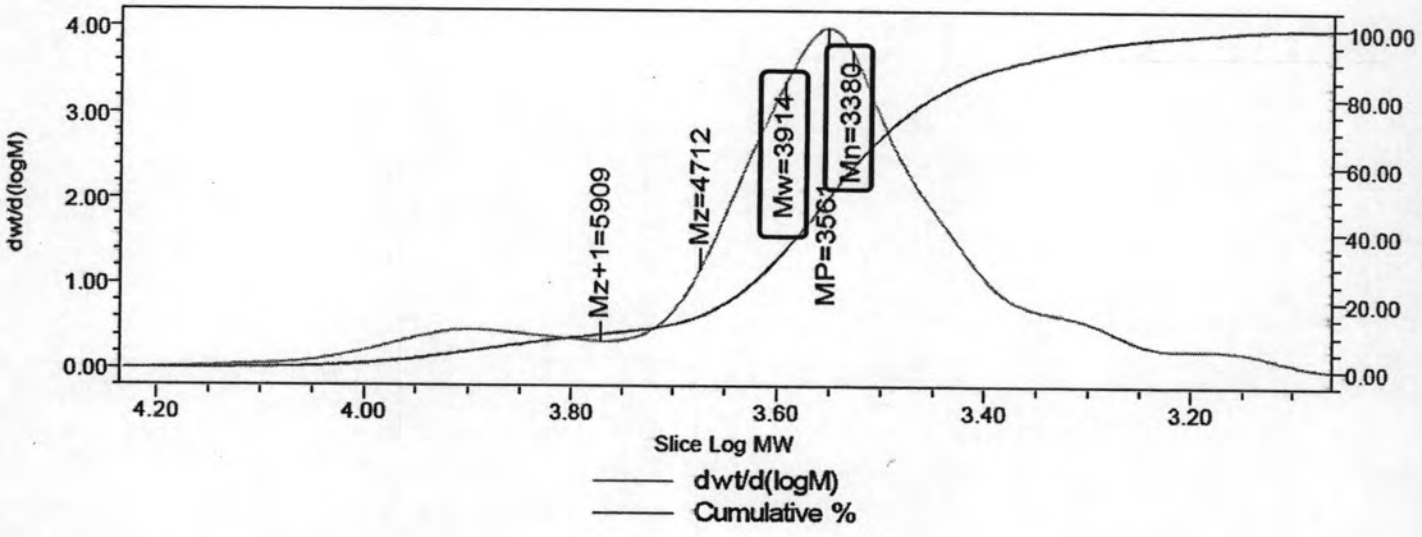

Figure B7 The chromatogram of 90:10 PLLGA using $Sn(Oct)_2$ 0.5 mol% of monomers as catalyst, 120°C, 24 hours. ($\overline{M}_w = 3914$, and $\overline{M}_n = 3380$).

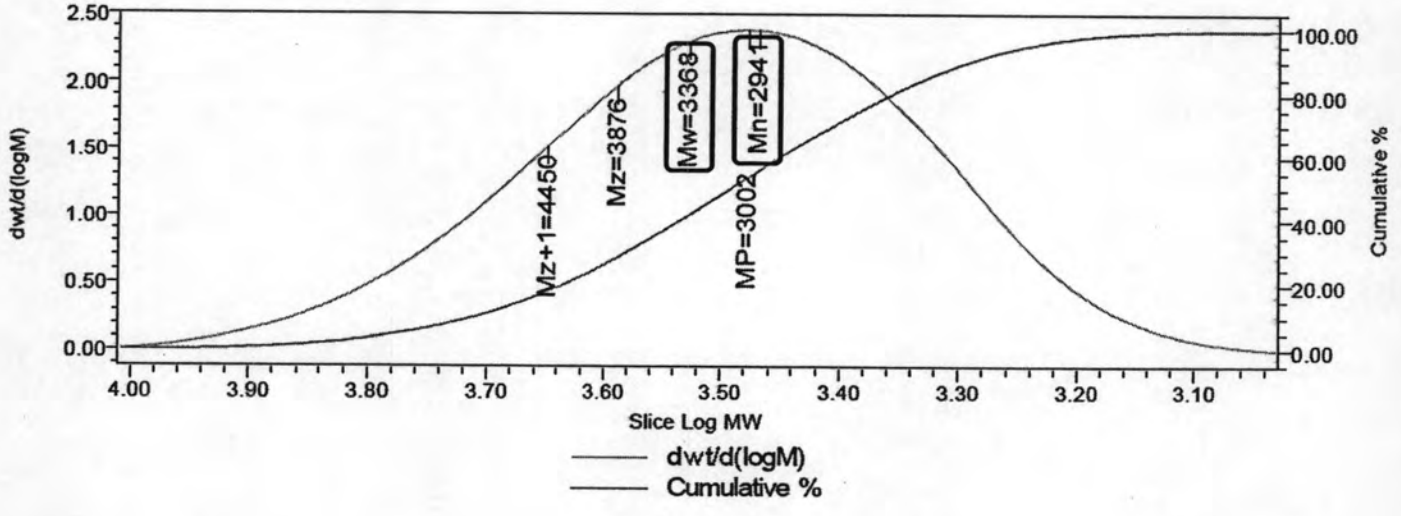

Figure B8 The chromatogram of 90:10 PLLGA using $Sn(Oct)_2$ 0.3 mol% of monomers as catalyst, 120°C, 4 hours. ($\overline{M}_w = 3368$, and $\overline{M}_n = 2941$).

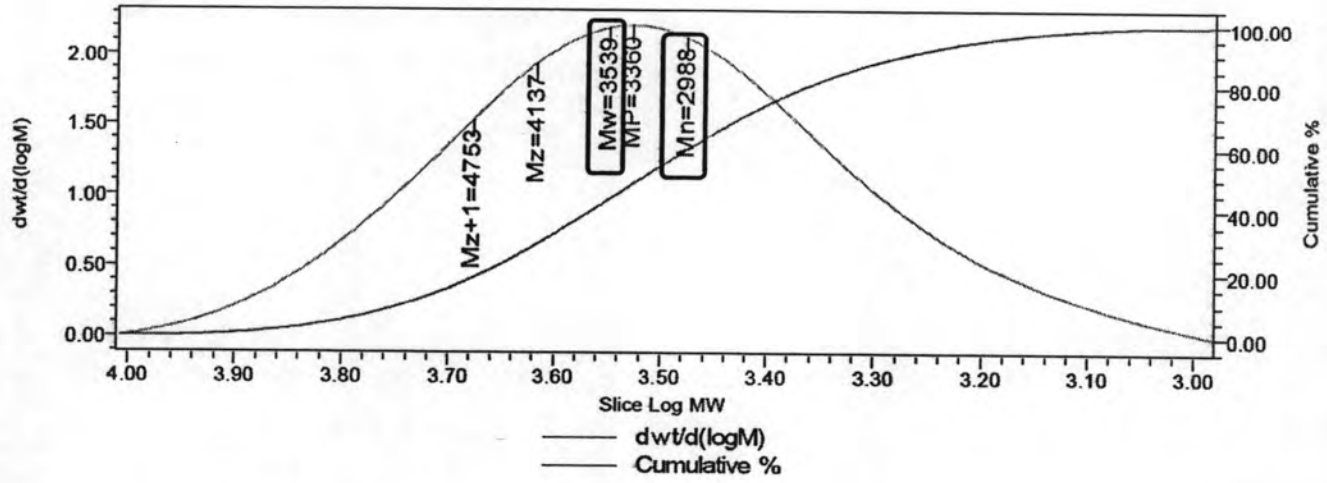

Figure B9 The chromatogram of 90:10 PLLGA using $Sn(Oct)_2$ 0.3 mol% of monomers as catalyst, 120°C, 12 hours. ($\overline{M}_w = 3539$, and $\overline{M}_n = 2988$).

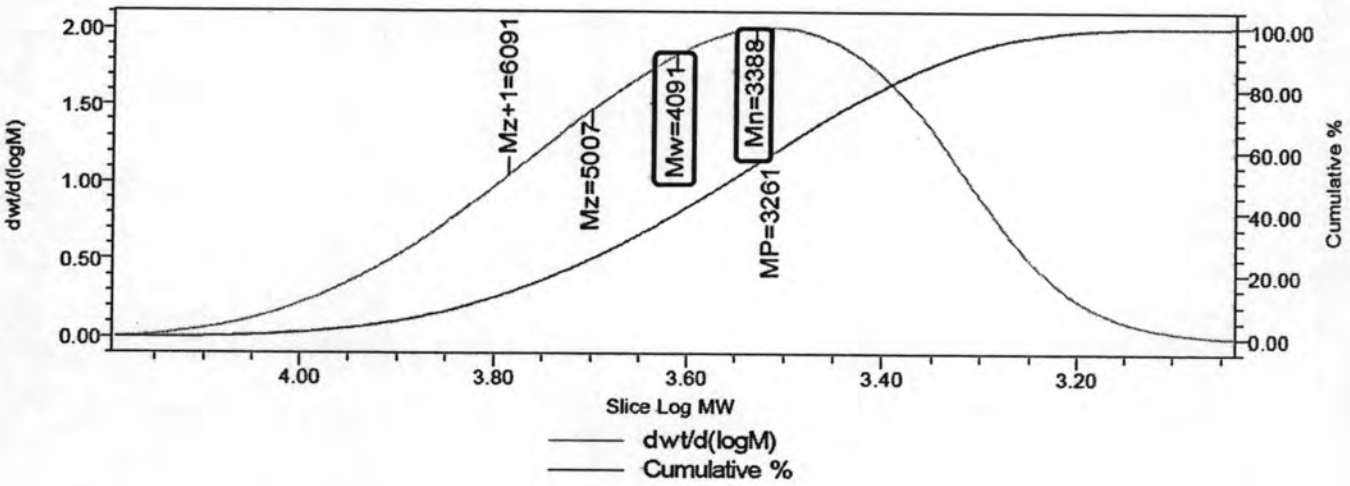

Figure B10 The chromatogram of 90:10 PLLGA using $Sn(Oct)_2$ 0.3 mol% of monomers as catalyst, 120°C, 48 hours. ($\overline{M}_w = 4091$, and $\overline{M}_n = 3388$).

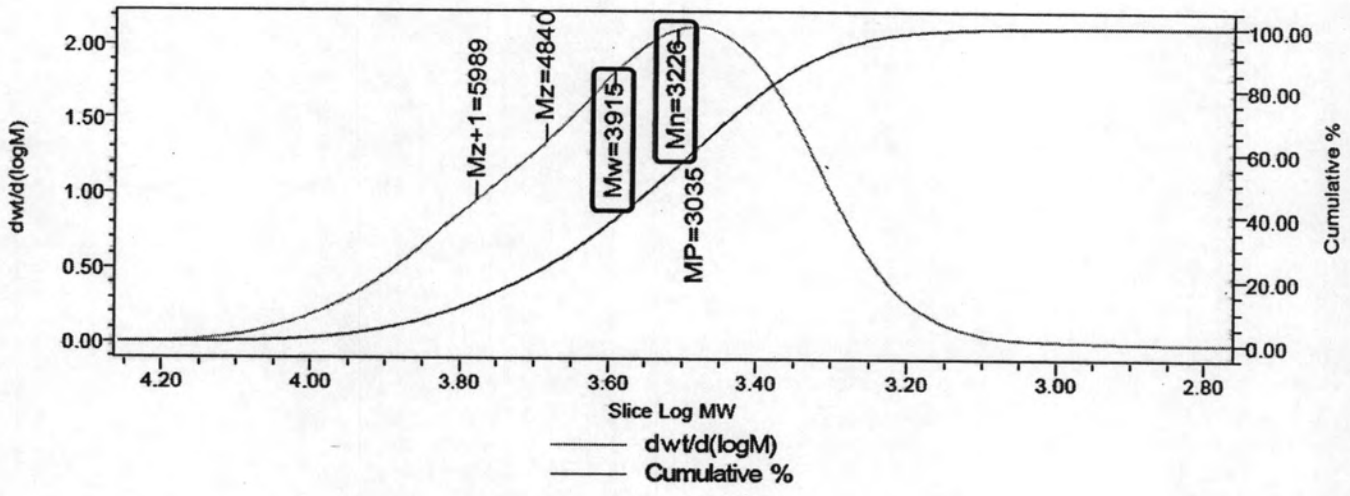

Figure B11 The chromatogram of 70:30 PLLGA using $Sn(Oct)_2$ 0.3 mol% of monomers as catalyst, 120°C, 24 hours. ($\overline{M}_w = 3915$, and $\overline{M}_n = 3226$).

APPENDIX C

The DSC Chromatogram

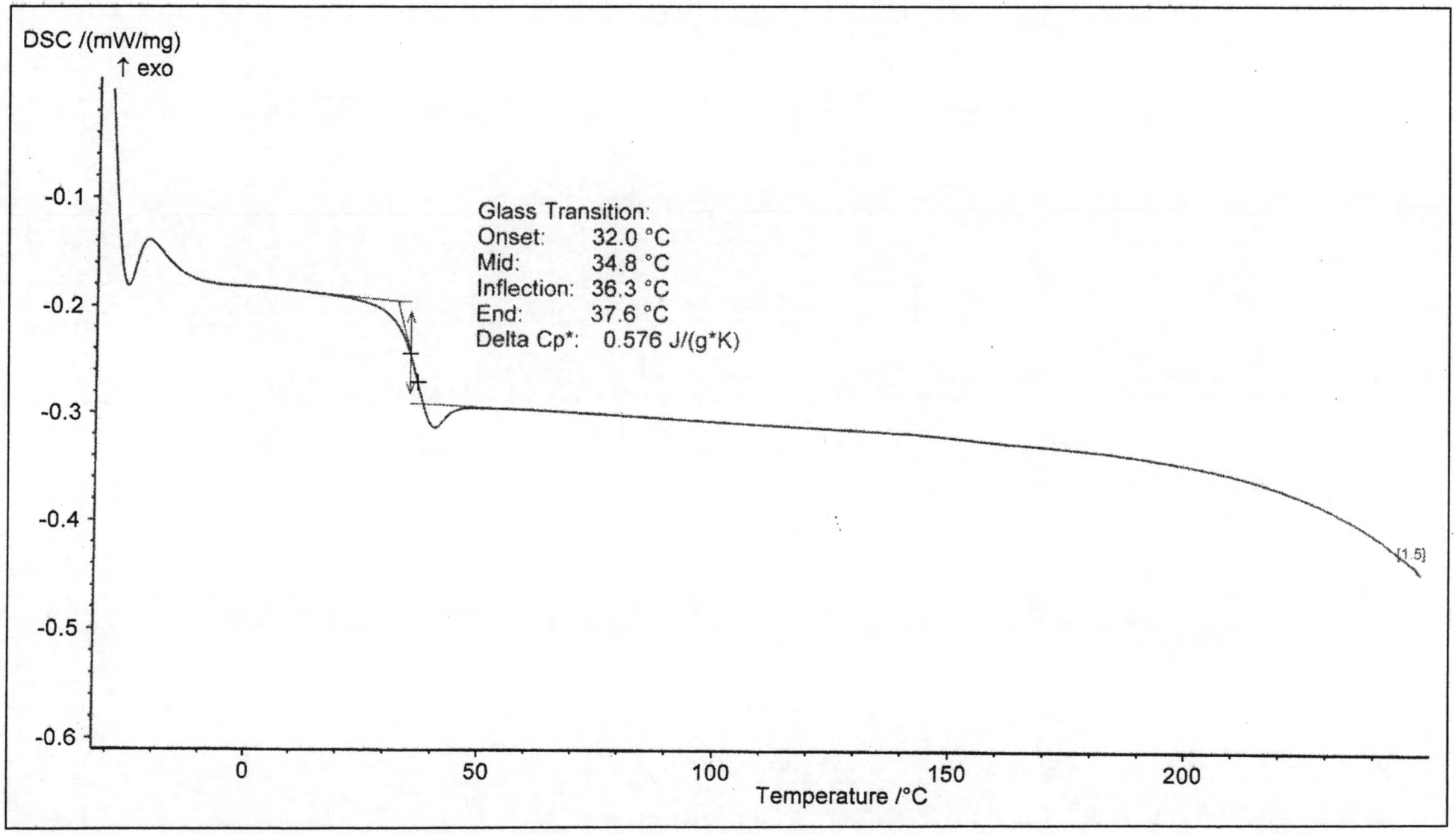

Figure C1 The DSC chromatogram of 70/30 PLLGA

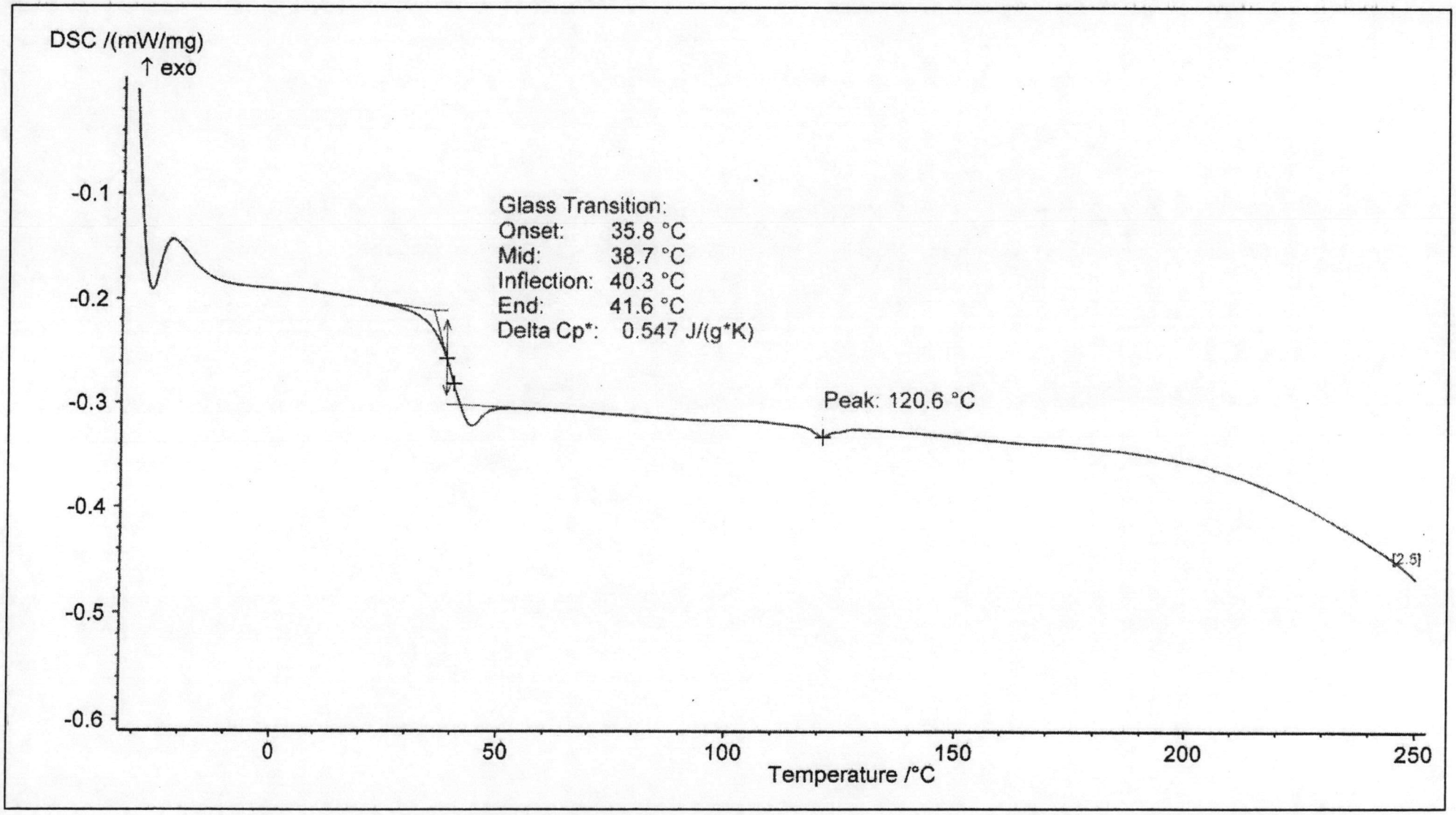

Figure C2 The DSC chromatogram of 90/10 PLLGA

APPENDIX D

Swelling Rate

Table D1 Swelling of 70/30 L-lactide/glycolide ratio behavior of various ratios of PLLGA and PVA.

Time (hours)	Formulation A Swelling±S.D.	Formulation B Swelling±S.D.	Formulation C Swelling±S.D.	Formulation D Swelling±S.D.
0:00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
0:01	74.59 ± 3.23	99.79 ± 5.09	267.24 ± 3.97	115.81 ± 4.10
0:02	89.62 ± 4.52	102.61 ± 6.40	335.47 ± 2.11	123.35 ± 3.52
0:03	94.80 ± 5.74	113.02 ± 5.10	375.30 ± 2.79	125.51 ± 4.52
0:04	98.82 ± 5.01	122.85 ± 5.91	378.83 ± 2.06	133.67 ± 6.59
0:05	106.14 ± 5.63	128.01 ± 6.57	406.62 ± 2.40	141.99 ± 5.75
0:10	111.01 ± 5.33	137.39 ± 6.71	430.75 ± 2.90	159.66 ± 6.68
0:15	116.81 ± 5.37	147.68 ± 6.18	435.11 ± 2.79	158.91 ± 5.03
0:20	120.47 ± 4.72	157.46 ± 3.32	435.73 ± 2.26	165.28 ± 4.02
0:25	122.23 ± 5.18	158.37 ± 3.46	440.37 ± 2.49	168.95 ± 4.11
0:30	124.14 ± 5.17	171.23 ± 4.68	455.07 ± 2.92	187.15 ± 6.93
0:40	125.92 ± 4.94	180.26 ± 5.75	457.28 ± 2.59	189.88 ± 6.38
0:50	128.95 ± 3.28	188.29 ± 3.68	463.17 ± 2.78	194.43 ± 6.37
1:00	130.14 ± 3.45	192.30 ± 3.63	464.39 ± 1.94	194.48 ± 6.03
1:30	130.69 ± 3.53	193.64 ± 3.52	465.06 ± 2.92	196.79 ± 6.19
2:00	130.96 ± 3.51	193.26 ± 2.25	468.21 ± 3.14	197.23 ± 5.76
3:00	131.24 ± 3.55	194.17 ± 2.36	468.71 ± 3.52	198.49 ± 4.82
4:00	131.32 ± 3.51	195.26 ± 2.02	473.26 ± 2.70	203.83 ± 3.36
5:00	131.43 ± 3.65	197.30 ± 2.70	475.10 ± 3.29	207.46 ± 3.37
6:00	131.62 ± 3.78	199.01 ± 2.66	477.79 ± 3.12	208.22 ± 3.17
24:00	131.71 ± 3.69	201.71 ± 2.93	481.25 ± 2.11	208.81 ± 3.32

Table D2 Swelling of 90/10 L-lactide/glycolide ratio behavior of various ratios of PLLGA and PVA.

Time (hours)	Formulation E Swelling±S.D.	Formulation F Swelling±S.D.	Formulation G Swelling±S.D.	Formulation H Swelling±S.D.
0:00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
0:01	122.18 ± 7.34	322.45 ± 4.65	246.75 ± 5.93	102.30 ± 7.79
0:02	146.73 ± 8.54	323.97 ± 5.11	310.46 ± 4.90	105.01 ± 8.99
0:03	158.29 ± 8.36	335.92 ± 7.91	348.37 ± 7.15	114.53 ± 7.14
0:04	165.54 ± 8.29	348.99 ± 7.33	351.69 ± 7.38	124.98 ± 8.07
0:05	170.49 ± 6.88	357.28 ± 7.43	379.17 ± 6.77	129.94 ± 9.68
0:10	174.82 ± 4.56	363.33 ± 9.99	402.39 ± 6.05	138.79 ± 7.84
0:15	181.06 ± 7.72	370.52 ± 7.12	406.20 ± 6.69	149.13 ± 8.33
0:20	183.91 ± 7.96	382.77 ± 5.75	407.59 ± 7.17	158.62 ± 4.07
0:25	186.36 ± 8.29	388.00 ± 6.86	410.39 ± 6.93	160.47 ± 5.00
0:30	190.45 ± 8.26	396.34 ± 5.61	424.71 ± 4.83	172.12 ± 5.95
0:40	194.02 ± 8.19	402.89 ± 2.36	426.61 ± 3.69	180.85 ± 7.05
0:50	196.76 ± 8.15	410.37 ± 2.99	431.43 ± 6.10	189.61 ± 3.32
1:00	198.28 ± 7.02	415.44 ± 2.98	432.54 ± 5.62	191.58 ± 3.54
1:30	198.92 ± 6.42	418.35 ± 3.20	433.18 ± 4.89	192.27 ± 4.07
2:00	200.61 ± 4.34	420.00 ± 2.78	436.47 ± 5.54	192.73 ± 3.93
3:00	201.99 ± 3.38	421.01 ± 2.14	437.88 ± 5.21	194.05 ± 4.35
4:00	203.15 ± 2.60	421.69 ± 1.84	440.91 ± 2.99	194.94 ± 5.05
5:00	203.60 ± 2.79	423.23 ± 3.04	442.80 ± 2.70	196.09 ± 6.14
6:00	204.31 ± 2.67	423.93 ± 4.11	445.48 ± 3.32	195.82 ± 5.12
24:00	204.91 ± 2.56	424.77 ± 3.85	446.89 ± 3.29	197.27 ± 7.04

APPENDIX E

Calibration Curve of Nicotine

Calibration curve of nicotine

The concentrations versus absorbance of nicotine in phosphate buffer saline (PBS) pH 7.4, at 260 nm are presented in tables E1. The standard curves of nicotine in these solution media are illustrated in Figure E1.

Table E1 Absorbance of nicotine in phosphate buffer saline pH 7.4, determined in 260 nm.

Concentration (µg/ml)	Absorbance
10	0.358
20	0.510
30	0.675
40	0.846
50	1.015
60	1.176
70	1.341

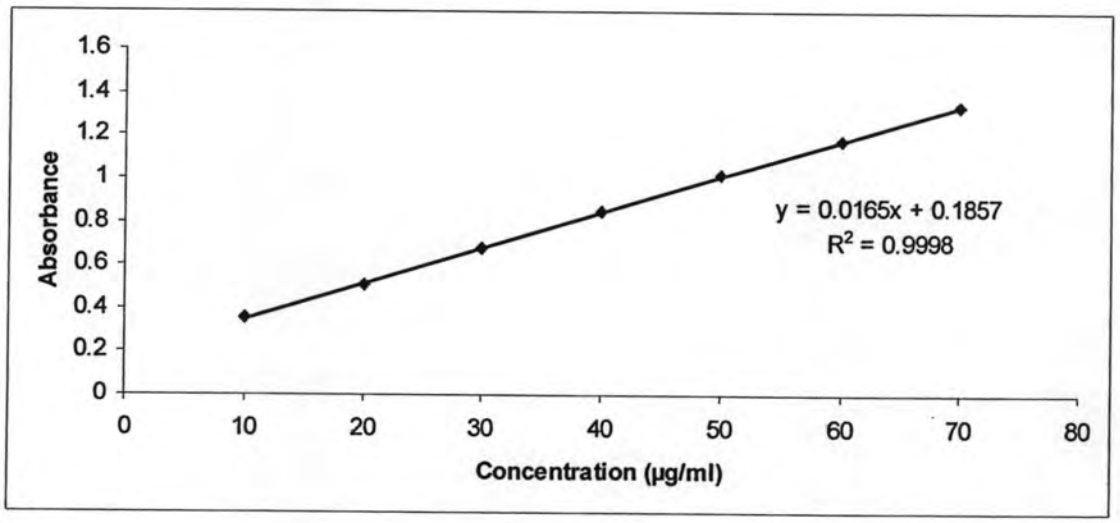

Figure E1 Calibration curve of nicotine in phosphate buffer saline pH 7.4 at 260 nm.

APPENDIX F

Nicotine Release

Table F1 Amount of nicotine release from 70/30 L-lactide/glycolide film behavior of various ratios of PLLGA and PVA.

Time (hours)	Formulation A % drug release ± S.D.	Formulation B % drug release ± S.D.	Formulation C % drug release ± S.D.	Formulation D % drug release ± S.D.
0.00	0.00 ± 0.77	0.00 ± 0.34	0.00 ± 0.30	0.00 ± 0.34
0.05	4.21 ± 0.44	23.91 ± 0.98	0.00 ± 0.24	28.37 ± 1.10
0.10	6.11 ± 0.37	28.54 ± 0.76	0.60 ± 0.13	35.51 ± 0.19
0.15	6.92 ± 0.27	29.38 ± 0.37	4.52 ± 0.16	36.98 ± 0.19
0.20	7.26 ± 0.44	29.93 ± 0.49	19.57 ± 0.14	36.58 ± 0.18
0.25	7.30 ± 0.42	29.57 ± 0.72	22.07 ± 0.43	36.82 ± 0.32
0.30	7.46 ± 0.40	29.67 ± 0.83	29.63 ± 0.33	37.12 ± 0.28
0.35	7.51 ± 0.50	29.65 ± 1.07	30.05 ± 0.51	37.26 ± 0.30
0.40	7.28 ± 0.45	29.83 ± 0.97	33.83 ± 0.56	37.24 ± 0.12
0.45	7.34 ± 0.45	29.75 ± 1.22	38.78 ± 0.76	37.34 ± 0.19
0.50	7.40 ± 0.46	29.83 ± 1.01	42.25 ± 0.31	37.44 ± 0.21
0.55	7.28 ± 0.34	29.79 ± 1.10	41.61 ± 0.34	37.59 ± 0.19
1.00	7.38 ± 0.31	29.85 ± 1.11	50.72 ± 0.34	37.65 ± 0.19
1.15	7.30 ± 0.21	29.91 ± 1.19	53.97 ± 0.24	37.67 ± 0.18
1.30	7.30 ± 0.34	30.03 ± 0.98	55.30 ± 0.82	37.73 ± 0.16
1.45	7.30 ± 0.54	30.11 ± 0.91	56.29 ± 0.70	37.83 ± 0.23
2.00	7.34 ± 0.39	30.05 ± 1.19	56.92 ± 0.67	37.97 ± 0.22
2.30	7.30 ± 0.56	30.09 ± 1.22	57.44 ± 0.43	37.99 ± 0.25
3.00	7.53 ± 0.56	30.11 ± 1.09	57.65 ± 0.64	38.11 ± 0.27
3.30	7.46 ± 0.47	30.09 ± 1.16	57.99 ± 0.50	38.35 ± 0.25
4.00	7.63 ± 0.28	30.21 ± 1.06	58.17 ± 0.76	38.45 ± 0.18

Table F1 (continue) Amount of nicotine release from 70/30 L-lactide/glycolide film behavior of various ratios of PLLGA and PVA.

Time (hours)	Formulation A % drug release ± S.D.	Formulation B % drug release ± S.D.	Formulation C % drug release ± S.D.	Formulation D % drug release ± S.D.
5.00	7.85 ± 0.16	30.19 ± 1.12	58.21 ± 0.73	38.52 ± 0.28
6.00	7.77 ± 0.19	30.21 ± 1.12	58.41 ± 0.61	38.60 ± 0.27
7.00	7.81 ± 0.23	30.19 ± 1.15	58.52 ± 0.62	38.64 ± 0.28
8.00	7.83 ± 0.15	30.21 ± 1.13	58.74 ± 0.61	38.64 ± 0.22
24.00	7.89 ± 0.09	30.31 ± 1.10	59.04 ± 0.40	38.66 ± 0.15
30.00	7.95 ± 0.09	30.37 ± 1.08	59.22 ± 0.39	38.68 ± 0.15

Table F2 Amount of nicotine release from 90/10 L-lactide/glycolide film behavior of various ratios of PLLGA and PVA.

Time (hours)	Formulation E % drug release ± S.D.	Formulation F % drug release ± S.D.	Formulation G % drug release ± S.D.	Formulation H % drug release ± S.D.
0.00	0.00 ± 0.99	0.00 ± 0.57	0.00 ± 0.16	0.00 ± 0.63
0.05	7.14 ± 0.15	9.40 ± 0.71	9.73 ± 0.52	19.12 ± 0.95
0.10	14.39 ± 1.73	25.79 ± 0.44	26.09 ± 0.47	22.64 ± 0.26
0.15	17.69 ± 0.36	32.09 ± 0.38	32.60 ± 0.33	23.38 ± 0.40
0.20	28.43 ± 1.53	42.09 ± 0.54	42.68 ± 0.67	24.01 ± 0.21
0.25	31.61 ± 0.46	45.85 ± 0.56	46.21 ± 0.63	23.67 ± 0.06
0.30	31.59 ± 0.64	46.41 ± 0.44	46.76 ± 0.64	23.85 ± 0.32
0.35	31.91 ± 0.89	46.60 ± 0.40	46.96 ± 0.55	23.97 ± 0.53
0.40	32.01 ± 0.89	46.66 ± 0.59	47.10 ± 0.57	23.89 ± 0.43
0.45	32.13 ± 0.91	46.88 ± 0.68	47.30 ± 0.54	23.95 ± 0.19
0.50	32.17 ± 0.91	46.96 ± 0.70	47.48 ± 0.64	24.35 ± 0.40
0.55	32.13 ± 0.97	47.00 ± 0.79	47.61 ± 0.70	24.09 ± 0.28
1.00	32.31 ± 1.01	47.02 ± 0.75	47.73 ± 0.70	24.05 ± 0.56
1.15	32.25 ± 1.00	47.22 ± 0.67	47.79 ± 0.74	24.25 ± 0.70
1.30	32.25 ± 1.03	47.14 ± 0.77	47.93 ± 0.76	24.43 ± 0.49
1.45	32.15 ± 0.99	47.18 ± 0.69	48.01 ± 0.72	23.77 ± 0.93
2.00	32.82 ± 1.31	47.18 ± 0.80	48.07 ± 0.72	23.77 ± 0.87
2.30	32.27 ± 0.93	47.34 ± 0.69	48.15 ± 0.80	23.40 ± 0.80
3.00	32.39 ± 0.97	47.38 ± 0.62	48.21 ± 0.74	23.61 ± 0.73
3.30	32.49 ± 0.86	47.40 ± 0.69	48.27 ± 0.74	23.34 ± 0.62
4.00	32.39 ± 0.94	47.40 ± 0.73	48.31 ± 0.72	23.79 ± 0.79

Table F2 (continue) Amount of nicotine release from 70/30 L-lactide/glycolide film behavior of various ratios of PLLGA and PVA.

Time (hours)	Formulation E % drug release ± S.D.	Formulation F % drug release ± S.D.	Formulation G % drug release ± S.D.	Formulation H % drug release ± S.D.
5.00	32.54 ± 0.85	47.44 ± 0.66	48.39 ± 0.68	24.09 ± 0.37
6.00	32.60 ± 0.87	47.61 ± 0.56	48.43 ± 0.67	24.17 ± 0.44
7.00	32.66 ± 0.91	47.53 ± 0.69	48.45 ± 0.70	24.31 ± 0.31
8.00	32.62 ± 1.06	47.63 ± 0.62	48.52 ± 0.66	24.49 ± 0.24
24.00	32.84 ± 0.85	47.71 ± 0.53	48.54 ± 0.72	24.45 ± 0.22
30.00	32.80 ± 1.07	47.57 ± 0.77	48.60 ± 0.72	24.54 ± 0.25

VITA

Ms. Wilasinee Robroo was born on Wednesday July 7, 1982, in Rayong, Thailand. In 2005, she graduated with a Bachelor's degree of Science in Chemistry from Chulalongkorn University. After that, she has studied a Master's degree of Science in Petrochemistry and polymer science, Faculty of Science, Chulalongkorn University, and completed the program in 2008.